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By investing in education, man will have a greater openness in life and more opportunities, although some people believe that learning is a waste of time, considering that one only needs luck and some batteries in order to attain something in life. Going beyond these opinions, education plays a key role in our lives, and it must be a continuous one because we can never say that what we have learned is enough until a certain moment.

Life always surprises us and it is best to be prepared; the book is a vital element of our life. If we do not learn and take everything step by step later, we may be sorry because it is difficult to recover overnight from what we have lost over the years. We are not learning for someone, we are learning for ourselves. We need education, and as Aristotle said, the roots of education are bitter, but the fruit is sweet, being the best provision one can make for old age. Education is at the forefront of the development and exploration of human qualities, being a predominantly action oriented towards the development of all, as well as an essential factor in preparing for life. As the philosopher Plato said, education is nothing more than the art of forming good habits or developing the native skills for the virtues of those who have them. Through education and faith, everything is possible.

Education in a person's life has a very important role, it develops countless sensitive, emotional, and pragmatic aspects of life. Education, by definition, is a social phenomenon that represents the transmission of data and existential feelings to generations about culture and society. It develops a

person's style, and in the end, you teach it yourself. Learning helps to form a purpose in life, to form the future, but the quantity also makes a difference in this case, and that is why depending on the teachings received, the personalities are different, i.e., a man full of culture and learned as a book will never be the more popular or the one who is good at most practical things, but one who is truly educated to cope physically with life does not possess such a large amount of logical and theoretical information. The development of a person's personality begins when the person in question is able to make choices because a man who knows how to go in one direction also knows why he chose to go in that direction, because, in fact, he is educated in the sense of knowing why a person is doing a certain thing and also knowing how to do it.

Whether the importance of education in schools is given importance, or the importance of education received as an ordinary person, elementary education plays a major role in shaping each individual's character and personality. An unfortunate event in your life should not make you change what education has taught you to do. You always need to establish a goal and aim for that goal. Even though there are many opinions about education, there is no doubt that today's man needs a strong personality to be able to succeed in a contemporary society full of requirements.

Family Science and Psychology Meets Design: Exploring Self-Awareness through an Interdisciplinary Lens

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ABSTRACT: Society has become more global with strong connections transcending national borders and families have become more transnational in this modern world. The historical journeys that families have made across the globe, how they have made and kept homes, how their cultural values and familial dynamics have evolved, and how they maintain their cultural heritage all influence people's everyday life in direct and indirect ways. An interdisciplinary course marrying the concepts within the disciplines of psychology, social science and design was constructed and will be presented in this case study. The case study examines how the interdisciplinary course was able to expand student's self-awareness through learning about their family dynamics, history and historical family homes, current living space, and culture. The course included content such as family dynamics and family development, cultural psychology concepts, spatial development, architecture, and home design to illuminate the student's unique historical and present context. This case study delineates the journey of the interdisciplinary course demonstrating the culmination of major learnings

for the students across the course. The pedagogical methodology presented will be the infographic course map describing how the learning content from psychology, social science and design connect and build to increase understanding of self in relation to others and one's home environment. This case study provides evidence of how students were able to learn about multidisciplinary factors of psychology and design to increase meaningful learning experiences.

KEYWORDS: psychology, design, family social science, interdisciplinary

Introduction

As the stories and issues of our lives become dynamic due to the complexity and changability of the modern world, interdisciplinary study gains popularity in undergraduate study which can bring comprehensive and integrative knowledge for the students. By definition, interdisciplinary study is "a means of overcoming the isolation and discrete attitudes that separate areas of knowledge, to find ways boundaries can be crossed and fields integrated (Gunn 1992, 241)." Historically, these courses have provided a wide range of desirable education for students (Newell 1999), broadening the spectrum of understanding the subject. This is because Interdisciplinary courses offer alternatives of one discipline-specific knowledge to integration of multiple disciplines (Szostak 2007). With increasing demands for practical and engaging courses in higher education, interdisciplinary courses provide an opportunity for the students to be more creative, and broaden perspectives as they develop various skills (Newell 1999). Teaching in interdisciplinary study is not only the mere collaboration of the two fields but it requires the focus of how different disciplines can merge, intersect, and diverge in ways to examine the current reality in versatile and dynamic lens (Casey 2010). The purpose of this interdisciplinary course was to provide students with a way to gain a better understanding of how family dynamics, history, and culture impact one's self-understanding, and how the spatial translation of learning helps the person improve their own environment, behavior, and relationship. As society becomes more global where connections are made that transcend national borders and families become more transnational, there is a need to gain an understanding of how this impacts individuals. The historical journeys that families have made across the globe, how they have made and kept homes, how their cultural values and familial dynamics

have evolved, and how they maintain their cultural heritage all influence the individual in direct and indirect ways. Gaining an understanding of these origins not only provides a strong foundation from which to grow, but also may uncover deeper self-discoveries of strength and resilience. What better time to focus on self-awareness and resilience than now, after the world has been beset with a global crisis and much uncertainty.

This case study follows an interdisciplinary course that is taught by two professors of psychology and interior design. It examines how the interdisciplinary course was able to expand student's self awareness through learning about their family dynamics, history and historical family homes, current living space, and culture. This course marries the concepts within psychology and social science (family dynamics and development, cultural psychology concepts) and design (spatial development, architecture, home design) to encourage understanding of one's behavior and environment. This case study describes the construction process of the course, the developed framework delineating how the separate disciplines were integrated in a culminating final project, and provides evidence of the effectiveness from the feedback of the students. The pedagogical methodology in this interdisciplinary course increases understanding of oneself in relation to others and one's home environment as students learn about how multidisciplinary factors of psychology and design can work together to create meaningful learning experiences.

At first glance it may be surprising to consider how psychology and design are related. As the world becomes multifaceted and complex, interdisciplinary thinking is necessary to understand the world in a broader and comprehensive perspective. Since both psychology and design are deeply interrelated to human behavior, the course was focused to create learning contents which help students to understand themselves through the study of their family and culture in relation to home design. Through this collaboration, students learn how human relationships are affected by spatial organizations and compositional elements that we live with everyday, and how home environments are the reflection of family and culture. They not only learn about themselves but also understand their family better and find ways to improve or envision better family relationships as they work on the project of creating their home.

Course Design

While there is a broad push for interdisciplinary pedagogy and courses across most universities, faculty may find the process of constructing such courses daunting based on the volume of effort and coordination. Interdisciplinary courses and programs are valuable and have been shown to encourage students to "take a deep approach to learning, they seek meaning, reflect on what has been learned, and internalize knowledge by creating personal understanding" (Ivanitskaya et al. 2002, 101). For this course, the instructors found common ground and excitement in the possibility of encouraging students' self-exploration by connecting with the concepts found in psychology, family science, and design, with a specific aim of increasing Global Awareness. The course needed to be engaging and go beyond a simple understanding of content but in true interdisciplinary fashion, it needed to both complement and enhance the understanding of the respective fields and also create novel learning and knowledge.

Family Science is a field that originated within the early 1900's growing out of the need to understand how families operated and how best to conduct systematic family research. Cultural Psychology focuses on the inquiry of culture as it relates to how people think, behave, and function and the sociocultural concepts and factors that impact groups of people. Within this course, family science and cultural psychology content was delivered to provide a framework for understanding familial dynamics and cultural concepts. Interior design is the discipline of studying interior built environment that addresses, protects, and responds to various human needs. It involves designing the space with technical knowledge to studying functionality, aesthetics, and sustainability using various design elements and principles and how they affect and support human life, and improve the safety, well-being, and health of the occupants.

The course was constructed with a series of continuous integrated content that built upon each step to a culminating product (see Figure 1 for Course Design Framework). Lectures and readings from the field of psychology provided students with a foundation for which to understand family systems and dynamics along with cultural psychological concepts and values. Lectures and assigned readings from the design were created for the

students to understand how spatial design impacts human living patterns from the natural and the built environments and how different cultural and historical design components impact human behavior. Both instructors provided students with activities each week that reflect on their current family dynamics, historical background, and home design and challenged them to apply and critically analyze concepts to their own contexts.

Figure 1. Course Design Framework
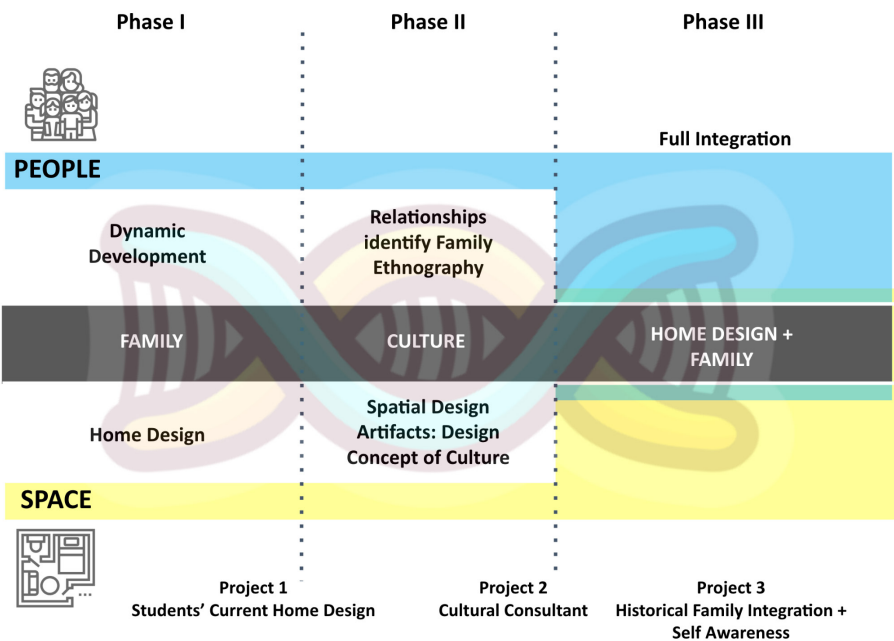
The course was constructed to have three phases that culminated in a cohesive interdisciplinary project at the end of phase three. Both instructors brought their expertise in their subject areas for each phase with an intentional effort to explore the interplay of each at the end of the phases; the Psychology instructor focused on the psychology of family and relationships, and the Design instructor focused on the design of family homes.

Phase 1 centered on the topic of family. The Psychology instructor instructed on the social science of families, their relationship dynamics and development, and the Design instructor instructed on the home space of

families, their home design and historical and cultural design influences on family homes. At the end of phase one students were tasked with exploring the interplay of family dynamics and development, and the family home by relating it to their own families. This assignment involved both a reflection and visual of how the family home was set up, the flow, boundaries, hierarchical spaces, and functional family uses for the space within their family home. This assignment allowed for them to gain a deeper understanding of how family processes affect design and how design affects family processes (i.e. greater boundaries for parental unit, increased flow and congregating in kitchen areas, etc.).

Phase 2 centered on the topic of culture. The Psychology instructor instructed on the psychological concepts of culture and cultural identity, and the Design instructor instructed on the spatial design and cultural and historical artifacts related to home design. At the end of phase two, students were tasked with developing an interview to use with a peer who will act as a cultural consultant. This project involved interviewing a peer that they were paired with- a project called "Interviewing a Cultural Consultant". The objective of this interactive project was to invite students to both enact the semi-formal ethnographic interview engaging in qualitative inquiry (as the interviewer) and also to embody a knowledgeable expert of their own cultural group (as the interviewee). It was meant to challenge them to ask and be asked questions that they may not have thought of before. Questions ranged from their family's living space, the cultural rituals and traditions practices, the values that were important in their family, and also specific cultural artifacts that were given a place of honor within their homes. Within this assignment, students both interviewed and were interviewed about how families enacted culture in their homes and within their relationships (i.e. altars within the home, coming-of-age events, cultural artifacts and designs in religious celebrations, etc.). This assignment allowed them to gain a deeper understanding of how family culture interlocked with cultural design for their own families but also their peers who hailed from other cultures. When coincidentally they were paired with a peer from the same culture, they were able to explore the similarities and differences by which each of their families embodied their shared culture.

Phase 3 was the integration phase. Students were provided with support to explore using a historical ethnographic lens the cultures from which they and their families came. For this integrative project, students were asked to go beyond the recent past of their family and cultural group, and look at where and how their ancestors lived. This project required an exploration of the historical contexts of their great grandparents- how their family was organized as it was reflected within the home design, what cultural values were prioritized, what cultural practices were celebrated and how, larger architectural features that connected with their family's culture, and what it was like for someone of their age in their family at that time. Students were also invited to recreate and draw from images of the typical home layout of that time to explore how families used the home and what functions specific design features served in maintaining family and cultural values. Finally, students were asked to design their future home integrating a) historical cultural artifacts, and b) family dynamics and values. The deliverables for this Final Project involved a presentation where students had the opportunity to orally present their findings and designs, and also engage with their peers in class about each other's projects. This allowed each student to showcase their work. This assignment aligns with established research findings that link the importance of ethnic and racial identity and belongingness with self-esteem (Hernandez, et. al. 2017; Umana–Taylor 2004). Additionally, students are exposed to other historical-cultural learnings and how it informs familial values and living spaces, truly embodying the Global Awareness philosophy of this course.

Student feedback

Markers of efficacy when evaluating the success of a course are multiple and because this course is a novel design without longitudinal evaluative data, the most distinct evidence came from the student's feedback. This course was piloted for two terms and at the end of the course, a survey was provided to students asking them questions about both their experience and learning process in the course.

When the students were asked how family dynamics, ethnicity and culture impacted the design of a home, all the students described a greater awareness of familial and cultural factors related to design. Students described that what they had previously seen as an unimportant factor was key to how they saw their family interact and that design features such as color and the family space became more meaningful to them as they reflected on their culture. Students also concluded that the design of a home should be unique and cater to the uniqueness of a family and culture. When students were asked about the everyday cultural practices around their home that they had become cognizant of, the students reported that many of these practices and rituals were known but they were able to connect them to their family and were motivated to practice them more as they reflected on their significance.

When the students were asked what they enjoyed about the course, they indicated that the pace of the course was comfortable and enjoyable which provided flexibility in the completion of projects. Students shared that they enjoyed learning about other people's family dynamics and sharing cultural aspects for the final project. Many students pointed out that they enjoyed learning about the connection between psychology and design because it allowed them to understand themselves and their culture in the relationship between those two disciplines. Students provided some insights into how they wish this course can be enhanced next time. Generally, students noted that the structure of the course should be kept. They suggested the possibility of having this course in person rather than online, so they can engage with others more.

The prevailing theme from the student's responses were that they arrived at greater insight of themselves, their family, culture, and home space, and a greater appreciation of how design features were interwoven with familial and cultural values.

Conclusion

As society becomes more global and families have become more transnational it is important to explore how people have made and kept homes and how their cultural values and familial dynamics have evolved. Interdisciplinary

courses provide the opportunity and space to explore these important human experiences and for this case study, was able to marry the concepts within the disciplines of psychology, social science and design. Student's through a course like this are supported in raising their self-awareness through learning about their family dynamics, history and historical family homes, current living space, and culture. While the process of constructing an interdisciplinary course can be daunting, due to the investment in time and energy, the gains and value of a course like this one was apparent in not just the creation of a strong framework that could be used for future projects but also in the words and discoveries reported by the students themselves.

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Science Diplomacy Index: Leadership and Responsibility to Act on Climate Change

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ABSTRACT: In the age of global warming, pandemics and East-West tensions, the time for science diplomacy has come. To this day, the concept of science diplomacy has never been quantified to highlight the importance and potential of specific countries around the globe to engage in science diplomacy. In the first macroeconomic model of science diplomacy, an index was created including 51 countries around the world ranked on their potential to be spearheading science diplomacy. The presented Science Diplomacy Index integrates (1) the academia quota per country as an indication of scientific excellence based on World Bank Educational Attainment data of at least Bachelor's or equivalent education in the population of a country from 25 years of age as cumulative percent in the population; (2) a modified World Ranking of academic institutions based on the Web of Universities data weighted by the relevance of its academic institutions; and (3) the Lowy Global Diplomacy Index measuring diplomatic relations in embassies, consulates, or other diplomatic representations. The index is then applied to a macroeconomic model on disparate economic impacts of climate change around the world and country-specific CO_2 emission levels, in order to determine what countries have excellent starting grounds but also a heightened responsibility to engage in science diplomacy to reverse the negative impacts of global warming. The results offer invaluable yet quantified information on the importance of science diplomacy in the 21st century.

Introduction

Today's global challenges in regards to climate change demand for urgent action of the global community. Time windows close on humankind's ability to revert global warming. Global warming impacts have reached unprecedented urgency for attention to finding common-ground driven solutions fast and efficiently.

In the coming together of all nations to solve global issues of concern around global warming, global governance institutions have done excellent work and proved successful leadership in the past decades. Another form of more informal strategies to discuss global crises leaving aside political frameworks and customary law practices is to connect and build a bridge of mutual understandings of global community members via scientific facts.

As early as in the 1930s and at its height during the old Cold War, researchers came together and aligned in order to discuss matters-of-facts and rational findings leaving aside any political agenda and historical denominations. This practice became known as Science Diplomacy. At the forefront of Science Diplomacy stood the International Institute for Applied Systems Analysis (IIASA) in Laxenburg, Austria, which – to-this-day – informs public leaders based on science-driven interdisciplinary findings and interculturally-derived insights.

Science diplomacy had its height during the Cold War era when institutional foundations in global international organizations helped connect scientists via empirical and rational facts in order to solve global issues of concern aside from political realities and country differences. In light of renewed East-West tensions and the urgency of a global warming solution, today's most pressing international challenges in climate change call for a renewed science diplomacy spirit to discuss solutions scientifically without political biases and historic customary practice.

Science Diplomacy builds on 'scientific collaborations…to address common and shared problems' (The Vienna Statement on Science Diplomacy 2022). Science diplomats advocate for 'free and open exchange of scientific ideas and information' (The Vienna Statement on Science Diplomacy 2022). Building on the integrity of research and societal responsibility focus of science, science diplomacy fosters 'freedom of cooperation' (The Vienna Statement on Science Diplomacy 2022). Science can learn from diplomacy tactful communication and respectful appreciation of differences; while diplomacy can benefit from the rationality of scientific facts and the rigor in argumentation over precise quantifications of the natural environment.

With certain world problems being too-big-to-fail requiring global collaboration and fast action, the challenges of our lifetimes appear to only be surmountable if tackled by a rational scientific collaborative approach. The time for Science Diplomacy has therefore come. Yet to this day, no quantification of the concept of science diplomacy exists. The concept of science diplomacy has never been quantitatively studied to highlight the importance and potential of specific countries around the globe to engage in academic discourse for science diplomacy. In particular, we lack information on what countries can lead the world to find a common ground on climate change aversion with science diplomacy advocacy.

The following paper acknowledges today's global challenges in climate change and presents the first quantification of science diplomacy potential around the world. This paper first introduces the concept of Science Diplomacy, drawing from the history of the International Institute for Applied Systems Analysis, to then capture the most pressing contemporary issue of climate change. A macroeconomic index of science diplomacy will be calculated to highlight the individual potential of countries around the world as a global panacea against global warming. In the first quantification of the concept of Science Diplomacy, an Index integrates (1) the academia quota per country as an indication of scientific excellence based on World Bank Educational Attainment data; (2) a modified World Ranking of academic institutions weighted by the relevance of its academic institutions; and (3) the Lowy Global Diplomacy Index measuring diplomatic relations in embassies, consulates, or other diplomatic representations. The paper also applies the

first Science Diplomacy Index (SDI) on the concept of a Responsibility to Act (RTA) on climate change based on a macroeconomic model estimating the economic prospects under the condition of a changing temperature (Puaschunder 2020). The results of the Science Diplomacy Index applied to a macroeconomic model on disparate economic impacts of climate change around the world and country-specific CO_2 emission levels determines what countries have excellent starting grounds but also a heightened responsibility to engage in science diplomacy to reverse the negative impacts of global warming (Puaschunder 2020). The discussion informs about future research avenues for deriving inferences about the relation of science diplomacy and macroeconomic correlates to shine light at the positive implications and multiplying variables of science diplomacy.

Science Diplomacy

Science diplomacy uses scientific collaborations among nations to address common problems and build constructive international partnerships for their solutions (The Vienna Statement on Science Diplomacy 2022). As a rather informal and unpaid diplomatic service, scientists are thereby engaging in technical, research-based academic discourse and scientific exchange with the goal of collaborating based on facts to understand and alleviate global concerns.

Originating since the 1930s in concept but practiced vividly during the Cold War, science diplomacy benefitted from the political and financial independence of scientists, who often could exchange information freer from governmental oversight and media scrutiny control than conventional diplomats. Science diplomats were mainly researchers trained to focus on facts and scientific goals rather than promoting national country interests or advocating for stakeholder demands.

Topics of scientific cross-border interests became subject to informal meetings to discuss the emergence of potential global challenges and world community needs. Oftentimes, scientists were the only elite group who was allowed to travel freely under restrictive regimes, granting them a global network in the governance and development of science. Historic examples of scientific collaboration despite political adversities include explorations and

scientific measurement of distance and time as well as grand accomplishments in technology and energy creation. Potential advancements during Cold War that were driven by science diplomacy were the successful closing of the Ozone Layer, cooperative development of nuclear energy, space exploration and technology transfers.

Science diplomacy appears to be practiced by scientists to advise and inform as well as support policy objectives with international impetus and/or global governance focus. Science diplomacy also benefits from attracting a range of scientists who are willing to collaborate and practice heterodox – in terms of unconventional methodology – scientific ethics. Science diplomats' scientific cooperation thereby forms a network of scientific exchange around the world, governmental leaders may turn for maintaining communication channels in times when political and conventional diplomacy are deadlocked (Gluckman, Quirion, Sachs & van Jaarsveld 2022). Science diplomacy is therefore a research collaboration-based informal network of allies that transcends nationalism and political frictions (Gluckman et al. 2022).

Science Diplomacy is considered as a new diplomacy form different from traditional diplomatic ties and a subform of international relations or soft diplomacy (Barston 2014; Bjola & Kornprobst 2018; Constantinou & Sharp 2016; Nye 1990; Sharp 2016; Szkarłat 2020). At the core of science diplomacy rests scientific cooperation and compromise for higher goals of global stability, sustainable development and common security.

Science diplomacy also allows for pooling of diversified viewpoints and a larger range of funding than conventional national scientific endeavors. The international sharing of organizational capacities and historically-grown expertise is bundled with a clear focus on empirically-driven results aside from national-politically-tainted red tape. As a rather unconventional approach to tackle global challenges and mainly focused on often hard-to-understand or inaccessible scientific jargon, science diplomacy collaboration can also benefit from less media scrutiny and market interference.

Historically, Science diplomacy was practiced successfully at the International Institute for Applied Systems Analysis (IIASA) in Laxenburg, Austria from the end of the 1960s on throughout the Cold War (Gluckman et al. 2022). On the back-then-neutral country ground Austria, scientists from East and West could discuss and exchange research-based knowledge

and *en passant* build bridges and lasting ties between two blocs that were officially at cold diplomatic tact and rested within politically-distanced camps (Gluckman et al. 2022). Scientists focused on common issues of concern and advancing global progress towards a better future for all and thereby incepted concepts like sustainable development, nuclear disarmament and space exploration cooperation (Gluckman et al. 2022).

Global governance institutions, like the World Bank, International Monetary Fund and United Nations, are building on science diplomacy to this day. Not only in the elevated number of academic-hired Bretton Woods institutions officials. But also in formal ties and open collaborations with universities and scientific organizations, such as National Academy of Sciences. Around the world, science diplomacy appears to come to action and global progress to fruition. Successful examples are the Conferences of the Parties (COP) Intergovernmental Panels on Climate Change (IPCC) reports, which are usually led by scientific investigators and rolled out with the help of global governance institutions, foremost the United Nations. The Sustainable Development Goals of the United Nations but also the Unequal World Conferences of the United Nations have become hallmarks of science diplomacy delivering tangible research output and credible results aside from political agendas.

Most recent notable advancements were the push towards science diplomacy as a soft power during the U.S. President Barack Obama administration. Notable institutional support is – to this day – provided by national Academies of Sciences around the world. The American Association for the Advancement of Science (AAAS) in Washington D.C. houses a Center for Science Diplomacy to bring together 'scientists, policy analysts, and policy-makers' to 'share information and explore collaborative opportunities' (Center for Science Diplomacy of the American Association for the Advancement of Science). The European Union also advocates for science diplomacy in EU-funded projects and international programs, such as the European Master in Law & Economics.

Leaders in science, politics but also the industry have acknowledged the power and influence of science diplomacy beyond traditional governmental efforts and conventional international development. Global challenges that are too-large-to-fail and can only be surmounted by concerted intellectual

effort asides from political agendas call for science diplomacy solutions. Global challenges related to climate change lay at the intersection of science and international relations.

Climate change

The climate change crisis has gained unprecedented urgency in the most recent decade. Scientific estimations give the world community a decade to act on climate change before irreversible lock-ins and substantial tipping points will be reached. The world could end up in an environmentally-hostile state and it will never be possible to bring back stable environmental climate conditions.

Overall, climate change has already led to and will continuously lead to irreversible tipping points and lock-ins that will degrade the common welfare (Kellett, Weller, Faulwasser, Grüne & Semmler 2019). The extraction and use of non-renewable fossil fuels is attributed as one of the main causes of human-made global warming and a highly volatile market endeavor. Global warming can be slowed by limiting the total cumulative global CO_2 emissions – but only if this occurs on an international scale and in a globally-concerted action plan.

Historically, the advanced countries have gained welfare and rising living standards by the use of fossil fuel energy and intensive CO_2 emissions, while the developing countries have not and appear nowadays as the most burdened with the climate disasters. In the aftermath of the 2020 United Nations Conference of the Parties (COP26) meeting on Climate Change, it has been argued that the advanced countries have an obligation and responsibility to finance the adaptation to global warming of the low-income countries through direct transfers and credit guarantees (Sachs 2021).

Future economic growth depends on national temperature conditions and climate change (Hansen 2014). Climate change risks are manifold and comprise of physical risks in weather extremes, wildfires, landslides, flooding, heatwaves, hurricanes, storms and typhoons, smog and many other forms of environmental damage. Climate-related finance costs are also imbued in transition risks in stranded assets as for causing volatility in financial systems.

Macroeconomically, costs arise as a result of damages that are exacerbated by extreme temperatures and severe weather events (Banerjee 2014). The measurement of the widespread effects of temperature changes includes catastrophes but also response lags and slow feedback in the wake

of environmentally-changing conditions (Bonen, Klasen & Semmler 2014; Hansen & Sato 2016).

In the treatment of risk, economic and non-economic climate risks have to be considered – such as, for example, tipping points and irreversible lock-ins that could cause Greenland ice shields and the Arctic Sea ice to disappear or collapse as well as ocean circulations that cause hurricanes and typhoons (Brock, Engström & Xepapadeas 2014; Keller & Nicholas 2014). Tipping point effects could increase weather extremes and intensify tropical storms, hurricanes, typhoons and cause weather extremes to occur more frequently. Results could be drastic if considering sea level rises, heat waves and desert formations as well as draught impacts on the ecosystem but also human development. Future vulnerability depends not only on climate change but also on the development path, mitigation, adaptation policies and precautionary measures (Hansen & Sato 2016).

Overall, climate change is expected to lead to drastic changes in productivity, food supply and labor working conditions. Tipping points and irreversible lock-ins with long-run changes will require improved climate projections to better inform climate risk management on a global scale (Keller & Nicholas 2014). Mitigation efforts of the international community will be needed that target to avert the global effects of climate change. Adaptation efforts around the world must be concerted to cope with local effects of climate change, such as regional disasters.

In the effort to curb harmful CO2 emissions, problems have arisen historically. The New York Times most recently discussed the disparate impact of climate policies and climate protection attention disparities (Flavelle 2021a, b). Geographically-determined economic prospects in light of climate change reveal vast inequalities in the distribution of future climate-induced economic gain or loss prospects (Puaschunder 2020). While ethical imperatives lead to the claim for redistributing some of the short-term economic gains of global warming into territories that are losing out from climate change the most and the fastest; political realities may hinder efforts to cooperate on an international level to redistribute resources in order to avert climate change. Free rider problems exist, whereby countries that do not take action may benefit from the other countries' efforts. Political historical facts may also deter countries from action on climate change, as

was shown during the Copenhagen Intergovernmental Panel on Climate Change Conferences of the Parties (COP).

Novel policy efforts are now focused on redistribution via taxation and bonds strategies (Semmler, Braga, Lichtenberger & Toure 2021; Puaschunder forthcoming b, c). While a World Bank Report presents a global overview on the current state of climate taxation and climate bonds usage around the globe, it calls for macroeconomic models to inform on the political feasibility of climate gains redistribution strategies and global warming loss burden sharing. Current climate change mitigation and adaptation financing efforts are calling for innovative green investment strategies around the globe.

Alternative market-driven solutions appear in the Cap-and-Trade scheme but also in Socially Responsible Investing (SRI) and market solutions to curb harmful CO_2 emissions that can only be effective if implemented on a world-wide scale (Puaschunder forthcoming a). Ethics of inclusion in the environmental domain as a novel climate taxation-and-bonds strategy to redistribute climate change gains can only raise widespread momentum for a transitioning to a zero-carbon global economy if carried by a global community.

An emerging literature and awareness on the economic gains and losses of a warming globe being distributed unequally between countries is the basis of redistribution schemes. In the aftermath of the COP26 annual climate meeting of the United Nations, Jeffrey Sachs (2021) put forward an idea of funds for climate change mitigation and adaptation that should be raised by climate tax-funded grants provided by some countries as transfer payments, while other countries should be recipients of green bonds granted to low-income countries. A refinement in prioritizing which countries should be grantors and which recipients based on macroeconomically-informed criteria, such as expected climate change economic gains and losses as well as CO_2 emissions as the cause of global warming. In the political feasibility check of a global redistribution scheme, science diplomacy appears as prerequisite to implement climate change aversion via taxation and bonds strategies. All these strategies will need a scientifically-informed concerted action of all nations of the world, which lets science diplomacy appear as attractive vehicle to push for a common ground. While the country positions on expected climate change economic gains could serve as an indicator to determine the responsibility to act on global warming, science diplomacy

could aid in targeting what countries could lead the world in the collective burden sharing strategy and implementation of a common climate gains redistribution scheme.

Research question and hypotheses

This paper addresses the question, what countries have favorable science diplomacy leadership conditions and heightened responsibility to act on climate change? In order to act on climate change mitigation and adaptation within the shortened timeframe given, a global solution must be found in extraordinary speed. Country leadership of powerful science diplomacy nations appears as necessary conditions to push for cooperation and feasible solutions that are carried by the world community. The following index will thus help determine the countries that have good starting grounds on science diplomacy given their academic skills and scientific institutions as well as knowledge-driven expertise networks.

After presenting a scientific quantification of science diplomacy leadership potential, the Science Diplomacy Index will be applied on climate change aversion strategies. Thereby the question arises what countries have an economically better starting ground to protect the earth from global warming and a higher obligation to act on fair climate solutions. In accordance with ethical imperatives derived from Immanuel Kant's (1783/1993) categorical imperative and Hans Jonas (1979) extension on environmental justice, John Rawl's (1971) veil of ignorance, Kaldor's (1961) compensation criteria and Puaschunder's (2020) climatorial imperative, those countries should have a higher responsibility to act to protect the earth from global warming that have relatively better economic outlook conditions in light of climate change as well as those countries that cause the problem of a heating up earth in CO2 emissions.

The underlying hypotheses of the following macroeconomic modeling state that scientifically-skilled and academically-equipped nations with rising economic prospects based on changing temperatures under global warming have favorable redistribution conditions as well as those countries that cause the problem in harmful CO2 emissions have a heightened responsibility to act on climate change with science diplomacy focused on enacting climate justice.

Science Diplomacy Index (SDI)

Method: In the first macroeconomic model of science diplomacy, an index was created including 51 countries around the world ranked on their potential to be spearheading science diplomacy. The presented Science Diplomacy Index (SDI) integrates (1) the academia quota per country as an indication of scientific excellence based on World Bank Educational Attainment data of at least Bachelor's or equivalent education in the population of a country from 25 years of age as cumulative percent in the population derived from the United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute for Statistics data as of June 2022 (World Bank 2022); (2) a modified World Ranking of academic institutions based on the Web of Universities data weighted by the relevance of its academic institutions of the July 2021 edition (Web of Universities 2022); and (3) the Lowy Global Diplomacy Index 2019 Country Ranking measuring diplomatic relations in embassies, consulates, or other diplomatic representations (Global Diplomacy Index 2022).

Results: The Science Diplomacy Index results for 51 world countries are shown in Graph 1.
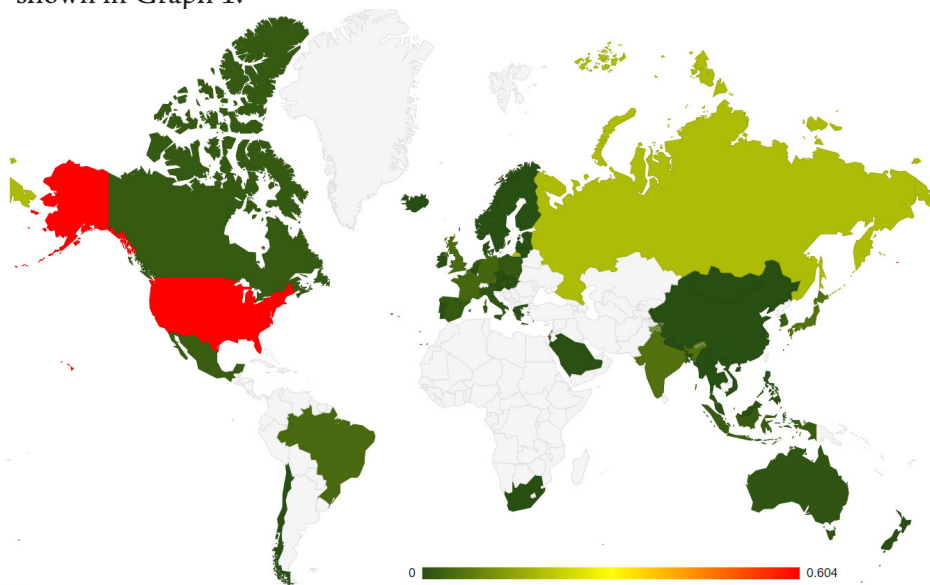
Graph 1: Science Diplomacy Index world map

The red country has the best science diplomacy conditions, followed by yellow and light green colored countries. The dark green countries have low science diplomacy preconditions. For white countries no data exists.

The supporting data of the Science Diplomacy Index is exhibited in Table 1.

Table 1: Science Diplomacy Index numerical ranking

Science Diplomacy Index

Australia	0.012041	Czech Republic	0.002086	Indonesia	0.024474	Myanmar	0.000161	Singapore	0.000921
Austria	0.001633	Denmark	0.002291	Ireland	0.002345	Nepal	0.000010	Slovakia	0.000848
Bangladesh	0.001803	Estonia	0.000313	Israel	0.002615	Netherlands	0.010268	Slovenia	0.000400
Belgium	0.004423	Finland	0.001598	Italy	0.012258	New Zealand	0.001583	South Africa	0.000867
Bhutan	0.000000	France	0.042081	Japan	0.062239	Norway	0.002108	South Korea	0.026350
Brazil	0.048176	Germany	0.040758	Latvia	0.000557	Philippines	0.005180	Spain	0.020001
Brunei Darussalam	0.000002	Greece	0.003227	Lithuania	0.000903	Poland	0.016922	Sweden	0.002562
Canada	0.019878	Hungary	0.002593	Malaysia	0.004031	Portugal	0.004512	Thailand	0.003280
Chile	0.002752	Iceland	0.000038	Mexico	0.026015	Russian Federation	0.187294	United Kingdom	0.049136
China	0.001145	India	0.060416	Mongolia	0.000511	Saudi Arabia	0.003982	United States of America	0.603586
								Vietnam	0.001503

The Science Diplomacy Index for 51 countries of the world indicates that the United States offers best conditions to lead the world on science diplomacy. As visible in Graph 2, Russia as well as Japan and India, the United Kingdom, Brazil, France and Germany have good conditions to establish cooperation through science diplomacy. South Korea, Mexico, Indonesia, Spain, Canada, Poland but also Italy, Australia and the Netherlands play a role in science diplomacy leadership on a global scale. Additional countries of interest to help with science diplomacy are the Philippines, Portugal, Belgium, Malaysia, Saudi Arabia, Thailand, Greece, Chile, Israel, Hungary, Sweden, Ireland, Denmark, Norway and Czech Republic. In addition, capable of science diplomacy are Bangladesh, Austria, Finland, New Zealand, Vietnam and China. Further science diplomacy support can be granted by Singapore, Lithuania, South Africa, Slovakia, Latvia, Mongolia, Slovenia, Estonia, Myanmar, Iceland, Nepal, Brunei and Bhutan.
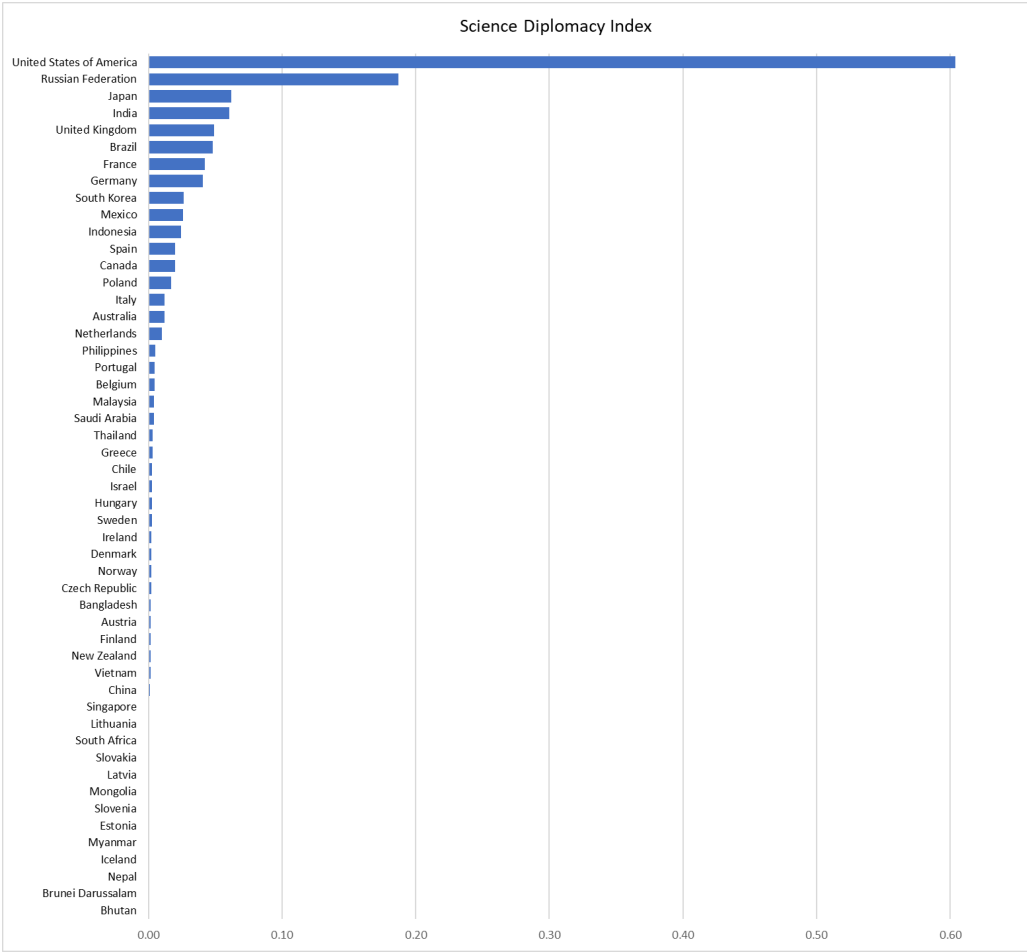
Graph 2: Science Diplomacy Index bar chart

Discussion: Overall, the results indicate that the U.S. and Russia are key players in science diplomacy. Africa offers science diplomacy leadership potential foremost in South Africa. In Asia Japan and India but also South Korea, Indonesia as well as the Philippines, Malaysia and Thailand, Bangladesh, Vietnam, China, Singapore, Mongolia, Myanmar, Nepal, Brunei and Bhutan play a role in science diplomacy. Australia and New Zealand take a role in science diplomacy as well. Within Eurasia, Saudi Arabia and Israel are key players on Science Diplomacy. In Europe, the United Kingdom, France and Germany lead followed by Spain, Poland, Italy, the Netherlands,

Portugal, Belgium, Greece, Hungary, Sweden, Ireland, Denmark, Norway and Czech Republic, Austria, Finland, Lithuania, Slovakia, Latvia, Slovenia, Estonia and Iceland. In North America, the U.S. leads on science diplomacy but also Canada has potential for academic diplomacy. In South America Brazil, Mexico and Chile have good starting grounds on science diplomacy.

Science Diplomacy Climate Responsibility Index (SDCRI)

Method: Economic research has elucidated the economic impact of climate change on the world and found stark national differences (Puaschunder, 2020). Puaschunder (2020) measured the Gross Domestic Product (GDP) prospect differences under climate change around the world and found exacerbating climate inequalities. Puaschunder (2020) introduced a climate change winners and losers index based on the economic prospects under climate change around the world and over time. The index attributed economic gain and loss prospects based on the medium temperature per country in relation to the optimum temperature for economic productivity per GDP agriculture, industry and service sector and the GDP sector composition per country in order to determine how far countries are deviating from their optimum productivity levels based on temperature on a time scale (Puaschunder, 2020).

The Science Diplomacy Climate Responsibility index is applied to the macroeconomic model on disparate economic impacts of climate change around the world (Puaschunder 2020) and country-specific CO2 emission levels for the year 2019 derived from Our World in Data, in order to determine what countries have excellent starting grounds on science diplomacy leadership but also a heightened responsibility to engage in science diplomacy to reverse the negative impacts of global warming via redistribution of prospective economic gains.

Results: The Science Diplomacy Climate Responsibility Index results for 48 world countries are shown in Graph 3.
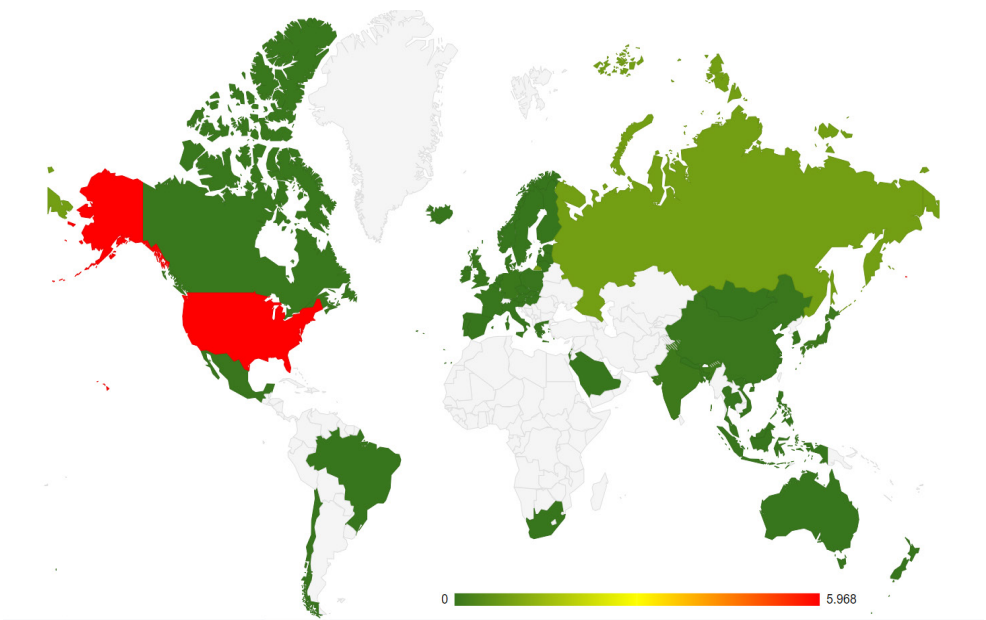
Graph 3: Science Diplomacy Climate Responsibility Index

The red country has the best science diplomacy conditions and the highest responsibility to act on climate change, followed by light green colored countries. The dark green countries have low science diplomacy preconditions and relatively-lowered responsibility to act on climate change based on economic prospects given climate change. For white countries no data exists.

The supporting data of the Science Diplomacy Climate Responsibility Index is exhibited in Table 2.

Table 2: Science Diplomacy Climate Responsibility Index numerical ranking

Science Diplomacy Climate Responsibility Index									
Australia	0.004416	Estonia	0.000010	Israel	0.000168	New Zealand	0.000089	South Africa	0.000451
Austria	0.000248	Finland	0.000171	Italy	0.005214	Norway	0.000227	South Korea	0.021213
Bangladesh	0.000064	France	0.020454	Japan	0.096205	Philippines	0.000150	Spain	0.006468
Belgium	0.000740	Germany	0.052112	Latvia	0.000011	Poland	0.010761	Sweden	0.000273
Brazil	0.006980	Greece	0.000259	Lithuania	0.000028	Portugal	0.000266	Thailand	0.000111
Canada	0.032920	Hungary	0.000205	Malaysia	0.000218	Russia	0.882752	United Kingdom	0.033554
Chile	0.000406	Iceland	0.000000	Mexico	0.010328	Saudi Arabia	0.000287	United States	5.968150
China	0.023881	India	0.094465	Mongolia	0.000092	Singapore	0.000004	Vietnam	0.000133
Czech Republic	0.000421	Indonesia	0.001380	Nepal	0.000000	Slovakia	0.000059		
Denmark	0.000153	Ireland	0.000148	Netherlands	0.002743	Slovenia	0.000011		

The Science Diplomacy Climate Responsibility Index for 48 countries of the world indicates that the United States offers best conditions to lead the world on science diplomacy. As visible in Graph 4, Russia as well as Japan and India, Germany, the United Kingdom, Canada, China, South Korea and France have good conditions to establish cooperation through science diplomacy and a heightened responsibility to act on climate change. Poland, Mexico, Brazil, Spain, Italy and Australia should also play a role in science diplomacy leadership for climate justice. Additional countries of interest to help with science diplomacy on global warming are the Netherlands, Indonesia, Belgium, South Africa, Czech Republic, Chile, Saudi Arabia, Sweden, Portugal, Greece, Austria, Norway, Malaysia, Hungary, Finland, Israel, Denmark, the Philippines, Ireland, Vietnam, Thailand, Mongolia, New Zealand, Bangladesh, Slovakia, Lithuania, Latvia, Slovenia, Estonia, Singapore, Iceland and Nepal.
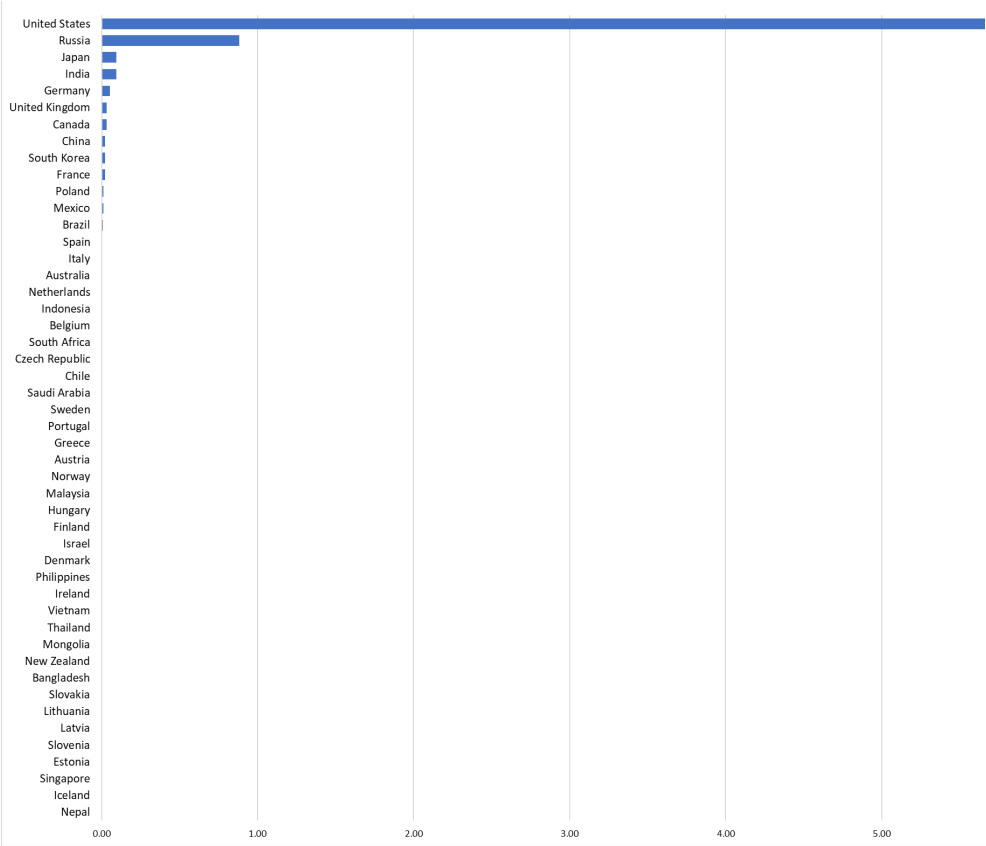
Graph 4: Science Diplomacy Climate Responsibility Index bar chart

Discussion: Overall, the results indicate that the U.S. and Russia are key players in science diplomacy with highest responsibility to act to avert climate change. Africa offers science diplomacy climate stabilization leadership potential foremost in South Africa. In Asia Japan, India and China but also South Korea, Indonesia as well as Malaysia, the Philippines, Vietnam and Thailand, Mongolia, Bangladesh, Singapore and Nepal play a role in science diplomacy with responsibility for climate control. Australia and New Zealand should take a responsible role in science diplomacy for global warming alleviation. Within Eurasia, Saudi Arabia and Israel are key players on science diplomacy with respect for climate mitigation and adaptation. In Europe, Germany, the United Kingdom and France lead on science diplomacy for climate awareness followed by Poland, Spain, Italy, the Netherlands, Belgium, Czech Republic, Sweden, Portugal, Greece, Austria, Norway, Hungary, Finland, Denmark, Ireland, Slovakia, Lithuania, Latvia, Slovenia, Estonia and Iceland. In North America, the U.S. leads on science diplomacy but also Canada has potential for academic diplomacy and a responsibility to protect from the downsides of global warming. In South America Mexico, Brazil and Chile have good starting grounds on science diplomacy for a common climate solution.

Conclusion

Climate change imposes massive environmental challenges and unforeseeable human living condition degradation risks. With rising unpredictable risks and a complex ecosystem challenge as never before being imposed on humankind, the call for science-informed united action against climate change has reached unprecedented momentum.

In all the mentioned contemporary tragedies of our lifetimes, science diplomacy appears as beacon of light and ray of hope to connect the world in a united wish to overcome challenges successfully and grow stronger on externally-adverse shocks. The results offer invaluable quantified information on the importance of specific nations to lead on science diplomacy solutions to overcome the climate change problem.

Advocating for science diplomacy enlightens science as a profession, which is often criticized for being a competitive field with a hostile collegial

climate and negative socio-psychological externalities. Science diplomats would be trained to be socially-versed and diplomatically-fit. Science diplomacy could also help scientists find meaning and additional value in their profession beyond impact factors and could touch the laypeople's everyday life with quality results.

Science diplomacy could also address the call for heterodox scientific methods granting interdisciplinary and international exchange a prominent role in science. Lastly, in the most recent call for heterodox scientific ethics, science diplomacy could serve in genuine support of creative thinking to develop innovative ideas in a protected environment, inspiring others to move traditions forward respectfully, thoughtfully and meaningfully and to allow for breaking hierarchical dynamics in mutual exchange of insights while meeting in collective appreciation for the differences.

As for future research endeavors, to this day, the question remains whether scientist diplomats or diplomat scientists are more effective than conventional modes of governmental and governance diplomacy and international relations. Until today, we have no clear economic model that investigates what science diplomacy ingredients are favorable and how science diplomacy is related to macroeconomic stability and resilience variables.

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The Economic Dimension as the Foundation of a State's Security

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ABSTRACT: In the context of globalization and economic integration in recent decades, the relationship between the economy and national security has become increasingly close. For each state, these links represent both opportunities and potential threats to the country's national security. Definitions of national security have an important economic dimension, and the economy cannot easily be separated from national security. The relationship between the national security and economic spheres is complex and characterized by many close interconnections. For the purpose of this article, national security is understood as those aspects that relate to the protection of critical infrastructure, sectors and processes that are vital for the sustainable functioning of a society. We will examine how potential threats to national security from economic factors can be understood through "risk vectors", which highlight the ways in which the components of "economy" and "national security" interact. The economy has been and always will be one of the basic pillars for building a credible military power and achieving a sufficient degree of security at national, regional or international levels. Professional, well-equipped armed forces capable of dealing with a wider range of risks and threats in the security environment cannot be secured without adequate economic resources.

KEYWORDS: security, economic policies, threats, risk, power

Introduction

The economic determinants of security have become more indisputable in today's international system in that all aspects of potential security and

defence needs require financial, human and material resources. The obvious trends of globalization, where the boundaries between internal and external affairs are blurred, provide a clear link between economics and security.

An increasing interrelationship between the two areas can be observed even on a less detailed analysis of the various strategies and official documents of different regional and international security organizations.

The 2003 EU Security Strategy "A Secure Europe in a Better World" states that "security is a prerequisite for development. Conflict not only destroys infrastructure, including social infrastructure, but also encourages crime, discourages investment and makes normal economic activity impossible" (European Security Strategy 2003).

In this article, we propose a conceptual framework for examining factors related to the economy that could have a disruptive effect on society because of their impact on national security. This approach is in line with the increased emphasis that scholars place on human-centered security, as well as the way in which national security is operationalized in many modern states. As part of this framework, we propose a concept of 'risk vectors' - pathways through which national security risks to critical infrastructures, sectors and processes can manifest themselves.

Methodology

As a methodological practice, we have opted for a combination of two complementary approaches: objective and interpretive methodological practice. In objective methodological practice, the main concepts are explanation and prediction based on the analysis of determinants or causes. Interpretative methodological practice uses understanding and interpreting the subjective meanings of situational behaviors by considering the purposes and reasons for action as the main concepts. The integration of objective and interpretive methodology in this article, which is thus intended to be multidirectional, is considered optimal to achieve the expected valid results.

From a methodological perspective, we will proceed to map the books and works of interest, as well as the official strategies and documents of various regional and international security organisations. Given the dynamism of the field and the rapidity with which the map of the balance of power between global actors is constantly being reworked, the specific media channels, as

well as the virtually unlimited information "offer" of the Internet, to which the necessary selection filters are applied, are tools worthy of consideration in any information and data collection action (Diamescu 2012).

Results and discussion

Economy - as the foundation of security

Faced with a range of potential dangers, from terrorism and computer viruses to fraud and organized crime, the world is seen by many as an increasingly dangerous place. As a result, the focus on security issues has increased and the demand for security-related goods and services has grown steadily, giving rise to a wide and varied range of economic activity in both government and business. This is the emerging security economy (Muresan 2009).

From a theoretical point of view, the term security economy represents the way of organizing and setting up an entire system of protection, measures and activities, both public and private, aimed at preventing or mitigating the risks of actions that affect the quality of life and property of the citizens of a state, thus affecting the security of the state. (Diamescu 2012)

One of the most succinct definitions of the concept was offered by Pop (2004): "The economics of security includes economic security, the costs of economic security and economic risks to security as a whole."

The premise of strengthening the security economics in the context of globalization

Economic efficiency associated with national and regional ambitions, especially those of the major powers, will influence the dynamics of the global economy in the 21st century, and the international economy could increasingly become a space of conflict. Through the rivalries they induce among international actors, these economic conflicts may endanger national security.

In this context, the security industry is a large and growing area of economic activity. Spurred by the perception of rising crime, the threat of terrorist attacks and the increasingly free movement of goods, capital and people, recent years have seen an increase in government, corporate and consumer budgets for security goods and services. This development promises to have far-reaching economic and societal implications in the long term.

The challenge for policy makers is how to respond to the apparent need for increased security without unduly hampering economic efficiency and citizens' rights in liberal societies. Revealing as an example may be that, before Russian President Putin launched his war against Ukraine, Europe faced an increasingly competitive and assertive geostrategic environment. Russia's war in Ukraine has brought the grim reality, such as it is, that Europe is at risk. The threats are growing, multiple and hybrid: military, economic and political. As a direct result of Russia's invasion of Ukraine, EU Member States have already announced increases in their defence budgets of almost €200 billion extra over the next few years.

According to European Defence Agency figures, in 2021, EU member states spent €3.3 billion on research and technology - 1.5% of total defence spending. While this is an improvement on the 1.2% in 2020, it is still below the agreed EDA baseline and the PESCO commitment of 2% (EDA 2020).

Conceptualizing national security in terms of critical infrastructures, sectors and processes

The article takes an approach focusing on those factors related to the economy that could have a disruptive effect on society due to their disruptive impact on critical infrastructure, sectors and processes. This focused approach is consistent with the way national security thinking is operationalized in many modern states.

The following definitions are used in this report:

- Critical sectors are sectors whose assets, systems, and networks (physical or virtual) are considered so vital that their incapacitation or destruction would have a debilitating effect on national security, the functioning of the economy, and society (U.S. Department of Homeland Security 2019)
- Critical infrastructure is an asset or system that is essential to maintaining vital societal functions. The destruction, damage or disruption of critical infrastructure can have a significant negative impact on national or EU security and the well-being of its citizens.
- Critical processes are processes that could lead to serious social disruption if they fail or are disrupted (European Commission 2019).

To illustrate this, Table 1 gives an overview of the definitions of critical sectors in three selected countries: Denmark, France, United Kingdom. These countries were selected on a non-systematic basis based on the public availability of information on national risk assessment processes related to critical infrastructure.

Table 1. Overview of critical sectors and processes as defined in selected countries

DENMARK	FRANCE	UK
-Defence, intelligence and security services	-Communication, technologies and broadcasting	- Chemicals
- Energy	- Civil activities	- Civil nuclear [energy]
- Finance	- Energy	- Communications
- Fire and rescue services, police duties, military assistance to civil authorities, etc.	- Finance	- Defence
- Food	- Food	- Emergency services
-Health and social services	- Health	- Energy
-Information and communication technology	- Industry	- Finance
- Transport	- Legal activities	- Food
- Water	- Military activities	- Government
	- Transport	- Health
	- Space and research	- Space
	- Water management	- Transport
		- Water

Source: RAND Europe analysis of the country strategy papers of Denmark, France and the UK

The lists of critical sectors and processes presented in Table 1 are taken from the three countries' national security strategy documents (French General Secretariat for Defense and National Security 2017; Centre for the Protection of National Infrastructure 2019; Danish Emergency Management Agency 2013).

As shown in the table, there is a high level of similarity in the sectors and processes listed, indicating that certain sectors (such as energy, finance, food and transport, among others) play a critical role regardless of the size of the country or its economy. It is also increasingly important to ensure protection and resilience against threats that apply to all sectors, as they

are interdependent, and the failure of one could have cascading effects on another (U.S. White House 2017).

It is emphasized earlier that a strong economy will also have a defence capability to match. The example of France, one of the strongest economies in Europe and whose position in defence and security equipment gives it strength in international relations, is revealing. France is one of only four countries in the world capable of designing and producing all security systems and all types of weapons, from light weapons to nuclear missiles, alongside the United States, the Russian Federation and China. This strategic situation gives France two major advantages: on the one hand, it provides security - through the ability to deter potential adversaries and the capacity to interfere militarily if necessary - and, on the other, it is an amplifier of political power and influence (Diamescu 2012).

Extrapolating this example to the economics of security, we can say that security has no price, only costs, and a relaxation of financial efforts in this area is likely to quickly lead to illusory security, which can have catastrophic consequences.

However, as a study by RAND Europe shows, there are a number of economy-related risks to critical infrastructures, sectors and processes that are worth considering for policy makers. Seven "risk vectors" have been identified which represent the means by which economic variables and events can impact on critical infrastructure, sectors and processes in ways that could threaten national security. These vectors are:

- **Ownership** (**through control and influence**) by public or private actors of critical infrastructures and sectors or ownership of assets in the physical vicinity of critical infrastructures and sectors.

- **Espionage** and access to sensitive information facilitated, for example, by physical proximity or ownership.

- **Reliance on natural resources** from third countries and actors for the supply of critical raw materials and energy.

- **Dependence of suppliers** on other suppliers to maintain critical infrastructures and processes, reinforced by the presence of a skills and technology gap and lack of competition, which can result in reduced efforts to ensure the resilience of critical infrastructures, sectors and processes, and reduced innovation and R&D.

- **Government intervention** through spending, economic policy and regulation, which can have a strong influence on the quality, availability and resilience of critical infrastructures, sectors and processes.
- **Corruption and fraud,** which can undermine the resilience of critical infrastructures and create potential opportunities for malicious actors to gain physical or digital access to sensitive assets and information.
- **Socio-economic inequality** resulting from factors such as economic policies and neo-liberal market forces, which can reduce people's ability to support themselves, and the risk of social unrest and internal instability that threaten critical infrastructures, sectors and processes.-

There are a number of complex interactions between different risk vectors, their underlying factors and the global economic and geostrategic environment, some of which have been highlighted in this article.

However, it is beyond the scope of this paper to examine the detailed mechanism or even quantify the relationships between macroeconomic variables and events, risk vectors and critical infrastructure, sectors and processes. Such a study would require a series of "deep dives" into each of these relationships and would probably benefit from a series of specific case studies on critical infrastructures, sectors and processes to describe, in detail, the underlying dynamics.

Conclusions

Whether national security is conceptualized in the traditional sense or in a broader sense (Ullman 1983; Buzan et al. 1998), the stability and internal functioning of society is also important as part of a discussion of what national security actually means (De Spiegeleire et al. 2012).

Indeed, the uninterrupted functioning of a state's essential political, economic, social, technological, legal, and environmental (PESTLE) processes - such as financial transactions, secure data transfer between government departments, the efficient functioning of emergency services, and more - is critical to a state's ability to protect itself against internal and external threats. A state's ability to function is, in turn, influenced by several key factors, such as the availability of energy sources - without which an economy cannot develop - or the resilience of its critical infrastructure, which includes, for example, the emergency services sector, the energy sector, the financial services sector

and the communications sector, as well as the defence industrial base and the political and democratic spheres (Ronis 2011). Moreover, a strong economic base secured by strategically important sectors and processes, supported by a resilient critical infrastructure, facilitates a country's ability to cope with challenges, whether they are "foreign or domestic, intentional or accidental, and the consequences of human or natural forces" (Neu & Wolf 1994).

Critical sectors and processes that enable economic activity and the general functioning of society - such as, for example, internet access, air traffic control, human rights and contact with emergency services - could be seen as acting fundamentally as a subsystem of national security, as well as more abstract processes such as democratic processes and decision-making mechanisms. These factors are interdependent and interconnected and could be understood as a complex system.

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Strategic Alignment vs. Opportunity Hopping – Disruptive Times Require a Firm Strategy

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ABSTRACT: In a time with many unexpected sudden events—disruptive times—it is more important than ever for executives not to lose sight of their strategy and to implement the corporate strategy according to plan via systematic *Strategic Alignment*. Oftentimes, managers only survived the Covid-19 pandemic through sheer pragmatism and tactical behavior. Their strategy took a back seat, and strategic considerations were not taken into account due to a lack of time or resources. The business management literature is more concerned with developing new strategies than either the implementation or the day-to-day practice of strategic management. In the latter, corporate strategy usually plays no role and appears to many as a too remote an instrument to guide operational work. *Strategic Alignment* binds all corporate actions to an overarching strategic plan. *Strategic Alignment* defines the framework for decisions and is a procedure for making downstream decisions consistently and in a sustainable form. In times of crises and disruptive developments, the well thought-out corporate strategy is seen as a hindrance to making money, where an initial strategic alignment may quickly become a misalignment. Instead, short-term opportunities and promising profit opportunities are sought and exploited, even if they contradict the correctly held strategy. It then becomes 'opportunity hopping', where quick profit or sheer survival become the motives for acting and may also result in less attention being paid to the legality of the business. The recent qualitative study presented in this paper explores the status quo in strategy implementation

and, in particular, Strategic Alignment. The method of Grounded Theory Methodology (GTM) was used to analyze the current state of companies until theoretical saturation is reached. The iterative cycles of the research started in Germany but, at a later date, interview partners in Switzerland, France and the USA were integrated into the study.

KEY WORDS: Strategic alignment, Strategy implementation, Corporate strategy, Disruption

Introduction

In the implementation of the corporate strategy, deviations or simply contradictory actions occur over time. *Strategic Alignment* describes whether the organization and its employees are moving along the strategic path, i.e., whether there is a positive alignment, or whether the orientation to the strategy has been lost, i.e., whether there is a misalignment.

In the currently ongoing study using a qualitative research methodology, the current state of *Strategic Alignment* is surveyed and discussed. The research is deliberately broad in scope, as the environment for strategy implementation has fundamentally changed since the pandemic and now with the war in Ukraine. Using Grounded Theory, the topic will be addressed in cyclical research loops and will continue to deepen. The openness of this research methodology is an advantage in a constantly changing environment. The goal of Grounded Theory is always to derive a theory that is valid either for the current situation or, ideally, beyond it.

The research synopsis for this study was prepared back in 2019, well before the disruptive events of the pandemic and events like the Ukraine war with their immediate impact on the economy in Europe. With Grounded Theory, the research design is determined at the outset, but can still be adjusted as things develop. The focus of the research is to conduct qualitative interviews, usually lasting just under two hours. The interviews are transcribed, coded and then further analyzed. As is customary with Grounded Theory, a literature review is then conducted on the results of the interviews. An initial finding from the interviews is that a corporate strategy must be in place (like a corporate credo), but that its practical importance for day-to-day business is relatively low. The creation is described as a

compulsory exercise and the associated strategy process is also perceived as time-consuming work—that it is not for everyone—but such statements were also made by top executives.

In Grounded Theory, usually no working question is required; more importantly, the *Domain of Interest* (DI) is used as the basis for research design and the work in the research (Döring et al. 2015, 26–27). The DI is used to understand how strategy implementation and strategic alignment are currently taking place in companies, what the drivers and motivations are, and also which methods and procedures are used in this context. A key competitive advantage in global competition is the speed with which new strategies are implemented or, as the interview partners put it, "how the strategy is put on the road."

The word *strategy* has become a term of everyday language: when someone wants to give some weight to an idea, it becomes a strategic idea. Most often, this is also used to testify to its special lasting quality. A simple plan thus quickly becomes a strategic plan—even if, strictly speaking, it is not. To distinguish this, it is better to speak of political, military or economic strategy. For companies, it is a matter of corporate strategy (Freedman 2015, 460–461).

Research on corporate and business strategy started in the 1960s with Igor Ansoff, considered to be the founder of scientific 'strategic management' (Freedman 2015, 500–501). Prior to this, the historian Chandler had used the corporate history of General Motors as a case study for his book "Strategy and Structures" (Chandler 1962 (1975 printing)). He used his connections to the Du Pont family to make further observations and he later became one of the first influential consultants for McKinsey (Freedman 2015, 497). Of course, entrepreneurs like Rockefeller (Chernow 2000, 129-131), for example, had a strategy, just not a strategy in the formal and scientific sense that has emerged over the last 50 years. Following Ansoff, strategic thinking was particularly in vogue for large enterprises over the following two decades. After the year 2000, strategic thinking began to be more influenced by traditional strategic thinking that had originated from politics and the military, with the term 'business as war' becoming especially popular (Freedman 2015). Accordingly, these new interpretations brought the classical works of Clausewitz and his teacher Scharnhorst back into focus (Paret 2014, 19–20, 81). Clausewitz later expanded on Scharnhorst's

practical experiences and shaped them into theories on an abstract level, especially in his work "On War" (Hornung 1997, 53).

In business administration, strategy is assigned to corporate planning and the area of responsibility of top management. *Strategic Alignment* concerns the alignment of entrepreneurial action with the adopted strategy. The process of strategic planning anticipates different scenarios and attempts to describe a path for them that is probable and can also be seen as feasible in the eyes of the executives. Lack of alignment is repeatedly criticized by scientists and managers, and is hence described as a latent problem. Trevor asks "How aligned is your organization?" and provides a definition of alignment: Alignment means that the organization's strategies, capabilities, resources and management systems are arranged to support the enterprise purpose (Trevor 2019, 1). As a result, a positive alignment is described, but no explanation is offered as to which methods or tools can be used to achieve this (Trevor 2019, 6).

A good strategy should be convincing in itself and thus create acceptance for its implementation. The predominance of strategic action versus the collection of opportunities to make money should be obvious to everyone. Nevertheless, even in large companies, there are always phases where there is no determinable strategy, or where there is a lack of alignment even when a good strategy is in place. The question which therefore arises for the researcher and also for the manager is: Why do this when you actually want to act strategically?

Research Design based on Grounded Theory

The "disruptive environment" and its influence on corporate strategy was not a topic in the preparation of this research exposé. The global health crisis was not foreseeable when planning the research work, much less the global political and economic upheavals. For decades, until the onset of the pandemic, a relatively stable environment existed for business in which sudden changes in strategy were not necessary for most industries. The newly emerging influences have not only made research more difficult, but have also devalued some of the previously valid literature.

Grounded Theory is a human cognitive practice following Kant and Popper (Kruse 2015, 96). The special methodological language legitimizes

Grounded Theory for qualitative research (Kruse 2015, 95). The particular benefit of Grounded Theory is an established procedure with its own terminology that can be adapted by researchers to the individual research design. Understandably, the philosophical foundations do not offer pragmatic tools or a research process.
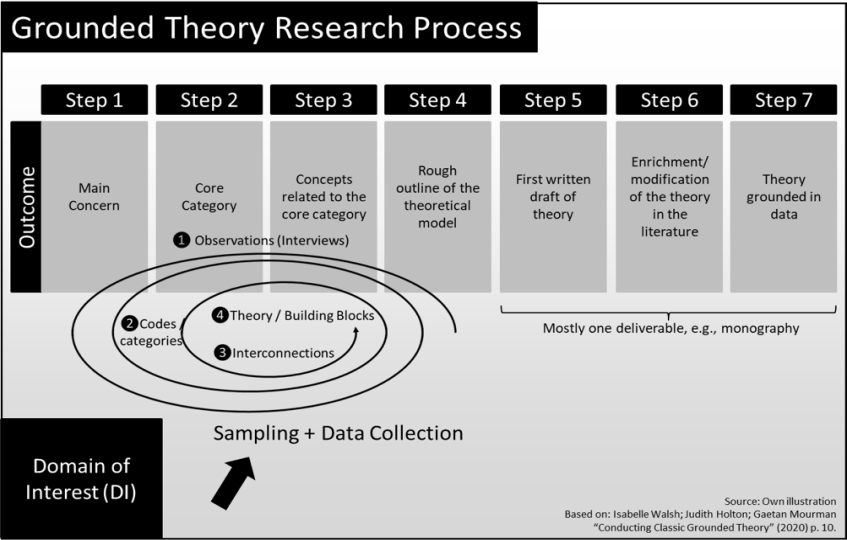
Figure 1: Research Process according to the Grounded Theory Methodology

The domain of interest is the thematic delimitation and also the central leitmotif for the entire research work (Figure 1). The less research exists in a field, the wider the domain of interest should be defined. Steps 1 to 4 describe the research process, which is largely determined by Grounded Theory. Step 5 is where the findings from the qualitative research are condensed and summarized. Then, Step 6 enriches the research findings with existing literature. Step 7 should lead to a theory or a theoretical approach, if the research results allow this (Walsh et al. 2020, 10).

Interviews were conducted and coded throughout 2021 and 2022. Memos in the form of researcher's notes documented the observations and findings. The Core Category and the related concepts emerged from the data, and the main relationships and aspects became clear. Currently, the research finds itself at Step 3 of the process, with saturation not yet having been reached. Further interviews will be scheduled, as there is still a demand

for new and fresh data. Of course, in a stable situation as was the case before the pandemic, saturation would probably have been reached sooner.
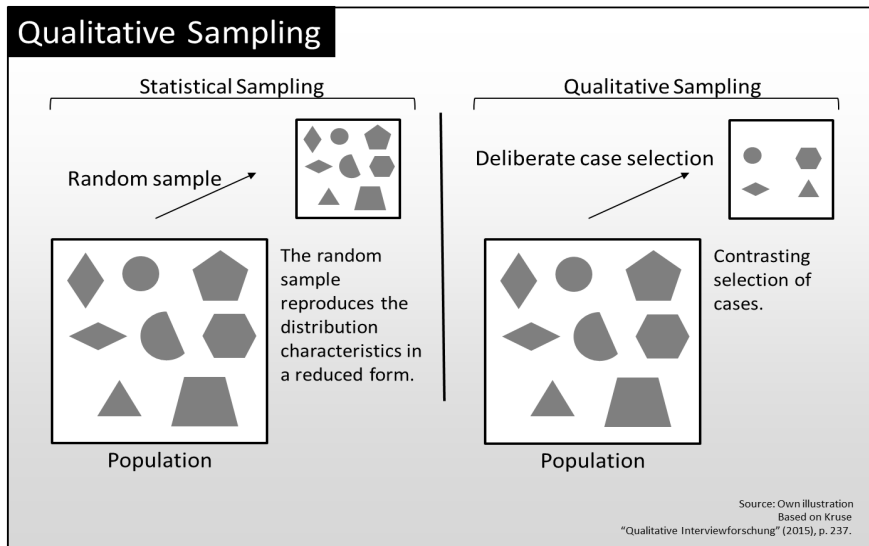
Figure 2: Qualitative versus Statistical Sampling

In quantitative case selection, the sample must be representative (Figure 2). In other words, the sample must have the same structural characteristics as the population. For qualitative sampling, two methods are used:

1. Contrastive sampling strategy with the aim of selecting maximum structural variants or
2. Homogeneous sampling where the same patterns are selected (Kruse 2015, 237).

In this study, the challenge is to obtain contrasting statements that are as far apart as possible, i.e., the interviewees should bring as many different aspects of strategic alignment into the research process as possible.

The adaptability to different research situations is a further benefit to the different versions of Grounded Theory. The integration of different data sources is the central aspect of the mixed-method Grounded Theory (MM-GT) (Creamer 2021, XVII). The second path of Grounded Theory, which may help in this research effort, is *reflexive* Grounded Theory (R/GT) which accepts and integrates the fact that the researcher is not a neutral person

with full scientific objectivity (Breuer et al. 2019, 10). This shows the range from the formal or classical Grounded Theory to the latest developments in this field. In this research project, classical Grounded Theory is applied and customized to the needs of the subject and specific situation.
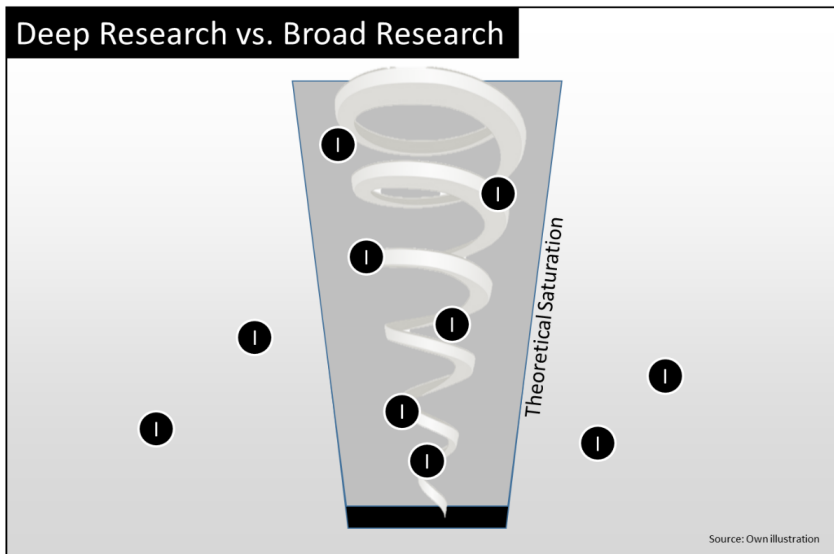
Figure 3: Research Dimensions

The goal in Grounded Theory is to reach theoretical saturation in research work: that is, a state in which no more new findings are to be expected (Figure 3). This is, of course, an ideal picture, because every interview still brings new aspects or new formulations for already known and described aspects. The researcher must therefore decide for himself when he wants to conclude the data set—a decision that will always be open to third party criticism in retrospect. If the "research borehole" is very deep, theoretical saturation can be reached relatively quickly because the statements of interview partners from identical functions and roles will naturally be similar. After all, many topics in management are subject to a trend or fashion, so that certain preferences will emerge. In almost all industries, there is an exchange at the most diverse levels via specialist conferences or working groups. As a result, many points of view and convictions converge. Research with such depth can, however be criticized that only one perspective is considered and that the environment is left outside of the consideration.

The research originally envisaged personal interviews at the respective interviewee's workplace. This allows a personal relationship of trust to be established and there is still sufficient time for side conversations and small talk, which ultimately helps to enrich the content of the research and improve its quality. Due to the lockdown and contact restrictions, only interviews via video conferencing were possible for the research. A detailed preliminary telephone conversation was held to discuss the topic of *Strategic Alignment* and what contribution the interviewee could make to the research. A questionnaire was also designed for the preliminary phase to collect standardized facts from the interviewee. The questionnaire was developed from a professional perspective, and it was known that not every interview partner would be able to answer all questions. There is a certain reluctance among top executives to use standardized procedures, which usually do not fit the individual case. In order not to create any resistance among the interview partners, this questionnaire was therefore made available in the preliminary interview as an offer to better understand the subject. The aim of the preliminary interview was not to remove the interviewee but to put him in a positive mood for the actual interview and to motivate him to participate.
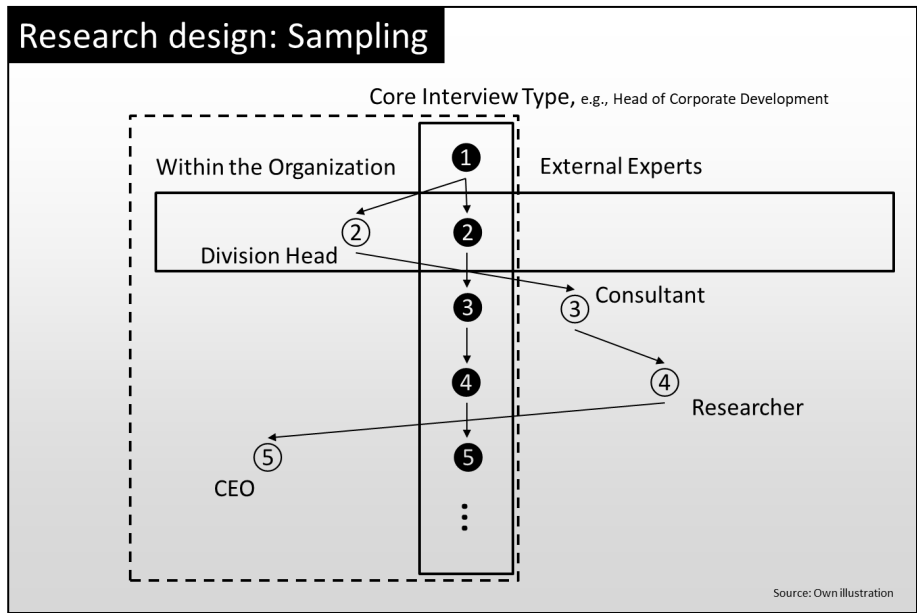
Figure 4: Selection of Sources for Interviews

The key question in selecting sources and interviewees is whether a particular group of people or functions from different organizations should be interviewed, or whether different people can make a greater substantive contribution (Figure 4): Linear survey versus lateral survey. For example, the interview partners designated with ❶ are heads of strategy departments. In the course of the interviews, the same functions from different companies are repeatedly interviewed here. If new insights are to be expected, additional in-depth knowledge can be collected for the research. The disadvantage is that these people often have very similar backgrounds and, due to personnel changes, their views will also be very similar. The broader survey is characterized by ②. Here, both internal and external experts are included in the qualitative data collection. The advantage is that different roles and functions are already included in the survey and thus correspondingly diverse perspectives on the topic find their way into the research.

Further work on the transcribed interview concerns coding using the standard software MAXQDA. In addition to the interview texts, a fieldnote was created for each interview. Contents from the preliminary interview or from other telephone calls with the interview partner are documented here. Supplementary information received by e-mail, for example, is also documented here. Some interviewees are themselves technical book authors and provided even more supplementary content to the interview or references to their own publications, which were also incorporated into the research via the fieldnotes.

Already since the beginnings of Grounded Theory, Glaser postulated *"All is data"* as early as 1978. He stated this principle in detail in later publications and made it clear that the interview should be enriched with transcription (Glaser 2007). This means that, in addition to the interviews, observations, existing material from the interviewee and also other sources should be taken into account in order to ensure qualitatively rich research. To give an example: If the interviewee talks about a software solution for *Strategic Alignment*, it is necessary to be aware of the corresponding screen shots or the technical concept of this application. The pure interview would remain far too superficial here. In terms of disruptive developments, a source could also be a suitable scenario from a movie, as is the case with the current pandemic with *Contagion* (Soderbergh 2011).

Research Phase

Initial findings address the importance of commitment to strategy due to legal requirements and the lack of strategy implementation despite an implemented strategy process.

Supervisory law for financial service providers calls for consistent strategy commitment

The interviewees from the financial industry emphasized the legal framework created for the business strategy and also for the risk strategy. This involves an integrated understanding of the strategy documents available in the company. The content of these must be coordinated and enable effective management of the company. Prior to the financial crisis in 2008, there were no clearly formulated requirements from the legislator that could then be checked for compliance by BaFin (the banking and insurance supervisory authority in Germany). For insurance companies, these legal requirements have existed since an amendment to the German Insurance Supervision Act (VAG). However, the institutions have been given extensive scope in their respective organizations to create customized organizational solutions (Schmude 2008, 1556).
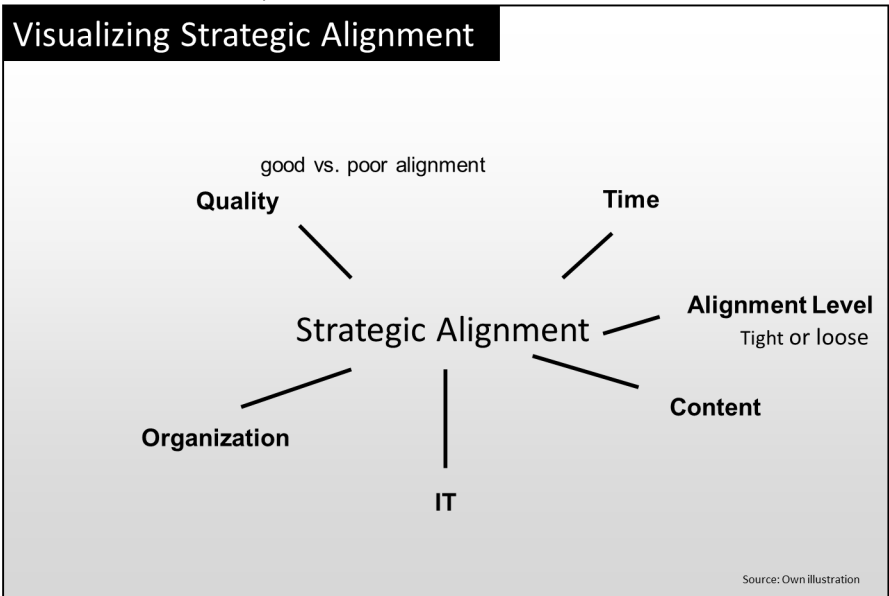
Figure 5: Aspects of Strategic Alignment

Coding concerns combining the raw material, for example, the transcriptions of interviews, into data segments and naming them. Another term for coding is indexing or tagging, in the meaning of identifying and labeling (Equit and Hohage 2016). Coding the raw data is an essential step in the scientist's work. The term code can also be paraphrased as category. The result of the coding is a system of codes and subcodes.

In the literature analysis, by using the software Citavi, it is possible to assign categories and subcategories for the literature sources. This has already been done with more than 470 sources currently and will be continuously expanded. Current references to the Covid-19 pandemic or the ongoing war in Ukraine with its effects on all sectors of the economy have understandably not yet been scientifically prepared. Thus, only current reporting in newspapers, magazines and increasingly also television can be resorted to. To dispense with this source would be to ignore or negate the current situation. This would be a clear bias that must be avoided.
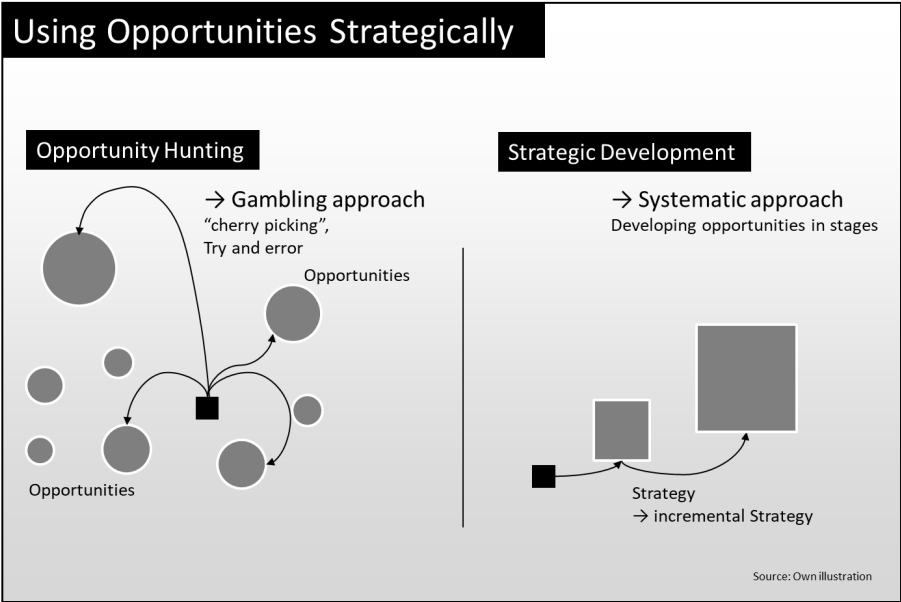
Figure 6: Strategic Development versus Opportunity Hopping

It is not the case in very company that strategic thinking determines action. Particularly in small and medium-sized enterprises (SMEs), business

opportunities are sought that are promising in terms of profits (Figure 6). Especially in the pandemic, this was repeatedly observed in the initial shortage of disinfectants and medical masks. A profit, or at least the prospect of one, becomes the driver for entrepreneurial action. It is a search for business opportunities that are exploited in the short term but which are abandoned just as quickly again. Even large companies are not free from this way of doing business, but are less likely to do this because of their obligation to justify and be accountable. As to the question, what is the opposite of strategic actions, this demarcation was developed. Growth here is accomplished in spontaneous leaps rather than a coordinated systematic approach. Strategy, on the other hand, recognizes the opportunities and develops the company accordingly in stages, following an internal logic.

Strategic Alignment

The approach of Balanced Scorecards (BSC) and Strategy Maps was initiated by Kaplan and Norton. It is a tool for strategy implementation and, more precisely, it is a monitoring tool with metrics to show whether the implementation of the strategy is in line with the adopted strategy. This monitoring function is assigned to the *Office of Strategic Management (OSM)*. The alignment is intended to create synergies. According to this, alignment is a management process that is run through cyclically and basically chooses the top-down view which, however, can lead to distortions in the implementation. Accordingly, realignment represents a readjustment and taking a new direction (Kaplan and Norton 2014, 14–16). The duties of the Executive Board and the Supervisory Board to monitor the strategy are particularly emphasized and their recognizable failures in the past are reprimanded (Kaplan and Norton 2014, 198–199).

The five-element strategy diamond developed by Hambrick and Fredrickson in 2001 is often associated with alignment, but according to the authors it is a framework for analyzing strategy. Since everything is now called strategy, there is some confusion about what really is strategy and what is not. The inflationary use of the word strategy undermines its value and credibility. The elements of the strategy according to the diamond framework are: *Arenas (= markets), Vehicles, Differentiators, Staging* and overall the *Economic Logic* (that which generates profits). These elements, grouped in a diamond, form

the strategy diamond (Hambrick and Fredrickson 2001, 51), whereby the shape of the diamond is an arbitrarily chosen shape and does not carry any information of its own. The designation as a diamond is a pure artifice for better marketing. Developed from teaching, this model has spread rapidly in textbooks on strategy, for example, "Strategic Management: A Dynamic Perspective" by Carpenter and Sanders is completely structured according to this framework. (Carpenter and Sanders 2009, 14–17). Other authors emphasize the *Staging* element: Implementation speed and sequence is often not adequately discussed and considered, which can lead to a flawed strategy (Rawitzer and Hefti 2018).
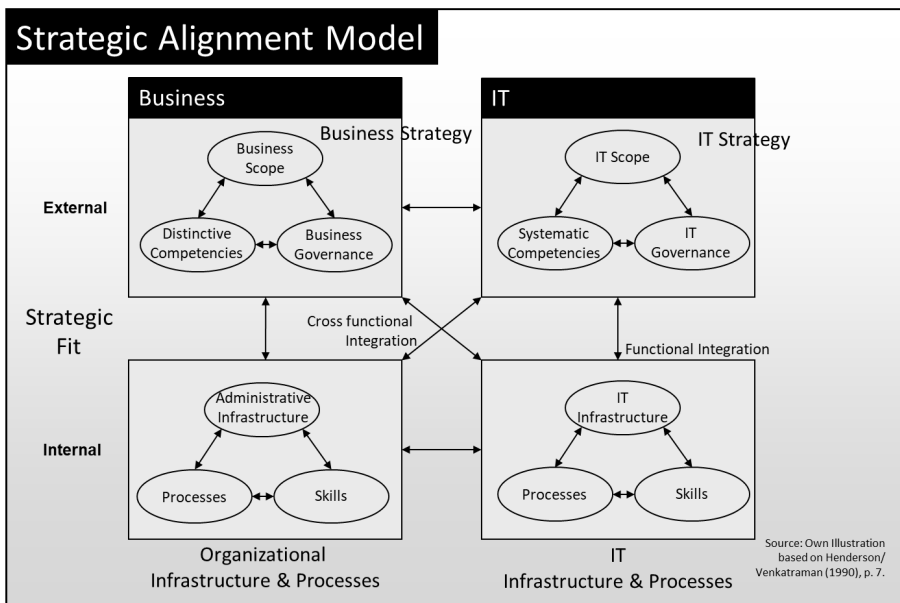
Figure 7: IT-Alignment Model according to Henderson

The *Strategic Alignment* of IT with the business side of the organization was first recognized by Henderson and Venkatraman in 1990 (Figure 7), their research being directly funded by the computer industry—specifically, IBM. The core aspect here is to bring the organization in line with all its existing human resources and processes with the latest computer technology (Henderson and Venkatraman 1990, 7–9). The IT perspective dominates this alignment model. The integration of IT Strategy and Business Strategy

is the core element, viewed from either an internal or external perspective. In this model, then, IT and business strategies stand side by side as equally important. Needs of the market, customers or competitors are not addressed within the model. As the overall driver of strategy, the model places technology at the forefront and ignores management and human aspects. Indeed, strategy history is full of examples supporting the notion that technology enables new strategies.

For the development and implementation of strategies, the latest technologies such as Artificial Intelligence (AI) are recognized as being central. A meta-study on the importance of AI for the overarching strategy in China (Grand Strategy) shows that AI is seen as a resource for future development. It is not only about domestic surveillance, but rather the possibility to take a leading role in geostrategic 'intelligentized warfare'. Equally, it is not about state control or the work of the intelligence services, but the integration of political, military, diplomatic and economic interests (Leo S.F. Lin 2021, 51–53). Unlike Western democracies, corporate strategy in China is closely intertwined with political vision, and political and military strategy. Alignment with strategy can be managed via AI and behavior contrary to strategy can also be quickly detected and sanctioned.
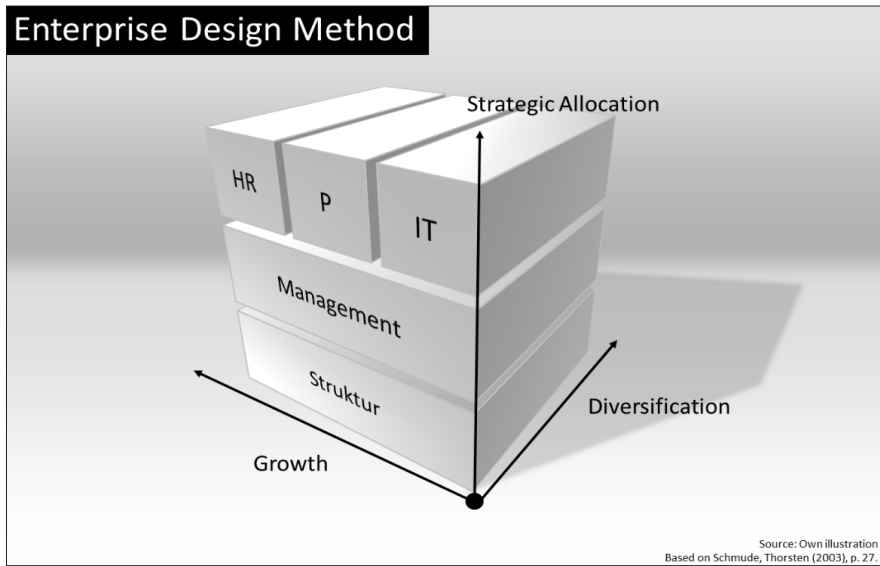
Figure 8. Strategic Building Blocks

The Enterprise Design cube groups the topics of strategic business design according to an internal logic and in such a way that important interdependencies are easily recognized. The depth dimension of the cube is formed by the entities, for example organizational units or legal entities.

Based on the consulting work, the *Enterprise Design Model* (ED Model) was developed for the strategic planning and its implementation. The method is explained on the basis of practical reports, such as the reorganization of a large bank branch and a spin-off from an automobile manufacturer. In international projects, the communicability of planning contents plays a central role, as well as that the essential contents can be recognized at a glance, prima vista (Schmude 2003, 17–21).
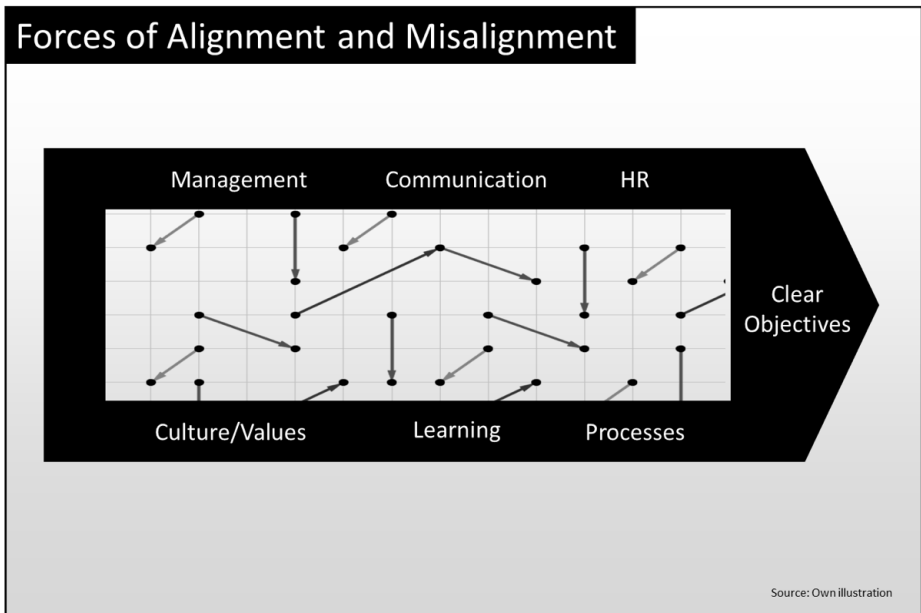
Figure 9: Driver and Forces of Strategic Alignment

The forces that lead to good alignment or to bad alignment, i.e., misalignment, form the starting point for a deeper understanding of *Strategic Alignment* (Figure 9). The diagram shows the framework in which alignment takes place. The individual forces can each affect strategy implementation. When these drivers are identified and understood, targeted influence can be

considered via optimization and management of these forces. The direction is set by the goals, which is why clearly formulated and understandable targets are an absolute prerequisite for alignment. The remaining six forces are: Management or control, communication, human resources (employees), culture and values, learning and knowledge transfer, and the organization of work referred to here as business processes. To find a linguistic image for alignment, one would have to compare it to a form of natural bonding, as is the case with magnetism. Invisible forces bring everyone and everything together to fulfill the strategy.

Voluntary versus Forced Alignment: Alignment of the individual or even the entire organization can be voluntary or forced. A voluntary alignment with the strategy is the ideal case, because here the actors involved know and understand the strategy and act and decide in line with its spirit. In the case of forced alignment, means of influence and management are used to ensure that the organization behaves in accordance with the strategy.
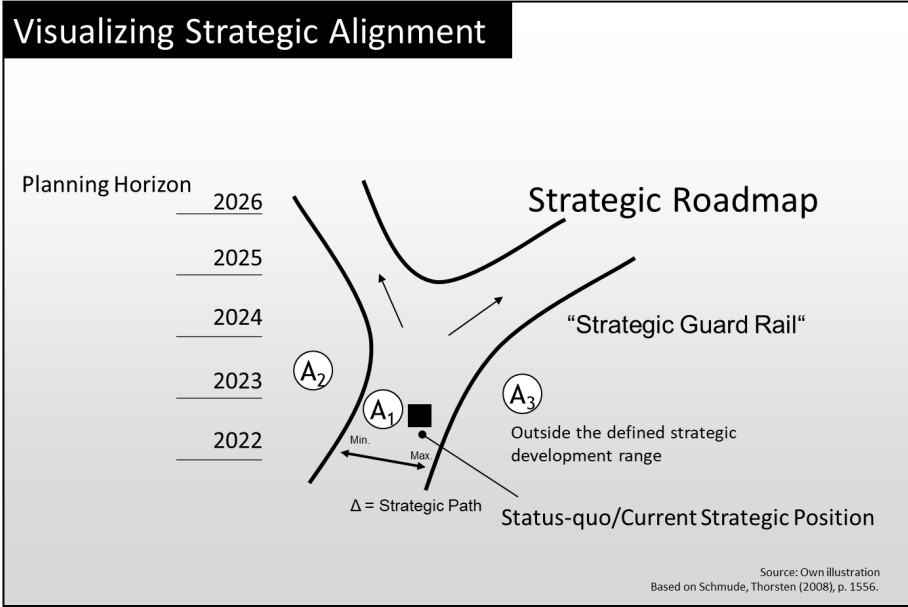
Figure 10: The Strategic Path

A common way to visualize the strategy is strategic road mapping, showing a roadmap with the planned strategic initiatives and options.

Branches in the road can stand for milestones in the company's development, for example for central directional decisions, such as a merger, or a decision for a market segment or a specific product line. Such a strategic road map can be used in strategy development as well as for the communication of the strategy (Schmude 2008). Strategic guardrails provide guidance, but they do not offer absolute certainty. Everyone knows that guardrails along highways are regularly breached in the event of a serious traffic accident.

Moving along the strategic line is a paraphrase for *Strategic Alignment*. This metaphor is helpful because it shows that the strategy is understood as a development and not as a state (final state = that would be a goal) and the company itself determines how fast it moves and also how far it may move away from this strategic path. The term *Strategic Alignment* is not a common term in Germany, but is nevertheless understood by all managers. A very common phrase is "getting the strategy on the road", i.e., implementing it successfully.

Ethical Considerations regarding Strategic Research

Fundamental strategic decisions in companies today are increasingly based on scientific studies. GTM provides a new framework for qualitative research in the field of strategic planning and strategic corporate management.

The research design based on Grounded Theory used today is very broad and well characterized by the statement "All is data". Not only qualitative interviews that are transcribed and then, through a process of condensation and content processing (coding), become the building blocks of a theory of their own are allowed here, but essentially all sources, including the experiential knowledge of the researchers. The classification of the sources and the identification of subjective aspects and personal evaluations are therefore crucial in order to achieve the highest possible degree of scientific objectivity (Quinlan et al., 2019, 43-44).

Theoretical sampling is a core principle of GTM. This involves the selection of sources such as interview partners. There is no statistically determined number of interviews, for example, but the researcher determines when theoretical saturation has been reached in the specific research project and data collection is terminated. Openness in research is one of the special strengths of GTM and allows the researcher to develop new solutions born

of creativity. Ethical considerations are very important—especially with a very broad method and a free field for new solutions—because they provide a framework for one's own thinking and research.

However, greater freedom in research also leads to greater ethical moral responsibility on the part of the researcher (research ethics). The researcher's own reflection on all steps of the research process and particularly on the results therefore becomes an intrinsic topic. The researcher's own views and an interpretation of the content that comes too early can lead to a bias in the research results. Transparent documentation of all steps in the research work can help to avoid this bias, as can regular evaluation of intermediate results with a supervisor in the research institution (Döring et al. 2015, 123–124).

The research process in Grounded Theory requires constant attention from both the researcher and his team in an iterative approach. The theoretical saturation can hardly be determined at the beginning of the research, but rather emerges over the course of the work. When discussion-worthy results are available, they can be published and discussed with outside experts.

The research methodology according to Grounded Theory allows a research project to be reopened and continued at any time, for example if new findings are expected or the environment has changed. This openness in research design is particularly useful for studies that have a long-term research intention (longitudinal studies).

The ethical considerations relate not only to the research itself, but also to the environment under consideration. A properly constituted company is considered to be one which operates in compliance with the law. However, the reality is different: Organized crime (OC) continues to increase worldwide. According to the OECD, 3.6% of the global GDP (or USD 2.1 trillion) result from illegal activities (OECD 2022). In terms of individual companies, the current case of Wirecard is noteworthy—a listed financial services provider in Germany, which suddenly slipped from celebrated stock market stardom to insolvency because of fraudulent machinations by top management (Holtermann, 2019).

In terms of *Strategic Alignment,* this means that legal business concepts based on consensus and a largely voluntary approach have a much harder time because legal corporations are largely transparent and use soft factors to enforce control of their employees and businesses.

Conclusion

The domain of interest for research on strategic alignment is the implementation of corporate strategy and, in particular, the commitment to the strategy of individuals and entire organizations. The existence of a corporate strategy is essential for the top management in large companies and also SMEs, even if it is not acted upon conclusively later, i.e., it will only have been implemented in parts or not at all. Rarely is strategy implementation about the implementation of clear visions, instead, the emphasis is on a further development of a more or less successful business model. Pragmatism and opportunism are stronger than commitment to the strategy, which then leads to opportunity hopping, and where extraordinary short-term profit opportunities are assumed, the well-considered strategy is often disregarded—as are the risks associated with this opportunity hopping.

It therefore becomes clear that in many companies strategic planning is a compulsory exercise and that the result of this—the corporate strategy—is only implemented to a limited extent. There are cases in which it really is a pro forma strategy, and then the existing strategy documents have many gaps or can be interpreted in very different ways, and there is a lack of commitment to the strategy from management and employees. This can have different causes, such as a lack of understanding of the strategy or a lack of acceptance of, or commitment to, the formally adopted strategy. Especially in disruptive times, when no alternative scenarios have been thought through and planned out, strategic management quickly takes a back seat, and action is also taken contrary to strategy: Markets and customers outside the strategic focus are addressed, and products and services are developed that are off the strategic path.

The overarching influence of unexpected events must be given greater consideration: Wars and crises change people and, thus, society as a whole. Currently, we are in the third year of the pandemic Covid-19, and it has become a new normality to wear masks in public transport, for example. Many companies are now practicing home office for the time being, which has so far worked well for two years off the cuff without any real preparation.

In this report, statements can only be made on the basis of the qualitative interviews conducted and the evaluation of the associated material. A generalization is thus only possible under clear restrictions. Grounded Theory has made it methodologically possible to include very different

resources: Interview partners, fieldnotes, additional material provided by the interviewees, files and published literature.

The study is currently still in progress, which is why only initial results can be published, and these only on a preliminary basis. After completion of the work, the results will be presented in a comprehensive monograph.
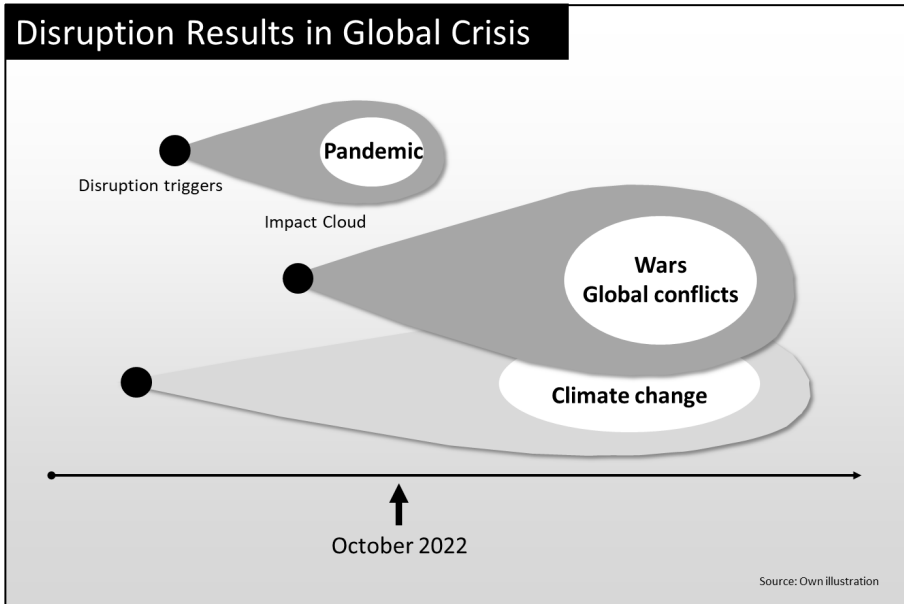
Figure 11: Impact of disruptive events

Prior to Covid-19, the external influence on corporate strategy had been easier to observe over the previous three decades. Then, with the onset of the pandemic, sudden events created completely new conditions—often within only a few days—that management found itself unable to deal with. For instance, in the initial weeks of the pandemic, it was necessary to switch to virtual forms of working, such as home office and video conferencing— sometimes within a matter of days—and, in many cases, this worked relatively well. This has, however, made many office spaces redundant—eliminating the spatial separation of living and working for many people. The disruptive events have different dimensions and periods of impact. For companies, this means being prepared for unexpected events in the future by means of prepared scenarios and strategies.

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Medical, Social and Criminological Aspects of Psychopathic Personality Disorder

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ABSTRACT: Psychopathic personality is a worldwide known psychiatric trait that brought fascination and interest not only in the scientific world but also in social culture and media due to its spectacular and powerful contrast with other mental health issues and also because of the impact the psychopathic behavior echoes in the society. The medical field describes psychopathy as an antisocial personality disorder, a disorder of affectivity and moral or *"moral insanity,"* as Prichard (1999, 118) described it, because most of the characteristics were found in delinquents. For a long time, it was considered an entity at the border of normal and pathological. In the following article, we will present general aspects of this condition from a bio-psycho-social point of view in order to better understand its implications in medical, social, and criminological fields.

KEYWORDS: psychopathy, antisocial, criminology, personality, callous unemotional

Introduction

Personality disorders are a special area of the psychologic and psychiatric expertise field. That is because they do not represent classic pathological structures for mental illness. They actually are cognitive and affective patterns of behavior that develop through childhood. They crystalize through adolescence and will describe the individual through his adulthood. These entities are behavioral disruptions resulted from a disbalanced development of all personality and conscience levels. An antisocial personality disorder is a part of the cluster B group of person-pathic traits, alongside histrionic, borderline, and narcissistic types. This cluster of personalities is known for its dramatic, extreme emotional or unemotional, and unpredictable features. The DSM manual of the American Psychiatric Association places personality disorders on an independent axis, separately from other pathologic areas, but also, they can define major psychiatric disorders. A psychopathic personality disorder is maybe the most fascinating and complex disorder but in the darkest and most antisocial sense (Kraus and Reynolds 2201, 350).

In 1886, Richard von Krafft-Ebing's "Psychopathia Sexualis" described a psychological feature defined by cruelty and lack of empathy. The author also characterizes the terms "sadism" and "masochism" by commenting on the publications of Marquis de Sade and Leopold von Sacher-Masoch. For a long period of time, pathological personalities were not documented as mental disorders but as semi-normal ways of being, as they did not influence the cognitive functions (Von Krafft-Ébing 2013, 140). Later on, Philippe Pinel was the one who defined the behavioral characteristics of these individuals who had no cognitive disruption but were lacking emotions, empathy, and, therefore, moral directions. Lack of responsibility, cruel and sadistic behavior, and predisposition to substance abuse and frequent antisocial activity were also acknowledged. This description, completed by Koch, Kraepelin, si Cleckey led to the modern medical definition of antisocial personality disorder as stated in the DSM manual (Schulsinger 1972, 191).

Medical overview of the antisocial personality disorder

The DSM Manual enlists characteristics that could check the behavioral pattern of criminal offenders but also, traits that affect people in non-criminal

ways. These individuals have a constant disregard for other people's emotions and well-being, having no problem in violating human rights and acting without remorse. As such, though many delinquents will check antisocial behavioral traits, they can also remain in the social frame and disrupt social rules and expectations in a non-law-offensive way. Sociopathy and psychopathy are commonly mistaken one for another. Still, the root of the behavior is different and the severity of the symptoms is different. Sociopathy is a secondary effect of environmental factors and influences, especially in the adolescent period. The psychopathic personality is a primary feature, with genetic and neurobiological mechanisms involved. The second type has complex interferences between social, familial and physiologic factors, as some of these individuals can remain inoffensive or manifest in their intimate space, without major social implications. Moreover, sociopathic behavior defines a violent response to social/environmental stimuli but in psychopathy, violence and cruelty with no apparent reason will be conducted towards a specific personal goal (Liam 2012, 483).

Another important feature and the reason why it is called "moral insanity", is the fact that narcissistic traits are part of their personality and the combination of self-focused manifestation and lack of moral conscience leads to impulsive decision-making, disregarding the effects of their action will cause.

As stated above, there are no cognitive impairments, at least no visible cognitive disruptions in these patients. Moreover, there are many studies that suggest that these individuals have higher IQ scores than the average. This statement is still contested as they are truly cunning and capable of simulating affection and manipulating with their false charm and also they can plan their work in an exquisitely detailed way but these features, may be so prominent specifically because of their failure to affective motivate their actions.

Current criteria, aligned to the latest version of DSM Guidelines (DSM 5) include activities that defy rules and law, including criminal offences, lying, misleading and manipulation of others for their own benefit or distraction, impulsivity, irritability and frequent aggressive behavior (verbal, emotional and physical), lack of responsibility, assumption and remorse for their action but also a disregard for their own and other's safety. Also, to these criteria, there are another 3 features that may be added: the disrupted behavior is not part of a psychotic disorder manifestation such as schizophrenia or bipolar affective

disorder, the patient is minimum 18 years old and/or has a history of conduct disorder before the age of 15. The age of the diagnostic is extremely important, as personality does not crystalize before adulthood in the range of 18-20 years (DSM 5, 2013, APA).

The DSM guidelines for antisocial personality disorder diagnostic cover a broad spectrum of pathologic elements but specific types of psychopathic features are evaluated with psychological battery tests. Still, the absorption of psychopathy into antisocial spectrum implies a more social view, although psychopathy does not impact environmental features only, but also intimate personal dynamics. Some authors consider that antisocial personality disorder is a more efficient definition for sociopathy rather than psychopathic personalities, as the last one need more profound and detailed individual characterization. As such, Cleckley (1941) and Hare (1991) developed a schematic diagnostic instrument with multiple factors to be checked during evaluation and these criteria are still used by many psychiatrists to this day (Regier, Kuhl and Kupfer 2013, 94).

Cleckley (1941) enlisted the following features that describe a psychopath:

- Intelligence and charisma
- Absence of hallucinations, delirium or psychotic symptoms.
- Lack of psycho-emotional tension, fear or concern
- Unreliable and unworthy of confidence
- Constant lying
- Lack of remorse, shame and guilt
- Antisocial behavior without any remorse
- Impaired rationality in the context of learning from experiences
- Incapacity for love and pathologic egocentrism
- Profound lacking of emotional reactiveness
- Lack of responsibility in interpersonal relations
- Dramatic and theatrical behavior
- Demonstrative suicidal threats
- Impersonal and poor integrated sexual activity
- Failure to be consistent and finish a plan. (Crego and Widiger 2016, 75)

On the other hand, Hare (1991) divided all psychopathic features into two classes: personality traits and social defiance traits with three additional and optional factors added: his personality checklist included superficial charisma, megalomania and high self-esteem, pathologic lying, manipulation, lack of remorse and guilt, superficial or fake affect, lack of empathy and cruelty and lack of responsibility for their own actions. The social defiance traits included: permanent need for stimulation and novelty seeking, parasitic/dependent lifestyle, history of juvenile delinquency, lack of realistic expectations, impulsivity, irresponsibility, often reiteration of antisocial behavior. The additional factors include promiscuous sexual activity, multiple and short marital or engagement relationships and the variability of the criminal behavior. All these items are helping specialists and researchers but also forensic psychiatry experts to detail their diagnostic and to fully assess the patient (Cooke and Michie 1997).

Although there are still strong debates on the concept of psychopathy, especially in the field of physiopathology and clinical features and even DSM criteria are still being argued, so the research in this field and the need for an effective management in medicine, social environment and criminology are imperative.

The psychopathological characteristics of psychopathy

In order to understand the criminological predisposition of this personality disorder, a full radiography of the pathological mechanisms is required. Starting from official guideline and other accepted definition of the antisocial personality disorder, the following lines will detail the characteristics of this disorder stating from neuro-psychiatric aspects to emotional and social features. These aspects will, one by one, explain the criminological predisposition of these patients.

The cognitive aspect of this personality is still highly debatable and a subject of active research. On one side, is seems that these individuals have different cerebral mechanisms of perception and interpretation of the external environment. The egocentric mentality works towards planning his own personal interests and satisfaction. His way of thinking will find solutions to his own problems with no interest in the well-being of others. As such,

his cognitive features will use environmental stimuli selectively, focusing on his own desires, no matter the negative impact those plans have on others (Walters 2004, 145).

The megalomanic feature is a big part of the cognitive mechanism of this personality. The grandiose vision of themselves comes with a sense of unlimited power and the wrong perception that others admire them deeply. This person will respond with more charisma to positive feedback and his self-esteem will be charged to extreme, but he will respond as extremely negative to critics and even with aggressive behavior. This characteristic is also a trap as their inability to perceive themselves and the outer space in a realistic way, leads to poor assessment of their medical, social, familial and material state and to fantasy expectations, especially from others. In this way, failure will be externalized, the guilt will never be assumed and the self-victimization will close the vicious circle of their disrupted interpersonal and social behavior. On the others side, there is also a judgmental perception of the external environment with often hostile points of view. This impaired perception can be viewed as a semi-conscious self-reflection in the outside world, as the person will often criticize his own vulnerabilities and negative features. Still, this behavior will often serve as a justification for his actions against others, as a manipulative mean to an end but it will also serve as a precursor for antisocial behavior and criminal activity (López and Núñez 2009, 10).

Before we analyse the affective traits of psychopathy, we should dive into cognitive processing of emotions. Functional MRI studies and clinical observations have tried to link psychological test scores to symptoms and central nervous system processing. It seems that certain areas of the brain, involved in empathy and emotion regulation via neurotransmitters, are poorly activated or not activated at all during external affective stimulation. These regions include the temporo-parietal area, the amygdala, the nucleus accumbens, the ventromedial and prefrontal cortex, which are areas that should work in a coordinated dynamic. These disruptions are observed even in youths with conduct disorders and callous unemotional symptoms. These observations, made by comparison with healthy control groups, led to the neurodevelopmental hypothesis of the antisocial personality disorder. Between sociopaths and psychopaths, respectively, between conduct disorder

youths and callous youths, the genetic involvement is the one who decides the severity of the affective pathologic process. Furthermore, genetic traits and neurobiological disruptions are more evident in callous and psychopathic individuals, this characteristic divides the two clinical entities into a more psycho-emotional developmental disruption and one being more deeply organic rooted. As such, neurobiological processes should further describe important clinical features that could unlock diagnostic and possible medical management of these cases but also, could impact the procedures of forensic psychiatry and psychologic expertise. An important aspect of the cognitive mechanism in antisocial personalities is its presence and the fact that these individuals have often elevated IQ scores compared to average, thus, discernment is not questionable during psychiatric expertise. Also, their lack of responsibility does not mean they are not responsible for their actions but the disruption of the emotional filters will make them unable to understand their guilt and to be rehabilitated during a legal trial and further punishment (Blair 2013, 790).

The affective expression in psychopathic personality disorders has no profound mechanisms or roots. They lack in the very core of their subconscious and conscious level of personality. Still, they are described as impulsive and irritable. The interesting question is how these features are triggered in these people as they usually have strong affective fundament. It can also be observed how negative emotions appear in the description of these patients: anger, envy and even love for themselves. If a normal person is "blinded" by the love for another, and his perception of that person changes to positive, then we could affirm that self-love, in these individuals, could be a variant of love that augments their perception of themselves, and still, it can be considered a variant of emotion. So, we could further describe psychopathy as a lack of positive emotions toward others or an inverted affective mechanism with negative assessment of outer space and positive perception of self (Thomson 2019, 149).

The lack of empathy has multiple psychological and cognitive components and it includes the capacity of recognizing one's emotional state, the capacity of accepting the emotional perspective of the other and the capacity to reflect the other one's emotional state. The psychopathic individual has an accurate cognitive sense for recognizing the other's emotions and their perspective. We could say

that he has a sixth sense in this direction, which makes him able to identify vulnerabilities in others and place himself in a privileged position from which he will be able to manipulate and dominate the context, especially by saying what the victim wants and needs to hear and by stimulating their compassion. Returning to the discernment issues, it is important to reinstate the fact that the psychopathic person has the cognitive means to understand the negative side of his actions but he will never feel the emotional distress he is causing and will ignore or attack the person involved. This is one of the reasons why reiteration of antisocial acts is a big risk with these individuals. Also, the lack of consistency and the unrealistic expectations they manifest for themselves puts them in a constant need for excitement and novelty. They can be truly interested in subjects and activities that align with their interest, but they can also fake that interest in order to obtain their goals. Also, they will get bored and leave the context the moment they no longer feel the novelty stimulation or they are required to put an effort to achieve something (Brook, Brieman and Kosson 2013, 981).

Anger is yet another negative emotional entity that can appear due to impulsivity. Impulsivity and anger in psychopathic traits do not come from its temperamental affective level but from a need for fast gratifications, with poor effort and lack of consistent effort. This makes them prone to criminal activity and dependent relationships, in which they can benefit from their emotionally manipulated victim. The anger and aggressive responses come from the frustration of the failure to obtain his goals and because of critics of his person but it remains and emotional-void motivated response to negative stimuli for his self-esteem (Fox, Jennings and Farrington 2015, 287).

The interpersonal relations of the psychopathic individual is maybe the area with the most negative social impact. Although social media has begun to raise awareness, promote healthy perspectives and develop support for victims of emotional abuse, especially for those coming out from a relationship with narcissistic and antisocial individuals, there is still a lot more to be resolved in this area. The psychopathic individual will always place himself on a superior level in any relationship. He will activate all his abilities to lie and deceit by mimicking and offering all that his victim needs and acting with a perfect seductive and convincing capacity. The victim will be absorbed in a false perception which will act as an emotional bond. The next step is taking that validation away from the victim and making her/him work hard for anything the psychopathic

individual will offer. This mechanism will deactivate all defensive and self-esteem traits in the victim, making her/him completely dependent on the psychopath's validation, while the last has the freedom to enjoy all benefits and to increase his megalomania. The trauma of emotional abuse leaves profound marks, even in the aftermath of that relationship (Vicente 2011, 62).

Sex differences in antisocial personality disorders, has been a long debated subject. Most of the studies admit that the two genders manifest similarities at psychological levels, reflected in the psychological testing scores, but manifestations are somehow different as females tend to be less physically aggressive and more prone to manipulation and self-destructive behavior, while men are more hetero-aggressive and tend to manifest more of the narcissistic traits (de Vogel and Lancel 2016, 101).

Conclusions

From moral insanity to a distorted way of being and to psychiatric pathology is a long road. However, the research direction moves closer and closer to discovering pathophysiological mechanisms involved in these disorders and, thus, to a more efficient medical and social management of these patients. This means better recognition in the social and familial environment, medical and psychological prevention and treatment, and more complex forensic management.

From moral insanity to a distorted way of being and to psychiatric pathology is a long road. However, the research direction moves closer and closer to discovering pathophysiological mechanisms involved in these disorders and, thus, to a more efficient medical and social management of these patients. This means better recognition in the social and familial environment, medical and psychological prevention and treatment, and more complex forensic management.

The fact that a fundamental aspect of the personality, the affective level, is disrupted or has inverted cognitive mechanisms is the main feature that should be understood about psychopathic personality disorder. It is the reason why these individuals cannot integrate into any community as they lack emotional motivation, which is a baseline human being trait. It aligns people to moral rules and empathic consideration, which supports any

social or cultural matrix. Although they can be attractive, charismatic, and persuasive, the narcissistic traits and the lack of remorse can be recognized. As these individuals often negatively impact their interpersonal relations and emotional trauma, prevention should begin through better education and victim support, as this would cut their stimulation and motivation even before they engage in criminal activity.

In the large spectrum of antisocial behavior, from conduct disorder and callous-unemotional in young individuals to specific psychopathic or sociopathic traits in adults, neurobiological characteristics are the direction for research, unlocking interdisciplinary management protocols for both medical and forensic fields.

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Effects of a Reliability Engineering Department on an Industrial Organization: An Empirical Investigation

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ABSTRACT: In industrial companies, efficient maintenance is a prerequisite for overall competitiveness and, therefore, needs the utmost attention from the highest management level. Maintenance departments work primarily in a preventive and proactive manner in order to detect and avoid damages early instead of reacting to sudden failures. Some companies have gone further and introduced an independent Reliability Engineering Department (RED). This RED is intended to improve equipment dependability and decisively reduce production downtime to an even greater extent. The effects of a RED on industrial organizations have received little academic attention to date. This study aims to address this research gap by analyzing vital questions concerning the advantages of an independent RED. The research has been carried out using an empirical quantitative online survey. The study results demonstrate that many companies have already introduced an independent RED. It is envisioned that many businesses, if not most, currently missing a RED will soon introduce one. Furthermore, it is presented that companies that have already implemented a RED expect recurring significant annual savings. For the most part, these REDs are organizationally integrated into the existing maintenance department. The surveyed companies demonstrate that a RED, virtually without exception, generates a positive contribution to the company.

Introduction

Having reliable and cost-efficient operable machinery is crucial for every production company (Kiran et al. 2016, 577). Serious malfunctions – sometimes even minor ones – or unexpected breakdowns are unacceptable in modern plants and usually costly (Smith 2011, xix) not just for the repair itself but for the loss of production, which is often much more expensive. A study from Great Britain shows that defective equipment is responsible for three percent of all lost workdays (Williamson 2017), not to mention the loss of reputation if a company cannot deliver on time. A principal managerial task is to implement performance improvements (Hawkes and Spedding 2022, 16; Volkelt 2020, 2). Thus, all managers should be committed to this topic. To keep the equipment in a 24/7 production company permanently productive and in good condition, firms of a specific size usually have a maintenance department. This department can be staffed by the company's own personnel or by personnel from external businesses. Various organizational characteristics and depths are conceivable. They are, in practice, often historically grown. The departments' goals sometimes diverge, as well. Some maintenance organizations are content with correcting errors; others apply preventive measures or try to predict errors before they occur (Strunz 2012, 1-34).

In the past, measures to improve a plant's reliability were usually part of the general maintenance department (Madu 2000, 938-39). In some more prominent companies or facilities, it was part of asset management, which took care of all assets within the company or facility. This department is usually but not consistently an integral part of the maintenance department.

To further improve equipment reliability, maintenance departments are looking for implementable solutions. These can lie in employing more preventive maintenance work (Jin 2019, xxiii-xxiv). Solutions include, for instance, planned maintenance activities or the replacement of (worn) parts before they reach the end of their service life. Building on this, maintenance departments can also work proactively. Doing so means anticipating errors

before they transpire and deriving measures to prevent any future occurrence. This can, in some cases, significantly increase plant reliability and save costs (Eti et al. 2006, 1238-239). Some companies, mainly medium and large enterprises, are developing independent departments out of maintenance that focus exclusively on increasing plant reliability (Hawkins 2015, 31). In these departments, reliability engineering, as we understand it today, is usually only a fraction of the work of the engineering personnel. In order to mitigate the problems with asset reliability and, therefore, save costs, more and more companies across the globe have invested – at least during the last number of decades – in separate departments with the sole objective of improving the reliability of their assets (machinery) (Madu 2005, 318). It is fair to say that reliability engineering is now a firmly established area in larger firms. Historically, this development started in the aerospace industry, since it is an unmitigated requirement that all failures are prevented at any cost. More and more fields have adopted reliability engineering as the demands of industry have continued to increase (Moubray 1997, 3). Consequently, having a separate reliability engineering department (RED) is a "must-have", indeed, a "prestige department" in larger companies. Setting up separate departments mainly to improve asset reliability is a considerable step, as it is pretty costly. It means providing full-time personnel, who primarily try to solve problems that are not problems today but could appear in the future. It is commonly known and widely accepted that a RED improves machinery's technical condition much more than any general maintenance department can (Calixto 2013, 503-05).

In this context, reliability engineering describes an interdisciplinary field that deals with the life cycle management of a product or system, from design, manufacturing, and installation to maintenance and repair services (Jin 2019, xxiii). Here, various defined processes, methods, and tools are used for dealing with technical risks (Dam 2010, 9). The actual tasks covered by such a RED vary depending on the corporate philosophy.

A model outlining potential activities and tasks for a RED is, for example, described by (Smith 2011, 84-176) in "Reliability, Maintainability and Risk: Practical Methods for Engineers". There are also different models for the meaningful organization of a maintenance department. These are presented, for instance, in "Organisation der Instandhaltung / Organisation

of maintenance VDI 2895" (Verein Deutscher Ingenieure 2012, 1-36) or by Ben-Daya et al. in "Introduction to Maintenance Engineering: Modeling, Optimization, and Management (Ben-Daya et al. 2016, 403-06)".

A parallel can be drawn here to general project management or the current issue of the operational implementation of digital transformation. In these areas, too, there are various organizational options for embedding them into the existing operational process (Kretschmer and Khashabi 2020, 86-101). These, in turn, depend on a variety of individual factors. Implementing these topics in a separate focused team in the project field has significant advantages such as simplicity, speed, cohesion, and cross-functional integration (Larson 2007, 25-6), as is the case when implementing digital transformation. In addition, at least one dedicated lead person is needed to drive the change forward efficiently (Horlacher et al. 2016, 1).

The question arises as to what extent independent REDs can positively affect a company, even over an extended period. To put it in a more straightforward way: What are a company's financial expectations when it comes to their reliability engineering department? How can such a department be integrated organizationally into an existing company? How will the success of reliability engineering be measured? Does an independent reliability engineering department positively impact a business? These questions will be answered with the help of a quantitative survey.

Definitions and Limitations

When talking about reliability, many people focus on the product's reliability. However, this is only one part of a vast field. The reliability of the production facilities to manufacture the respective product is, of course, just as decisive for a company's success. Quality and reliability are often equated (Braglia et al. 2007, 420). Nevertheless, this is only partially applicable here. Instead, reliability must be considered as the quality (of a product, a system, a plant, etc.) over a certain period (ibid.).

Blischke and Murthy state that the reliability of a product (system) is the likelihood that the product (system) will perform its designed function over a given time period under standard (or specified) environmental circumstances (Blischke and Murthy 2000, 18).

Reliability engineering can also be viewed from many different angles. Dam describes that reliability engineering is the application of a set of accurately defined engineering processes, methods, and tools used to identify, interpret, and manage technical hazards (Dam 2010, 9).

In this study's context, the term reliability always refers to the reliability of production assets or production equipment. However, the engineering path to reliable equipment is primarily the same as the path to reliable products. Therefore, the same mathematical models and techniques are predominantly used. The reference to software and networks is explicitly excluded.

Maintenance departments with independent reliability engineering departments are usually only found at larger companies or sites (>250 employees, according to Eurostat (European Commission – Eurostat 2021, 1)). In most cases, small and medium-sized enterprises do not possess such independent departments within their organization. Consequently, the majority of the study's focus lies on large companies. No industrial sector is expressly excluded from this study. Still, companies from the chemical and petrochemical industry, in particular, have more often independent reliability engineering departments and are, therefore, strongly represented in this study.

Due to the intense restriction of the possible field of participants, as a high level of expertise is required, it seems – despite a great deal of effort – to be challenging to reach a much larger number of participants to participate. Even though the survey participants are international (for more on this, see sampling), all these participants have a technical background.

There were no questions or even restrictions on the gender of the participants. It must also be considered that face-to-face interviews were impossible due to the Corona pandemic.

Methodology

Unfortunately, the presently publicly available data is insufficient to draw reliable conclusions on the study's questions. In order to investigate the current structures of industrial maintenance organizations – especially concerning reliability engineering departments – an empirical study must be conducted to close this research gap. A substantial number of specialists and executives from international companies at worldwide locations will be

questioned. Therefore, a quantitative online survey was chosen to answer the open questions. This results from the fact that this research design is excellently suited to capture a considerable number of cases and numerical values (Bryman 2016, 32).

The results of the empirical study are primarily intended to answer the following questions:

- What are a company's financial expectations when it comes to their reliability engineering department?
- How can such a department be integrated organizationally into an existing company?
- How will the success of reliability engineering be measured?
- Does an independent reliability engineering department positively impact a business?

This study consists of three steps. The first step was creating a comprehensive database using a quantitative online survey which was specifically designed and conducted for this purpose. The survey mainly addressed highly specialized experts and managers in reliability engineering, maintenance, production, and site management. The main aim was to answer the four questions mentioned above but also to collect some supplementary information regarding independent REDs. The second step entailed the analysis and interpretation of the received data. These were evaluated with the support of the SPSS (Statistical Product and Service Solutions) software (IBM SPSS Statistics, Version 25, IBM, Ehningen, Germany). In the third step, the evaluated data was processed and presented.

Survey

An online survey was chosen to collect quantitative data as an empirical research method. This approach was chosen as quantitative-empirical research has become the standard in the social sciences (Best and Wolf 2010, 3). This method allows a clear statistical presentation and evaluation of the results. Raithel also confirms that quantitative or quantifying approaches and methods enable an intersubjectively comprehensible description of complex structures by making social conditions measurable and providing a statistical analysis (Raithel 2008, 8). An online survey has the great advantage of being

independent of time and place. Since this research addresses internationally active people, the authors expect a larger and more international group of participants through this survey method.

Survey participants are assured of strict confidentiality and anonymity. Bos state, in this regard, that the reference to the results' absolute confidentiality, which will only be used for the purposes agreed upon, is a matter of course (Bos 2020, 39-48). The survey took place during the spring and summer of 2021. The evaluation directly followed this phase and was concluded by the end of 2021.

Sampling

The questions asked in the survey are highly specific and require a detailed insight into the respective company's specialized area. In order to be able to answer the survey in a detailed and technically correct way, a restriction to a small, very specialized group of participants was mandatory, as exact knowledge of the organization, processes, and costs at the company or site was required. Survey participants included general managers, site managers, production managers, maintenance managers, reliability managers, and reliability engineers. In addition, persons with similar areas of responsibility, such as researchers & practitioners in reliability, a consultant in reliability/lubrication, a professor of mechanical engineering, and a sales technician, were surveyed.

Jungbauer-Gans states that quantitative-empirical social research is oriented towards case numbers as high as possible or sufficient for differentiated statistical procedures. This approach is made in reference to sampling and test theory tenets. On the other hand, studies with small numbers of cases are exposed to the general suspicion of biased selection (Jungbauer-Gans 2009, 6). Biased selection may well arise when the group of respondents is so small that it cannot reflect the full range of possible responses in the field under consideration. For this reason, a sufficient number of participants must participate in the survey to draw a conclusion about the majority. The minimum number of submitted online questionnaires was set to 50. Teddlie and Yu explain that when using probability sampling, it must be large enough to be representative (usually at least 50 units) (Teddlie and Yu 2007, 84).

It is not an easy matter to find a sufficient number of participants for a quantitative survey where the participants group must have such specialized knowledge to answer the questions satisfactorily. For this purpose, various sources were selected. These were personal contacts from the industry, contacts from professional institutions, contacts from universities, and reliability networks and institutions.

Participants are also encouraged to share the survey with experts with similar professional backgrounds. Thus, purposive and probability sampling is combined for the study.

Due to the many different approaches and ways of finding participants, it can be assumed that a strongly mixed group from different professional fields and with different regional origins will participate in the survey, thus avoiding a one-sided response to the questions posed.

For the actual formulation of the questions, the "10 commandments" of question formulation, according to Porst, were followed as accurately as possible (Porst 2000, 2-12).

The questionnaire aims to gain as much insight into the topic as possible; therefore, 26 questions were formulated. For some questions, there was the possibility to give multiple answers. Thus, evaluating some questions may result in a response rate of over 100%. The complete questionnaire is available upon request from the authors.

A pretest was carried out before the survey was released for public access. Executing a pretest is generally considered an indispensable prerequisite for successfully developing a questionnaire (Stockemer 2019, 67-9). For further processing in the IBM SPSS program, the survey data had to be coded accordingly. This coding was performed according to the specifications described by Bryman (Bryman 2016, 293-98).

The possible settings within the online questionnaire directly prevented some errors in the input. For example, entering texts into sections requiring numerical values was impossible. Nevertheless, all data were checked for plausibility, correctness, and completeness without exception. Spelling errors in free-text input have been left as they were. Data cleansing was performed following the procedure described by van den Broeck et al. (van den Broeck et al. 2005, 966-70). Due to the excellent data situation, a basic cleansing was not necessary but was limited to very few individual cases of implausible data.

Results

Participants, Origin, and Qualification

A total of 76 respondents took part in the survey. Unfortunately, the questions were not answered entirely by all participants. For 13 participants, the survey was intentionally closed because they do not have and do not plan to establish a reliability engineering department within their organization. Thus, they would not be able to answer the questions adequately. The questions were scored as far as they were answered for all other questions.

As expected, specialists from all over the world participated in the survey. The geographical focus here was on Europe. Most participants came from the fields of reliability engineering and maintenance. Yet, some other professional groups also participated, as shown in figure 1.
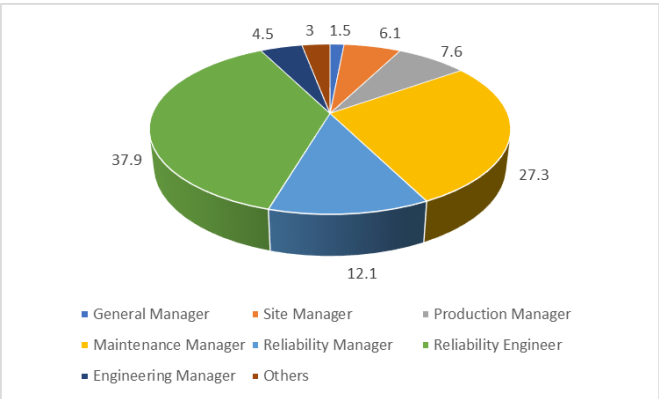
Figure 1. Participating professions [%]

The average number of employees at the participating sites was 727. It can therefore be characterized as a large company (European Commission – Eurostat 2021, 1). The largest site had 5,000 employees, the smallest only 30 employees. The respective maintenance departments (if any) employed an average of 107 people. In the independent REDs, an average of nine people were employed. The largest department occupied 150 associates, the smallest just one person. It is presented that 61.4% of reliability engineering employees have a university education.

*Activities, Organization, and Integration of an independent Reliability
Engineering Department*

Although independent REDs are still a relatively new phenomenon in many
industries and geographic regions, 62.1% of participants pointed out that
their site already has a RED. Of the participants who have not yet established
their own RED, almost half of them (48.0%) would like to establish a RED
in the future. The survey ended here for the participants who have neither
already established a RED nor want to establish one.

   Although participants suggested that there are several ways the
RED can be integrated into the existing organization, in most cases,
reliability engineering is part of general maintenance (71.7%). Other areas
are significantly less represented here (see Fig. 2). One participant stated:
"Reliability Engineering needs to support all departments and therefore not
be part of any." However, individual responses also show that this department
can well be part of cross-departmental teams (twice).
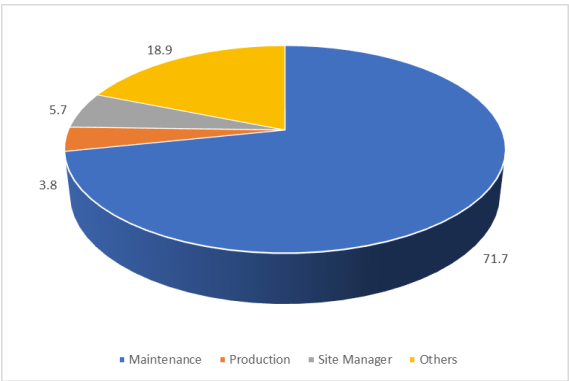
Figure 2. Affiliation of the reliability engineering department [%]

   This consequently shows that the majority of the REDs report with
56.6% to the maintenance manager. However, they may also report directly
to the site manager (20.8%) or the head of engineering (11.3%). Nobody
reports directly to the production manager.

   The general maintenance strategy depicts that a purely reactive strategy
is no longer common (20.8%). For the most part, preventive (67.9%) and
predictive (52.8%) work is carried out. In some cases, several strategies are

pursued, depending on the situation. Here it becomes evident that one strategy that fits all assets often does not work. Therefore a strategy mix is used (providing an overall sum >100% as the question result). The study shows that many REDs are allowed to carry out projects themselves, i. e., without the approval of a manager (e.g., asset manager, plant manager etc.) - at least in part. The overwhelming number of participants (83.0%) consider this sensible. 2/3 (66.6%) of those working in the area of reliability engineering do this exclusively—the employees who work only part-time in the department work 66.0% of their time in reliability engineering. Figure 3 shows the main activities of these departments as follows:
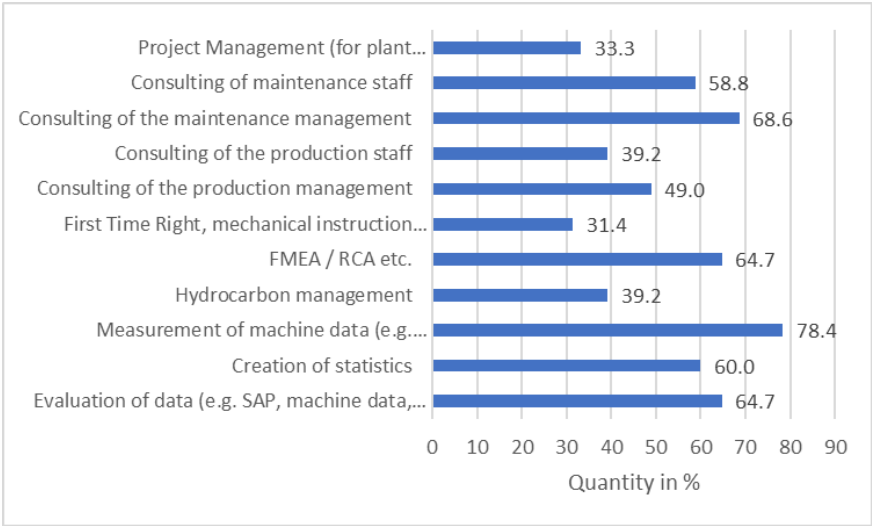
Figure 3. Main reliability engineering department activities
(possible multiple answers)

The study showed that only 58.8% of the REDs have their own budget for implementing improvements. The budget varies from 0% to 35.0% of the maintenance budget. It results in an average budget (related to the maintenance budget) of 12.0%.

As in most companies, the participants in the study also use the classic Key Performance Indicators (KPIs) of maintenance costs, production losses, and plant uptime (see Fig. 4). Strict use of these indicators allows the success or failure of the RED's measures to be represented.
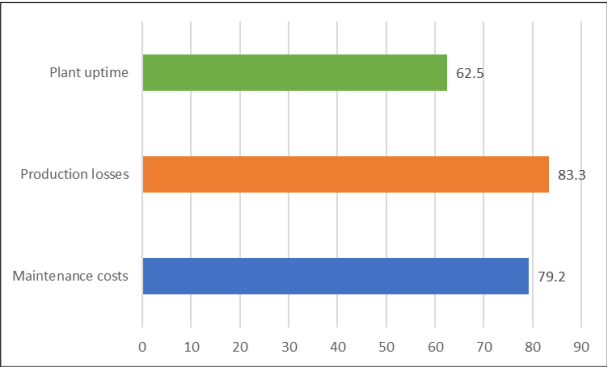
Figure 4. Use of KPIs [%] (possible multiple answers)

Almost all of the participants in the study said that they expect financial improvements from a RED. A large number of participants (86.3%) indicated that reliability engineering has already contributed to cost savings for the site. It should be noted here that some participants state that they have not yet established any reliability engineering department. Adjusted by these participants, savings were generated at 100% of the participating sites. This shows the positive effect that REDs have on the respective company.

Over the past two years (2019 and 2020 were analyzed), the expected average savings compared to the actual average savings achieved for participants that had already implemented a RED were as follows:
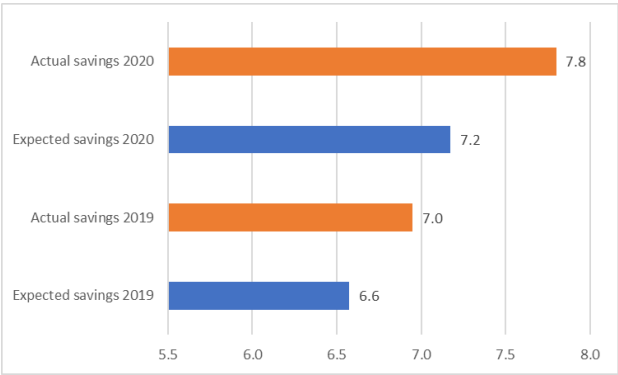
Figure 5. Average reduction of production losses [%]
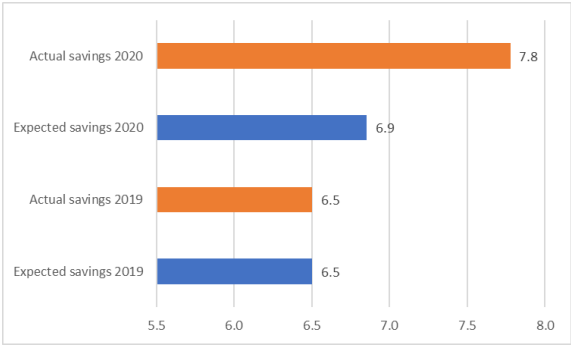
Figure 6. Average reduction in maintenance costs [%]
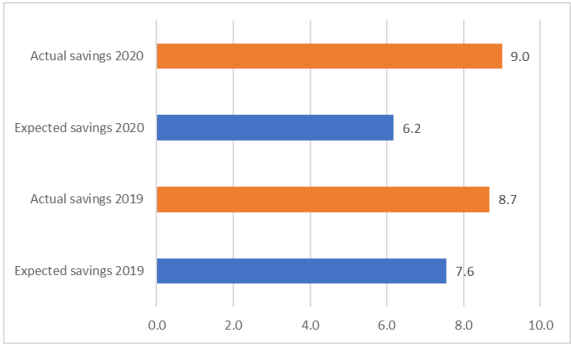
Figure 7. Average extension of plant operation time [%]

Figure 5 shows that the reduction in production losses has exceeded expectations for two years in a row. Regarding maintenance costs (Fig. 6), expectations were precisely met in 2019. These were substantially exceeded in the following year (2020). The average extension of plant operation time (Fig. 7) shows that the savings achieved in this area also surpassed expectations in the same period. In any case, however, there are significant savings in all areas.

Two participants (4.9% of all with an independent RED) who already have their own reliability engineering department revealed that the department did not meet the specified targets.

Looking forward, participants rightfully expect to see continued savings. These expected savings average out to a reduction in production losses by 12.7%, a reduction in maintenance costs by 10.2%, and an extension of plant operating time by 12.2%.

However, the expectations of the individual participants are pretty different. These range from 0% to 50.0% for the reduction in production losses, from 0% to 30.0% for the reduction in maintenance costs, and from 0% to 50.0% for the extension of plant operating time.

Conclusion

This paper's main objective was to investigate the impact of an independent RED on an existing company as well as its implementation in practice. Four main questions were answered in this process to close the research gap.

In order to be able to draw relevant conclusions from a survey, a broadly diversified field of participants was required. Even if most participants originate from Europe and larger companies, there is still a worldwide spread and references to small and medium-sized enterprises. Likewise, despite the required strong specialization, the participants not exclusively came from the reliability engineering and maintenance field. Therefore, the expected approach of a mixed group has been fulfilled, as was intended.

It is now clear that independent reliability engineering departments are by no means isolated phenomena today. They are already firmly established in many companies or will be launched soon.

(i) What are a company's financial expectations when it comes to their reliability engineering department?

In most companies, substantial financial savings are expected from REDs – consistent not only once but recurring yearly. The results show that the various participating companies have clear financial expectations for introducing REDs. In the years under consideration (2019 and 2020), the companies that have already implemented a RED expected an average reduction in a production loss of 6.9%, a reduction in maintenance costs of 6.7%, and an increase in plant operating time by 6.9%.

(ii) How can such a department be integrated organizationally into an existing company?

REDs are classically integrated into the general maintenance organization in most companies. However, it is also apparent that other organizational forms are possible but often not utilized. Particularly departmental or cross-site organizational forms are used. Consequently, most

reliability managers report directly to the overall maintenance manager but also to the site manager.

(iii) How will the success of reliability engineering be measured?

To measure the success of the reliability engineering department, the "classic" KPIs are predominantly used: maintenance costs, production losses, and plant uptime.

(iv) Does an independent reliability engineering department positively impact a business?

It has clearly and broadly been demonstrated that all REDs have achieved savings in recent years, some significant. Correctly, it is expected that savings will be achieved noticeably and recurrently. As a result, these departments had a thoroughly positive effect on the company's competitiveness.

Furthermore, the study also showed that the maintenance strategy is not precisely defined in many participating companies or is deliberately a mixture of several strategy forms. In any case, there is a clear shift away from a purely reactive maintenance strategy.

In addition to that, it is demonstrated that the majority of the employees in the reliability area work full-time in that field. The field of activity of the employees in this area is very diverse. The focus is undoubtedly on "classic" activities such as recording, evaluating, and assessing machine data and creating Failure Mode and Effects Analysis (FMEA) and Root Cause Analysis (RCA). On the other hand, advising employees and managers is an integral part of their work.

Implications

The study results show that an independent reliability engineering department in modern maintenance positively affects the companies studied. Such a department may well achieve significant savings. Even if the current standards for maintenance organizations do not mention such a department or only marginally, the study shows that many of the companies investigated have already gone the way to an independent RED or are planning to do so in the near future. It is, therefore, advisable to rethink today's maintenance organizations. An independent RED can contribute to the profit of a company.

Critical Appraisal

Due to the given characteristics of a quantitative survey, it is only possible to understand specific backgrounds and intentions to a limited extent. In order to be able to classify the survey results better, some of the questioned variables of the quantitative survey must be deepened and validated. It is recommended that various variables be examined in depth in expert interviews and combined with the results obtained. It could also be interesting to investigate the size of a company at which an independent reliability engineering department can operate profitably.

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The Silence of God between Alienation and Resonance

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ABSTRACT: Alienation is more than a symptom of our times. It has become an increasingly articulated feature of the contemporary collective ethos. The paradigm of alienation seems to be a cyclical occurrence, a reiteration of the oppressive spleen of the early last century, but much more oppressive and much more globalized. Analyzed from multiple perspectives (psychological, social, artistic, literary, etc.), alienation remains a negative category, which is why it must have a cause. Depending on the lens through which the cause of alienation is viewed, inevitably limited answers can be offered, as the human structure is too complex to be contained in one area of analysis. Almost completely ignored, although, as we shall see, this is where the lifeline might come from, the theological perspective can diagnose the phenomenon of alienation with greater precision and offer a sustainable variant of what we call resonance. The Hebrew Bible offers some conclusive passages on alienation, seen as estrangement, a split from God. This comes both from man, through disobedience to God's law, but especially from God, through the installation of a communication embargo. The silence of God is the most drastic consequence of man's estrangement from God, a consequence that will bring about a state of alienation. The present study aims to identify and analyze the situations in which God's silence produces alienation, as well as a biblical perspective on the antidote called resonance.

KEYWORDS: alienation, resonance, silence of God, spleen, Hebrew Bible

The Silence of God between Alienation and Resonance

Social alienation, both at the level of the individual and as a whole, is one of the symptoms that is becoming increasingly apparent in contemporary post-modern society. It is seen as an alienation of the individual from the individual, a retreat into the self of as many as possible. Alienation is by no means a reaction to an accumulation of over-licensed tumultuous relationships, like a temporary and necessary respite from too much exposure to human interaction. It is an estrangement that also has a background of non-communication.

The causes identified are multiple. The finger is pointed at technology, which means that the individual is less and less exposed to human interaction, at excessive urbanization, which does not create the framework for a welcoming ethos, at the accelerated dynamics of each individual through rapid changes of job, home, neighbours, entourage and routine. The assault is, therefore, concerted from multiple angles, and as a result, the individual is continually and, it seems, irretrievably alienated.

The issue has been addressed from multiple perspectives and through the lens of several fields. The explanatory dictionary itself, under the secondary meaning of the term 'alienation', makes the appropriate reference: 'philosophical'. Unfortunately, what once seemed to be the exclusive preserve of philosophy, i.e. of a small, elite group of people, who had the vocation of genius anyway (in the model outlined by the nineteenth-century romantics, the genius, as an individual, feels a crushing disappointment of non-value, which is why he retreats into an ideal, imaginary, own, exclusive world), today the problem is found to be a psychological one (Triff 2016, 204-242), sometimes with pathological nuances (Kessler 2021, 13-22). In dealing with Saul's alienation due to his disobedience to God, Kessler induces the idea of pathological overtones in the character of Saul as a result of his estrangement from God, but more importantly the institution of God's silence in relation to him. The issue can also be treated from sociological, economic (as the alienation of the individual poses serious challenges to economic domination), literary and theological perspectives.

This study aims to address the problem of alienation from a theological perspective. Since the antidote to alienation is, according to the current trend, resonance, we will start by addressing this concept, also from a theological

perspective, even if the term is not present as such in the biblical texts. However, the theological approach will not limit the perspective exclusively to this field, as the Bible itself is a coherent source of content for related fields such as sociology, psychology, philosophy, etc.

As the title of this article suggests, the concept of alienation is treated in the context of the theme of God's silence. In fact, divine silence, seen from the perspective of an embargo of communication on the part of God in relation to man, is also the cause of individual alienation. What are the causes of the establishment of divine silence, some typologies of this silence that concern the subject of alienation, as well as a concrete application to our lives are some of the reasons treated in this article. Both human moments of silence in relation to God, but especially the nuclei of divine silence are message-bearing and enriched with meaning. We can affirm that through his silence God „speaks".

„Silence is an oft-used literary, philosophical and theological category." (Caraman 2020, 180-191). Silence is a virtue present in a wide variety of spheres. The spheres of mysticism in particular value silence as telling, sometimes more meaningful than the utterance itself. We can speak here of Eastern mysticism, Muslim or Christian mysticism.

> In the Christian area, we mention the writings of Saint John of the Cross (Jean de la Croix), or Maître Eckart. Philosophy, for its part, also claims silence as a virtue, as an instrument of wisdom or of knowing the truth. Plotinus, the Neoplatonist whom some theologians place at the roots of Christianity, discusses in his philosophical discourses the silence of nature as a divine principle, i.e. nature that produces, without having signifying figures, and that has only signified figures, i.e. nature has no discourse of its own, but glides through what it does. (Caraman 2020, 181)

Looking at the dynamics of divine silence in the Old Testament, it appears as a spectral notion, whose limits are the peaks of walking with God (see Abraham in the episode of the sacrifice of Isaac, or Joseph towards whom God instituted a silence that resulted in his deity. The term used is based on the Bible's statement that Joseph loved as God did, as he proved in his confrontation with his brothers, who had been exposed for the iniquity they had committed years before, and from which Joseph suffered dramatically) or an oppressive silence that brought a curse. The latter type of silence produces

alienation. The treatment of the subject is at the confluence of theology and philosophy (Schellemberg 2015) and is, surprisingly, even used as a rationale for divine evidence (Lutzer 1997).

As a category of communication, silence is present in the writings of the Old Testament in various guises. Each of these implies the semantic value of a programmed absence on the part of God and in relation to man. The most commonly used image of divine silence is that of the concealment of his face (Balentine 1983).

Silence can be defined as a deviation from the norm, the absence of words or repression of actions are a signal of exception. God has established direct communication with man. When the human-God relationship is healthy, it is characterized by utterance and active involvement on both sides. God's utterance is a bearer of grace, and man, as receiver, is a blessed beneficiary. "When the divine-human relationship begins to break down, God's silence on words and deeds testifies to the alienation that has occurred" (Kessler 2021, 13). God's chosen people have repeatedly rejected what he communicates to them. God's slippage had as its primary purpose the people's finding out His will and fulfilling that will. Relationships established on the original terms deteriorated and were replaced by alienation and silence. Therefore, the alienation of individuals and the nation has its primary source in God's decision to impose an embargo on communication, either verbal or at the level of His actions. We will examine some Old Testament narrative cores that present these instances of divine silence.

Saul: the exponent of disappointed expectations

1 Samuel 8-31 depicts the rise and fall of Saul. He is Israel's first king, chosen by God and embodying the people's longing for better. Saul's journey reiterates the Deuteronomic pattern emphasized by God: obedience to His Law (Rotaru 2015, 318-322) will bring blessing in all aspects of Israel's life, while disobedience had built-in curses. The punishments listed in Deuteronomy, then reiterated, are progressive in the intensity of the pain suffered. In addition to famine, drought, numerous deprivations, infertility, the abhorrence of enemies, the dishonesty of one's own daughters and sons, all culminate in the announcement of the establishment of a silence from

God. The culmination of this curse will bring a distress that could not have been anticipated.

Saul seems to be the actor of this peak of divine wrath, with silence playing a significant role in the deterioration of the relationship between Yahweh and Saul. The biblical narrator highlights through narrative sequences the instability of Saul's character and the sinful decisions he made. We will look at the tragedy of this character who began his monarchical career with the promise of a successful path, crowned with God's blessing. In our approach, we will limit ourselves to one aspect of his tragic career: his loss of access to God's voice and his descent into darkness and silence. Saul's alienation from God comes in two stages. The first, outlined in 1 Samuel 13 and 15, builds on rejection from God. The entire dynasty is subject to removal, and Saul in particular loses the divine blessing needed in his service as king of Israel. The second stage appears in 1Samuel chapters 16-18. The passage captures Saul's progressive decline into alienation, silence and then death.

Saul's reign is preceded, in 1 Samuel 1-12, by the removal of Eli and his family from the priesthood, later to be replaced by Zadok. The chapters mentioned make it clear that God is willing to remove a priesthood line because of the sin in which Eli's sons persisted. Saul is characterized as having a lacking character (Hertzberg Philadelphia 106, 133-34). Saul is the actor of a tragic history. He begins with good premises, but is rather dismissed because of his inability to show obedience to God.

The fatality of rejection

1 Samuel 13:1-14 focuses on Yahweh's rejection of Saul's dynasty. Saul's first serious mistake was his failure to wait for Yahweh's appointed time with full confidence. Although the context was extremely tense (Jonathan had announced a battle with the Philistines, and now the Israelite army was surrounded by the enemy army), Saul had a duty to wait for the arrival of the late Samuel. The people begin to scatter, and Saul is increasingly tense, until he takes the initiative to burn the sacrifice (v. 9). While the smoke of the sacrifice was still in the air, Samuel appears and pronounces judgment on Saul:

> And Samuel said, "What have you done?" Saul said, "When I saw that the people were scattered from me, and that you did not come within the days appointed, and that the Philistines gathered together at Michmash,

"than I said, 'the Philistines will now come down on me at Gilgal, and I have not made supplication to the Lord.' Therefore I felt compelled, and offered a burnt offering." (1 Samuel 13:11-12)

Samuel does not accept such an explanation that only shows a lack of trust in Yahweh and speaks against Saul in discrediting his dynasty:

And Samuel said to Saul, "You have done foolishly. You have not kept the commandment of the Lord your God. (...) For now the Lord would have established your kingdom over Israel forever. (1 Samuel 13:13)

Some interpretations say that Saul's mistake was that he was not a Levite, which prohibited him from offering sacrifice before God. Other interpretations say that his fault was that he usurped Samuel's office. However, in the deepest layer of the situation,,,Saul's fault lay in his inability to see beyond the numbers of his soldiers and trust Yahweh for the outcome of the battle." (Firth 2009, 157)

Saul's recklessness can be compared to Gideon who set out with an army of 32,000 soldiers, but brought victory to the people with a force of 300. Yahweh was going to bring victory without using the power of arms, but rather the panic of the Midianites who end up slaughtering each other. Gideon sets Saul an example of success that he did not experience.

A similar situation is outlined in 1 Samuel 14, where Jonathan attacks a Philistine garrison, accompanied by only one soldier (vv. 6-13). Again God uses a small number of soldiers for the intervention that will destroy the Philistine army. Jonathan's statement in 14:6 is instructive of Saul's bankruptcy. Jonathan says: *Then Jonathan said to the young man who bore his armor, "Come, let let us go over to the garisson of this uncircumcised; it may be that the Lord will work for us. For norhing restrains LORD from saving by many or by few." (1 Samuel 14:6).* While Jonathan sees the situation through God's eyes, Saul, in his own words, fails the challenge.

Saul is like the servant of Elisha who could not see beyond what struck his eyes, but he is opposed to Elisha himself who looks at and analyzes the situation through the perspective of Yahweh's power. These narrative interferences strike a discordant note with Saul's attitude in 1 Samuel 13.

As a result of his failure in 1 Samuel 13, Saul's dynasty is removed from the throne. Although he remains on the throne, God's communication continues through the prophet Samuel. He has not yet been seized by God's

silence. His fall continues, however, in chapter 15, where the reign is taken from him personally. In 15:1-3, Samuel commands Saul to rise up against the Amalekites and destroy them utterly. Saul only partially obeys God's voice and His command. He keeps his best flocks and the Amalekite king alive and sets aside some of the valuable pieces raised in battle. When God reveals to Samuel what Saul has done, he confronts Saul, who ducks, blaming the people (15:17-21). Saul blames the people, saying that they brought the best flocks from the Amalekites to be sacrificed to the Lord and that the others were sacrificed as commanded. He is contradicted by the text in v. 9, where the narrator notes that: *"But Saul and the people spared Agag and the best of the sheep, the oxen, the fatlings, the lambs, and all that was good, and were unwilling to utterly destroy them."* Saul repeats the same idea in vv. 21-22. This marks a contrast between chap. 13 and 15. While in 13 it was obvious why he lost the battle, in 15 it is not clear why he chose to keep Agag alive. In any case, his statement, made to justify himself, intensifies his guilt rather than mitigating it. Accordingly, Samuel informs him without mincing words that the reign has been taken from him (15:22-29). As a conclusion to the passage, Samuel communicates to Saul Yahweh's final decision to remove him from the reign:

> Because you have rejected the word of the LORD, He also has rejected you from being king. Then Saul said to Samuel, "I have sinned, for I have transgressed the commandment of the LORD and your words, because I feared the people and obeyed their voice. Now therefore, please pardon my sin, and return with me, that I may whorship the LORD." But Samuel said to Saul, "I will not return with you, for you have rejected the word of the LORD, and the LORD has rejected you from being king over Israel." (1 Samuel 15:23b-26).

Establishing divine silence

From this point on, Saul's descent into the darkness of silence and the absence of God is accelerated. The degradation of his whole being is pitiful. The Spirit of Yahweh departs from him and an evil alien spirit possesses him (16:14, 18:10) (Jaffers 2005, 670-74). Saul becomes insanely angry with David, afraid of him, and plans numerous attempts on his life. He suspects everyone

around him of conspiracy. All these are symptoms of severe alienation with paranoid overtones. The degradation of his inner structure as a result of his alienation from God is beyond the range of what people are used to. His alienation takes on serious pathological notes. He is still called king of Israel, (whether by Jonathan, David or the high priest Ahimelech), even leading the people into battle, though his status was that of an outlaw.

Yahweh's silence is relentless. It contrasts the person of Saul with that of David. In the period between the book of Joshua and the books of Kings, discernment of Yahweh's will by a leader of the people was essential. This is particularly emphasized when the Israelite army had a choice between going to battle against an enemy or not. In fact, there were limited possibilities in Israel to find the answer to such a concern. The Urim and Thummim procedure was instituted, guidance was received through dreams and their interpretation, as well as through prophetic actions. Saul appeals to all these tools (1 Samuel 28:6), but without an answer from God. Guidance by the means mentioned above was available to Saul until his fall (he was verbally guided by Samuel - 1 Samuel 9:19-10:8 - and the prophet Aiah, appealing to Urim and Thummim, 14:41-42). His status is totally perished and he „descends into a realm where Yahweh's will becomes progressively inaccessible to him."(Kessler, 17). Unlike Eli who receives the news of his removal with a humble heart, Saul resists God's will, losing every shadow of what he had been or could have been. His degradation reaches tragic and comic notes (Exum and Whedbee 1984, 5-40).

The first episode of divine silence, vis-a-vis Saul, is in a narrative core related to David. The latter, fleeing from Saul's face, arrives, with a small army gathered around him, at Nob, at Ahimelech the priest. He demands food and asks the priest to ask God about his plans. Learning of Ahimelech's hosting of David, Saul calls the priest to account. He is most upset that Ahimelech has asked for divine guidance for David. The priest's ambiguous answer leaves us unclear as to whether he asked Yahweh and whether he also received an answer for David, but the situation is made worse when Saul demands that the priest do the same for him, and Yahweh refuses to offer guidance. The refusal in this situation was not due to Saul's condition, but to an oath broken by his son Jonathan. These aspects, however, are not the subject of our study. Saul's reaction to Ahimelech's response is as brutal

as it gets. He orders Ahimelech and all the priests of Nob killed (1 Samuel 22:16-19). Saul's subordinates refuse to carry out the order, but Doeg, who has denounced Saul's involvement of Ahimelech in helping David, thirstily carries out the order, even over-zealously killing not only the priests but all the inhabitants of the village (1 Samuel 22:16-19). The most important aspect is Saul's removal from the face of God as a result of his touching the priestly ephod. The aspect is highlighted in verse 18: "*he turned and stuck the priests, and killed on that day eighty-five men who wore a linen ephod.*" Saul's humiliation is all the greater when contrasted with David's situation, to whom Yahweh responds and guides him. So Saul is proscribed from leading the nation of Israel by having one of his most important footholds amputated: access to Yahweh's counsel.

Saul continued to go deeper and deeper. Saul's experience of divine silence reaches its nadir in 1 Samuel 28. The context is hardening to disfavor Saul on all sides: David hides from Saul, Saul continues to lead battles against the Philistines (28:4-5). The coalescence of the Philistine armies against him terrifies Saul (28:5). He asks for God's guidance, but does so in vain. The biblical narrative captures this detail: "*And when Saul inquired of the LORD, the LORD did not answer him, either by dreams or by Urim or by the prophets.* (1Samuel 28:6). Saul's situation is desperate. Samuel has died, so he can no longer call on him personally for help, so he orders his subordinates to find him a medium through whom he can find an answer to his distress. Even at this moment Saul's face does not humble itself before God. He betrays no trace of repentance before God. He quickly takes the step of seeking help from a witch. Surely the reader is curious as to what forces, powers or deities Saul was going to appeal to by his visit to the witch. That's because the unseen world of the Old Testament is much different from that of today or the New Testament. The dead were seen as shadows inhabiting the Sheol, a dark and shadowy place (Johnson 2002, 54-84).

The situation is all the more tenebrous because the biblical text specifies that Saul had killed all the soothsayers and all who called for the dead (28:3). It is reminiscent of the episode of the massacre at Nob. Stepping as if into a kingdom of darkness, the woman's house in Endor seems like a gateway to Sheol. She agrees, following Saul's oath not to kill her, to summon the spirit of Samuel. Annoyed by Saul's action, Samuel does not give Saul the answer

he expected, namely what Yahweh's intention is regarding the encirclement of Israel by the Philistine armies. What Samuel does is a reiteration of what he had already told him while he was alive: his kingdom has been taken from him, he himself removed from the face of God. He is told not only of the removal from his reign, but also that in the battle that will take place the next day, Saul, along with his entire family, will be killed: "*And tomorrow you and your sons will be with me. The LORD will also deliver the army of Israel into the arms of Philistines." (1 Samuel 28:19).* Essential in this scene is the clarification in verse 16: "*LORD has departed from you and has become your enemy."* (1 Samuel 28:16).

To conclude, Saul's alienation has several roots that grip and suffocate him. First, we noticed his desire to please people, to please them, becoming fearful when they begin to drift away from him. He fails to give obedience and belief to God. He dishonors Yahweh by his rash actions. Above all he shows no trace of repentance or humility before God. He is the prototype of deceived expectations. Both Yahweh and Samuel invested him with their trust. Both began with high hopes and gave him enormous support. Both are saddened by his failures and both refuse to reconsider his rejection. Saul ends up mired in silence, a prisoner of his own imprisonment.

Amos: silence covers the nation

Amos is recognized in Old Testament literature as a prophet who adopts a harsh discourse against the Northern Kingdom of Israel. Divine silence settles in, on the pages of the book becoming as oppressive as Saul's. The difference, and perhaps the greater gravity of the situation, is that the silence is established nationwide. Disobedience to the Lord's law has led the people into a state of crisis. Most serious, in God's sight, is that while religious activity was abundant (songs and sacrifices were flying and filling the air, Amos 5:21-24) sin and idolatry were rampant.

The book of Amos is replete with motifs from the semantic area of sound and silence, and silence as God's judgment plays a central role. The noise of singing and noisy temple worship become disturbing to God. He commands their removal from before His Face: "*Take away from Me the noise of your songs, for I will not hear the melody of your stringed instruments."*

(Amos 5:23). Amos' call is always to obey Yahweh's will (3:1; 4:1; 5:1; 8:4). Amos' warning is very clear. If God's Word goes unheeded, the nation will experience death, destruction and exile (2:14-15; 4:2-3,12; 5:1-5,16-20; 6:7-11; 7:8-9; 8:2-3, 9-14; 9:1-4).

Amos 8:11-12 is one of the best known passages in the book of the prophet and one of, if not the most important for our study. The passage is surrounded by other passages that foreshadow divine and human silence. The establishment of both are an effect of disobedience to God's word. Verses 8 and 9, which just precede our passage, foretell complete and imminent disaster. The sun will be darkened in the middle of the day, the inhabitants of the land will tremble with the terror that will overtake them. Then the text expresses the most profound disaster:

> „Behold the days are coming," sais the LORD, "That I will send famine in the land, not famine of bread, nor a thirst for water, but of hearing the words of the LORD. They shall wander from sea to sea, and from North to East; they shall run to the fro, seeking the word of the LORD, but shall not find it. (Amos 8: 11-12)

As stated earlier, God's silence, as a consequence of the people's repeated violation of His law, is established following the deuteronomic pattern. This silence is preceded by punishments that increase in intensity: famine, drought, infertility of women, invasion of wild beasts and harmful insects, invasion of foreign peoples. None of these carries the gravity of God's silence. Thus the passage in 8:11-12, being itself a prophecy, heralds the cessation of prophetic messages.

Like the divine silence of 1 Samuel 28, in Amos 8:11-12 the loss of access to God's counsel is appalling. Those deprived of this benefit go off shaken in search of it. Weighed down by so many allusions to utterance, to sound, Amos now declares that God's Word will disappear and that God Himself will cease to speak.

The threat comes in the context that in the first five chapters of Amos, the people are urged to repent and change. Yahweh implores the people to turn from their ways (4:6, 8-11), to seek Yahweh (5:4-6,14), and to fill the earth with justice and righteousness (5:24). The famine of 8:11-12 thus describes a time between the loss of the opportunity they had to repent and the implementation of the final judgment, which means that the people

actually had the chance to seek the Lord before they starved as God's truthful prophets had a message from Him.

In conclusion, Amos 8:11-12 highlights the privilege of hearing God's voice. Disobedience leads to silence that weighs far more than a state of confusion created in the midst of Israel, not knowing which way to turn in times of trouble. God's silence highlights the loss of relationship between the people and Yahweh, i.e. it produces alienation, estrangement. The state of alienation has multiple effects, affecting many areas of identity: election as a people, the covenant made with Yahweh, direct communication, special protection from God, the guarantee of material blessing. The crisis of alienation is all the deeper the more favorable the status they lose as a nation (Rotaru 2014, 28-29). Israel agonizes between becoming a people like all others or, worse, a people identified with God's curse. They will be the icon of what it means to disobey Yahweh and squander a great opportunity.

The silence imposed on Jeremiah

To the instances of divine silence presented above is added a new form of silence. Jeremiah, the prophet of God, is forbidden to be silent in his dealings with the people. "*Therefore do not pray for this people, nor lift up a cry or prayer for them, nor make intercession to Me; for I will not hear you.*" (Jeremiah 7: 16). In the prophetic tradition, silence is seen as a sealed book and a cessation of prophecy and vision. „*The whole vision has become to you like the words of a book yhat is sealed, which men deliver to one who is literate, saying, 'Read this, please.' And they say, ț I cannot, for it is sealed.' Then the book is delivered to one who is illiterate, saying, 'Read this, please.' And he says, 'I am not literate.'*" (Isaiah 29:11-12)

For Israel, it seemed impossible for Yahweh to cancel their elements of identity, such as the Temple or the act of prophecy. As an effect, God limits both elements: both the Temple door and His voice, silencing them. (Isaiah 29:10). God's fearful silence is both on the level of the nation as a whole and on the level of the individual when he is in trouble and distress. God turns His face away from His people, but He turns His face to His prophet whom He commands not to interfere with the cause of the people. The term used for forbidding communication is *al-tiphga*, from the root *paga*. It implies emotional intensity and persuasive skills as a mediator. The

term also occurs in situations where one is advocating for someone based on an existing relationship, accessing a strong emotional dynamic. Perhaps most eloquently, Ruth encourages Naomi to leave her, and Naomi responds: "Entreat me not (*paga') to leave you, or to turn back from following after you;" (Ruth 1:16).

In this context, it is natural to ask what is the reason for this embargo imposed by God. Wasn't it enough to cut off His direct communication? Beyond the aspect of a categorical imperative on God's part to interrupt any chance for the people to rehabilitate themselves (perhaps Jeremiah's intercession would have softened Him), it is pertinent to see in this gesture God's desire for resonance. He wanted the alienation of the people as a whole to reserve for Him a singular specimen of empathy. The Most Holy One wants His prophet to be one with Him, to feel His pain, to understand His heart. It is a song intoned in silence, like a dirge. Just as at a funeral service you let the mourner's mourning embrace you, so Jeremiah is called to resonate with God. It is, if you will, a polyphonic silence, in which God is silent, accessing his own inner chords, and Jeremiah is called to harmonize through his own silence. In these sequences, the sound, Jeremiah's utterance would have been offensive to God.

Conclusions

God's silence carries a message at least as consistent as His utterance. The aspects of God's silence are many, much more varied than have been dealt with in this material. They are tuned to God's purpose in relation to the human subject, whether individual or nation.

Silence, as the materialization of the curse prefigured in Deuteronomy, is a painful form of punishment inflicted by God. The pain lies both on the part of man who directly feels the consequences of God's silence, but also on the part of Yahweh Himself, for His expectations have been deceived, the investment made in the chosen people is squandered.

The silence of God, with all the stages of its establishment, is the main, if not the only cause of alienation, since the lack of communication with God can only bring alienation, confusion, loneliness. The solace offered by postmodern society cannot cover the inner emptiness of man thirsting for

God. The antidote to alienation must be organically linked to what caused it to arise. Without a substantive link, the search for a solution is only a doomed endeavor.

Alienation is not a passing state of some individuals. Rather, it is an acute symptom of alienation from the living God. Someone said that hell is not fire and unimaginable pain, but hell is the total absence of God. The feeling is given by inter-human relations, by social projects that smooth the alienation of the individual, even the well-being of contemporary society cannot create a real and lasting resonance without anchoring these endeavors in God and in a steady, harmonious communication with Him. For most people today, God has become the Great Unknown that the world is trying so hard to bypass and replace. Success is doomed to failure.

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Education in the Current Social, Economic and Security Environment

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ABSTRACT: This research starts from the analysis and interdependence of the social, economic and military dimensions of security and the importance of maintaining balance in a state, relative to the need to preserve its sovereignty. We consider that the threats to society, viewed through the prism of the mentioned security dimensions, must be carefully managed in this context characterized by new crises - extensive and unforeseen - in order not to create a serious state imbalance. The adaptation of education to changes in society and technology must be considered in the development of policies and, above all, in their implementation.

KEYWORDS: education, social context, cognitive development, modern skills, asimetryc threats

Our rapidly changing world faces constant major challenges – from technological disruption to climate change, conflict, forced movement of people, intolerance and hatred – transformations that further increase inequality and exert major and well-defined impacts for decades to come. The COVID-19 pandemic has further exposed and deepened these inequalities as well as the fragility of our societies. It is imperative that all of us, those who make up the education of our nation, take a stand and have stronger, transformative, creative and modern thinking that provides the educational tools to determine the necessary changes in the growth of economies, in

respect of human rights and human dignity, in eradicating poverty and achieving sustainability and resilience.

It should be noted that the importance of education in the social context intervenes only if it allows us, individuals, to contribute to the understanding, interpretation, preservation, consolidation, promotion and dissemination of national and regional, international and historical cultures, in a context of pluralism and cultural diversity. That it will only be found in a hierarchy when it helps to protect and strengthen society's values, ensuring that young people learn the values on which democratic society rests. Education fulfills society's functions, including individual development, socialization, social integration, social placement, and social and cultural innovation.

Introduction

Based on the theory that if the state loses its sovereignty, it will no longer survive as a state (Chifu, Nantoi and Sushko 2008, 168), threats to societal security must be viewed with utmost care because they affect the state as a whole and not just a specific component of it. In a globalized world, it is difficult to imagine what would be all the threats to societal security that could appear, analyzing through the prism of its basic elements, namely cohesion and integration within a collectivity, whose members are bound by traditions, common values and goals, with the aim of preserving identity.

In the specialized literature, several examples of threats to societal security are identified (Chifu, Nantoi and Sushko 2008, 168), among which: cultural cleansing that manifests itself through the systemic approach towards the destruction or limitation of institutions and/and cultural symbols important for group identity; ethnic cleansing embodied in the deliberate, voluntary harassment, violence, murder, and/or deportation of members of one society by another society. The characteristic element of threats to societal security is that they are, as a rule, initiated by a small, minority group that has the perception that it is not treated equally with the rest of the community, but they produce a direct impact on the community as a whole.

From the perspective of threats to identity, the studies in the field (Chifu, Nantoi and Sushko 2008, 170) list elements related to minority rights, extremism/nationalism, religious identity, cultural identity, the historical foundation or the language of certain groups of individuals, and

from the perspective of threats to cohesion, changes in demographic models, separatism, regionalization, anarchy, poverty - economic status, migration, family and family models are mentioned, the specialized literature specifying that to be considered genuine threats to societal security, they must bring affecting the existence and/or way of life of individuals within society.

We appreciate that in order to try to reduce threats of this type to security, it is necessary to adopt a package of measures with a horizontal dimension, respectively with the involvement of all the internal authorities of the states for the application of existing laws and the improvement of the legislative framework, but also for the management borders through judicial collaboration between political, economic, financial bodies and non-governmental entities, completed with a vertical dimension, in which case European, regional and international cooperation is essential, with the elaboration of policies, agreements and unitary initiatives, common at the level of the European Union and the member states.

1. Education in the face of new development challenges

With the birth of this new century, the demand for education is unprecedented and this is due, from one perspective, to the rapid technological development accompanied by an equally accelerated transformation of it, and to a greater awareness of the fundamental importance that education has for economic and socio-cultural development.

The hypothesis from which we start in this research, based on the method of systematic evaluation of studies carried out in the current technological development alert on society and the economy, resides in the impact of new technologies on education. Thus, the question is, how big is the impact of the Internet and advanced technologies - device-to-device communication using 5G, artificial intelligence, etc. - on education? Smart cities are being designed around us, a space called Meta World that aims for "a large digital economy" and that will open right inside the virtual universe and other developments that require adapting education to what the context of the future means.

Nobel Prize-winning economists have considered the education-as-investment argument. Schultz (1963, 65), argued that investment in

education explains growth, and Gary Becker offered the human capital theory. In short, human capital theory holds that investment in education has a return in terms of higher wages. Moreover, the theory and empirical estimates are supported by current science.

Neurogenesis also tells us that learning can continue into old age. The relative costs and benefits of investing in older people are different. Investments in more capable workers at any age generate higher returns than investments in less capable workers, and capability is built at young ages. According to the "education pays" theory, it is generally believed that an additional year of schooling will increase earnings by 10 percent per year. This is usually larger than any other investment a person can make.

According to the World Bank website, the skills required by the labor market are changing. One of the reasons for the changing profitability model is the race between technology and education as labor markets adapt to automation. In this new world, the ability of workers to compete is hampered by the poor performance of education systems in most developing countries. Technological change and global competition require the mastery of skills and the acquisition of new skills for many people.

To promote success in today's labor market, we need to invest early in relevant skills adapted to the demands of the labor market. Above all, educational entities need to invest smartly, with a focus on autonomy, accountability and assessment, but also pay attention to teachers, their development and ongoing culture.

When we talk about education, we immediately think of its purpose, because today's students will be tomorrow's employees. Since education is hundreds of years old, and technology is changing at breakneck speed, we reckon the former will be in for a shock. Just as digital technology has disrupted and improved most major segments of the world economy, education and training will similarly undergo a technological revolution.

It is now proving that the struggle for human resources is more important than that for natural resources as educated and skilled labor is highly sought after in the contemporary world, becoming a huge global business. Today, the combined education and training industries account for more than $4 trillion in spending globally, which is huge growth. In Romania, unfortunately, this phenomenon is still not found.

Lifelong learning illustrates an ongoing process of flexible learning opportunities in which learning is complemented by skills acquired in formal institutions. At the level of the European Union, it is desired to increase the role of continuous education, this concept being more and more desired. It is necessary for people to understand that they must permanently complete their knowledge and skills as an individual, citizen and employee, which is essential to support competitiveness in a global economy based on knowledge and technology and to participate in a democratic society.

Since the beginning of the Industrial Revolution (beginning in the late 18th century in England), the private sector has gradually taken over much of the responsibility for lifelong education (one example being the Waldorf education system developed by the German philosopher Rudolf Stainer, currently spread globally). In the same trend, the efforts are integrated so that education is still oriented toward the future in an economy marked by Revolution 4.0, the latest industrial revolution.

Studies show that today's young people, as digital natives (term introduced in 2001 by education writer Marc Prensky in the article "Digital Natives, Digital Immigrants"), are born surrounded by digital technology (notebooks, computers, Internet, mobile phones). They can have and develop skills that can rival those of a teacher and cause the classic change of hierarchy in a classroom. In this context, the teacher is no longer the one who completely coordinates the spectrum of knowledge, he is no longer a cognitive instance, but it is good for him to remain the person in the classroom who facilitates learning. This can be achieved by identifying and exploiting opportunities for learning and dialogue between the student, the spectrum of disciplines and pedagogical aspects. This dynamic represents the future social space of the teacher's work.

Also, a particularly valuable study carried out by the consulting company Deloitte, in association with the Global Business Coalition for Education (Preparing tomorrow's workforce for the Fourth Industrial Revolution, a joint report from Deloitte and the Global Business Coalition for Education, 2018), shows to what extent the future is fluid and has a high degree of uncertainty, for a significant share of young people, internationally. The study shows that by the end of 2030, more than half of young people worldwide, currently aged 15-29 (around 1.8 billion), will not have the skills

or qualifications needed to get a job of work because the next industrial revolution would radically change human work activities and job categories of the future. Industry 4.0 seems to be a great challenge for Romanian public education, forcing it to open its programs to contemporary realities. The authors of the mentioned study record that Industry 4.0 will resort to educational factors and training centers that can keep up with the need for continuous professional training. Therefore, the prestigious universities in Romania, the strong university centers, must reform themselves and be fully aware of transformations and adaptations of the contents and forms of the specializations they offer, which tend towards permanent training programs, carried out in partnership with the entrepreneurial environment - the main beneficiaries.

Education has essential cultural implications, being the best way to pass on values and traditions to the next generation. It also has the role of social education, offering each individual the opportunity to educate himself, to accumulate knowledge, to develop in general, in order to become an informed and active citizen who contributes to the development of the society of which he is a part. We believe that the most important role that education has is that of personal development. It is necessary for all members of a society to have the opportunity to develop according to their own capacities, to ensure their independence and prosperity as well as that of their families. Continuous development through lifelong learning is essential for today's society.

There are currently efforts by the Romanian intellectual elite to raise the level of education in Romania. An analysis carried out by the Romanian Academy (2015) called "Romania's development strategy in the next 20 years," tried to outline a long-term national strategy, until 2035, through which an emotional refounding of the human resource was attempted, in order to restore optimism and confidence in the educational system, the only system through which Romanian society could perform economically and socially. However, the studies of the highest academic forum in Romania were not found within the programs developed by the institutions responsible for the organization of Romanian education. Instead, a series of projects financed by European funds were developed, addressed both to teaching staff and pupils and students.

Digital technology has become mandatory in the 21st century to be socially, economically and culturally integrated. The European Union finances the development of education through information and communication technology (ICT), in order to equip schools with the necessary equipment. Thus, information and communication technology has generated both a significant increase in the preparation, planning and delivery of lessons, as well as an increase in the use of these technologies in the learning process itself. The teachers themselves must have expertise in the methodology of computer use. Regardless of their specialty and position, teachers must be convinced that this tool will transform teaching methodologies even more than the advent of the printing press in the 15th century. The computer has, as a unique characteristic, interactivity, a quality that other teaching aids do not have. Also, any kind of process can be modeled with it.

As a result of the socio-economic changes generated by artificial intelligence, the E.U. supports partnerships between the business environment and the educational system and the establishment of training programs, through the programs of the next multiannual financial framework (2021-2027). However, studies by organizations such as the Program for International Student Assessment (PISA), carried out in 2012 on 15-year-old students, show that, in countries where a lot has been invested in education through digital technology, it is not seen a noticeable improvement in results. The study shows that 96% of the students surveyed have a computer at home, but that 72% of the students use a computer at school (OECD 2012).

The conclusion is that students who use the computer moderately at school converge towards better results than those who use the computer sporadically, and students who use the computer very often in the school environment have much poorer results than those who use the computer less often or moderately (taking into account social and demographic aspects).

In countries where the Internet is used intensively in schools, no improvement in school performance among students has been found. Moreover, three of the countries with the highest rates of internet use in schools are experiencing a significant decline in reading performance (Australia, New Zealand and Sweden), and three other countries are experiencing stagnation, Spain, Norway and Denmark (OECD 2012, 35). Countries such as South Korea, Shanghai, China and Singapore, ranked

first in terms of tested performance, are those that make little or moderate use of the technology.

In conclusion, the use of virtual (electronic) education should take into account the following arguments: geographical area, number of students, access to study material, and study speed. It is also important to consider the culture and technical training of the school before bringing in robot teaching assistants.

The software provided with artificial intelligence is still in the implementation phase and we think it will take some time before it could replace the professor in the classroom. Also, the total replacement of teachers with virtual software is recommended only in primary education and only in places where schools do not exist, are not effective, teachers do not exist or are not effective. In the absence of these arguments, there is no need for an alternative education system. However, we can say that "a teacher replaced by a machine probably needs to be replaced" (Sir Arthur C. Clacke).

According to The Organization for Economic Co-operation and Development (OECD - an international organization that works to build better policies for better lives), the specific assessment of Romania within the PISA 2021 (Programme for International Student Assessment) will include, in addition to the data on the development of students' skills in the fields of reading, mathematics and science, for the first time, an innovative field of testing: creative thinking. Thus, the aim is to identify the factors that support the development of creativity and the role of different school activities in this regard. A series of studies presented at the World Economic Forum in Davos regarding the impact of the Fourth Industrial Revolution showed the skills of the future employee.

Thus, according to the Future of Jobs Report (World Economic Forum 2020a), the list of skills of the future employee will include: the ability to solve complex problems; critical thinking; creative skills; people management; teamwork skills; emotional intelligence; analytical and decision-making skills; service orientation; of negotiation as well as flexibility in thinking. Thus, the analysis of the skills required for the workforce of the future reveals that the development of social and emotional skills becomes an important objective, these being common requirements of all education systems around the world.

Until now, the Romanian school has not succeeded in developing the personality of children or adults, nor has it set itself this goal. Romanian educational institutions are focused especially on the preparation of standardized activities, not on the development of certain types of intelligence, on autonomy and complex thinking. Thus, during the various national and international comparative assessments, PIRLS (Progress in International Reading Literacy Study), *has monitored trends in reading achievement at the fourth grade since 2001. PIRLS is administered every five years, making 2021 the fifth assessment of PIRLS (TIMSS & PIRLS International Study Center 2022)*, PISA, TIMMS (*Trends in International Mathematics and Science Study; since 1995, TIMSS has monitored trends in mathematics and science achievement every four years, at the fourth and eighth grades. TIMSS 2019 was the seventh such assessment, providing 24 years of trends. TIMSS 2019 began the transition to eAssessment, where countries could administer TIMSS 2019 in electronic or paper format,* (TIMSS & PIRLS International Study Center 2022) of the last decade, it was repeatedly found that the majority of students in Romania have unsatisfactory literacy skills - they do not understand written requirements in the absence of teacher support, they read texts informative without understanding the ideational content of these texts, they don't answer comprehension questions correctly, they don't have the skill to work with texts of different types to extract information, data, etc.

These programs enable evidence-based decision-making to improve literacy and mathematics education and enable the use of results to: monitor system-level trends in a global context; monitor the impact of new educational policies; identify weaknesses and stimulate curriculum reform accordingly; improve teaching and learning through research and conducting related studies, such as equity monitoring or student assessment in supplementary classes. From the point of view of thinking, multiple perspectives on a problem can generate speed and effectiveness in work and can increase efficiency in preventing psychological aggressions of a personal and organizational nature.

Thus, one of the modern methods we propose is the development of lateral thinking. Although the concept was developed in 1967 by Edward de Bono (considered the world authority in creativity and creative thinking, also called "the father of thinking about thinking"), in Romania, it still has a

novelty character. It is almost non-existent in the public education system, although courses in lateral thinking are taught in thousands of schools around the world and are part of the compulsory curriculum in many of them.

What is unique about lateral thinking is its applicability to an unusually wide area, so it can be applied to a number of military specialties within career or specialization courses.

Lateral thinking describes a systematic innovative thinking process that goes beyond the limiting patterns of logical thinking. It emphasizes creativity and significantly increases the ability to develop new ideas and identify new solutions. It does not replace logical (vertical) thinking, but complements it. It is used on a large scale in companies such as 3M, IBM, McDonald's, Procter & Gamble, Bosch. Lateral thinking can be an indispensable attribute for specialists working in the fields of security or intelligence. It can also be successfully used in risk analyzes of an objective by identifying opportunities within a SWOT analysis. The development of critical thinking, also among the population of Romania, is a way to counteract the actions of social manipulation with high chances, by introducing this type of thinking in education at all levels. And in this sense, Romania has important steps to take. Traditionally in Romanian society (of the paternalistic type), is currently used types of non-critical thinking, as well as desiderative thinking (with psychological functions, but without cognitive functions), also known as "ishfull thinking", or inauthentic manipulative-speculative thinking, "the truth is in the middle" being a representative expression for Romanian society.

The reason for the development of critical thinking was the dissatisfaction and restraint, related to what human reason actually is, more precisely, the classical studies dedicated to reason, carried out mainly by logicians, were relevant especially for mathematical reasoning or for philosophical speculation, but irrelevant for the way simple people and even specialists reason in life and in their daily concerns. Although critical thinking involves logic, it is more comprehensive than it, as it involves not only logic, but also the truth or falsity of statements, the evaluation of arguments and evidence, the use of analysis and investigation, the application of several skills that help us decide what is worth we believe or do. Critical thinking does not block your creativity, on the contrary, it enhances it, and ensures your freedom to act prudently and rationally.

In terms of increasing the population's resilience to the effects of an information war, a situation in which actions are carried out through current mass media channels and implicitly specialized social media platforms, an area where uncritical thinking predominates, the population is exposed and the consequence is that they can manipulate the opinions of a social group in the desired direction to generate confusion, frustrations, bewilderment, insecurity, impulsive behavior or even violence, specific manifestations of a new typology of war.

We therefore need the introduction of critical thinking classes in schools, but also the promotion of courses and trainings for adults, adapted to their socio-professional requirements, within continuing education programs. Currently, critical thinking courses are found mostly at the university and postgraduate level, in very few faculties with a humanistic profile and belong to an Anglo-Saxon pedagogical model. We appreciate that the development of resilience within society, against psychological aggression can be built through the use of modern techniques such as Neurolinguistic Programming (NLP), Coaching, Leadership, Communication Development Techniques. All this will ultimately contribute to social and individual development accompanied, of course, by efficiency at work.

2. The influence of technological development on security

Currently, the threats of destabilizing the world market through crisis phenomena complicated by the characteristics of globalization are increasing and an effective security system is the cornerstone of the successful development of any economy and, of course, any society. Strong increases in exchange rates of the financial sector, as well as the instability of the raw materials market, the emergence of new types of fraud in the banking sector, all these challenges require the development of new parameters for the security and economic development of the country. In addition, the new coronavirus pandemic has greatly influenced the socio-economic environment.

It is well known that the economy can be considered a key indicator for ensuring the security of the state, and in this sense, we can say that it is currently given priority in the strengthening of defense capabilities. The relationships

between the components of general security (political, economic, military, social, environmental) definitely need research and current, modern and real studies and in order for these things to be achievable, it is necessary that education from a security point of view be suitable for economic, social, technological development as well as military capabilities.

In this sense, the educational plans and the methods of their implementation to which the obtained results are added, represent determining factors of security, whether it is national, regional or international. If the education system has an appropriate political mandate, if it has the internal resources and support to reform education, then the relevant priorities of the mandate will be identified accordingly.

Quality education lays the most solid foundations for individual (micro-level) and national (macro-level) economic security, making it an indisputable condition for a stable and sustainable political, economic and social environment. And the studies related to the current economic development determine figures that not only influence education but even require a radical change in the current methods and techniques so that the learning results - the skills created - are for a large majority of graduates sufficient to be present on the labor market.

Thus, according to the Future of Jobs Report of the World Economic Forum (2020b) by 2025, a percentage of 50% of all employees will need reskilling, as the adoption of new technologies will increase and this requires a major investment in human capital to meet the challenges development. "Critical thinking and problem-solving are at the top of the list of skills that employers believe will grow in prominence over the next five years" (World Economic Forum 2020a). Since 2020, the demand for self-management skills such as active learning, resilience, stress tolerance and flexibility has emerged among employers' requirements.

The third edition of the World Economic Forum's Future of Jobs Report, which maps the jobs and skills of the future, tracking the pace of change and the direction of movement, estimates that around 1.1 billion jobs are likely to be radically transformed by technology in a decade. What are the challenges that education must respond to? We believe that in addition to technological changes, the COVID-19 pandemic and the ecological transition are crises of a social nature that pose great risks to people's livelihoods. The Future of

Jobs 2020 report "indicates that by 2025, time spent on current tasks at work by humans and machines will be equal. Therefore, investment in human capital is urgently needed to create a fairer world, ensuring that people are given the chance to fulfill their potential and thrive" (World Economic Forum 2020a). Leading global companies and international civil society and academic organizations are currently working to promote new approaches to competitiveness, to build a new pro-worker and pro-business jobs agenda, and to integrate equality and inclusion in the new economy.

Leading global companies and international civil society and academic organizations are currently working to promote new approaches to competitiveness, to build a new pro-worker and pro-business jobs agenda, and to integrate equality and inclusion in the new economy.

The beginning of the century has already subjected humanity to two great tests with a global character, the economic crisis (2008) and the medical crisis (SARS-Cov2), both characterized by massive influences in society. If we start from the idea that two such crises have already taken place in two decades (with a global character and massive social impact), it follows that society is faced with new threats, to which it must respond promptly and creatively.

The dynamics of the security environment, the development of cutting-edge and information technologies, the diversification of political, economic, cultural and military interests of state and non-state actors, have determined the increase in the complexity of real or potential threats and disruptions, which generate changes at the geopolitical level and require the redefinition and the development of new security and defense policies and strategies by international and national organizations. In this sense, we note the diversity and extent of threats and disruptions in the international security environment, which cause the emergence of military and non-military crises and conflicts in the physical, informational, cyber, psychological and media environment.

The international security environment has become a geopolitical chessboard, where disruptive and destructive factors are strongly manifested, inducing vulnerabilities and fragilities that affect the stability, cohesion and development of states at the global, regional and national levels. The way tectonic disturbances manifest does not know the limits imposed by borders, it does not differentiate between internal or external security, nor between democratic and autocratic states. In this sense, as globalization ensures progress

and improves the living conditions of citizens, it also causes disruptive and destructive vulnerabilities and fragilities in the security environment.

This approach leads us to affirm that, apart from the traditional challenges and threats with a direct impact on security and defense, such as war, the proliferation of weapons of mass destruction and their vectors - terrorism, organized crime - humanity faces a wide range of disturbances generated by human activity and the physical factors of the environment. The category of "massive disruptive attacks" includes climate change, cyberspace, social networks, migration, pandemics, the exacerbation of extremism and fundamentalism.

Therefore, the war in the current era is based on hyper-connectivity, information being its weapon. He is closely related to Big Data whose data can be used to alter the way of thinking within societies of interest when individuals are connected online. Asymmetric warfare uses much more complex technologies than information warfare or psychological operations, because the battle is to take control of the human brain, not just an information battle.

This type of threat involves influencing human knowledge through the use of information processing capabilities in order to generate conflicts. For this purpose, large amounts of information are needed in order to identify influential individuals or to carry out influence operations. The main asymmetric threats are currently closely related to the use of social media and modern technologies such as artificial intelligence (AI) or Big Data.

3. Conclusions

In conclusion, we appreciate that the most effective defense against social threats is awareness of the social implications of an action. Thus, the level must be reached so that a critical percentage of the population is aware of the vulnerabilities, risks and threats to itself and the society of which it is a part. For greater efficiency, there is a need to mediate among the population some sets of norms and values, to be generated through public policies and implemented through education and to be protected and respected. Likewise, another effective measure that the authorities can adopt is the promotion of security culture within civil society as well.

The trans and inter-disciplinary approach of the article, in which we included the economy, security and education, leads us to the conclusion that

the development of technology also affects military capabilities and their use requires that the military, in turn, have those skills and abilities that allow to do so. So they are included in the percentage promoted by the World Economic Forum's Future of Jobs Report of about 50% of employees who will need reskilling as the adoption of new technologies increases.

4. Materials and methods used

The methods used in this article are diverse. The dialectical method of knowledge made it possible to identify the basic laws and categories of economic security viewed from the perspective of science, and also the socio-economic roots of threats to the economic security of the state. The dialectical method of knowledge, a philosophical concept defined as a very old form of finding the truth, allowed the identification of the basic laws and defining elements of economic security from a scientific perspective, as well as the socio-economic roots of threats to the country's security.

Specific scientific methods were also used when writing the article. The comparative method was used as a basis for the analysis of institutions, categories and concepts by comparing them with similar provisions in other states and the logical legal method was used to reveal the concept and essence of economic security, as well as its threats and principles.

Subsequently, the methods of analysis and synthesis were used to summarize the theoretical material and formulate conclusions based on them. The statistical and sociological methods allowed the analysis of the consequences of the current socio-economic situation and also allowed the estimation of some trends that we find in the chapter dedicated to the conclusions.

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The Potential of Blockchain Technology in the Efficiency of Global Supply Chains

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ABSTRACT: The supply chain is a network of interconnected companies and individuals working together in sequential steps to create products and deliver them to customers. Cross-border transactions make the network more complex. It cannot be stressed enough how important it is to have uninterrupted supply chain operations. The world we live in changes constantly, so it is important to adapt to changing requirements and new challenges. Integrating technology like the blockchain system, which is considered more efficient and secure, can help support supply chains. Blockchain, also known as distributed ledger tech, allows participants to securely settle transactions, archive transactions, and transfer assets at a low cost. Blockchain is not only an innovative internet infrastructure that uses distributed applications but also a new supply chain network that may open up new opportunities for business. This emerging technology is undergoing a lot of research and revolution.

KEYWORDS: supply chain, blockchain, logistics, economy, digital

Introduction

The supply chain system goes beyond the mere storage and preservation of information. It also incorporates channels that allow information to flow. As raw materials begin their journey, they go through many stages before finally arriving at a final product that can be shipped to customers. Each step of the supply chain involves information flowing toward different organizations.

It is important that communication channels are open and available at all times. Data silos may also occur when organizations fail to comply with legal and business requirements regarding data storage (safe data storage). Data silos are basically instances of duplicate data in different databases accessed individually. The solution is to share information among the many stakeholders in a supply chain. This makes information visible to other users beyond a single entity.

The growing trend in supply chain and related activities is supporting the importance of information and trustworthiness in this complex environment. The supply chain is impacted by regulations. Regulations are used to prevent past events from happening again or to impact future actions. According to the Harvard Business Review, transparency is the obligation for companies to be kept informed about upstream activities in the supply chain and to communicate these details internally as well as externally.

Blockchains comprise several data storage technologies. There are many implementation options and variants, providing secure, robust, and authenticated storage that is resistant against modification. Their distinctive characteristic is their decentralized management. The infrastructure is managed by consensus rules and no single actor holds all the power (Maher 2022, 4-5).

Blockchains have the core value of providing an infrastructure that is neutral. This means that all stakeholders can share the technical infrastructure. This is especially useful for ecosystems where participants must cooperate, but also have competing or conflicting interests. This mainly applies to international trade processes that involve many actors and complex relationships within different regulatory frameworks. It can be viewed as a tool for promoting cooperation and trust (Fernandez 2022, 6).

Methodology

In order to identify high-quality, relevant articles, I did a research on the Web of Science Core Collection (WoS),. The database is carefully curated to only include peer-reviewed journals, book chapters, and conference papers. Searches were made between 2019-2022 using keywords "blockchain" and "supply chain" or "blockchain AND logistics" in the title. This combination of keywords was used to identify studies that relate

to this technology's support for the supply chain. An increase in the number of published proceedings was seen due to the advancements made with blockchain technology. Two stages were used to select the articles. The first stage analyzed titles and abstracts. The second stage involved full-text reading of all studies that were not excluded from the first stage.

To systematize the data, I used a content analysis in this study. This allowed me to see the evolution of research on blockchain in the supply chain area. The analysis focuses on three main criteria: the distribution of papers between 2019 and 2022, the number of publications by countries, the number of articles by journals, and the number of proceedings from conferences. Although studies based on blockchain use in supply chain management are relatively recent, there has been an increase in publications that I consider to have been influenced by technological developments. This is due to the industrial revolution 4.0 as well as the challenges they face in global supply chains.

The systematic literature review identified the key benefits of blockchain technology for improving the supply chain. Combining the benefits of blockchain technology with their ability to face the challenges, the system has the potential to improve the efficiency and performance supply chain. Blockchain technology can track goods flow, offer transparent operations, and reduce risks of low-quality products or high costs of operations. This results in reliable relationships between customers and partners, which helps address sustainability concerns.

Results and discussions

What is Blockchain?

In 2008, the concept of blockchain was born out of the global financial crisis. Satoshi Nakamoto published the white paper "Bitcoin: A Peer-to-Peer Electronic Money System." This paper described a peer-to-peer system that allows digital currencies to be transferred without the need for financial institutions or government (Hanebeck 2019, 6). To ensure that transactions are valid and secure, the emerging digital currency needed a reliable digital infrastructure. This is how the concept of blockchain appeared. This is a secure, robust, and resistant to alter digital registry that relies on both decentralized networks as well as cryptographic technologies (Maher

2022, 4-6). Blockchains are used in the monitoring, validation, and storage of all transactions with digital currencies. Blockchain is a digital shared infrastructure that stores data securely and allows data exchange with other parties. These blockchains are a type of distributed database (Graubins 2019, 11-14).

Duplicated storage

Blockchains can be used to share data within an ecosystem, while each member of the ecosystem must contribute to a global infrastructure, i.e., provide resources for data storage. A node must have a local copy the blockchain content. To ensure the resilience of information, there are several copies of the information that have been synchronized (Tsolakis 2022, 5).

Decentralized control and consensus

Blockchains can be used to share data in decentralized, horizontal ecosystems. This means that there is no single leader who holds strong control over the ecosystem. There is also no trusted third party responsible for validating and storing information. Without proper validation by other participants, no single actor can add or modify information to blockchain. This relies on predefined algorithms, called consensus algorithms, which allow trustful verification of transaction entries by multiple actors.

Immutability, Authentication and Timestamping

Blockchains use cryptography to protect information stored and traded, meaning they are based on cryptographic algorithms which ensure that all information saved can be modified or deleted. Each piece of information stored on a blockchain can be associated with one user through the use of cryptographic methods and proprietary digital signatures. Every piece of information on a blockchain can be robustly linked to the date it was added to the system (Centobelli 2021, 5).

Important Attributes of the Blockchain

Practical Uses

The supply chain consists of three phases: source, make and deliver. It is important to consider all factors that could impact the use of blockchain in business. Each industry has its own priorities and focuses. The food industry, for

example, may demand high quality standards and safety standards throughout the supply chain. The forest industry might focus on improving efficiency in manufacturing processes and reducing transport costs. The pharmaceutical industry might be focused on product innovation, R&D to source and make. It is important to evaluate the potential use of blockchain according to the requirements of a specific business area (Kouhizadeh 2022, 4).

Information Sharing

Information sharing has led to a new model of logistics under the sharing economy. Because logistics is volatile, businesses must take practical steps to improve logistics compliance. It is possible to solve differences due to seasons, holidays, and other factors, increase connectivity between systems, avoid wasting resources, and create shared information. The purpose of sharing logistics is to use the Internet to temporarily and seamlessly integrate dispersed logistics resources to diversify society. To put it another way, sharing information refers to the use of the Internet by logistics resource owners to temporarily access information resources or services for a fee. It's a logistic method that allows others to use their information. This reduces logistics costs and increases information resource operation rate. Blockchain could be a solution because each document can be uploaded and shared with individual departments or businesses. This will significantly reduce communications efforts and transfer paper, while also improving information sharing within a supply chain (Agrawal 2021, 3-4).

Traceability

Traceability can also be called auditability or scrutiny. This technology can be used for identification and tracking of the final products within supply chains. All users can trace the block within the blockchain network thanks to its design. The real-time data also adds value to business operations. The blockchain is made up of a series of blocks. Transactions and records are stored in separate blocks, as they are linked using the cryptographic hash function. Business partners can use blockchain technology to track and monitor blocks within a supply chain system. A block can contain important information such as products, process history and shipments, as well ingredients. It facilitates information sharing which increases transparency and visibility in supply chains. Business partners can also quickly gain

access to information without permission. The material information in a manufacturing system can be uploaded to blockchains with a specific ID and description. Customers and other supply chain partners could then quickly and accurately find the details.

Carrefour used blockchain technology in March 2019 to improve traceability of its milk supply chain. Carrefour, a French retail giant that operates more than 12300 shops and supermarkets across 30 countries in Europe and the Americas, Asia, Africa and Asia, is blockchain-enabled. Blockchain allows secure information exchange between suppliers, customers and producers throughout the supply chain. Customers and business partners can scan QR codes on Carrefour Quality Line milk bottles in order to identify all stakeholders and conduct quality checks. This increases supply chain integration and collaboration and adds trust and a long-term commitment to a supply chain.

Automation in Digital Transformation

Blockchain's automation of digital transformation is a practical feature that can be widely adopted in supply chain management. This technology cannot be used to achieve business automation. It does however, provide a decentralized model for supply chain integration and collaboration that includes people, finance and information as well as goods and technologies. Blockchain can increase efficiency by automating data processing and eliminating intermediaries, such as robots and autonomous guided cars. It can also be used with other technologies to create a smart supply chain for industries. A blockchain network can be used to build a smart supply chain network that may include a number of IoT devices and smart contracts, robots, machine learning and vision, as well as planning, scheduling, optimization, expert systems, and other technologies.

A smart contract can organize the supply chain-related information in the local data structure to allow content-based search and enable efficient information retrieval. In addition, it can easily detect duplicated transactions and remove them immediately Meanwhile, updating products' status will be much more effective via blockchain smart contract structure. Furthermore, smart contracts and smart supply create low query response time and a higher accuracy environment.

General economic perspective

To achieve widespread adoption, it is not enough to have the technical functionality of blockchain technology. It also requires that the economics of the solution provide benefits for potential users. These benefits can be offered by blockchain technology because of its potential in:

+ Lowering verification costs;
+ The cost of networking.

First, it is cheaper to audit transaction information. Second, it eliminates the need for intermediaries, thus Blockchain could eliminate rent extraction by actors acting as trusted intermediaries (Graubins 2019, 11-14).

However, these benefits come with their own costs, considering that decentralization is generally associated with three main expenses:

+ Wasting resources;
+ Scalability problem;
+ Inefficient network effects.

When assessing the economic impact, these costs must be balanced against the benefits of increased competition. However, it is difficult to create such an environment on a large scale, since many organizations currently use permissioned blockchains in smaller Consortia, which are more manageable. Due to enforcement issues, a permissioned blockchain might be necessary. Although the technology can transfer ownership easily, it does not guarantee possession transfer. For enforcement and supervision, it might be necessary to have centralized entities like government agencies. But, it is possible to end up with inefficient, competing public and private networks that cover different aspects of trade, supply chains, and where the gains may be smaller than what some forecasts might indicate (Beserra 2020, 3-7).

Initiatives on blockchain at EU level

There are approximately 770 blockchain initiatives at the EU and Member States level. The EU Blockchain Observatory and Forum was launched by the European Commission (DG CONNECT) in February 2018. This platform allows stakeholders to engage with each other and connect European and international expertise. The observatory published reports on the scaleability and operability blockchain, the regulatory framework for smart contracts,

as well as on blockchain in trade finance, supply chain and trade finance (Schneider-Petsinger 2021, 13-15).

21 EU member states and members of the European Economic Area (Norway and Liechtenstein) signed the declaration establishing the European Blockchain Partnership (EBP) in April 2018. The declaration is intended to bring together the signatories at the political level and commit to realizing the potential of blockchain-based service. The Partnership is working to define a policy agenda in Blockchain and identify key regulatory areas, such as smart contracts. The EBP is also building a European Blockchain Services Infrastructure (EBSI), which will enable the cross-border delivery of public services using blockchain technology across Europe. The Partnership has seen more signatories join it, taking the total to 30.

EBSI supports four use-cases: diplomas, notarization, European self-sovereign identification, and trusted data sharing. This use case is linked to trade and supply chains because it uses blockchain technology to securely share data between customs and tax authorities within the EU. EBSI was created in 2020 to be a part of the Connecting Europe Facility and aims to provide software specifications, services, and reusable software to facilitate adoption by EU and member state public administrations. The EBP will choose future use cases that will be integrated into the Connecting Europe Facility in 2021. Current plans are to create a use case on supply chain topics, such as provenance. Another area of interest is sustainability and the role ICT can play in achieving the Green Deal. The Digital Europe Programme will be the vehicle for continuing the work on EBSI and focusing on its deployment in the next Multiannual Financial Framework.

The launch of the International Association for Trusted Blockchain Applications in April 2019 was another initiative that the EU supported. INATBA, a multi-stakeholder organization, acts as a forum that brings together developers and users of distributed ledger technology (DLT), with regulators from around the globe. In November 2019, the Commission organized the "Convergence Global Blockchain Congress" together with INATBA and the EU Blockchain Observatory and Forum. This conference brought together regulatory and industry stakeholders to share information and take stock of the state of blockchain technology.

The Commission is also working to promote legal and regulatory aspects for blockchain-inspired technologies, which includes improving legal certainty in two areas, smart contracts and tokenization. Concerning smart contracts, it is important to clarify the borders of mutual recognition. It is also necessary to clarify the use of tokens in the economy as a form of digital currency. The eIDAS regulation is more focused on blockchain use to establish digital identity and connect to eSignatures, but it is less relevant to trade and supply chains (Lundqvist, 2021, 44-48).

Practical uses of blockchain in supply chains

a). Transparency and counterfeit prevention

Transparency is essential to anti-fraud prevention and counterfeit prevention. These activities are emphasized in some projects, such as Guardtime HSX for pharma and Everledger which started out tracking the digital twins of every diamond to increase confidence in buying and selling these products. Everledger recently expanded its focus to include gemstones, wines, minerals, luxury, and insurance. For example, Toyoda describes a novel framework to establish post-supply chains that can be used to prove ownership of a product. This framework allows customers to reject counterfeit products even if they have genuine RFID tags (Wang 2021, 115-116).

b). Trust management

In some cases, the goal is to create a trusted, single source of truth that can be trusted by all stakeholders. Insurwave is a joint project between Guardtime and EY that illustrates this. It automates insurance processes to meet the demands of the digital age and manage dynamic risk (Dietrich 2021, 3). Others applications also aim to automate manual paperwork. CargoX, CargoCoin and others are heavily investing in digitizing bills of lading documents. This is a major source of inefficiency in modern shipping administration. Skuchain offers the Empowered Collaborative Commerce Cloud, (EC3) which is claimed to be the Swiss Army knife in supply chain software. It offers a wide range of solutions, including inventory tracking (the transformation sub-assemblies and parts used to make a finished item), digitizing invoices, and other physical documentation. Morpheus Network approaches the technology from the trade finance perspective. The platform

allows for quick payment and conversion of funds via various partnerships at real-world exchange rates, while requesting a single network fee. It can integrate with payment (SWIFT/Ripple/Stellar), transport (FedEx/UPS) and CRM services (Salesforce). SyncFab aims to connect idle machines with production demand. Fr8 connects brokers and carriers, improving shipment coordination and management, by also offering tracking utilities. NextPakk uses a shared economy model that is similar to Uber's for last-mile logistics.

More researchers and practitioners are realizing the benefits of IoT technology and blockchain technology. In one example, Caro&Co proposes a traceability solution for the agri-food industry by integrating IoT devices that feed onto the chain and consume from it. Riddle and Code also offer NFC tagging and blockchain enrollment. The literature focuses on the fact that data on chain can only be as good as what is recorded. Waltonchain aims to change this. QR codes and RFID tags are not known for being reliable trust anchors (Veramallu 2021, 28). They created a secure, two-way authentication RFID design that includes integrated encryption logic, resulting in a design which is claimed to be tamper-proof. The sensor can be used as a node and upload directly to the chain, thus making it possible for IoT measurements such as temperature, humidity, etc. It is significantly safer. SKYFChain also focuses on machine-chain communication, which creates a platform between unmanned autonomous cars and businesses. Malik&Co argue that blockchain cannot be relied upon to support trust and reliability in data stored on the chain about the quality of physical commodities as well as the trustworthiness of supply chain entities. They will provide an automated framework that can associate a trusted price to each supply chain event, based on both the trust value of each participant and the commodity's quality (Vyas 2019, 150-157).

Conclusions

This paper provides an overview of the blockchain and identifies and explains the key attributes. A supply chain system typically includes a number of companies and flows, including information, finance, and goods. Collaboration with business partners is essential to integrate flows and improve performance, thus giving companies substantial competitive advantages. Blockchain has many unique features that can be used in a vast

array of economic sectors. The paper discusses how blockchain applications, including information sharing, traceability, and automation, can be used to facilitate supply chain collaboration and deeper integration, all resulting in unprecedented efficiency growth.

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Incoherence in Comments of Cooking Channels in Algeria

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ABSTRACT: This study is an analysis of impoliteness language behavior that results due to conversational incoherence in the comments on YouTube. Based on data from comments of Algerian Arabic viewers of two YouTube channels providing recipes, this study argues that some impolite comments in threads appear to be the result of conversational incoherence in the comment threads. This means that the absence of comments that respond to the video itself or the topic addressed in the video creates incoherence and hence impolite linguistic behavior on the part of the commentators who are interested in the topic of the video. In this respect, the appearance of comments addressing nothing in threads and whose owners advertise for their channels instead creates annoyance and hence impoliteness among the commentators. In other words, such comments can be seen as an impoliteness trigger in these YouTube commenting threads. It can also be concluded that the comments that respond to the video are important because they can establish conversational coherence between commentators and their absence may create complaints and impoliteness. This work is based on the study of Herring and Seung Woo (2021), who emphasize the consideration of addressee (including video topic) and message content relationship in analyses of conversational coherence on YouTube. It both supports and expands it by analyzing qualitatively the language itself. In addition to this, a quantitative study was conducted for empiricism. This study also draws on Culpepper's (2011) model of impoliteness.

KEYWORDS: impoliteness, addressee types, conversational coherence, computer-mediated communication, YouTube thread comments

1. Introduction

In any successful communication, coherence is such an important fact. Sinclair & Coulthard (1975) say that an ideally coherent conversation consists of a sequence of initiating and responding turns. This implies the responding turns to be relevant to the initiating ones (Grice 1975). From the standpoint of discourse-analytics and pragmatics, Bou-Franch et al. (2012) say, '*coherence is understood as a general process of sense-making in which individuals engage whenever they communicate.*' On the basis of this assumption, conversational computer-mediated communication interfaces are designed (Donath 2002). Since the 1990's, coherence has been analyzed within some studies of Computer Mediated Communication. Herring (1999) made a pioneer study of different synchronous and asynchronous CMC fields where she identified disrupted adjacency and lack of simultaneous feedback as two causes of incoherence in online interaction. She argues that this disjointed connection online was pleasurable to some and posed problems for others.

At the level of participation structure which is a sensitive feature of coherence, YouTube participation structure encompasses both instances of one-to-many interaction and intergroup discussion Bou-Franch et al. (2012). In comparison with dyadic interaction, YouTube text-based interaction is complex, flexible, unstable, and unpredictable (Kerbrat-Orecchioni 2004). The structural properties of YouTube polylogues to be featured by turn-by-turn adjacency, and 'networked sequences' consisting mainly of adjacent and nonadjacent interaction turns like asynchronous interaction (Lorenzo-Dus et al. 2009). These structural properties also have an impact on how coherence works within YouTube text-based discussions (Bou-Franch et al. 2012). However, while incoherence causes have been analyzed in numerous studies, its consequences remain ignored by most of research in language and communication in online settings.

In presenting deeper studies of online interaction on YouTube, Dynell (2012) proposes a dimensional framework for overall communication on YouTube. The framework consists of three levels in which different types of interaction are available. The first level of communication is between speaker(s) and hearers in the video. The second level is communication between video producers/ senders and recipients/ hearers. In this level, the recipients can interact with the senders by commenting on the video. The

third level is interaction between the recipients of the video, who alternately take on the roles of speakers and hearers in the YouTube comment threads. However, and according to Herring Seung Woo (2020), this framework does not consider interaction between commentators and the video itself. Nor does it consider the issue of topics. Not only is that, but the analysis by Dynell is conceptual and not empirical (Herring Seung Woo 2021). In this respect, Herring and Seung Woo (2020) present an empirical analysis of addressee types and topics in YouTube comment threads, as well as the relationship existing between them. In fact, they expand Dynel's study, and consider additional possible addressees assuming that any addressee can be the topic of a YouTube comment. One of the conclusions they make is that the YouTube platform should support deep threading to indicate logical turn-adjacency at multiple levels of reply. They also suggest that the YouTube platform should consider a reply mechanism to address common addressee types that occur in prompts and that the relationship between addressee and message content should be taken into consideration. They argue that such changes would facilitate automated thread identification and improve the coherence of user conversations on rich-prompt platforms. On the basis of this claim for conversational incoherence in platforms such as YouTube, this study confirms and expands this assertion by analyzing the language in the comments and their replies that display annoyance because of such incoherence resulting in impoliteness linguistic behavior. So this study does not only consider conversational incoherence on the YouTube platform but seeks to relate between this incoherence and the linguistic behavior itself. Also, the level of communication addressed in this study is the one introduced by Herring and Seung Woo (2020) and who emphasize the video content as an addressee in addition to the levels introduced by Dynel (2012). Therefore, the research question that can be addressed is the following: How does conversational incoherence as a result of the existence of non-related and self-advertising comments affect the linguistic behavior of the commentators to make it impolite on YouTube? In this respect, I will introduce some examples of comments in which the use of impolite linguistic behavior is explicit because of incoherence and the presence of some comments that have no relationship with the video topic. This study examines incoherence in a corpus of YouTube postings in Arabic, and hence

it answers calls for research on languages other than English in the field of 'multilingual internet' (Herring, 2010a; Danet & Herring 2003, 2007).

The article is organized as follows. First, a review of relevant work on (in) coherence online is given; this is in addition to that of impoliteness in different forms of online communication. Second, the methodological design of this study is explained in detail. Next, results and discussions are presented and dealt with. Finally, a conclusion about YouTube communication and conversational coherence in relation to impoliteness is given.

2. Literature Review

2.1. Conversational coherence online

In her pioneering study of many (a) synchronous computer-mediated communication environments, Herring (1999) tackled the issue of coherence online by identifying two main reasons hindering its realization. They are lack of simultaneous feedback and disrupted adjacency. This claim led many scholars to conduct research for the reason of testing the validity of this claim. In this respect, a number of other problems were identified. The first was multi-tasking and authority in instant messaging introduced by Woerner, Yates & Orlikowski (2006), and the second was multiple participation in discussion forums, chat rooms, text messaging on interactive television, and Twitter presented by Honeycutt & Herring (2009) and Zelenkauskaite & Herring (2008). Korolija (2000) says that coherence is multi-layered and activity-specific process. This served many discursive resources employed to achieve coherence mainly including sequential features like adjacency and topic development, grammatical and lexical cohesion, and turn-taking features like backchannelling, naming, or quoting (cf. e.g. Berglund 2009; Herring 1999; Herring & Kurtz 2006; Herring & Nix 1997; Herring, Kutz, Paolillo and Zelenkauskaite 2009; Honeycutt & Herring 2009; Lapadat 2007; Markman 2006; Nilsen & M¨atikalo 2010; Simpson 2005; Woerner et al. 2006; Zelenkauskaite & Herring 2008).

YouTube participation structure encompassing instances of one-to-many interaction and intergroup discussion (Herring 1996; 2007; Yates 2000) also affects coherence. Hence, it constitutes a sui generis case of polylogal communication open to public, mainly anonymous multiparticipation, since the YouTube video-clips remain posted. This polylogal feature of

YouTube is also characterized by the double-articulation of interaction that it generates. This includes communication of one-to-one interaction and inter-group discussions polylogue; and the "imagined 'mass' of ordinary users" (Burgess & Green 2008, 8), who passively participate in the polylogue without commenting. So, YouTube text-based interaction is complex, flexible, unstable, and unpredictable (Bou-Franch 2015). Generally speaking, it is its structure of turn-by-turn taking and 'networked sequences' of adjacent and nonadjacent turns typical of asynchronous interaction (Lorenzo-Dus et al. 2009) that affects coherence. Herring and Sueng Woo (2021) introduce the question of interaction between addressee and message content in analyzing conversational coherence on YouTube. They argue that this would facilitate communication between commentators. According to the study at hand, the comments addressing topics other than the video topic pose problems of coherence and create impoliteness among the users.

2.2. Impoliteness

Apart from the abundance of theories on politeness research, Lakoff (1973), Brown and Levinson (1978/1987), Leech (1983), Locher and Watts (2005), Spencer-Oatey (2008) and others, impoliteness was not focused on except recently. Culpeper (1996) drew attention to impoliteness by creating a framework which is contrary to Brown and Levinson's (1987) theory of politeness. Culpeper's model of impoliteness is based on the principle of failure to maintain politeness or 'each other's face'. He proposes five super strategies of impoliteness. The first is *bald on record impoliteness*, where the FTA is performed directly. This has to be distinguished from Brown and Levinson's Bald on record, where it is considered a politeness strategy used in cases of emergency like 'Come in!', 'Do sit down!' etc. The second strategy is *positive impoliteness* which is designed to damage the addressee's positive face wants. The third one is *negative impoliteness* by using strategies to damage the addressee's negative face wants. The fourth strategy is *sarcasm or mock politeness*, where the FTA is performed with the use of politeness strategies that are insincere. The last strategy introduced by Culpeper is '*withhold politeness*,' which is in fact the absence of politeness where it should be expected, such as failing to thank somebody for his/her favors (Culpeper 1996, 356).

Later in (2011), Culpeper affirms that "impoliteness is partly inherent in linguistic expression" although it is context related. He separates between two main groups of impoliteness: Conventionalized formulae and Implicational impoliteness. Conventionalized formulae include the subcategories of insults, pointed criticisms/complaints, unpalatable questions and/or presuppositions, condescensions, message Enforcers, dismissals, silencers, threats, and negative expressives.

Culpeper (2011) divides implicational impoliteness into three kinds. The first one is *form-driven* and is based on lexical cues and co-text, like using mocking mimicry. The second kind is *conventional-driven,* in which one can mismatch conventional politeness behavior in a context where the interpretation of politeness is unacceptable. The last kind is context-driven impoliteness which is marked by the absence of politeness where it is strongly expected by the hearer. In addition, Culpeper (2011) classifies the functions of impoliteness into four types. The first is *affective impoliteness,* where the speaker uses the emotional senses like anger in his language behavior. The second is coercive impoliteness that implies the use of unacceptable language behavior by speaker to exert power on hearer. The third type is *entertaining impoliteness,* used to add humor to a third-party audience. The last type is *institutional impoliteness,* in which the speaker uses the dominant group behind an institution.

2.3. Impoliteness online

One of the most important characteristics of online linguistic communication is impoliteness. It has drawn the attention of many scholars to date. Herring (1994) refers this fact to anonymity, the absence of social accountability due to geographical distances. Döring (2003, 270–275) analyses the aggressive linguistic behavior of users in cyberspace. Also, Maricic (2005) deals with 'face' issues online. In the same sort of way, Haugh (2010) deals with impoliteness in email communication. Danet (2013) also discusses issues of flaming and linguistic impoliteness on a Listerv.

In its relation to politeness study, impoliteness has recently been emphasized by scholars such as Culpepper (1996, 2011), Bousfield (2008), etc. Impoliteness was studied by scholars like Herring (2001) in computer-mediated communication, who claimed that it was generally widespread and pervasive.

However, the reasons behind the use of impoliteness are various and cannot be detected easily. For instance, in his study on YouTube, Bahaa-eddin (2019) shows that identity and power are variables that trigger impoliteness in Arabic online responses in political talk shows. In this study, we are going to see another impoliteness trigger standing behind such impolite behavior. It is conversational incoherence in comments as a result of the existence of other comments which do not address the topic of the video and advertise for themselves instead.

3. Methods

The data in this study is collected from the comments and replies that show annoyance because of certain comments that do not care about the subject of the topic in the videos and generally advertise for their own channels instead. These comments generally ask for help from participants in the sense of urging them to hit the subscription and like buttons of their channels on YouTube. As it is known for the success of any YouTube channel, it has to attract the most followers, likes, comments and views. For this reason, we find a lot of new YouTube channel owners who ask for these things with insistence, and do everything to reach what the YouTube Corporation oblige them to do. This is why you find them everywhere in the threads asking participants to follow them. However, the reaction of other participants on YouTube threads is not always positive. By contrast, it is sometimes very negative to the point of insulting them, mocking at them and even denigrating them. In this study, I analyzed some of these comments in two threads of two famous YouTube channels. One of the channels exceeds nine million followers by now and the other exceeds two million. The subjects of the videos were two cookery courses in which one gave a recipe of 'Taco', a recently popular food in Algeria originating from Mexican culinary art and that was restricted to only restaurants, and the other brought a recipe of 'white pizza' which is also a very popular and loved food among Algerians and people in general. The data was in the Arabic language and mainly Algerian Arabic. I relied on content analysis but used the qualitative approach so as I can concentrate on analyzing the language itself. For more confirmation of the results of this study, quantitative analysis was used to support the findings.

The first thread under study contained 3.390 comments and the second contained 1.180 comments at the time of the study. The dataset of the user comments from these channels contains a variety of impolite comments. I started by identifying the impolite comments in the YouTube threads. For such identification, I used Culpeper's framework (2011) to categorize the comments according to conventionalized impoliteness and implicational impoliteness.

The analysis showed that impolite comments due to other ones advertising for their channels were recurring patterns and mostly liked by other users. In this respect, I subcategorized conventionalized impoliteness according to Culpeper's model of impoliteness in addition to implicational impoliteness. However, I focused only on insults, mock impoliteness, and complaints in conventionalized impoliteness. I identified 60 comments and replies to comments that can be classified into these types of impoliteness. This number might seem small but all these comments got a number of likes from other users who agreed with them which made them appear with the first comments in the threads. Also, I used an application called 'hadzy' that helps knowing the most liked comments in threads and their placement the threads in opposition to other comments. In this study, there are some comments that were deleted by either the YouTube platform or the video maker herself later and after I captured them using the 'screenshot' option available on my phone when the videos were first released. However, after a while they disappeared from the threads.

Due to the recurrence of such impolite comments, I decided to conduct an empirical analysis based on direct questions to my students. In my quantitative analysis, I delivered a questionnaire on my university students whose ages ranged between 17 and 21 and who use the YouTube platform for pleasure, studying, fashion, learning how to cook, etc. I asked them whether they got annoyed with the comments having no relationship with the video topic or not.

4. Results

This section is concerned with a sketch of the subcategories that I chose in my dataset. It is worth saying that these types cannot easily be categorized and comments may carry an insult and a mockery at the same time. Also, the examples given are in Algerian Arabic but full of mistakes. Since

online communication is anonymous, face is less important than in offline communication. Focus was put on only insults, pointed criticism/complaints and silencers by giving examples with descriptions.

The most recurrent type of impoliteness in this case under study is insults, pointed criticism and complaints. This is due to the fact that the first aim of these commentators was to learn from the video. This type of impoliteness is directed to the comments that do not respond to the video content. This form of criticism shows clearly that the commentator is very annoyed with those who advertise for their channels instead of talking about the recipe in the video. Therefore, the aim of this type of impoliteness is to attack their face directly by criticizing as well as insulting them and hoping thus not to see them again in the threads. The following examples are taken from a channel with more than 2 million subscribers. She introduced a recipe of 'taco', a newly introduced Mexican food to Algerian people. I have to note that there were comments of all kinds in the thread. Some of them thanked the video-maker, others gave advice, and other ones commented about problems in their lives being out of the subject too. The thread had at the time of the study a number of 2.700 comments varying from thanking, advising, problem introducing, etc. However, very few of these comments got 'likes' from other users if compared with the following examples. So, the following sections are a description of the types of impoliteness in these examples.

4.1. Conventionalized impoliteness

4.1.1. Insults

Example (1) shows that the commentator uses the insult 'beggars of likes' to attack the self-advertising commentators. This comment got a number of 196 likes and 5 replies agreeing with him/her. This can be regarded as an example of conventionalized impoliteness.

(1) Commentator

والله تعبت من قراءة التعليقات لكي اجد تعليق يخص هذا المحتوى ولم اجد الا شحدين الليكات الذين يدعون انهم يحبون الله ورسوله عليه الصلاة والسلام و عديمين المحتوى يشحدون المشتركين وانا اقدم لكم نصيحة لعبدة الله يعبده باركانه التي فرضت عليه والذي يبحث عن المشتركين فل يجذبهم بالمحتوى الرائع

I swear that I got tired of reading the comments to find nothing but beggars of likes, those who pretend they love God and His Messenger (Peace be upon him) and those who have no good content begging subscribers. Look! I advise you something: if you want to worship God, do it truly and if you search subscribers, try to bring good content.

This commentator starts with a complaint of getting tired of searching for a comment addressing the video content and as a result of not finding one, s/he insults those whom s/he finds on the threads asking for 'likes' and who s/he reports they pretend to love God and his Messenger.

Another example where the insults 'beggar' is used to attack the comments who do not address the video topic is the example that follows. This commentator complains of not finding a comment addressing the recipe in the video to have an idea on it, and consequently starts insulting the ones who ask for support to their channels and those who ask for praying to them.

(2) Commentator

نقرا التعليقات نشوف بلاك كاش وحدة جربت الوصفة لقيت غير دعولي ودرولي لايك والله خصّ ، وصاي ولله تنارفو فففففف

I scrolled down to read the comments to see if someone has tried the recipe and I found nothing but 'prey for me' and make me 'likes'. I swear that you are beggars, that is driving me crazy ffffff

This comment has had a number of 108 likes and 3 replies who agreed on what she/he says like the following ones:

(3) Reply 2 to commentator 2

والله غير صح قلعتيها من فمي ههههههه

Yes, I swear you are right; this is exactly what I was going to say hhhhh

We can notice that this reply is mocking at those who ask for support by agreeing that they are beggars.

4.1.2. *Complaints/ pointed criticism*

One of the liked comments in which pointed criticism and complaints is clear in its language use is the following:

(4) Commentator

أغلبية التعليقات ابوني اشترك كارثة قليل وين نلقى تعليق مع الوصفة على كل حال شكرا على الوصفة اليوم نجربها إن شاء الله

Most of the comments ask for subscription; that is a catastrophe. Very few people comment on the recipe. Anyway, I will test it today if God will.

This comment was liked by 95 people and got 12 replies where some of which agreed with her/him and others asked about the reliability of the recipe. Some of the replies to this comment are the following:

(5) Reply 1 to commentator 3

صاح مام انا ضقت ذرعا بهم

Even me, I got fed up with them

(6) Reply 6 to commentator 3

صح سمطولنا اليوتوب' نكره حياتي كي يخرجو على الموضوع

You are right, I got fed up, I hate when they get out of the subject.

This commentator seems to have tested the recipe and answered the most important question in the thread in a positive way. Not only that but some other users commented in the replies about the recipe by agreeing that it was good.

The next comment is another complaint carrying criticism towards those who comment out of the subject and do not address the video topic. This commentator ended with the expression 'pfffff' to show her/ his disgust towards those who are out of the subject. This comment, also got 264 likes and 19 replies, most of which either agreed or talked about the reliability of the recipe positively and negatively.

(7) Commentator

دخلت نشوف كشما واحد جرب الوصفة لقيت التعليقات الكل خارج الموضوع بففففف

I tried to see if there were some people who tried this recipe, I found most of the comments out of the subject. Pffffff

Some of the replies to this comment are as follows:

(8) Reply 7 to commentator 4

شفتي يكرهو التعليقات ديما خارج الموضوع

Do you see?! I hate those comments that are out of subject.

Here in the replies, there were some people who spoke about the recipe either positively and/ or negatively.

Due to its recurrence, the next complaint also criticizes those commentators who do not address the video topic and advertise for themselves instead. It got 31 likes and 3 replies agreeing with him/her.

(9) Commentator

<div dir="rtl">

شكون جرباتو عيييييت ونا نحوس على كاش كومونتار يهدر على المحتوى مكاااااش
</div>

Who has tested it? I got tieeeeered of searching comments talking about the subject but in vaiiiiiin

Another comment which caught a number of considerable likes (67) is what follows:

10) Commentator

<div dir="rtl">

شكرا على الوصفة انا ما فهمتش هادو عباد يكتبو كلش واش دخل طياب في حاجات وحدخرين الله يهديكم
مشكورة لحبيبا
</div>

Thank you, I do not understand those people writing about anything; what is the relation between cooking and other things! May God direct you! Thanks dear

This comment has had no replies. As it is clear from this comment, this person is inquiring about what relates cooking to other things such as likes, subscribing, etc.

4.1.3. Silencers

The following examples are taken from the biggest YouTube channel in Algeria with a number of subscribers exceeding 10 million. The recipe introduced here is on how to make white pizza. It attracted a lot of views and comments. However, apart from the different comments that talked about different subjects, the following one got second place of the most liked comments in the thread with a number of 387 likes and 22 replies.

11) Commentator

<div dir="rtl">

سكتونا (يرحم والديكم) افتحو عزرين قروب وادعيو بعضاكم وشبيكم متخلفين هكذا؟ شان تاع طبخ كومونتيو
عللوصفة خليونا نشوفو راي لي جربو نديو ملاحظات والله الواحد ولا يهبط للي كومونتار ويندم وحدة تحكي
فحياتها وحدة تدعي وحدة تحكي ف سوجي ما نعرف منين جاتها الفكرة والله كارثة روحو الفيس بوك وقصر
</div>

Shut-up (God bless your parents), open a s***t group and pray for one another! Why are you so uncivilized like this? This channel is for cooking and you have to comment on the recipe to see the opinions of those who tested it to learn from them. I swear that when I read the comments I feel regret because you are just narrating your life stories, pray, and speak about any subject like that. It is catastrophic, go to Facebook and have fun

The commentator here vents out directly in the face of those who ask for support from others. s/he uses the expression (God bless your parents) not as a polite cue but to show her/ his disgust and that they can no longer support the situation they are in. Also, the commentator shows the role of this channel whose main aim is cooking and not other things like praying for one another. This comment got a number of 22 replies as mentioned above and here are some of the replies:

(12) Reply 8 to commentator 11

من كثرت ما قلقونا برب ادعيولي عدت انا وماندعيش لروحي عدت كي نشوف وحدة كاتبة ادعيولي ندعي عليها .بففف ياخي طليا ياخي.قرحة

Due to the large number of s***t prayers, I found myself not able to pray for myself and pray on them instead, pfff you such beggars (unclear text)

This user starts by using a four letter tabooed word because of finding comments asking for praying to them. S/he also insults them by saying they are beggars of likes and subscribers.

(13) Reply 9 to Commentator 11

يا ادعيولي يا ادعموني لقناة ...تفوه عليهم

Either pray for me or support my channel … I spit on them

The expression 'I spit on them' shows clearly how angry this commentator feels because of those who ask for support to their channels or ask for praying to them. The expression 'I spit on them' is used here to describe his/ her feelings towards such self–advertisers in this comment thread.

(14) Reply 10 to commentator 11

ههههههه والله غير عندك الحق

Hhhhh you are right

This user is agreeing with the commentator and making fun of those who are out of subject and ask for support instead of commenting on the video content.

4.2. Implicational impoliteness

All the above examples are part of conventionalized or direct impoliteness. The following examples in this section rely on inference that is related to Gricean cooperativeness (cf. 1975). Inference is needed to draw impolite implications. The following example could be interpreted as *implicational impoliteness*. There is a conventional politeness expression mismatch with a co-text or prosodic context where the interpretation of politeness is not expected. It is like a discord which results of the clash of expectations; mainly because of mixing two opposite linguistic features – both conventionally polite and impolite. The first part is 'doctor' which is conventionally a polite form of address, while the second part is of the comment attacks the commentator's positive face by using the conventionalized impolite insult 'begging'.

(15) Reply to a Commentator

اول مرة اشوف دكتور شحاد

The first time I see a doctor begging

As it is seen, this is a reply to a commentator who claims he is a doctor of medicine, advertising for himself and asking for support from other users. He seems to give medical advice to people on his/her YouTube channel and because this is not very frequent on YouTube, he was insulted ironically by saying. 'the first time I see a doctor begging.'

On the basis of these observations, the seeking for quantitative analysis was started to get the complete picture of this fact. In this respect, I conducted a quantitative empirical analysis on whether irrelevant comments were that annoying to other viewers or not. I delivered a questionnaire to my students to see what they thought about those kinds of self-advertising for their own channels in YouTube threads. Table 1 shows their opinions clearly. Not surprisingly enough and as was expected, most of the informants found them annoying and even more disgusting because some answers showed hatred towards them. Thus, more than three quarters of my informants (81.66%) said that this was annoying to them. Only 06.66 percent said they were

not disturbed by irrelevant comments, while the remaining showed little annoyance by saying this sometimes disturbed them. The second question in the questionnaire was if they thought that the YouTube platform should delete or filter the non-related comments so as not to appear first in threads. 41.66 % of them were with deletion while 51.66 % of them thought they would be better filtered. In general, most of the users under study did not really want to see or come across such kind of comments. Tables 1 and 2 show the results clearly:

Table1: Irrelevant Comments Annoyance Rates

The question	The answers	The rates
1. Do you feel annoyed when finding irrelevant comments to the video topic?	Yes	81.66 %
	No	06.66 %
	Sometimes	11.66 %

Table 2: Opinion Rates related to the deletion or filtration of Irrelevant Comments

The question	The answers	The rates
2. Do you think that the YouTube platform should delete the non-related comments or filter them so as not to appear first in threads?	Deletion	41.66 %
	Filtration	51.66 %
	Do not care	06.66 %

5. Discussion

The main aim of this study was to examine the impolite linguistic behavior that results due to conversational incoherence and which is directed to the users who advertise for their channels and do not comment on the video topic in two YouTube threads in Algeria. The most interesting result is that those comments which do not address the video topic and make publicity to their channels in the threads are considered as an obstacle that precludes conversational coherence in the threads. Therefore, since this fact obstructs coherence to other users, they start using impoliteness to show their anger to

them. Also, according to table1, the totality of my informants did not want to see such kind of comments in the YouTube threads. According to their responses, they feel annoyed when such comments surface in the threads. In this respect, one can say that the existence of such kind of comments which are out of subject are a source of annoyance to other users and hence can be regarded as a trigger of impoliteness on these YouTube threads. Not only was that, but the comments that vented out their anger impolitely due to this fact got many likes by many users and commentators in these threads.

6. Functions of impolite comments and replies

Culpeper (2011) introduced four functions of impoliteness. However, according to the data at hand, the functions that dominate the impolite language behavior in the comments are the affective, entertaining and coercive ones. Concerning the affective function, the commentator blamed the other users and insulted them for the bad use of the commentary section to fulfill their needs. So, example 2 is a vent of anger where the commentator blamed the users for not being interested in the video topic and commented on it. The entertaining function of impoliteness is mostly present in the replies rather than in the comments. Reply 2 to commentator 2 is clearly mocking at the self-advertisers of being 'beggars'. The coercive function of impoliteness can be clearly observed in comment 7 where the commentator tried to exert his/her power on the other users by ordering them to 'shut-up'; that is s/he had used an unacceptable speech pattern to show her/his anger.

6.1. The recurring insult 'beggar' and those related to begging

YouTube is a paying corporation and those who open new channels to get payment from YouTube should fulfill some conditions. The known conditions for any new YouTube channel are getting a certain number of subscribers and views as well as likes. So the challenge of YouTubers in general, is realizing those conditions and this is why they start advertising for their own channels. In this respect and while doing so, they are sometimes faced with some impolite comments especially in big channels of millions of subscribers. These impolite comments can be in the form of irony, anger, or even insults. In this

study, one of the most recurring insults directed towards such commentators advertising for their own channels is the one of 'beggar'. As it is known, beggars are generally found on streets and not in online settings like YouTube or Instagram, or other. However, the use of such insult is used because those users know well that those self-advertisers are going to make money out of their views (users' views'), subscriptions, and likes. In other words, they think they are being exploitive to them in the sense of taking advantage of them and making money out of their views. This insult is sometimes used with irony and other times with vent of anger. An example of the ironical expressions carrying the insult 'beggar' is the following:

(16) Commentator

طلبة هههههههه

'Beggars hhhhh'

(17) Commentator

صدقة صدقة

'Charity, charity'

The insult by commentator 16 is a recurrent one and found in many comments that I read although they were mostly deleted by either the YouTube channel owner or the YouTube platform. Example 17 is a reply to commentator '11' in which the one who replied used the word 'charity' as a connotation to show that the ones who ask for support are like beggars who ask for charity.

Overall, this impolite language behavior which includes a vent of anger out, insults, ironies, complaints and pointed criticism, are clearly the result of the presence of non-related comments and self-advertisers who do not address the video topic and who are regarded as a cause of conversational incoherence in these two YouTube threads. Not only this, but this kind of impolite venting comments are the most liked by the other users in these two threads. This study is based on the one by Herring and Seung Woo (2021) who argue that *'the interaction between addressee and message content should be considered in analyses of conversational coherence on YouTube and other rich-prompt CMC platforms.'* This study indicates that the relationship between

the message content of the comment and the addressee (here in our case the video topic) is very important at the level of conversational coherence in these two YouTube threads. However, the findings of this study are restricted to only these two YouTube threads and this means that it does not account for larger data and this is one of its limitations. Not only that, but the data at hand are in the Arabic language only. So, the question that should be asked is whether this could be applied to larger data of YouTube channels and/ or in other languages such as English, Spanish and Chinese, etc.

7. Conclusion

This study concludes that the comments showing self-advertisements annoy most users especially those interested in the video topic. Therefore, such comments can obstruct coherence and preclude communication and hence can cause impoliteness. In this respect, conversational incoherence that is caused by those users' advertisements is an impoliteness trigger in these comment threads. In other words, the comments which address the video topic can create conversational coherence and their absence may result in complaints and impolite linguistic behavior such as insults, complaints and ironies. This study concludes that the relationship between addresses and message content is important. Therefore, it supports Herring and Seung Woo's (2020) work, which emphasizes considering the relation between addressee and message content in analyzing conversational coherence on YouTube.

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The Impact of Supply Chain Imbalances on the Defense Industry

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ABSTRACT: Supply chain is a critical network in today's economy to ensure that manufacturers and other businesses make the most of their profits. In a volatile market environment, companies must be concerned about the flow of goods. This is especially true in light of the Covid-19 pandemic, which was triggered by the outbreak of violence between Russia and Ukraine. The war also brought sanctions against Russia, which severely impacted the defense industry supply chain. The article examines the current state of the global supply chains during wartime, while also discussing management implications and suggestions for improving the supply systems, such as with blockchain technology. This research is based on information analysis of the current global supply chain and aims to propose solutions to reduce the risk for the defence industry.

KEYWORDS: supply chain, defence industry, military, war, blockchain

Introduction

Five functions are common to military logistics: maintenance and repair, supply, transport and movements, maintenance, repair and medical services. Three basic options exist for military logistics: get the resources on the battlefield, transport the resources to the front area, or transport the resources

from the rear to the troops on the battlefield. Logistical considerations have influenced military operations throughout history.

Modern military logistics must include all three options. The first option is to be partially dependent on the host nation's support. The second option is partially used by armies that bring supplies to the units. However, this third option is the only one that can sustain a modern military unit for a long time. No matter what mission, armies cannot accomplish their tasks in time if there is no logistical function that guarantees a steady flow of resources at the right speed and time.

Defence supply networks, also known as defence supply chains, are responsible for distributing different types of supplies. These supply chains can include a variety of suppliers and in-house storage facilities to many types of military units. They must also distribute these types of supplies in multiple domains and situations, satisfying multiple operational needs. Each nation's armed forces are dependent on many different supplies, while different countries and organizations have different methods of classifying the supplies.

The production of the force structure and the maintenance of readiness, modernization, and sustainability are all dependent on military logistics. The operational requirements for readiness and sustainability in military logistics have their own meanings that differ from those used elsewhere, but even so there is no universally accepted terminology or definition in this area.

Methodology

This study was qualitative in nature and aimed to examine the Defense Industry Supply Chain. An interpretive approach was used as part of the qualitative research design to identify key attributes of supply chains, the defense industry, and the use blockchain technology to improve supply-chain systems and increase their security. Interpretive research requires that the researcher understands the subjective meaning of phenomena and social action.

Results and discussions

Defense industry supply chain

Due to the complexity of most weapon systems supply chains, some components require parts from fifth- or fourth-level suppliers, disruptions

are possible. A supply chain is a collection of activities that distributors and manufacturers must do to create value, including purchasing, manufacturing, and distribution. A supply chain solution is composed of both a supply strategy (manufacturing strategy) and a delivery strategy (delivery strategy) that reflect the capabilities of the delivery system.

Researchers suggest a range of contingency variables that are business characteristics that can influence the competitive priorities supply chains should follow to maximize profit. The five key characteristics of supply chains include the duration of lifecycles, delivery lead-times, volume, product variety and variability in demand, supply, or process.

A company must focus on the end-user when it is involved in a supply chain. This includes service, quality and cost, as well as quality, flexibility and innovation. These competitive priorities are a key element of supply chain strategy that is aiming to outline how a company can achieve competitive advantage through its competitive priorities (Hutchings 2022, 7).

The US Government Accountability Office highlighted several problems with the F-35 supply chains, including lack of spare parts, limited repair capability, mismatched parts for aircraft deployment, and an immature global network to transport parts. Contractors have a hard time retrofitting or upgrading older assets, such as the US Army's basic M1A1 Abrams Tank Platform, dating from 1970s. It has seen many modifications and upgrades, including new weapons, armour, and drivetrains. Multiple variants can be used by different units, making it difficult to ensure the right part is in the right place at the right moment. If any of these elements go wrong, it can lead to production delays, downtime, asset damage, and a reduction in readiness.

The central challenge for defense supply chains is to put more emphasis on supplier risk management. In this regard, multiple layers of vendors and sub-suppliers are required to develop complex platforms (Blokdyk 2017, 35-36).

The impact of the war between Russia and Ukraine on supply chains
Supply chains are being tested again after the effects of Covid-19. This time, it is the conflict in Ukraine. Organizations must build resilience in their supply chains to survive conflict, due to the fact that many are attempting to reduce dependence on Russia and East Europe for raw material, migrating instead to more localized or regional sourcing strategies (Jagtap 2022, 5-6).

The direct effect on the supply chain was the sharp rise of commodity prices, including petrol, diesel and other fuels. This has had a devastating impact on companies around the globe, which are now being forced to seek out alternative materials and labor sources in order to meet demand (Garicano 2022, 109-112).

The global commodity prices are rising

As we have seen, commodities prices have experienced a massive spike due to rising inflation and supply disruptions. Inflationary effects from the Ukraine conflict will likely continue to impact costs of raw materials and energy as well as logistics and digital services. Due to Russia's dependence on oil imports, which account for 40% of Europe's gas, oil and gas prices have already risen across the globe.

Recent reports indicate that the continued rise in energy prices is having a negative effect on the eurozone's economy, which has primarily resulted in a slowing growth rate. A delayed and indirect impact on resins/petrochemicals can also be expected due to the rising costs of upstream resources (crude and natural gas), which could cause logistical disruptions. However, energy is not the only industry that will be affected by these price increases. All key metals like copper, nickel, platinum and nickel are expected to be affected along with all the industries that are using these materials (Wilson 2022).

Organizations are searching for other sources of supply

Companies around the world are being forced to look for cheaper sources of materials due to rapid inflation. This could lead to a decrease in the supply of important grains like wheat and corn, and a rise in the prices of bread and other products. Russia is also the largest exporter of all three major fertilizer groups, which can cause an increase in input costs. If alternatives are not found quickly, this could result in a food crisis for major importing countries, such as the Middle East or North Africa.

We expect further disruptions in the supply of metals and plastics as well as semiconductor chips. This will have an impact on the production of medical devices. Russia is a major player in the mining and processing of palladium (45%), and platinum (15%). Possible international trade sanctions from the EU and the US against Russia will likely disrupt the exports of these

metals. We see a shift towards raw materials coming from Asia and Africa as a result of these shortages, but while some changes may be permanent, it is unlikely that they will change in the near to medium term. There will be new markets and new sources for raw materials, but their availability and price may be limited.

Labour shortages

Businesses are under increasing pressure to source alternative materials and find more labour. There has been a reduction in the supply of labour in Eastern Europe since the conflict started, which has led to increased costs. According to International Chamber of Shipping data, Russians make up 10.5% (198,123), while Ukraine makes up 76,442 or 4%. Many companies are exploring South America and Africa as options for labor-intensive jobs that require a lot of people to move away from Eastern Europe. This is especially important for agriculture and farming industries, which depend on short-term foreign workers to harvest crops.

Import and production disruption

Both global supply and demand have been severely affected since 2020, resulting in supply chain shortages. The demand for goods from Asia has increased, especially in advanced economies, while the supply sector has been affected by the closure of Chinese factories and the shortage of labor in ports of importing nations, which have caused significant delays and made it difficult to find transportation ships.

Major Western ports reported large backlogs and stranded containers, which in turn contributed to the shortage of containers. All areas of logistics movement, including ocean freight, rail freight and airlines, have been disrupted by the war. The disruption of the last mile of the supply chain can also be expected - an area already severely affected by recent fuel and driver shortages and the pandemic.

Businesses will need greater transparency about planned transport, capacity, and alternative routes in order to limit disruption, and in order to ensure that there are no further obstacles, it is important to establish strategic relationships and join alliances. Businesses cannot afford to rely upon outdated information in these times of volatility and constant change.

Risk management has become mandatory

All of the above-mentioned trends - logistics disruption, cost, alternative sourcing and labor shortages - point to our fifth and final trend - greater risk management. This crisis has brought to light the importance of improving visibility, and this is why organizations must improve visibility of supply chains, as risk is often hidden by sub-tier suppliers.

Although it may seem obvious to ask questions like "Who are our suppliers?" or "Where do our critical materials come from?" organisations need to have visibility and an understanding of the potential risks in order to be able to respond to and adapt to any disruption. The supply chain managers will focus on building resilience in the operations of their business. This starts with preparation and visibility. In fact, organizations will move away from Just In-Time (JIT), inventory management to Just In-Case (JIC) inventory management. In-country supply and regionalization are becoming more attractive options for the safety, security and stability they provide.

The worst-case scenario is a war that extends into 2023, since this could have a long-lasting impact with 2.8% GDP growth in Europe slashed from pre-war expectations to bottom at 1.1% next year. Inflation could rise sharply beyond 10% and then fall in 2023. This scenario could lead to a larger oil and gas embargo, which would cause structural disruption and commodity prices remaining high and volatile through 2023. Consumer spending would be affected by price increases, which could lead to a drop in confidence and a decrease in growth. There will be varying times and costs involved in addressing supply chain problems, while preliminary easements suggest that it could take up to EUR 920 billion to fix the current disruptions.

European growth is driven by supply chains, but operating models aren't ready for uncertainty. The Ukraine-Russia crisis will have a significant effect as we see more disruptions over time; each scenario will need to be evaluated, but all will require a fundamental supply chain redesign around security of supply and energy transition, as well as agility to address the new economic landscape.

Real-time, end-to-end visibility across the entire extended supply chain is essential for resilience. Control towers are a great help. Analytics and data can speed decision-making, increasing competitiveness and boosting efficiency. Frontrunners create digital twins of supply chain to test their responses, while the endeavor to prepare for unanticipated risks will determine companies to

shift from a just in time approach to one that is just in case. This includes diversifying supply bases, creating alternative freight routes, building inventory, and making distribution centers more flexible. This 'insurance policy' is not cheap, but it makes sense in times of uncertainty. To address a paradigm shift, supply chains must be redesigned. Originally, supply chains were created to maximize costs. In today's world they need to be more resilient and flexible to deal with increasing supply uncertainty. They also have to become a competitive advantage that will allow future growth.

Future-ready supply chains are essential to capture growth opportunities, but they must be relevant and enable customer-centric experiences. Organizations can better fulfill customer expectations by moving away from linear, centralized supply models to decentralized networks that use production on-demand. In some cases, this may even mean bringing production closer the point of sale. This means they have to demonstrate a commitment towards addressing environmental and social problems, as well as bolstering the efforts of partners to improve sustainability throughout the product's lifetime. Trust will only be built if there is transparency (Kilpatrick 2022, 5).

It is important to invest in cutting-edge technology that will enable resilient, relevant and sustainable supply chains, including digital twins, analytics and control tower algorithms. Cloud computing will be crucial, as it provides enormous computing power in a cost-effective way that is flexible and sustainable. A new economic order is needed amid an inflationary environment and tight talent markets.

The advantages of integrating blockchain technology in supply chain management

Blockchain is a distributed and decentralized digital ledger that records transactions and facilitates asset tracking within the business network. Blockchain can also prevent the replacement of genuine product with counterfeit products. Blockchain in Supply Chain Management also has other benefits, such as transparency and traceability.

Few military defenses are currently exploring blockchain's potential in security and defense to maximize its capabilities and capacity in terms of actions, assets, and operations. A few potential uses of military blockchain include tracking defense shipments/contracts, secure government messaging and

battlefield messaging, cyber warfare readiness, preventing data theft and NATO applications, protecting weapons systems, and military additive manufacturing.

Original equipment manufacturers can use blockchain technology to support them as they move from traditional procurement models to sustainment arrangements. In these arrangements, they don't sell assets, but rather sell capabilities. An original equipment manufacturer could, for example, sell airborne fuel tanks instead of selling them. Private contractor operations are increasingly looking into space commands. These agreements are growing in popularity, but they shift operational risk from military to original equipment manufacturers that retain control of the asset (Anand 2022, 3-4).

Blockchain allows for transparency and insight to link production and operation. With a single set data, manufacturers can meet not only delivery targets but also operational requirements. This technology allows original equipment manufacturers to deliver better service and improve their financial performance through these types of contracts (Szewczyk 2019, 593-596).

As part of routine maintenance checks, all platforms and systems used by the armed forces must be inspected periodically. Having greater visibility into the state and use of every part, which is distributed to all nodes in the supply chain could greatly improve the efficiency and speed with which these checks can be completed. Instead of reactive maintenance, which is when a part breaks down, prescriptive maintenance could be used to predict when it will break down. The asset could be powered by AI and ML and link to original equipment suppliers and manufacturers, allowing it to request the part ahead of time. This would enable maintenance units to keep smaller parts inventories (Wang 2020, 3-4).

Conclusions

The global COVID-19 pandemic has shown that fragile supply chains can have long-lasting and far-reaching consequences for economic prosperity and national security. A supply chain system typically includes a number of companies and various types of flow, including information, finance, and goods. The paper suggested that blockchain could facilitate supply chain integration and collaboration. Additionally, blockchain applications, including information sharing, traceability, and automation, can facilitate supply chain collaboration. We also considered the potential of blockchain technology in terms of its transparency, immutability, speed, security, and transparency.

Another wake-up call is the war between Russia and Ukraine. This shows how important it is to increase resilience of supply chains. In today's complex, globalized, and asymmetric security environment, national defense faces many challenges that require a comprehensive foreign and security policy. This requires a new management approach and a greater collaboration among all relevant organizations, governmental and not. To further protect national defense, it is important to implement safety-and security-related tools.

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