NON-TECHNICAL ASPECTS OF RESILIENCE OF GLOBAL SUPPLIES CHAINS-CASE STUDY

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Abstract

The aim of the article is to analyse and evaluate the relationship between media coverage and the resilience of global supply chains. The basis for the assessment was qualitative research carried out on a representative sample of Poles in the years 2015 - 2018 (58 interviews with people connected to supply chain, like drivers, operators etc.) and quantitative analysis of words on social media (Facebook, Twitter). The authors also monitored Polish print media, both local and nationwide. In addition, the statements of politicians recognized as social significant, which were conveyed to the public by the media, were analysed. To analyse the source of risk, the "What If" method was applied.

Keywords: Resilience, media manipulation, human factor, global supply chain

1. INTRODUCTION

In social studies, the human factor plays a dominant role and is the main topic of these studies. In the technical field the situation is somewhat different. As humans, there are some characteristics that are different from composites: sometimes people mix together, and sometimes they do not. Sometimes one can predict the human performance and behaviour, sometimes, it is impossible. Unlike most materials, applying stress to a human being will not always generate the same consequences, whether the stress be physical or psychological. People are connected to each other when they work, because in general, people do not work alone as people generally do not work alone. Each person brings along a specific culture which means specific rules, manners, and verbal and written communication styles. Both technical and non-technical factors can disrupt the smooth implementation of supply chains. Non-technical factors that that may be recognised recognise include: the incorrect assessment of strategic options, external certifications, legal regulations, natural events or socio-cultural factors, and the impact of media-generated societal events.

Significant political changes have occurred in Central Europe since 2015 which have had a huge impact on societies. Commercial relations between participants in supply chains have been impacted by the consequential media fall-out.

2. LITERATURE REVIEW

The importance of the human factor has been highlighted by the organizers of the biggest European conferences and seminars as ESReDA seminar and it had own panel during ESREL conferences starting from 2015 when ESREeDA seminar was dedicated to the topic of Human Factor in Risk Assessment and Maintenance. ESReDA is a European Association provides a forum for the exchange of information, data and current research in Safety and Reliability and a focus for specialist expertise. One may conclude that the publications presented are in line with the latest trends that are mandatory in Europe. Thirty-two papers were presented on seminar from different scientific disciplines, and from different European researchers. Few of the articles were strictly connected to the topic of Human Factor, which is the most important in the point of interest of this article area [10].

The most complex text where one can find different types of human factor's definition as human reliability is *Methods, Techniques and Tools to Understand Human Error in Industrial Activities* by José Sobral, Edgar Serrano and Luis Ferreira. Human reliability is described there in this article as a wider and more complex concept of „the ability of an item to perform a required function under given conditions for a given time interval an may also be defined as a probability" [10]. Authors are citing Meister states that "human reliability is linked to the probability of a work or task to be accomplished with success in a given time" [7]. Kirwan says that "human reliability is a discipline of Ergonomics based on the knowledge of reliability and risk analysis" [6]. A more complete definition of human reliability is mentioned by Pallerosi: "it is the probability of a person not to fail on the accomplishment of a required task (action), when demanded, in a given period of time, under adequate environmental conditions and with available resources to perform it" [10]. The team also writing about human failure in accordance to [10] Human failures are classified into different categories as errors (slip and mistakes) and transgressions (deliberate and unintentional). the most common cause of human failures is error. These errors are dependent of operator capability, stress factors, motivation and environmental conditions. Mistakes usually happen due to fatigue or stress or even bad environmental conditions or person's aging (natural loss of capabilities) but the main reason is due to lack of training for a specific activity. Sometimes physical characteristics can also influence the accomplishment of certain tasks. Authors also concentrate on the subject of man-machine interaction, where man is the system supervisor. To control the human error they presenting few technologies, methodologies and tools to minimize human error probabilities: Human Error Rate Prediction (THERP), Accident Sequence Evaluation Program (ASEP), Human Error Assessment and Reduction Technique (HEART), Standardized Plant Analysis Risk - Human (SPARH), Cognitive Reliability and Error Analysis Method (CREAM), A Technique for Human Event Analysis (ATHEANA). None of them taking into account any cultural differences between people all over the world. It can be observed from the previous paragraphs, the estimation of the probability of human error is a complex task, once it can be influenced by several factors. But none of those factors were social, political or cultural. Just technical and environmental ones were taken into account [10].

The most efficient example of human factor and human error re the case studies of plane crash. Sameer Al-Dahidi, Francesco Di Maio, Piero Baraldi, Enrico Zio, team from Energy Department, Politecnico di Milano in *Supporting Maintenance Decision with Empirical Models Based on Fleet-Wide Data* were taking Human Factors (HFs) in maintenance as a element which play an important role for equipment reliability [15]. For example, in 1985, 520 people were killed in a Japan Airlines Boeing 747 jet accident because of wrong repair [3]. Moreover, in 1993, a study of 122 maintenance actions involving HFs reported that there were different types of maintenance errors: omissions (56 %), commissions (38 %) and others (6 %). HE is the failure of the human to perform a specified task that could result in disruption of scheduled operations or damage to equipment. The errors of maintenance personnel can be the most visible aspects of maintenance HFs. HFs is the discipline that aims to optimize human well-being and overall system performance. The term includes all psychosocial and biomedical considerations, personnel selection, training principles and applications in the area of human engineering, human performance evaluation, aids for task performance and life support [5]. In practice, the response to HEs involves two paths. First, the HEs probability can be reduced by identifying and counteracting error-producing conditions by involving attention to, for example human factors training and other actions directed at the HFs associated with these errors. Second, the implementation of an efficient PHM system can reduce (a) unnecessary maintenance actions, since it allows reducing unnecessary maintenance interventions and (b) predictable failures, since it allows anticipating the failure events [15]. Similar approach to the HF problem had Frederik Mohrmann (from National Aerospace Laboratory in Amsterdam) and John Stoop (from Kindunos Consultancy, Gorinchem) who presented their ideas of meaning of the behaviour of the Human Factor. Authors have analysed human error from a psychological perspective, criticizing reactive approaches, compliance with procedural safety management and control. Despite their methodological and scientific critiques and alternatives for a popular use, the notion of human error is strong and alive, in particular in social media and public perception [9].

The importance of human factor and its unpredictable errors become one of the most important research in the technological sciences. But the measurement of the influences on the human behaviour and its cultural reactions are still not examine enough.

3.   MEDIA MANIPULATION AND ITS POSSIBLE INFLUENCE ON GLOBAL SUPPLY CHAINS

"The media create a picture of reality that is convenient for ruling elites. Most often, it has nothing to do with the truth. It is used to intimidate and manipulate society" [1], as Noam Chomsky wrote in his publication criticizing the functioning of the American media in the 1980s and 1990s. The American linguist, philosopher and political activist introduced the concepts of "propaganda of the media" and "the propaganda media", referring them to the media of the broadly understood West, excluding from the scope of these concepts only the world of the Global South and information flowing from there. The researcher wanted to draw attention to new threats that flow from propaganda messages and are not noticed by recipients. Democratic society remains, according to the researcher, defenceless against the media hidden message [2].

The problem of the media propagandization is present in the current message that reaches society of the 21st century. The media message constitutes the basis for building the identity and sense of security of civil society. Modern nations believe in the current state of existence, with the illusory impression that in the era of globalization they have access to so much information, that they can themselves create awareness of what is happening in the world.

Propaganda belongs among the oldest forms of "exerting pressure" on society, however, the modern media have changed the current rules of the game. The universality of information, while not being able to "filter" the imposed content out of the data, causes the recipient to be helpless in the face of the multitude of often contradictory information.

The process of globalization, encompassing communication processes, "has weakened the context of" statehood "in international relations, and the mass media increasingly use elements of interpersonal communication, thus becoming a space for direct contact and cultural exchange between people of different nationalities or belonging to different cultural circles" [14].

The media having a strong ability to create social attitudes and shape social opinions on topics related to cultural and international security as well as crisis situations play a very important role in the process of providing information. The so-called "logic of media operation" ought to be emphasized [8]. This is the logic of selection and presentation of information, developed by editorial teams and based on the sensitivity of journalists to the subject presented on the one hand and, on the other hand, it is based on the recipients' social expectations. This system causes a whole range of distortions of the image of the reality presented by the media. The means of mass communication are an instrument of the reality construction: they construct it themselves and help each member of society in constructing his/her subjective reality [14].

In the 21st century, the media has become a tool that creates information on a global scale. Information is transferred in a fragmentary and selective way, valuing global issues over local ones. They ceased to be a tool showing events in the world and began to build ideological hegemony.

The development and accessibility of the internet and global television stations (CNN, BBC World, Sky News, Al-Jazeera), which have become the key sources of information about world events and broadcast news programs 24 hours a day, have revolutionized mass communication. The internet has also enabled an immediate exchange of views and information. This revolution has given the opportunity of worldwide real time transmission of information.

When analysing the media message, three aspects of intercultural communication need to be borne in mind: it concerns distant culture - in the sense of both geographical and cultural distance, a recipient and his/her

expectations influence the message, which editors and journalists are well aware of and thereby provide the desired "product".

The media image of a Muslim has been deformed and misshapen more than other people/beliefs. The actual image becomes adulterated in the process of shaping and reading the content of the media message. The reasons for this state of affairs can be found in the mediatization of everyday life, which consists in imaging reality in a media message, which then influences the reality perceived by the recipients [14]. The mediatization of everyday life concerns almost all aspects of our lives. This is significant in so far as the media perform informational, orientation, educational and advisory functions, and serve as an activator of social activities. The media are also the main field of criticism of political activities and the controller of authorities. In other words, they generate and articulate messages that are perceived by the public as their own [14]. As Umberto Eco remarked: "Fictitious worlds are in fact parasites of the real world, however they are "worlds" that capture the lion's share of what we know about the real world; they allow us to concentrate on a finite, closed world, very similar to ours, but ontologically poorer" [4].

For this reason, media messages concerning contemporary migration and exile in the context of "a stranger" should be subjected to a special analysis and interpretation, since they are often an element of manipulation and disinformation [11]. "In wartime, truth becomes the first victim" [12]. The quote from the book Falsehood in Wartime. Propaganda lies of the First World War by Ponsonbi has never been more accurate.

4.   WHAT-IF ANALYSIS OF MEDIA COVERAGE IMPACTS ON GLOBAL SUPPLY CHAINS

What-if method may help in performing tasks and understanding more complex challenges. Questions are generated based on interviews among Polish members of society. The basis for the questions was the idea of an "alternative reality" created by media that covers many subjects. In most cases, this "alternative reality" may have a very slight influence on global supply chains whereas in a few cases serious damage may be caused.

Given the impact of the media on creating societal world views, decisions relating to global supply chains need to be informed by questions around societal stereotypes concerning for example Muslims, Jews, Russians or Asians which can negatively impact the capacity of global supply chain partners to create trusting commercial relationships. It has to be asked:

1)   how social message will affect the selection of suppliers and companies' local purchasing strategies;
2)   how the social and online media will affect the selection of alternative means of transport;
3)   how the media generally negative image of immigrants may affect perceptions relating to their quality of work;
4)   how the media image may affect the issues such as staff absenteeism and staff retention;
5)   how the lack of trust can in turn impact the range, quality and quantity of products and services that are ordered and transported.

A case study covered Polish drivers who transport goods to Great Britain via Calais and the increased expenses involved in insuring these transport routes as an alternative to ferry crossings from Rotterdam. Increased costs arose from drivers demanding higher pay, increased insurance costs, more parking tickets, more incidents of conflict etc.

The increase of threats related to transport safety and untimely delivery on the analysed route is strongly reflected in the increased costs of handling cargo deliveries to Great Britain. The main threat in the form of increased expenses is primarily due to special insurance conditions on this route and the possibility of penalties. An alternative route for deliveries to Great Britain includes the possibility of taking advantage of the ferry crossing in Rotterdam. However, this connection leads to Hull (the central part of Great Britain). The duration of the crossing is more than 10 hours longer than the crossing from Calais, while crossing the route between Calais and Hull takes about 5 hours. At the same time, carriers emphasize that carrying out cars through Rotterdam would increase costs by 20-30 % electoral [8,13].

Negative image of an immigrant causes racist and aggressive behaviour towards immigrants. As a consequence, they will leave the companies from the production lines. And that will cause labour shortages.

Other examples involved piracy and the increased costs of air freight which was chosen as a means of transport to address the risk that was faced by cargo ships from China as well as the impact of zloty currency depreciation on the cost of raw material inputs as a consequence of uncertainty around Polish investment grade ratings. The furniture chain, Ikea, experienced a fall-off in sales following media coverage of poor working conditions faced by Indian workers producing their furniture. The popular mineral water "Cisowianka" was hit by a 20 % fall in sales after articles appeared in the press about the health hazards associated with the alleged bacteria in their water.

The answers to following question could show the impact of media image for the supply chain's resilience:

1) Social media image can change the process of building supply chains by local carriers.
2) Media information about fake or misunderstand events/crisis/incidents may cause the alternative choose of transport even much more expensive what would increase cost of whole process.
3) Media image on immigrants may cause different problems: starting from changing whole process of supply chain, the suppliers, way of transport to conflict based on cultural background.
4) Negative media image on immigrants can cause cultural and social problems and conflict at work. Due to lack of polish workers and discrimination of the "others" it may cause lack of workers.
5) Media information, even the fake one, with negative repercussion usually cause fall off in sales.

The article discusses only a few examples of the media influence on the social perception of reality and the creation of an alternative reality. However, it should be mentioned that resilience global supply chains do not depend only on technical factors, but also on the human factor which has a huge impact on the whole process that is analysed.

5. CONCLUSION

The impact of the media on society is significant. The portrayal of conflicts and events can have a huge impact on the way a society reacts to contemporary challenges and the misrepresentation of information can lead to faulty decision-making and unnecessary, costly disruption to supply chains. Examples include the migrant crisis and the different ways it has been handled in European countries such as the UK, France or Poland or the impact of terrorist events in a country such as France. Global supply chains are based on trusting, often long-term commercial relationships between partners that at times are distant from both a geographic and cultural perspective. Such relationships can be undermined by the impact of ill-informed stereotypes generated by the media. The consequences can be severe at times. This study is a reminder of the importance of non-technical, human factors in the overall performance of supply chains. An interdisciplinary approach is needed to assess the resilience of global supply chains. The human factor is needs to be integrated into risk assessment processes. Economic and technical knowledge needs to be combined with socio-cultural research in order to generate a better understanding of overall risks and ultimately better, more rational decision-making. The challenge of how to assess the quality of such decision making remains open.

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