

A Survey on Cyberbullying in Small and Medium-Sized Hi-Tech Enterprises in the Republic of Bulgaria

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Abstract — Digital technologies create conveniences for work and interaction of the human factors in an online environment, but at the same time, problems arise when using them. The integration of digital technologies into the business practice of hi-tech enterprises is a natural process through which the human factors communicates and creates business content. Since a large part of communication processes are carried out online and physical interaction between people decreases, the opportunities for unregulated use of ICT technologies are increasing. This communication connectivity through computer networks, software platforms, social media and mobile devices creates prerequisites for cyberbullying in the workplace. The publication has conducted a preliminary study on the impact of cyberbullying in an online environment and the consequences for the emotional and psychological state and health of people. Small and medium-sized hi-tech enterprises on the territory of three large cities in the Republic of Bulgaria were studied, using a quantitative approach in the development of an online survey through which empirical data was generated. Based on the results, an analysis of the manifestation of cyberbullying was conducted in order to identify its impact and consequences for the human factors in a working environment.

Keywords—Behavior, cyberbullying, hi-tech, human factors.

I. INTRODUCTION

With the development of Industry 4.0 and the transition to 5.0, enterprises are faced with the challenges of digital transformation of business (especially in the field of high technology), where various aspects of digital processes, AI, robotics, software, cloud solutions and others are part of the modern business process. As a result of the digital transformation of corporate processes, enterprises rethink the business model, switch to a digital strategy and corporate culture, implement new technological solutions,

tools and approaches to work in a digital environment [1], [2], [3], [4]. The choice of cutting-edge technologies for digital transformation of business requires hi-tech enterprises to create new ways of working and interacting in a digital environment. In order to remain competitive and achieve the desired efficiency in the conditions of digital transformation, they must rethink business processes for creating value, relationships with customers and stakeholders.

Unlike the traditional corporate office where bullying can occur through direct interaction between people working there, the development of cutting-edge technologies removes the boundaries of this physical interaction [5], [6], [7]. Now, through the impact of computer technologies and applications, people can communicate with each other in the workplace without meeting in physical interaction. The boundaries between bullying that occurs in a physical environment of human interaction and cyberbullying are clearly recognized. This distinction is important to emphasize the increasing role of cyberbullying with the accelerated development of technologies and the integration of professional and personal communication in an online environment. Some authors [8], [9], [10], [11] emphasize the specificity of these circumstances as an important fragment for studying the role and effects of cyberbullying in the modern workplace. According to them, traditional bullying, which is carried out through direct contact between people, has clearer indications for identification and taking adequate countermeasures. This is because it is easily recognized by the personal identity of the confronting parties, who are in physical contact with each other, and is difficult to establish as a result of the dynamics and rhythm of the existing conflict. On the other hand, cyberbullying is not only within working hours, it is permanent and constant,

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regardless of distance and is not always carried out by the persons who carry it out. They can hide their identity under foreign or fictional profiles and is often not limited to the interests and behavior of the affected parties. One of the features of cyberbullying is the access of data and information to the mass audience, which may be sympathetic to the existing conflict. Sharing, liking, rejecting or commenting on the relevant information can spread so quickly on the network that it creates a viral effect in the created negative situation. Often, cyberbullying leaves some kind of trace within the technology and applications through which it is used, which can be grounds for taking judicial or legal action when it is not compromised with profiles that do not correspond to the actual person (or group of people) responsible for the cyberbullying.

Cyberbullying with the development of technologies has an increasingly global impact on the behavior and work capacity of human resources [12], [13]. The presence of specialized platforms for online sharing of corporate information, online messages, social forums, photo sharing and online content in general, provokes subjects to possible forms of cyberbullying [14] [15]. The root of the problem is not only professional relationships in an online environment, where people strive to prove themselves and compete with each other, but also personal perceptions, reactions and behavior, which can always affect someone's side. These online relationships are not only publicly accessible, but also create different attitudes in the target audience, which can exceed the permissible ethical norms and practices of communication and interaction in a digital environment. Although there is no universal definition of cyberbullying in the workplace (as a result of the different possibilities and circumstances for its occurrence), a concept has emerged in the scientific literature that is associated with a tendentious and continuous manifestation of intentional actions that are directed at a specific subject in an online environment. This is done through the use of modern information technologies, and more specifically digital devices such as desktop and laptop computers, tablets, smartphones, text and voice messages, online videos, websites, social media, blogs, chat rooms and tweets [16], [17], [18].

In this regard, authors [19], [20], [21], examine the different forms of cyberbullying that have a negative impact on the behavior and actions of the human factors in the workplace. In the general aspect of the problem, cyberbullying arises from sending, publishing or sharing inappropriate online content that can affect the dignity and personal views of people. This occurs through digital content that has a harmful negative, false or slanderous effect on someone else, who may feel affected by the situation and react according to his position and point of view. These actions often relate to sharing compromising or misleading information that does not correspond to reality or that embarrasses or humiliates people in the context in which it is sent. Therefore, some authors [22], [23], emphasize the individual forms of cyberbullying that

have their own specificity and way of manifestation. These forms concern the publication and sharing of negative or personally harmful online content, so that a certain person or group of people is intentionally affected. Another possibility for cyberbullying in the workplace is social media, which people use to share both professional and personal information (often the two are mixed). At this level, various opportunities for cyberbullying arise, as a result of professional and personal attacks, sharing negative online content or making malicious comments. It should be taken into account the sharing of false information online or without the knowledge and approval of the relevant subject, carrying out hacker attacks or sending emails with negative or offensive content. Also considered a form of cyberbullying is sending emails or text messages that do not fall within the standard working hours of people, especially if an immediate response or reaction is required from the person (or persons) for whom it is intended. It is not uncommon in the workplace when people's professional commitments or personal space are affected by the use of a fake online profile, indecent chat messages or the publication of indecent online content. There are also situations where online content is shared and communication is conducted on behalf of someone else, false statements, comments are spread or lies are used that aim to compromise a specific person or group of people in the enterprise. It is not to be underestimated to provoke a state that can lead the subject of cyberbullying to unconscious actions that endanger their own lives and the lives of others.

II. MATERIALS AND METHODS

The main objective of the publication is to conduct a survey among a certain group of respondents in hi-tech enterprises, which were randomly selected, in order to establish the level of cyberbullying in work practices, the consequences and effects on the human factors. The study was conducted on the territory of three large cities in the Republic of Bulgaria - Sofia, Plovdiv and Burgas, where a number of small and medium-sized enterprises in the field of high technology develop their activities.

The surveyed enterprises carry out business activities in two sectors of the hi-tech industry - information technology and telecommunications. The object of the study are respondents who fall into the category of technical specialists and administrative personnel. The study did not include managers from the different levels of the surveyed hi-tech enterprises in order to ignore the influence of power relations and to provide an objective idea of the degree and forms of bullying among people who more often fall into this category, i.e. employees and the relationships between them. It is also important to establish the consequences of cyberbullying that arise for the human factors and what their presence in the work and the relationships between them leads to.

The study was conducted for research purposes, the scope of which provides the necessary information to gain an idea of the typology and manifestation of cyberbullying

in a work environment with the option of expanding it in the future to a larger territorial area. A quantitative approach was adopted to conduct the study, and an online survey was compiled to collect data from respondents at an interval of two and a half months. The conducted study is part of separate stages of a larger project to study the impact of cyberbullying in different sectors of industry in the Republic of Bulgaria. A method of collecting information was chosen through an online survey, the key advantage of which is saving time and costs for conducting the study. The electronic survey was sent to 46 small and medium-sized hi-tech enterprises at random with the option to be completed only by employees. The division of enterprises is into two categories - twenty-one in the field of information technology and twenty-five in the field of telecommunications. The authors' goal is not to make a distinction between individual enterprises, but to study different areas of business in high technology and the influence of cyberbullying on the general performance and behavior of the human factors.

The completed and returned questionnaires were from 157 employees, representatives of 38 small and medium-sized hi-tech enterprises, due to the refusal of 8 of them to cooperate in the conducted study. The completion of the web-based questionnaire is in accordance with the voluntary consent of the respondents, while respecting the requirements for confidentiality, and the information obtained is used only in the form of a sociological sample for the development of the publication. Respondents are given the opportunity to answer anonymously about the possibilities of cyberbullying (or lack thereof). The study does not set age limits and gender division of employees, but seeks a comprehensive answer about the manifestation of cyberbullying and the effect it creates.

The survey is structured in six main questions so that respondents assess several components in the work environment – experience of cyberbullying, frequency of its manifestation, subject of influence of cyberbullying, form of cyberbullying, possible impact of cyberbullying on work and productivity and effect on the physical and emotional state of the human factors. Through the conducted study, the authors of the publication aim to reflect how digital technologies in the work environment (and often in personal relationships as a result) affect the interaction of the human factors in an online environment. On the other hand, an opportunity is sought to establish the prerequisites for cyberbullying in the workplace and the consequences for the emotional-psychological state and health of people in the studied small and medium-sized hi-tech enterprises.

III. RESULTS AND DISCUSSION

The results of the survey are formed by six main questions, the application of which in the online survey aims to provide a comprehensive assessment of the manifestation of cyberbullying in the surveyed hi-tech enterprises. The questions cover quantitative information that is sufficient to establish the perceptions of the

surveyed employees, as the structure of the questions allows for a comprehensive analysis of the impact and manifestation of cyberbullying and the effects on the physical and emotional state of the human factors in the surveyed enterprises. From the obtained results, a conclusion can be made based on the answers provided by the respondents. They are primary in nature, without being processed with statistical tools, so as to provide a comprehensive picture of the nature of cyberbullying in a certain group of small and medium-sized hi-tech enterprises on the territory of three large cities in the Republic of Bulgaria. The discussion on the individual questions of the survey is based only on the online answers received, without additional research or interviews with the respondents. This requires looking for a logical connection between the respondents' answers and justifying their perceptions regarding the main aspects, manifestation and effect of cyberbullying.

Figure 1 shows that a fairly large percentage of the surveyed respondents in the surveyed small and medium-sized hi-tech enterprises (83%) have experienced some form of cyberbullying, regardless of the degree and level of its manifestation. On the one hand, this is due to the widespread use of technological tools for work and communication, as well as an immediate connection between the communicating parties, but it also shows a worrying trend of a high percentage of experienced cyberbullying in the workplace or personal relationships as a result of the work performed. Whatever the circumstances, the fact that employees share the presence of cyberbullying (as evidenced by the high percentage) indicates that there is a problem in the mechanism of implementing work practices, monitoring ethical organizational standards or ineffective communication in professional relationships. It is not excluded that people communicate professionally or personally outside of working hours, where it is also possible for forms of cyberbullying to manifest themselves when mixing professional and personal relationships. At the same time, the rather low percentage of respondents who state that they have not experienced cyberbullying is striking, regardless of whether they are completely convinced of this (1%) or have hesitations on the issue (4%). It is also evident that 12% of the surveyed respondents cannot assess the situation, which generally means that they either do not recognize the symptoms of cyberbullying (and accordingly it has not affected them in any way) or fall into the category of those who have not experienced it. Even so, the high percentage of employees who have experienced cyberbullying is an indicative trend for the tangible impact of technology on people and perhaps problems in corporate work practices and interaction.

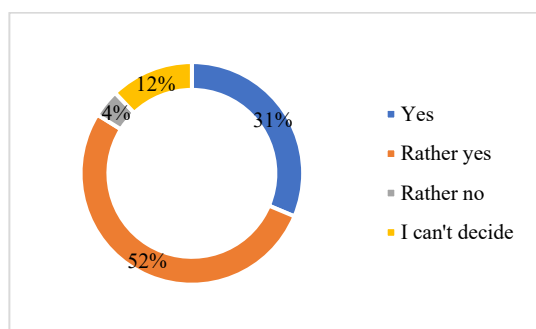


Fig. 1. Answer to the question: "Have you experienced cyberbullying at work"?

From Figure 2, it can be concluded that almost the entire group of respondents (91%) has experienced cyberbullying at work, although with different frequency of occurrence – constantly (31%), at a certain interval of time (43%) and occasionally (17%). In practice, this means that almost every employee at work has had situations of cyberbullying that have affected them in one way or another. The percentage of those who constantly experience cyberbullying is not small, which obviously has a different impact on the way in which work commitments are performed, including people being exposed to great risk regarding their physical and emotional state. This group is defined as risky because cyberbullying may increase as a trend, as a result of peculiarities in behavior and interaction between people or purely organizational problems in the activities of hi-tech enterprises. The highest percentage of the surveyed respondents is those who have received cyberbullying at work over a certain period of time, i.e. at cyclical intervals. This may be due to the development of group dynamics in the team or the attitude to work on various projects and tasks, which often exacerbate relationships in an online environment. Only 1% of respondents said that they had not experienced cyberbullying at work, and 8% of them could not assess the nature of the situation. In general, the authors' opinion prevails that regardless of the frequency of manifestation, cyberbullying in the studied hi-tech enterprises varies widely.

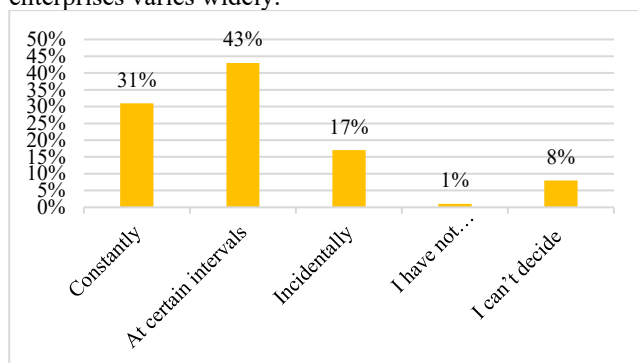


Fig. 2. Answer to the question: "How common is cyberbullying in the workplace"?

Figure 3 shows which subjects cyberbullying occurs in the workplace, according to the information from the surveyed group of respondents in hi-tech companies. It is striking that the largest percentage of cyberbullying is formed by work and interaction in the team or people who perform certain work duties together (59%). This may be due to various reasons that are related to daily communication and exchange of information between people, the way they communicate, distribute and fulfill their work commitments in an online environment. A large difference is also noted in the percentages of cyberbullying carried out by senior and direct managers – 2% and 31%, respectively. Perhaps this difference is normal and is explained by the access of employees to the relevant managers, i.e. the frequency and level to which they communicate with each other. It is normal for most communication and information exchange to take place with the immediate supervisor, resulting in cyberbullying situations in the workplace. The main reasons for this may be digital relationships at the expense of social ones, which are absent or neglected, unregulated mobile calls, email or chat messages outside of working hours, or other factors that oppose immediate managers and employees in an online environment. Since in most cases employees do not have access to senior managers or it is severely limited, cyberbullying amounts to only 3%. It should not be overlooked that not all actions of immediate managers fall into the category of cyberbullying (even if it appears to employees) when the rules for assigning, performing, reporting and controlling activities and tasks in an online environment are followed, which can be investigated in detail through another survey approach. 7% of respondents said they have experienced cyberbullying from customers, which in the context of digital business, online stores, websites and e-commerce platforms may be perceived as a normal phenomenon or at least not within the framework of the surveyed companies. When asked in the survey about the possibility of cyberbullying from business partners, there was no negative response (0%), which is due either to well-established relationships or employees having no contact with them.

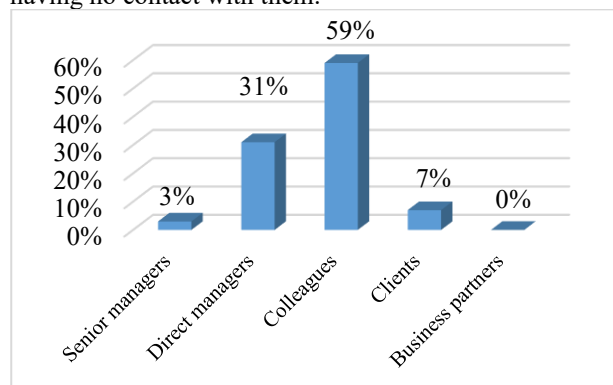


Fig. 3. Answer to the question: "Who have you been cyberbullied by at work"?

From Figure 4, a conclusion can be made about the form of harassment that respondents have experienced in the process of work and interaction in an online environment. It is striking that 87% of respondents claim to have experienced systematic cyberbullying on a personal basis. This also overlaps with a previous aspect of the study, mainly with regard to cyberbullying by colleagues. The main assumption here is that the constant interaction between people in the process of work is transformed into some personal relationships, which obviously mix with work and negatively affect not only communication, but also the result of the implementation of goals and tasks. The next point of a high percentage of cyberbullying from the study is online messages, mobile calls and chat outside working hours (73%). Perhaps this aspect of cyberbullying also overlaps with a previous question, mainly with regard to direct managers and their desire to achieve target goals and planned initiatives. Usually they are the ones who feel empowered to communicate with employees at any time of the day, regardless of the type of communication channel, which obviously reflects negatively on the respondents. More interesting is the case of cyberbullying based on indecent online and chat messages (45%). Here it is possible to make two main assumptions. First, collegial relationships at work are probably growing into personal ones (at least for one of the communicating parties), which is expressed in various forms of intimate or inappropriate conversations, including sending inappropriate photos. Second, with the development of technology, communication now dominates in an online environment, where, along with work relationships, personal ones also arise, which can cross the line of ethical and decent forms of behavior at work. Whatever the reasons, there is a lack of effective monitoring of the communication channel during work, unless this aspect of cyberbullying is mainly carried out outside of working hours, for which there is no clear indication. Also, 25% of respondents share about cyberbullying as a result of online messages and chat with fake content. A bigger problem is cyberbullying based on messages and chat with threatening content (11%), which is an obvious form of digital aggression. Management and cybersecurity experts in the surveyed hi-tech enterprises should implement a strict policy on digital online content and introduce systems and technologies for indicating malicious or provocative online practices. A part of the respondents reported cyberbullying through compromising devices for working with malware (3%), which is a cybersecurity lapse and another within 1%.

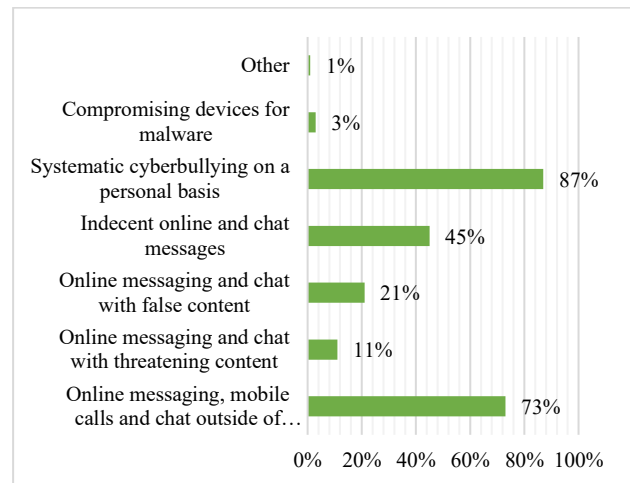


Fig. 4. Answer to the question: "What form of cyberbullying have you experienced at work?"

The question regarding the form of cyberbullying that employees have experienced at work is extremely interesting, as shown in Figure 5. For 83% of respondents, the problem arises from a lack of concentration, because cyberbullying distracts their attention from the real goals and tasks that they have to perform at work. An obvious consequence of this is low quality of work performed, as indicated by 76% of the employees surveyed. Another problem that arises among respondents as a result of cyberbullying is ineffective communication at work and the prerequisites that limit business communication between people (69%). It should not be forgotten that lack of concentration, low quality of work performed and ineffective communication are the main reasons for low productivity and efficiency. Approximately similar percentages of respondents are given that cyberbullying creates prerequisites for wasting time in performing work tasks (51%) and failure to meet deadlines (32%). Only 1% of respondents said that cyberbullying does not affect their work or their relationships with others, and 2% cited other reasons.

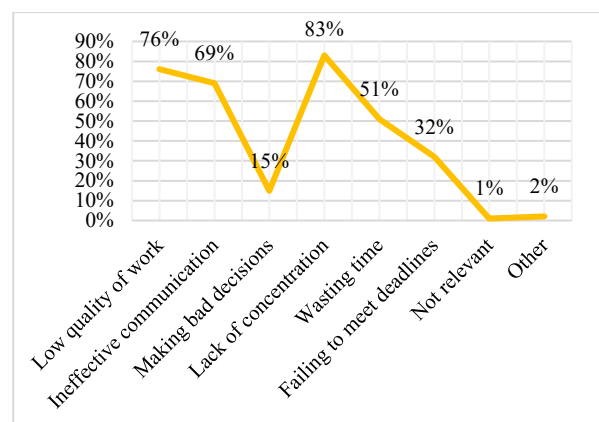


Fig. 5. Answer to the question: "How does cyberbullying in the workplace affect your work commitments and productivity?"

Regardless of the form and extent of cyberbullying, it can have different consequences for employees. Figure 6 shows how it affects their physical and emotional state in the hi-tech companies studied. The highest percentage of cyberbullying employees identify stress, anxiety and depression (91%), which is one of the major problems in the modern workplace, especially with the technologization of operations and the digital implementation of goals and tasks. Next in line are mental disorders (84%), health problems (78%), technostress from cyber provocations (68%), apathy and disinterest in work (35%). Only 1% of respondents claim that cyberbullying does not affect their work, and 4% indicated other reasons. These symptoms of cyberbullying should be regularly monitored, and senior management should take regular and adequate measures to implement strategies to counteract the negative effects.

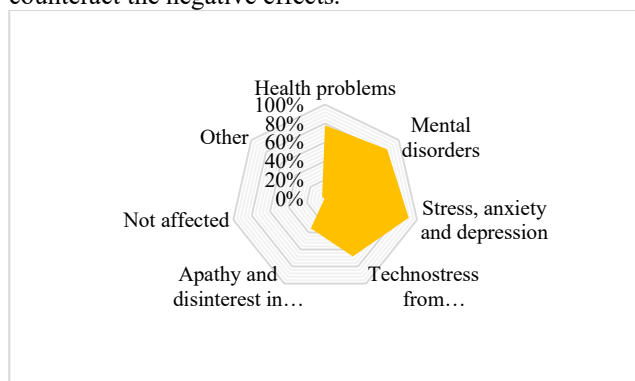


Fig. 6. Answer to the question: "How does cyberbullying affect your physical and emotional well-being?"

IV. CONCLUSIONS

The purpose of the publication was to study the presence of cyberbullying and its consequences on the human factors in small and medium-sized hi-tech enterprises in the Republic of Bulgaria. The publication generated results, the interpretation of which showed the presence of cyberbullying in the studied hi-tech enterprises, which is mainly due to the unprecedented use of technologies and software applications in work practices and communication between people. On the other hand, there is a lack of adequate mechanisms for prevention and deterrence in the online environment. It was found that employees experience cyberbullying constantly and at certain intervals of time and are practically affected by its manifestation in one way or another. From the point of view of the subject of influence, cyberbullying in the workplace occurs to the greatest extent as a result of group dynamics and the concentration of relationships within the team. The other more significant problem in this regard arises from direct managers who influence the behavior and actions of employees in the online environment.

Employees were affected by various effects, mainly due to systematic cyberbullying, which was carried out on a personal basis, including online messages, mobile calls

and chat outside working hours. From the point of view of the performance of work by employees, cyberbullying led to a decrease in productivity and distraction from their main tasks, including unfinished ones. The negative effects of cyberbullying are mainly manifested in a lack of concentration at the workplace, low quality of work performed, ineffective communication, as a result of which people waste unnecessary time in performing their assigned tasks and miss established deadlines. The negative effect of cyberbullying is that it affects the physical and emotional state of the human factors in the studied hi-tech enterprises, causing stress, anxiety and depression, mental disorders, health problems and technostress.

In addition, the reasons for the manifestation of cyberbullying are the lack of adequate mechanisms on the part of hi-tech enterprises for the prevention and monitoring of cyberbullying. In the general context of the issue, it has been established that cyberbullying is harmful (unwanted) behavior in the workplace, which can disrupt the personal and professional rhythm of any person exposed to stressful and harmful factors and situations in the online space. The empirical data in the publication can serve the authors for future research to establish the specific features of the types of bullying by categories of its manifestation and the role of direct managers in influencing subordinates. It is also necessary to study the factors that are a prerequisite for cyberbullying or are part of the employees' job commitments, as well as the indicators that form an inappropriate culture leading to cyberbullying in the workplace.

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