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CYBERSECURITY – THE CHALLENGE OF INFORMATION SECURITY IN TOMORROW’S SOCIETY

BEZPIECZEŃSTWO CYBERPRZESTRZENI CYWILIZACYJNYM WYZWANIEM ZWIĄZANYM Z BEZPIECZEŃSTWEM INFORMACJI W SPOŁECZEŃSTWIE JUTRA

Abstract: Cybersecurity is one of the most important contemporary challenges and also one of the challenges of tomorrow’s society. It concerns both the protection of the digital sphere of information and the sustainable development of the anthroposphere of the modern information society. The challenges of information security in cyberspace focus primarily on various types of threats. In the society of tomorrow, modern information and communication technologies, artificial intelligence and digital information security will play an important role. Assistance in recognizing them and using them to solve problems is offered by national security and social communication and media sciences, among others. The purpose of this article is to show the potential and role of information trust in information security efforts in the cyberspace of tomorrow’s society. This potential is represented by the four pillars of information security based on public trust in information, highlighted in the text.

Zarys treści: Bezpieczeństwo cyberprzestrzeni jest jednym z najważniejszych współczesnych wyzwań, a także jednym z wyzwań społeczeństwa jutra. Ten rodzaj bezpieczeństwa dotyczy zarówno ochrony sfery cyfrowej informacji, jak i zrównoważonego

rozwoju antropoinfosfery współczesnego społeczeństwa informacyjnego. Wyzwania dotyczące bezpieczeństwa informacji w cyberprzestrzeni wiążą się przede wszystkim z różnego rodzaju zagrożeniami. W społeczeństwie jutra istotną rolę odgrywać będą nowoczesne technologie informacyjne i komunikacyjne, sztuczna inteligencja oraz cyfrowe bezpieczeństwo informacyjne. Pomoc w ich dostrzeganiu i wykorzystywaniu do rozwiązywania problemów może być zapewniona m.in. przez nauki o bezpieczeństwie narodowym oraz o komunikacji społecznej i mediach. Celem artykułu jest pokazanie potencjału i roli zaufania do informacji w działaniach na rzecz bezpieczeństwa informacji w cyberprzestrzeni społeczeństwa jutra. Potencjał ten jest reprezentowany przez wyeksponowane w tekście cztery filary bezpieczeństwa informacji oparte na zaufaniu społecznym do informacji.

Keywords: information security, information management, information and knowledge society.

Słowa kluczowe: bezpieczeństwo informacji, ład informacyjny, zaufanie do informacji, wiarygodność informacji, klimat informacyjny, zarządzanie informacją, społeczeństwo informacji i wiedzy.

In the era of free flow of information, cybersecurity is one of the strategic objectives in the defence of security of any country.¹ Information security is a global challenge of the 21st century.² This security depends on the smooth operation of mechanisms to prevent and combat threats in various spheres, including cyberspace. Such a prevention “mechanism” is the formation of social trust based on the author’s concept of the four pillars constructed in the article, emphasizing the humanistic aspect of information security. Information security is particularly important in conditions of ignorance or uncertainty, related to unknown or unknowable actions of others. Information security of tomorrow’s society will be shaped, in my opinion, by the following four pillars: social

¹ Cf. J. Grubicka, E. Matuska, *Bezpieczeństwo cyfrowe. Perspektywa organizacyjna*, Difin, Warszawa 2023; J. Grubicka, R. Kompowska-Marek, *Przestrzeń cyfrowa ponowoczesności. Jednostka. Technologia. Profilaktyka*, Difin, Warszawa 2024.

² Cf. W. Babik, *Information security as a global challenge for the 21st century*, “Studia nad Bezpieczeństwem” 2022, no. 7, pp. 39–47.

information governance, information trustworthiness, trust in information and a positive information climate.

1. Social trust – a key social category

Social trust is the foundation of information security in cyberspace. Hence, we will first define the concept of trust and its types, dimensions, tasks and functions, since social trust is based on it, as are the pillars of information security in cyberspace.

1.1. The concept of trust

Trust is a concept closely related to ethics and morality.³ It belongs to human discourse, which in practice means that we do not direct it towards the natural world, but towards the social world. From this it follows that other people and their actions are the main addressees of our actions. When interacting with others, we often find ourselves in a situation of uncertainty, dismay or surprise.⁴ We experience “opacity of other people’s intentions.”⁵ Trust directed at objects is only appropriate when they are the products of human activity, because in this way we indirectly express trust in the people who created them. By using the term trust in relation to objects or natural events we metaphorically give them human

³ Trust in an object is the knowledge or belief that its actions, future state or properties will turn out to be in accordance with our wishes. If we do not have such certainty, trust is also accompanied by hope. The object of trust can be anything, e.g. a person, animal, object, substance, institution, society, God. In the case of interpersonal relationships, trust usually refers to the honesty of the other party towards us, which does not necessarily mean honesty towards others, e.g. in a criminal group. Trust may or may not be reciprocal; it is one of the basic human bonds, both in the family and in social groups, and is sometimes particularly valuable in crisis situations. Instilling trust is also a common *modus operandi* of criminals, especially fraudsters. The emotion of trust is also experienced by more intelligent animals (entry *zaufanie*, Wikipedia.pl, <https://pl.wikipedia.org/wiki/Zaufanie>, accessed 19.12.2024). Cf. M. Szymczak (ed.), *Słownik języka polskiego*, PWN, Warszawa 1983, p. 584.

⁴ P. Sztompka, *Zaufanie. Fundament społeczeństwa*, Wydawnictwo Znak, Kraków 2007, pp. 63–64.

⁵ A.B. Seligman, *The Problem of Trust*, Princeton University Press, Princeton 1997, p. 43.

characteristics.⁶ To trust, however, means to have the conviction that one can rely on someone, to expect the fulfillment of something (truth). Thus, trust refers to someone or something and means to confidently trust someone or something.

According to Eric Uslaner, the elementary type of trust is normative trust, which is an ethical attitude acquired through the process of socialization; “it is a general view of human nature and mostly does not depend on personal experience or the assumption that others are trustworthy (...) normative trust is the command to treat people as if they are trustworthy. It is a paraphrase of the golden rule (or Kant’s categorical imperative) (...) normative trust is the belief that others share your basic moral values and therefore should be treated by you as you would like to be treated by them.”⁷

Normative trust is based on the assumption of the goodwill of others, which justifies the choice of cooperative strategies during joint actions. According to this, “to trust is to believe, to move to the side of faith that cannot be reduced to anything else. Trust is specifically related to (...) ignorance. We don’t need to trust someone we have a constant eye on and whose actions we can directly control.”⁸

Francis Fukuyama, whose concept of trust is on the borderline of the normative trend, considers trust in terms of social capital. According to him, trust is “a mechanism based on the assumption that other members of a community are characterized by honest and cooperative behaviour based on commonly held norms.”⁹ These norms can be both religious and secular in nature.

In interpersonal relationships, we do not have the ability to directly or fully control the actions of others.¹⁰ Therefore, trust can be understood as “a strategy for dealing with the freedom of other entities or agendas.”¹¹ A person is constantly in a situation of uncertainty in relation to the future actions of others, over which they do not have any control and also do not know how others will react to their

⁶ P. Sztompka, *Zaufanie...*, op. cit., pp. 62, 63.

⁷ E. Uslaner, *Zaufanie strategiczne i zaufanie normatywne*, in: P. Sztompka, M. Bogunia-Borowska (eds.), *Socjologia codzienności*, Wydawnictwo Znak, Kraków 2008, p. 185.

⁸ A. Giddens, *Nowoczesność i tożsamość*, Wydawnictwo Naukowe PWN, Warszawa 2006, p. 27.

⁹ F. Fukuyama, *Zaufanie. Kapitał społeczny a droga do dobrobytu*, Wydawnictwo Naukowe PWN, Warszawa–Wrocław 1997, p. 38.

¹⁰ P. Sztompka, *Zaufanie...*, p. 66.

¹¹ J. Dunn, *Trust and Political Agency*, in: D. Gambetta (ed.), *Trust Making and Breaking Cooperative Relations*, Basil Blackwell. Oxford 2008, p. 73.

actions and can not in any way prepare for it.¹² This means that “uncertainty and risk are inherent in the human condition”¹³, including trust.

When an individual takes action despite uncertainty, lack of control and risk, we are dealing with trust, which belongs to the discourse of subjectivity which means that trust is seen as a strategy for dealing with uncertainty and the inability to control the course of the future.¹⁴ According to this assumption, trust is “a bet made on the uncertain future actions of other people.”¹⁵ In practice, this means that trust is made up of two elements: belief and the way it is expressed in practice.

The literature distinguishes four basic ways of expressing trust, which can occur separately or simultaneously in a single act of trust:

1. anticipatory trust – an individual takes an action oriented towards others because they are convinced that their actions will be beneficial to their interests.¹⁶ In this case, “the trusted party does not commit to anything, they may not even be aware that someone is placing their trust in them.”¹⁷
2. fiduciary trust – this type of trust has a defined addressee, and its foundation is the expected reactions of others to the trust we place in them.¹⁸ In this sense, trust involves “allowing other people (understood either literally or figuratively, i.e. also institutions, companies, etc.) to take care of something that is important to the one who places trust in them, in a situation where such care involves the exercise of some form of authority.”¹⁹
3. obliging trust – involves demonstrating one’s trust in relation to the other person in order to oblige them to meet our expectations.²⁰
4. provoked trust – this type of trust involves the demonstration of one’s trust in order to provoke an analogous reaction in the interaction partner, that is, to bring about a situation of mutual trust.²¹

¹² P. Sztompka, *Zaufanie...*, op. cit., pp. 66–67.

¹³ Ibidem, p. 67.

¹⁴ Ibidem, p. 69.

¹⁵ Ibidem, pp. 69–70.

¹⁶ Ibidem, p. 75.

¹⁷ R. Hardin, *Trusting Persons, Trusting Institutions*, in: R. Zeckhauser (ed.), *Strategy and Choice*, The MIT Press, Cambridge 1991, p. 198.

¹⁸ P. Sztompka, *Zaufanie...*, op. cit., p. 75.

¹⁹ A. Baier, *Moral Prejudices: Essays on Ethics*, Harvard University Press, Cambridge 1995, p. 105.

²⁰ P. Sztompka, *Zaufanie...*, op. cit., p. 76.

²¹ Ibidem, p. 78.

The content of trust varies dramatically depending on the situation, which means that trust is determined by the situational context, in which the key is whether the situation is clearly and unambiguously defined. Trust is usually relative in nature. Absolute trust is very rare and is most often demonstrated in pathological situations.

More often than not, specific expectations are closely linked to specific social roles and institutions, as there are legal rules that define how people who occupy certain social positions or work for a certain institution should act. When expectations are normatively defined, individuals and institutions are obliged to take full responsibility for their actions. Failure to live up to social trust is a violation of norms and carries certain sanctions. A key role in increasing public trust in social institutions is played by the legal system, which should be the foundation of cohesion and stability of the entire social organization. In order to increase the sense of stability of the social order it is necessary to guarantee the consistency and unquestionability of the rules, which should be guarded by the constitution and normative acts. In all institutions, positions should be filled by people who will represent them with dignity and professionalism when dealing with clients or petitioners.²² These people should remember that they function as “access points”²³ to the system and are obliged to properly represent the institution in which they work and the system of which they are a part.

In carrying out their duties, they should bear in mind that “attitudes of trust or distrust toward a particular abstract system are strongly influenced by experiences gained at access points (...) Bad experiences at access points can lead either to resigned cynicism or, where possible, to complete withdrawal from the system.”²⁴

1.2. Types of trust

The literature distinguishes three basic types of trust: personalized; generalized, that is, social; and institutional, understood as trust in formal institutions. Between these varieties of trust there are no clearly defined relationships.²⁵

²² Ibidem, pp. 132, 295.

²³ A. Giddens, *The Consequences of Modernity*, Polity Press, Cambridge 1990, p. 90.

²⁴ Ibidem, pp. 90, 91.

²⁵ K. Nowakowski, *Wymiary zaufania i problem zaufania negatywnego w Polsce*, “Ruch Prawniczy, Ekonomiczny i Socjologiczny” 2008, vol. 70, iss. 1, p. 215.

Personalized trust involves a state of emotional affection toward people we know: family, friends and acquaintances. It is an attitude or disposition towards relationships with other people, a certain degree of acceptance of risk or harm that may occur during interaction with another person.²⁶ It is located in the “stock of handy knowledge”, forming socially approved, that is, taken for granted and self-understood natural behaviour in typical situations.²⁷ It is rarely the subject of conscious reflection. People assume that others with whom the acting person establishes relationships are treated as if they have the same stock of cache knowledge (the presumption that the world is the same for everyone).²⁸

Generalized trust is trust in strangers based on direct experience of living in society, daily relationships with friends, family, neighbours, colleagues and others with whom an individual interacts “face to face.” Personalized trust often creates the rationale for generalized trust.²⁹

Institutional trust is based primarily on indirect experience, transmitted information about institutions or political leaders. Lack of institutional trust can result from reflections on the state of political life, from attitudes toward people who lead democratic institutions and other agencies that implement public programmes, from general trust in the democratic system and democratic procedures.³⁰ According to Bo Rothstein “special” type of public institution produces social capital in the form of trust, and where this social capital does not influence the work of said institutions. The basic institutions that create social trust are law and order bodies such as courts, the police and the military.³¹ A different view is held by Robert Putnam, who argues that people trust public institutions because they trust others.³²

The aforementioned Francis Fukuyama argues that, with regard to trust, we can speak of gradually expanding concentric circles of trust, or the so-called

²⁶ Ibidem, pp. 215, 216.

²⁷ A. Schütz, *The Stranger*, in: A. Brodersen (ed.), *Collected Papers. Studies in Social Theory*, Martinus Nijhoff Publishers, The Hague 1976, p. 95.

²⁸ J. Turner, *Struktura teorii socjologicznej*, Wydawnictwo Naukowe PWN, Warszawa 2004, p. 414.

²⁹ K. Nowakowski, *Wymiary...*, op. cit., pp. 216–218.

³⁰ Ibidem, p. 218.

³¹ B. Rothstein, *Social Trust and Honesty in Government: A Causal Mechanism Approach*, in: J. Kornai, B. Rothstein, S. Rose-Ackerman (eds.), *Creating Social Trust in Post-Socialist Transitions*, Palgrave Macmillan, London 2004, p. 7.

³² R. Putnam, *Bowling Alone: The Collapse and Revival of American Community*, Simon and Schuster, New York 2000, p. 8.

“trust horizon”: from the most direct interpersonal relationships to a more abstract reference to public objects. The smallest horizon includes trust in family members, which is most characterized by intimacy and closeness. Then we talk about trust in people we know personally, whom we identify by name and with whom we interact directly, such as friends, neighbours, work acquaintances and business partners. This trust is also characterized by a high level of intimacy and closeness. The wider circle of trust includes members of society whom we know indirectly or personally only through individual representatives, e.g. residents of our locality or employees of our company. The most distant horizon and the widest circle of trust includes people with whom we think we have something in common, although they are mostly “absent others” because we do not enter into direct relations with them, and only our imagination links them into actual collectivities, e.g. compatriots or members of some groups. In this case, trust in specific people is transformed into trust in social objects.³³

The famous Polish sociologist Piotr Sztompka assumes that trust is always directed towards the unpredictable actions of others, and consequently also towards the effects of their activities. These “others” come in many forms, while their actions are characterized by varying degrees of complexity. Based on this assumption, he proposed the author’s very detailed typology of trust.³⁴

1.3. Dimensions of trust

Actions that are expressions of trust are found in three areas of reality that are considered complementary. They make up the complex three-dimensional status of trust. On this basis, we view trust as a relationship, a personality tendency and a cultural rule.

The relational dimension of trust is dealt with by the theory of rational choice. The basic premise of this concept is that both trusting and trusted individuals are rational individuals seeking to maximize their own gains. These individuals evaluate the trustworthiness of a partner on the basis of available information and rational calculations. The relationship between them is transformed into a kind of game in which each partner is guided by their own rational arguments and takes into account the calculation-based rationality of the

³³ P. Sztompka, *Zaufanie...*, op. cit., pp. 104–105.

³⁴ Ibidem, pp. 103–111.

other in their actions.³⁵ In this view, “trust is presented as primarily a rational expectation of – most often – the calculating trust of the trusted person (...) Trust [is seen] as a manifestation of interest.”³⁶ The trust entity is guided by two principles. The first is to maximize profit with risk. The second principle is to minimize the loss in a risky situation. The main problem for an individual who places trust is the lack of sufficient information related to all relevant aspects of a situation. The most difficult and demanding task of all kinds of information is to assess the trustworthiness of the individual or social object we want to trust.³⁷ According to James Coleman, “when we consider whether or not to place trust in someone, often the greatest unknown is the likelihood that the person will fail the trust placed in him or her.”³⁸ In a situation of mutual trust between interaction partners, we have a situation in which the trusted person reciprocates the trust of the partner expecting trustworthy behaviour on their part.³⁹ In this case, it is the trusted person who is obliged to fulfill the trusted person’s expectations in the situation of continuing the relationship. In a situation of mutual distrust, on the other hand, interaction partners suspect each other of immoral behaviour. They take all sorts of measures to separate themselves from their partner, which prevents them from verifying their suspicions.⁴⁰

Considering trust as a personality disposition, that is, the characteristics of the trusting person, is characteristic of social psychology. This approach is related to the so-called “basic trust” or “trust impulse”, which is seen as the result of a successful socialization process. The presence or absence of basic trust is a factor that significantly modifies the calculation of risks and costs, since it affects the granting or withdrawal of trust in relation to others.⁴¹

Trust viewed as a cultural rule is the domain of the cultural approach. According to this assumption, it is the normative rules inherent in a given culture that significantly influence whether or not an individual places trust in an object. Trust is directed toward social groups rather than individual relationships or individuals. In a given culture, trust rules apply both to those who bestow trust and to those who are trusted. This means that at the same time there are norms

³⁵ Ibidem, pp. 134–136.

³⁶ R. Hardin, *Trusting...*, op. cit., p. 187.

³⁷ P. Sztompka, *Zaufanie...*, op. cit., p. 136.

³⁸ J. Coleman, *Foundations of Social Theory*, Harvard University Press, Cambridge 1990, p. 102.

³⁹ A. Giddens, *Nowoczesność...*, op. cit., pp. 133–134.

⁴⁰ P. Sztompka, *Zaufanie...*, op. cit., p. 137.

⁴¹ Ibidem, pp. 142–143.

that obligate trust and norms that obligate one to behave in a trustworthy manner.⁴² Modern societies can be divided into societies that operate according to a culture of trust characterized by situations in which people not only routinely act on the basis of trust, but are also culturally encouraged to do so, and those that operate according to a culture of distrust, the so-called “culture of cynicism.”⁴³

1.4. Functions of trust

Trust has many functions. They are diverse, since trust affects basically every human activity. In the era of changes concerning both the organization and functioning of the modern world, trust is closely related to new forms of organizing human activity and activity. According to this, it is increasingly difficult for people to function effectively in various areas of life without trust.⁴⁴ In the literature many functions can be found of trust considered from the perspective of various criteria. Most often, however, the functions of trust are analysed from two perspectives: the benefits for the interacting partners and the benefits for the broader society within which the relationship takes place, that is, the group or community.⁴⁵

The functions for the interacting partners are divided into benefits for the trust givers and benefits for the trusted. The bestowal of trust on others involves positive actions toward those people, i.e. the expression of trust in action. Trust releases human subjectivity and triggers creative unconstrained and energetic actions toward people. Interactions with people we trust are free from fears, suspicion and caution, which allows for greater spontaneity and openness.⁴⁶

Fulfilling someone's expectations fulfills many benefits for the individual who has been trusted. According to Diego Gambetta, “It is important to trust others, but it can be just as important to enjoy their trust.”⁴⁷ The main gratification of meeting someone's expectations is to increase one's credibility. To be credible “means to live up to the trust given, to maintain someone's trust, to continue a relationship

⁴² J. Palka, R. Winkler, *Bariery budowy kultury zaufania*, “Zeszyty Naukowe – Akademia Ekonomiczna w Krakowie” 2006, no. 715, pp. 31–33.

⁴³ M. Mularska-Kucharek, *Kultura zaufania czy nieufności? O społecznym zaufaniu mieszkańców lokalnych społeczności*, “Więś i Rolnictwo” 2010, no. 2 (147), pp. 67–71.

⁴⁴ A. Sankowska, *Zaufanie w społeczeństwie informacyjnym*, “Roczniki Ekonomii i Zarządzania” 2013, vol. 5, p. 117.

⁴⁵ P. Sztompka, *Zaufanie...*, op. cit., p. 305.

⁴⁶ N. Luhmann, *Trust and Power*, Polity Press, New York 1979, p. 8.

⁴⁷ D. Gambetta, *Can We Trust Trust?*, in: idem (ed.), *Making and Breaking...*, op. cit., p. 221.

with someone who places trust in us.” An individual who enjoys someone’s trust derives many benefits from it. The first is autotelic satisfaction, which is related to the innate human desire to live in a community, which entails a sense of recognition, sympathy or acceptance and facilitates interaction.⁴⁸ The second benefit is instrumental gratification of various kinds, which is primarily associated with the suspension of certain social constraints, and therefore “the trusted person can afford to take actions that would not otherwise be possible.”⁴⁹

The benefit of trust for the larger community is primarily to increase its so-called social capital. Social capital stimulates and enhances sociability, encourages joint participation in various types of communities by which, consequently, it expands the network of interpersonal ties, enlarges the field of interaction and makes it possible to establish closer relations with other people.⁵⁰ Trust fosters tolerance and acceptance of what is not known, allows for the existence of cultural and political differences and ensures that they are not perceived as a threat. Besides, it strengthens the ties between the individual and the community, influences the sense of identity and produces strong group solidarity, thereby encouraging people to cooperate and help each other. The existence of trust significantly reduces the costs of various social transactions and increases the chances of mutually beneficial cooperation.⁵¹

2. Pillars of information security in cyberspace

2.1. Information governance

From the point of view of the purpose of the article, it is worth emphasizing that “every society and economy form a certain social information order understood as a complex of social norms, processes, systems and information resources on the basis of which societies, states and economies function.”⁵² This order is shaped by the established norms of processes, systems and information resources, which in total form the information infrastructure of the state. Social information

⁴⁸ P. Sztompka, *Zaufanie...*, op. cit., p. 310.

⁴⁹ J. Coleman, *Foundations...*, op. cit., p. 97.

⁵⁰ M. Cladis, *A Communitarian Defense of Liberalism: Emile Durkheim and Contemporary Social Theory*, Stanford University Press, Stanford 1992, p. 196.

⁵¹ P. Sztompka, *Zaufanie...*, op. cit., pp. 307, 308.

⁵² J. Oleński, *Ekonomika informacji. Metody*, PWE, Warszawa 2003, p. 9.

governance is formed in a wave of social and economic development. It is a determinant of the quality of life in the modern world.⁵³

The term “information governance” emerged at the Fifth Conference of the Non-Aligned Movement in Colombo in 1976. This conference recognized that information governance was as important as economic governance because of the importance of the problems. The issue of information governance was further clarified by the UNESCO Declaration in 1978, postulating the free circulation of information and the wider and balanced dissemination of information, including freedom of information and diversity of information sources and means. Since then, the problem of information governance has become the subject of discussion primarily within the UN, UNESCO and the group of non-aligned countries. Some Western countries and the US opposed any regulation on the issue, believing that information circulation should be an independent sphere and part of private property. When new technologies emerged in the 1980s, information flow became more accessible.

The social order of information also immanently includes civil rights, including the right to information. This means that “every citizen has the right to reliable, verifiable and up-to-date information that they need to live and function in society and the state. Restricting, obstructing or providing information that is untrue, unreliable or misinformation is a violation and infringement of human and civil rights.”⁵⁴ Hence, every citizen should have access to the appropriate amount of information that is necessary for them to exercise their other human and civil rights. Evident here is a high correlation between the development of legislation, privileges and regulations and the necessary knowledge that everyone should possess in order to develop properly and be able to adapt to the given environment.⁵⁵ This applies in particular to information policy, information law, customs and good practices, and the situation that the law is not a sham, is observed and respected, and that there is an inevitability of punishment for non-compliance with the law and the law is fair.

⁵³ Cf. J. Miluska, *Ład społeczny jako determinanta jakości życia*, “Ruch Prawniczy, Ekonomiczny i Socjologiczny” 2003, vol. 65, iss. 1, pp. 173–185.

⁵⁴ Ibidem, p. 15.

⁵⁵ T. Galewski, *Psychologiczne bariery informacyjne w społeczeństwie informacyjnym*, “Zeszyty Naukowe Uniwersytetu Szczecińskiego” 2012, no. 721 (“Studia Informatica”, no. 29), p. 188.

2.2. Reliability of information

Information credibility is a complex and multi-faceted problem. It is a specific property of information correlated with information security, identified with the veracity and quality of information. This property of information is that a given piece of information can be verified as true when it meets the required standards of accuracy, timeliness, completeness and security. Assessing the credibility of information helps in deciding whether the information is valuable. When there is an inconsistency in the message from the sender in our perception of the information, then we do not believe the information. If the content of the message aligns with our mental model, then we accept the information in question as credible. Thus, the credibility of information is relativized to both the sender and the receiver of information.⁵⁶ Assessment of the credibility of information also depends on the medium that conveys it. The recipient's opinion of the credibility of the information usually depends on their opinion of the source of the information. The degree of intensity of other characteristics of information helps in assessing the credibility of information. People trust complete information more than incomplete information, transparent information more than opaque information, and verifiable information more than unverifiable. Fragmentary information is not considered reliable.

Reliability of information is a derived attribute relative to its accuracy, timeliness and completeness. These attributes are relativized to the recipient of the information.⁵⁷ The credibility of information is also relativized to its source – the sender of the information and to a specific domain.⁵⁸ Thus, the assessment of information credibility is subjective in nature and the attribute of “being information credible” is gradable.

In the context of meeting the information needs of citizens, it is important that the information directed to them be of high quality. The quality of information in inherent terms, i.e. in the context of its suitability to the user's

⁵⁶ J. Boruszewski, *Jakość i wiarygodność informacji w infobrokerstwie*, “Lingua ac Communitas” 2012, vol. 22, pp. 241–250.

⁵⁷ Ibidem, p. 245.

⁵⁸ Cf. W. Babik, K. Piaśnik, *O wiarygodności informacji*, in: J. Morbitzer, E. Musiał (eds.), *Człowiek – Media – Edukacja*, Katedra Technologii i Mediów Edukacyjnych. Instytut Bezpieczeństwa i Mediów Edukacyjnych Uniwersytetu Pedagogicznego im. Komisji Edukacji Narodowej w Krakowie, Kraków 2014, pp. 12–18.

needs, results from the following attributes of information, formulated, among others, by Vytautas Abramovich.⁵⁹

These are:

1. Truthfulness of information, which consists in the fact that the state of reality has been described within the limits of error accepted as acceptable.
2. Timeliness of information, when the state of a certain reality refers to the time when the information is received by the recipient or when it was created.
3. Reliability of information is a measure of its truthfulness and timeliness. When we can not determine its credibility, the credibility of its source is assumed.
4. Assimilability of information is that the recipient can use it without having to perform additional operations to transform it. It depends not only on the skills and knowledge of the specific recipient, but also on the conditions in which they are located and their condition.
5. Relevance of information is the weight that the user ascribes to it. It is subjective in nature, as each user may assign a different weight/relevance to it.

2.3. Trust in information

The relationship between trust in information and communication is indisputable. The classic forms of trust support are seals, signatures and initials, i.e. communication phenomena. Other elements of trust are reputation, recommendation, reference, credibility and, above all, image. These elements function only through communication processes. The manifestations of trust in information can vary. Marian Golka lists “island” trust, “hierarchical” trust and “network” trust. Let us add authorized trust and discuss them in turn. “Island” trust is strongly associated with particular groups or institutions. It manifests a kind of asymmetry. It is directly proportional to the sense of familiarity and strangeness and related manifestations of communication or its absence or low intensity.⁶⁰

⁵⁹ W. Abramowicz, *Filtrowanie informacji*, Wydawnictwo Akademii Ekonomicznej w Poznaniu, Poznań 2008, p. 43.

⁶⁰ M. Golka, *Bariery w komunikowaniu i społeczeństwo (dez)informacyjne*, Wydawnictwo Naukowe PWN, Warszawa 2008, p. 237.

“Hierarchical” trust functions on the basis of coercion or persuasion or even manipulation. Hierarchical communication processes are inherently not symmetrical. Finally, “network” trust is generated on the basis of mutual commitments and relationships almost exclusively through communication processes. It is characterized by a kind of faith, since this trust is inherently manifested mostly in face-to-face relations and differently in indirect contacts (e.g. on the Internet). Authorized trust is the result of respect for authorities. How do they function in a global society? According to Piotr Sztompka, “the chances of trust in such conditions are significantly reduced (...). In a globalized world it is more difficult to have a sense of obviousness and stability, as well as other conditions of trust. (...) the chances of it increasing rationality in evaluating the rationale for trust or distrust are also decreasing.”⁶¹ Thus, restoring trust in information is becoming one of the important challenges of information security.

2.4. Information climate

The theme of information climate is one of the important pillars of information security in cyberspace. The information climate is related to freedom of information and freedom to express one’s views and opinions. It refers to communication phenomena in society. It is a kind of metaphor built on the basis of meteorological phenomena. It is one of the elements of the social climate, as it relates to the prevailing conditions that favour or hinder various ways of information circulation. Deficiencies in the Polish literature in this area mainly concern the conceptualization and systematization of this issue important for information science. Information climate is usually associated with organizational climate.⁶² It can be defined as a set of people’s interpretations and feelings about information emphasizing the role of its broadcasting and perception as the most significant factors determining the type and level of climate.

Information climate can also be interpreted very generally as the existing/preferred set of values regarding the circulation of various types of social information. It determines the collective awareness of the desirable handling of

⁶¹ Ibidem.

⁶² Cf. G. Wudarzewski, *Początki zainteresowań problematyką klimatu organizacyjnego w polskiej literaturze naukowej*, “Zeszyty Naukowe Wyższej Szkoły Bankowej we Wrocławiu” 2016, vol. 16, no. 1, p. 55–71.

information and the degree of trust in information, which consequently translates into information security. An inadequate information climate can result in, among other things, difficulties in free communication, marginalization of grassroots initiatives, hypocrisy and insincerity of speech, so-called “political correctness” and even social alienation. It is often determined by the social emotional climate, which in extreme cases manifests itself in the form of new-speak and/or hate speech⁶³ and strikes at information security, including in cyberspace.

Conclusion

Information security in cyberspace continues to be one of the most important challenges of modern times. Cyberspace has a huge impact on the future of information security of tomorrow’s society. Social information security is the foundation of a democratic state.⁶⁴ The pillars of information security discussed in the article condition information security in cyberspace and emphasize its humanistic aspect and nature. Social information governance is not only important for social and economic development, but it is also the foundation of information security and a determinant of the quality of life in the modern world. Evaluating the trustworthiness of information not only helps in deciding whether information is valuable, but is also an important element of information security. Restoring trust in information is becoming one of the important social challenges of information security.⁶⁵ The reference to the area of information climate being a metaphor for meteorological phenomena emphasizing the impact of its influence on information security clearly highlights its importance in the context of information security in cyberspace. A separate treatment would require artificial intelligence, the current development of

⁶³ Cf. W. Babik, *Logistyka informacji*, Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków 2024 [in print].

⁶⁴ J. Oleński, *Spoleczne bezpieczeństwo informacyjne podstawą demokratycznego państwa*, “Roczniki Kolegium Analiz Ekonomicznych” 2015, no. 36, pp. 13–49.

⁶⁵ Cf. W. Babik, *O zaufaniu do informacji*, in: B. Taraszkiewicz (ed.), *Ekologia informacji jako wyzwanie dla edukacji i bibliotekarstwa XXI wieku*, Biblioteka Uczelniana AP, Pedagogiczna Biblioteka Wojewódzka w Słupsku, SBP – Zarząd Oddziału, Słupsk 2015, pp. 6–20.

which is straining confidence in information and poses a threat to information security, including in cyberspace.⁶⁶

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⁶⁶ J. Grubicka, E. Matuska, *Bezpieczeństwo cyfrowe. Perspektywa organizacyjna*, Difin, Warszawa 2023.

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Summary

Cybersecurity is one of the most important contemporary challenges and also the challenges of tomorrow's society. It concerns both the protection of the digital sphere of information and the sustainable development of the anthroposphere of the modern information society. The challenges of information security in cyberspace focus primarily on various types of threats. In the society of tomorrow, modern information and communication technologies, artificial intelligence and digital information security will play an important role. Help in recognizing them and using them in solving problems is offered by, among others, national security and social communication and media sciences. The purpose of the article is to show the potential and role of information trust in information security efforts in the cyberspace of tomorrow's society. This potential is represented by the four pillars of information security based on public trust in information, highlighted in the text.