



Formation of the attitudes and behaviours of employees in the context of safe operation of buildings on the example of the University of Agribusiness in Lomza

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ABSTRACT

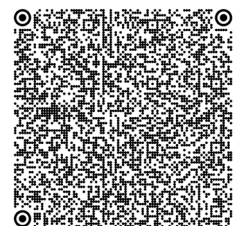
Purpose: The issue of shaping the attitude of employee involvement in an organisation is a relatively new area of scientific interest. Shaping employees' attitudes, understood as a conscious influence to consolidate or change them so that they are conducive to the safe operation of building objects, should be of significant importance for any organisation. Attitude is related to behaviour, the most elementary form of human activity, which is externally observable.

Design/methodology/approach: Statistical analysis.

Findings: The issue of shaping organisational attitudes and behaviours is related to the need to consider the factors that trigger the change process. It is important to diagnose whether the engine of change is the person with a specific attitude or elements from his environment.

Research limitations/implications: The article presents a theoretical introduction and the results of diagnostic tests. It proposes actions shaping the attitudes and behaviour of employees regarding the safe operation of buildings, based on the example of the University of Agribusiness in Lomza.

Practical implications: The classical approach to the safety of buildings focuses primarily on the technical and engineering side of the building. Planners, designers, contractors, and users of buildings strive to make them the least hazardous to health and life, especially during the operation of the building. At the same time, it is important to bear in mind that safe operation is influenced by the behaviour of facility users, as they are the weakest link in management.



Consequently, this is where the reserves for raising the health and safety of building users to a higher level still lie.

Originality/value: One of the main factors significantly influencing how an individual will behave when placed in a risky situation is how they perceive the risks involved. People's beliefs about various things can influence their behaviour more strongly than objective reality. To activate the reserves hidden in human behaviour to improve the safety level of buildings, it is necessary to fully recognise the causes and mechanisms that lead users to risky actions. Those behaviours allow the application of appropriate training and supervision methods, and more broadly of management methods, which would induce users to behave safely and to react consciously, directly or indirectly, to emerging risks during the operation of the works.

Keywords: Complementary roles of developed and developing nations in promoting a global industrial and economical infrastructure and requirements on common international research and teaching development in the field of materials

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EDUCATION AND RESEARCH TRENDS

1. Introduction

Forming human behaviour on particular importance in the organisational context.

There are many studies on health and safety at work [1,2], shaping organisational behaviour [3,4] and attitudes towards safety [5,6] and knowledge management [4, 7-10] of broadly defined safety. One of them is a definition from the area of management in which occupational safety and health (OSH) is treated as a state of work conditions and behaviour of employees ensuring the required level of protection of health and life against hazards present in the work environment [11].

According to practitioners, OHS activities require a system approach [12,13]. Such an approach must be based on clearly defined rules for workers relating to unsafe working conditions that lead to unsafe behaviour. They must be recognised and used to protect health and life from hazards in the working environment. At the same time, it should be remembered that there is no single right way to achieve safety in an organisation [14]. Safe employee behaviour in the workplace is influenced by the following factors:

- job characteristics,
- behaviour of superiors,
- working atmosphere,
- health and safety knowledge [15-17].

Knowledge treated as a body of reliable information about reality together with the ability to use it, can be divided into theoretical and practical one [18]. The former is

knowledge of theory. It consists of having information on a given topic, e.g., legal regulations and health and safety rules. The latter, on the other hand, is the ability to apply theoretical knowledge in reality. Construction is the activity of planning, designing, building and using buildings. It is based on theoretical knowledge of civil engineering. However, it is also a branch of practical knowledge, a technique applied to the construction and use of structures [19-28].

1.1. Regulations

The Rector [29] is responsible for safety and the provision of safe and hygienic working and learning conditions in a higher education institution and ensures the requirements for such working and learning conditions. Those requirements are met regarding, among others, the condition of the building facilities, and in particular, the premises and technical equipment where the workplaces of research and teaching staff, technical and administrative staff and students are located.

The Act – Construction Law [30] normalises activities covering design, construction, maintenance, and demolition of construction objects and defines the rules of operation of public administration bodies in these areas (Tab. 1).

1.2. General rules for the use of buildings

The Building Act adopts the basic principle that the owner or manager of a building is obliged to use the building in question in accordance with its purpose and

environmental protection requirements and to maintain it in a proper technical and aesthetic condition. The regulations address such issues as:

- inspection of a technical condition of a given building,
- documentation and site book,
- addressing deficiencies in the maintenance of a given building,
- change of use of a building.

Table 1.
General requirements for construction works

No.	Requirements and rules	Characteristics of requirements and rules
1	Basic	The basic requirements are: (a) bearing capacity and structural stability, (b) fire safety, (c) hygiene, health, and the environment, (d) safety of use and accessibility of facilities, (e) noise protection, (f) energy savings and thermal insulation, (g) sustainable use of natural resources.
2	related to the purpose and use of the facility	Requirements include: (a) the supply of water and electricity and heat and fuels, assuming efficient use of these factors, (b) the disposal of sewage, rainwater, and waste, including the possibility of accessing telecommunications services, in particular broadband internet access.
3	on the ability to maintain the proper technical condition	The provisions of the Construction Law impose an obligation on the owner or manager of a construction object to maintain and use the object in a manner consistent with its intended use and environmental protection requirements and order these entities to maintain the object in a sound technical and aesthetic condition, not allowing excessive deterioration of its functional properties and technical efficiency.
4	covering the necessary conditions for the use of the facilities	These requirements are derived from the Convention on the Rights of Persons with Disabilities, done in New York on 13 December 2006 and apply to the use of public facilities and multi-family housing by persons with disabilities, including older persons [31].
5	with regard to health and safety conditions	According to the Labour Code [32], the building facility where the work premises are located should meet occupational health and safety requirements.
6	concerning civil protection, in accordance with civil defence requirements	Civil defence aims to protect the population, cultural assets, workplaces and public utilities, rescue and provide assistance to those affected in times of war, and cooperating in combating natural disasters and environmental hazards remove their effects [33].
7	concerning historic buildings and objects under conservation protection	The protection and care of monuments is regulated by the law [34].
8	concerning the location on a building plot	The location of the building on the plot is regulated by law [33].
9	regarding the protection of the interests of third parties	The protection of the interests of the third parties in the development process must not lead to a situation in which it is those third parties, and not the property owners, who will decide whether to allow the construction of buildings on the site of such structures.
10	on construction safety and health conditions	According to the Construction Law [30], the organisation and execution of the work in a safe manner for both workers and others are the indirect responsibility of all participants in the construction process and directly of the site manager and work supervisors.

Each property owner is further required to keep their property clean and tidy by:

- aesthetic maintenance of the property,
- removing waste on an ongoing basis and collecting it in special containers,
- equipping the property with containers for the collection of waste and keeping them in good technical and sanitary condition,
- removal and disposal of municipal waste by concluding an appropriate contract with the exporters, clearing snow, ice, mud, and other debris from pavements located along the property.

The owner of a facility is obliged to maintain the facility in accordance with the rules set out in the Construction Law [30]. The owner or manager should inspect facilities.

The inspection of a building consists of an ongoing check of the technical condition of the building and fixed technical equipment and is combined with rectifying minor defects and damage. Damage found during the inspection, which the operating and maintenance staff cannot repair, must be reported immediately to the immediate supervisor. In addition, an inspection must be carried out every time after heavy rain, storms, or hurricanes.

A distinction is made between the following types of review:

- *working inspections* are carried out by the equipment's operating and maintenance staff. The inspection results should be recorded in the equipment workbook,
- *periodic reviews* should be carried out on an annual and five-yearly basis.

Annual inspections consist of a condition check:

- elements of the facility exposed to harmful atmospheric influences and damaging factors during its use,
- environmental installations and equipment,
- gas installations and chimney flues (smoke, flue, and ventilation).

The *five-year inspection* includes examining the readiness and technical state for the use of the building structure, its aesthetics and surroundings. The inspection should also include an examination of the electrical and lightning protection systems with regard to the effectiveness of wire insulation resistance, earthing of systems and equipment, connections, fittings, and protections against electric shock.

According to labour law [32], an employer and employees are responsible for the safety of work that takes place in construction facilities.

The employer has a responsibility to protect the health and life of employees by:

- guaranteeing safe and hygienic working conditions with appropriate use of scientific and technological developments;
- providing workers with information on, among others, the risks to health and life present in the workplace and the protective and preventive measures taken to eliminate the risks;
- the appointment of a coordinator to supervise the health and safety of all workers employed at the same workplace, where workers employed by different employers' work at the same time.

Due to the variety of work being carried out simultaneously on the university's premises, it is necessary to coordinate the execution of individual tasks. According to the law [32], when employees employed by different employers perform work at the same place at the same time, these employers are obliged to:

- cooperate with each other,
- appoint a coordinator to supervise the health and safety of all workers working on the same site,
- establish rules of interaction taking into account how to deal with risks to the health and life of workers,
- inform each other and the workers and their representatives of measures to prevent occupational hazards from occurring during their work.

The employee is required to:

- to be knowledgeable about health and safety regulations and rules, to take part in training and instruction in this field and to undergo the requisite examinations;
- perform his or her duties in a manner consistent with the principles of health and safety and comply with the instructions and directions of his or her superiors in this regard;
- ensuring that the workplace is maintained in good order and cleanliness, as well as that the machinery, plant, tools, and equipment are in good shape;
- use collective protection measures, and use assigned personal protective equipment as intended;
- undergo initial, periodic and follow-up medical examinations and other prescribed medical examinations and comply with medical instructions;
- immediately notify his/her supervisor if he/she notices an accident or a threat to human life or health in the workplace and warn his/her co-workers as well as other persons in the danger area;
- cooperate with the employer and superiors in the fulfilment of their duties regarding health and safety at work [32].

2. Research on staff knowledge of safe operation of WSA university buildings

Run and analysis of test results

The research was conducted in the form of a voluntary questionnaire (appendix 1) to be completed in the Forms MS Teams application. Thirty-six employees of the organisation participated in the survey. The characteristics of the respondents are shown in Table 2.

Table 2.

Characteristics of respondents

No.	Category	Characteristics of respondents
1	Gender	Women – 50% / men – 50%
2	Age	50 years and over – 50%
		41-50 years – 25%
		31-40 years – 23%
		21-30 years – 2%
		≤ 20 – 0%
3	Length of service	> 20 years – 53%
		10-20 years – 28%
		6-10 years – 8%
		1-5 years – 11%
		up to 1 year – 0%
4	Education	Higher – 100%
5	Position	Top management of the university – 14%
		Heads of departments and divisions – 0%
		Head of a technical department – 0%
		Technical department employee – 0%
		Administrative employee – 22%
		Teaching employees – 64%

A total of 1,980 responses were obtained in four categories (Fig. 1) and tabulated as a percentage according to the Pareto principle (Fig. 2).

The Pareto principle has made it possible to identify areas that require attention to increase the safe operation of a building with the least possible use of available resources (Figs. 3, 4).

Analysis of the “I do not know” and “not applicable” categories of Area **A** (Figs. 5, 6) and Area **D** (Figs. 7, 8) identified the specific issues of these areas. The issues of areas **A** and **D** are shown in Tables 3 and 4.

The analysis of the research results obtained has identified the following conclusions. The following should be noted:

- an area on the *quality of documents* from previous inspections, including on:
 - date of the next inspection;
 - conclusions;
 - declarations of conformity with the facts of the findings contained in the protocols relating to the facility with the signatures of the authorised persons carrying out the inspection of the technical condition of the elements of the building/facility; chimney flues, gravity flues; other flues or installations;
- an area on the *scope of the previous audit and recommendations*, including:
 - from previous inspections, including checks on the possession and proper maintenance of the Building Book;
 - concerning elements of the building, structures and installations exposed to harmful atmospheric influences and destructive factors occurring during the use of the building, the damage of which may cause a risk to the safety of persons, the environment and the structure of the building;
 - relating to environmental installations and equipment and gas installations and chimney flues (smoke, flue, ventilation);
- an area on the *findings of current condition elements to be checked*, including:
 - external envelope layers relating to plastering: material, workmanship; fixtures; fittings; condition; wear; other typical of the building; and wall cladding: material, workmanship; fixtures; fittings; condition; wear; other typical of the building;
 - external wall elements: cornices; parapets; pillars; balconies, loggias; balustrades; windows; doors, others;
 - roofing and drainage components: roofing; chimneys, chimney sweeps; flashings; gutters; downpipes; other roof components;
 - domestic hot water systems: risers; levels; hydrophones, pumps; valves; water circulation; insulation; connection to the external network; other site-specific;
 - fire precautions, including escape routes;
 - gas installation: pipes; valves; signalling installations; shut-off devices; main valve; reducing devices; gas meter; earthing; others;
 - other elements, equipment, and specialised installations, e.g., multimedia.

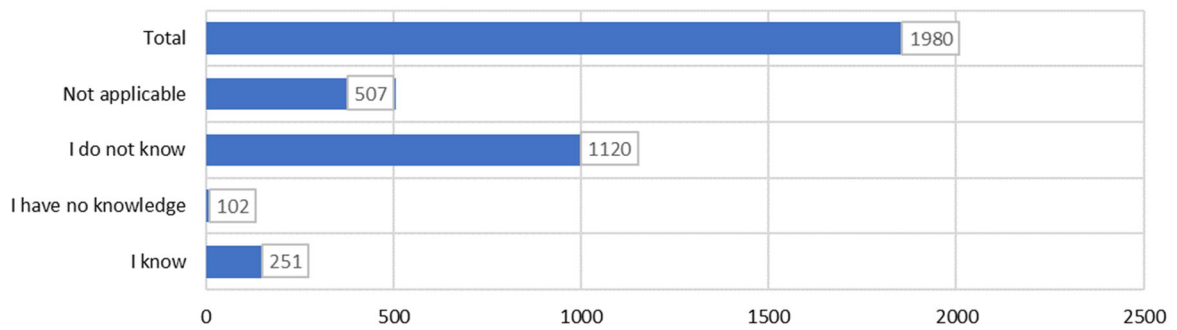


Fig.1. Overall summary of responses by four categories in all research areas [A-F]

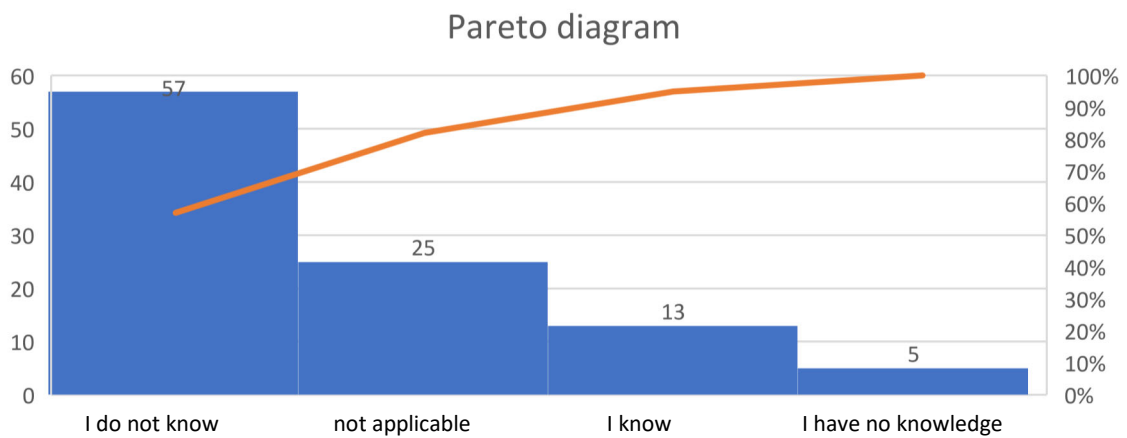


Fig. 2. Overall percentage breakdown of responses by four categories in all research areas [A-F] as per Pareto principle

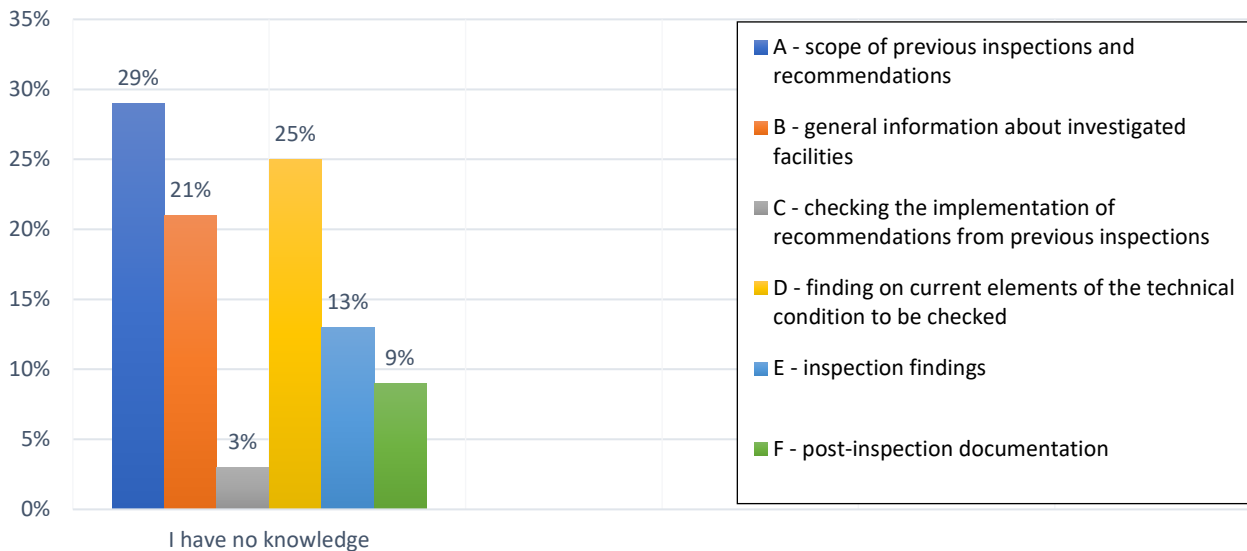


Fig. 3. Areas in which employees have no knowledge

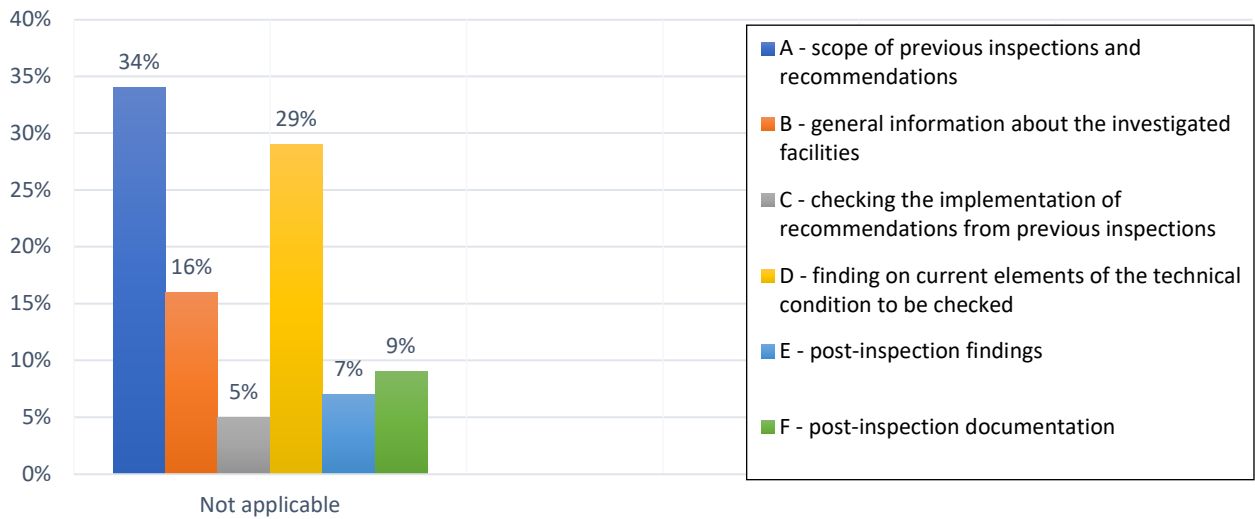


Fig. 4. Areas which, according to employees, are not applicable to them

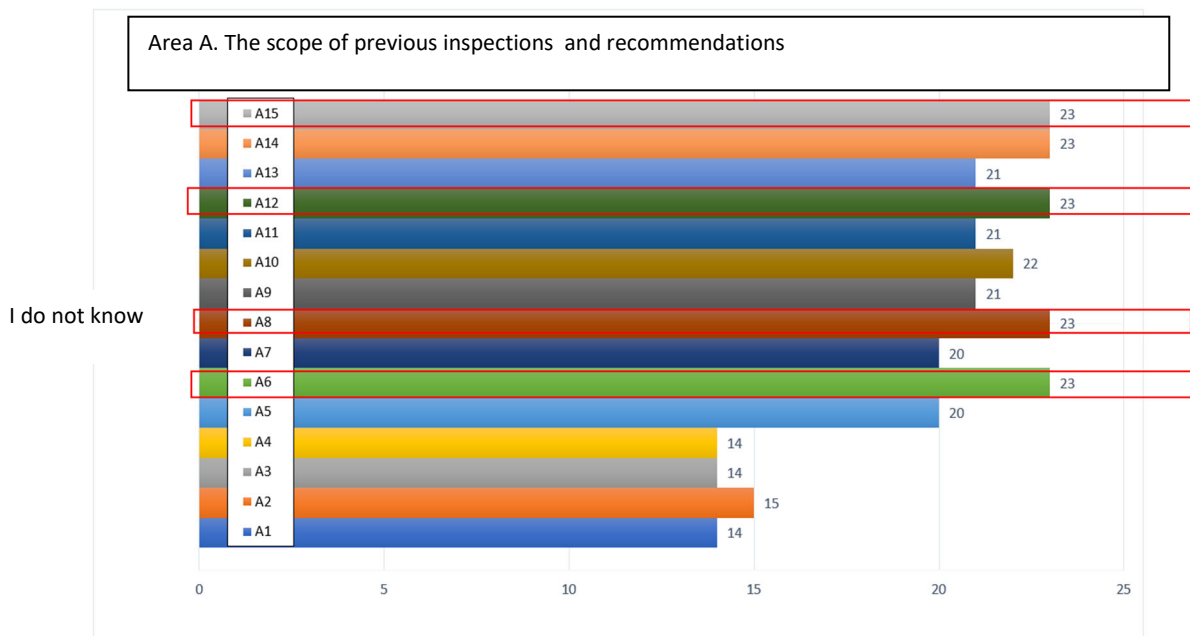


Fig. 5. Analysis of the “I do not know” category in area A

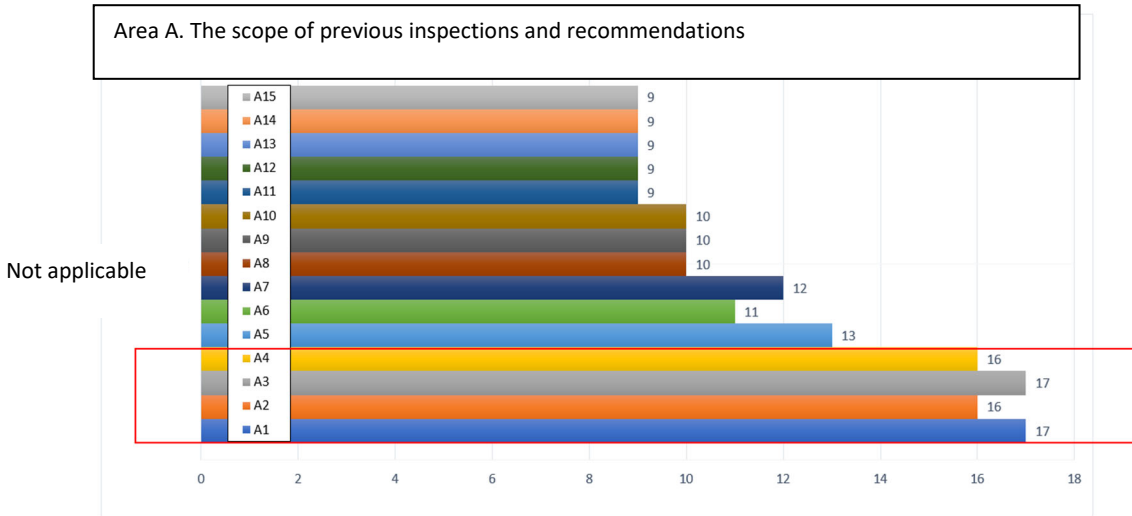


Fig. 6. Analysis of the “not applicable” category in area A

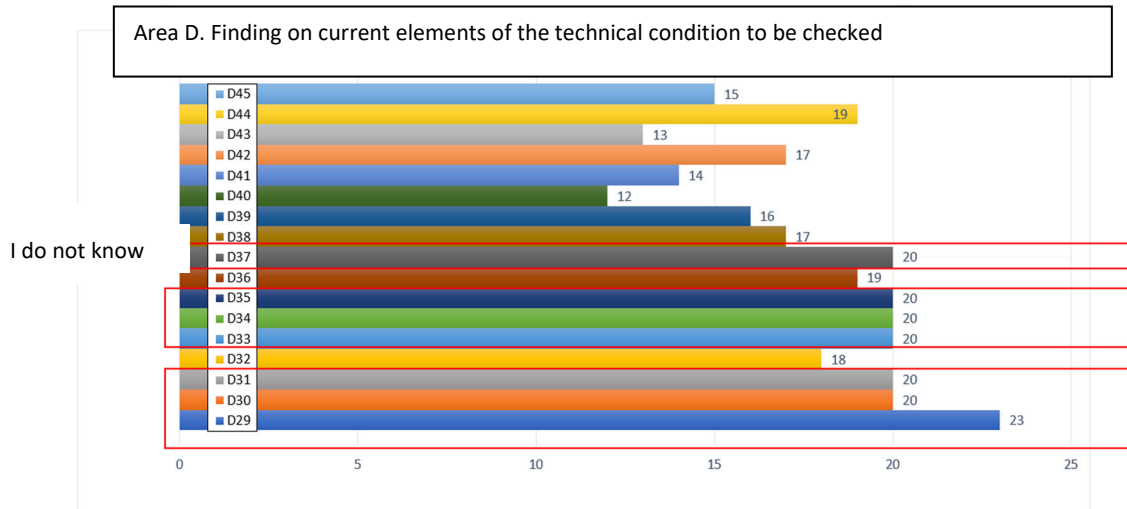


Fig. 7. Analysis of the “I do not know” category in area D

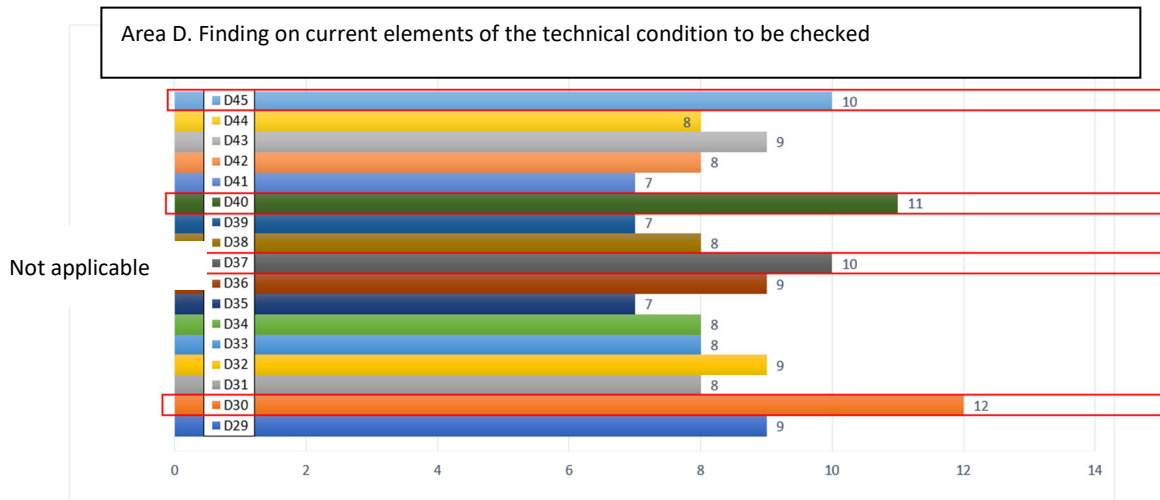


Fig. 8. Analysis of the "not applicable" category in area D

Table 3.

Area A issues (questions)

A.1	Checking the implementation of recommendations from previous inspections, including checking the possession and proper maintenance of the Building Logbook
A.2	Inspection of building elements, structures and installations which are exposed to harmful atmospheric influences and destructive factors occurring during the use of the building, the damage of which may cause danger to the safety of persons, the environment, and the structure of the building
A.3	Inspection of environmental installations and equipment
A.4	Inspection of gas installations and chimney flues (smoke, flue, ventilation)
A.5	Is the date of the inspection given?
A.6	Has a date been given for the next inspection?
A.7	Has the scope of the refurbishment works and the order in which they are to be carried out been specified?
A.8	Have conclusions been drawn up?
A.9	Have risks to people and property been identified, and a deadline given for their removal?
A.10	Was the graphic documentation produced during the inspection prepared?
A.11	Are declarations of the conformity of the findings in the reports with the facts included, together with the signatures of the authorised persons carrying out the technical condition check?
A.12	Are declarations of conformity of the findings in the inspection reports with the facts included, together with the signatures of the authorised persons inspecting the technical condition of the elements of the building/structure?
A.13	Are declarations of conformity of the findings of the reports with the facts included, together with the signatures of the authorised persons carrying out the technical inspection of the sanitary installations?
A.14	Are declarations of conformity of the findings of the reports with the facts included, together with the signatures of the authorised persons inspecting the technical condition of the flues and gravity?
A.15	Are declarations of conformity of the findings contained in the protocols with the facts included, together with the signatures of the authorised persons inspecting the technical condition of other ducts or installations?

Table 4.

Area D issues

D.29	External layers of the building envelope relating to plastering: material, workmanship, fixing; equipment; condition; wear and tear; other types of the building
D.30	External envelope layers relating to wall cladding: material, construction method; fixings; fittings; condition; wear and tear; other types of the building
D.31	Exterior wall elements: cornices; parapets; pillars; balconies, loggias; balustrades; windows; doors, other
D.32	Appliances, wall- and roof-mounted installations: signs and advertisements; air conditioners; antennas; lighting; transmitting and receiving stations; other
D.33	Roofing and drainage elements: roofing; chimneys, chimney pots; flashings; gutters; downpipes; other
D.34	Co-installations: risers; levels; hydro, pumps; valves venting; control and measurement apparatus; insulation; circulation; connection to the external network; other
D.35	Domestic hot water systems: risers; levels; hydrophones, pumps; valves; water circulation; insulation; connection to external network; other
D.36	Environmental protection installations and facilities: sanitary sewers; storm sewers; no-waste tanks; sewage treatment facilities; filtration facilities; soundproofing facilities; other
D.37	Gas installation: pipes; valves; signalling installations; shut-off devices; main valve; reducing devices; gas meter; earthing; other
D.38	Flue pipes: smoke; flue, gravity; ventilation, gravity; flue, mechanical; ventilation, mechanical; other
D.39	Fire protection: hydrants
D.40	Fire precautions: Escape routes
D.41	Fire precautions: other, including escape routes
D.42	Building installation connection
D.43	Passage through building walls/connector
D.44	Other passages, installation connections
D.45	Other components, equipment, specialised installations, .e.g., multimedia

3. Conclusions

The classical approach to the safety of buildings focuses primarily on the technical and engineering side of the building. Planners, designers, contractors and users of buildings strive to make them the least hazardous to health and life, especially during the operation of the building.

At the same time, it is important to bear in mind that safe operation is influenced by the behaviour of facility users, as they are the weakest link in management. Consequently, this is where the reserves for raising the health and safety of building users to a higher level still lie.

One of the main factors significantly influencing how an individual will behave when placed in a risky situation is how they perceive the risks involved. People's beliefs about various things can influence their behaviour more strongly than objective reality. To activate the reserves hidden in human behaviour to improve the safety level of buildings, it is necessary to fully recognise the causes and mechanisms that lead users to risky actions. The of these behaviours allows the application of appropriate training and supervision methods, and more broadly of management methods, which would induce users to behave safely and to react consciously, directly or indirectly, to emerging risks during the operation of the works.

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