

Politechnika Śląska
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**ROZBUDOWA MODELU AKCEPTACJI TECHNOLOGII
DLA POTRZEB BEZPIECZNEGO WYKORZYSTANIA
TOŻSAMOŚCI CYFROWEJ W MAŁYCH I ŚREDNICH
PRZEDSIĘBIORSTWACH**

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Abstract

In the thesis, Digital Identity Acceptance Model (DIAM), created on the basis of the Technology Acceptance Model (TAM) was presented. In order to prepare it, a series of research activities were conducted.

In the first stage of literary research, theoretical identification of the topic of digital identities was made. The sources of knowledge were scientific articles, reports of organizations investigating information security and development of e-economy, as well as documents generated by IT companies, with particular reference to the so-called white books.

The TAM model was chosen as the basis for explaining the factors that make employees use authentication in a certain way. To develop the model, critical analysis of the literature has been carried out in order to investigate factors influencing the security of IT systems use (including the analysis of motivation theories and the use of the TAM model).

Then, during the research internship, a preliminary research was conducted in cooperation with a software company. Using the experience of employees of this company, the problematic areas that influence the use of digital identities in the layer of technical implementation, organization and, above all, the practice of using digital identities by employees, have been identified with the Delphi method. This area was chosen to formulate a research problem.

In the next stage, an open interviews scenario was developed and critiqued by the experts, followed by a study of its use on a group of 10 managers. This allowed to perceive managers perceptions of purposefulness and motivation to use digital identities in an enterprise, their views on different ways of accessing information in IT systems, and ways to manage an employee so that he or she is using the assigned access as intended. The results of the interviews have allowed author to diagnose potential gaps in the way which digital identities are used.

Based on research using the Delphi method and the results of the open interviews, a research questionnaire was developed. This questionnaire was used to conduct preliminary research on a limited sample of Polish employees. Preliminary research concerned:

- area of Digital Identity utilize with an extension of a survey on access to data (individual accounts vs. accounts used by a group of employees),
- perception of various authentication methods by enterprise employees.

The results of the preliminary studies have been analyzed and used in a study design. The studies were carried out using an extensive research questionnaire on 202 employees of small and medium enterprises. The investigated areas:

- organization of access to IT resources, including: implementation of security policies, types of accounts and authentication tools used by respondents,
- user action in the context of digital identity security, i.e. multi-dimensional use of passwords and authentication devices,
- employee's perception of current solutions, i.e. management in the area of shaping employee's attitudes towards secure authentication, evaluation of current solutions, preference of employees and comparison of preferences with current solutions.

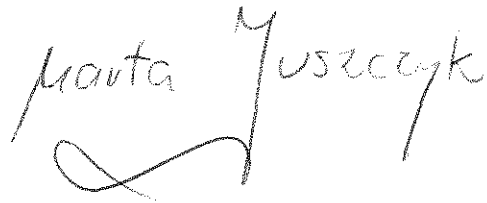
The second part of the research was the study of the parameters of the initial DIAM model, i.e. factors and the strength of the relationship between them. For this purpose, an analysis of the Alfa-Cronbach coefficient was used to determine the reliability of the scale and to examine the internal consistency of the questions. In order to investigate relationship between the model elements, 17 statistical hypotheses were constructed, and tested with Chi squared, Chi square of the highest reliability, and Spearman correlation.

As a result, four parts of DIAM model were obtained: the universal one (DIAM-0), associated with the use of passwords/PIN numbers (DIAM-H), dedicated to authentication devices (DIAM-P), and biometric methods (DIAM-B). In addition, gaps between employees in management and executive positions have been identified.

The analysis of the study results revealed the main 43 dependencies (testing statistical hypothesis) and 17 conclusions (the gaps and quantified DIAM model analysis); based on which 20 recommendations for management were formulated.

The recommendations were grouped as follows:

- design information security system (6 recommendations),
- actions and competences of superiors (5 recommendations),
- shaping employee attitudes towards secure authentication (5 recommendations),
- recommendations for reducing staff resistance when introducing biometric authentication (4 recommendations).

A handwritten signature in black ink, reading "Marta Muszczyk". The signature is written in a cursive style with a large, stylized initial 'M'.