

# THE USE OF DIGITAL SIGNATURE IN ELECTRONIC COMMUNICATION IN BiH - RESEARCH

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**Contribution to the state of the art**

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**Abstract:** The increasing use of electronic mail for identity theft and unsolicited marketing and frequent presence of viruses as well, reduced the credibility of email as a communication tool. Authentication of the sender is well known defense against such attacks. One of the methods to ensure that authentication, secure communication via e-mail, is the use of digital signature.

**Keywords:** a digital signature, authentication, the education sector, business users.

## INTRODUCTION

The information society development in Bosnia and Herzegovina is lagging far behind, even in comparison with countries in the region, Europe and globally. One of the essential conditions for integration into the European and global business environment is the information society development in order to facilitate business and create conditions for faster economic growth of the country.

Efficient e-business is not possible if the security of electronically transmitted data is not ensured.

In this research we examined users' opinion about the importance and use of digital signatures in our environment. We split the users into two groups by their use of electronic communications and agencies in which they work:

1. Users employed in the education sector and
2. Business users

The first group consists of employees in the education sector. These are the users employed in educational institutions who know the subject matter, but the frequency of using electronic mail is relatively low. Generally, they can be considered as average users.

The second group consists of users to whom electronic communication is of crucial importance. The frequency of using electronic mail is high. In our

case, this group consists mainly of civil servants and local government officials as well as of a number of business users who are related to accounting, transport and trade. This group is particularly vulnerable to the message authenticity.

The aim of the research was to examine users' attitudes toward:

- Security of e-mail communication
- Use of digital signatures and
- The significance of digital signatures in business communication.

The aim was also to determine if there were different attitudes toward the use and importance of digital signatures between the user employed in the stable business environment, including local government employees and those employed in educational institutions.

## RESEARCH RESULTS

The study included a total of 108 respondents aged between 21 and 65 years old.

PROFESSIONAL QUALIFICATIONS	
Elementary school	0
Secondary school	12
College degree	2
University degree	66
Master or PhD	28

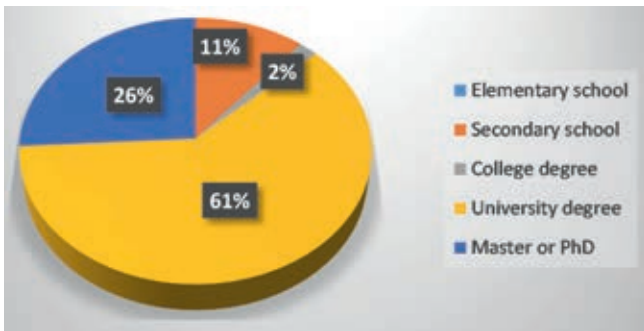


Chart 1.

Chart No 1 shows that the majority of respondents has a university degree, followed by Masters and PhDs.

The survey consisted of four groups of questions.

The first group of questions were answered by all respondents with the aim to determine the users attitudes on e-mail safety and reliability, as well as the use of digital signatures. We compared the answers given by the average users to the respondents that were considered as business users. Also, we investigated how many respondents used digital signature.

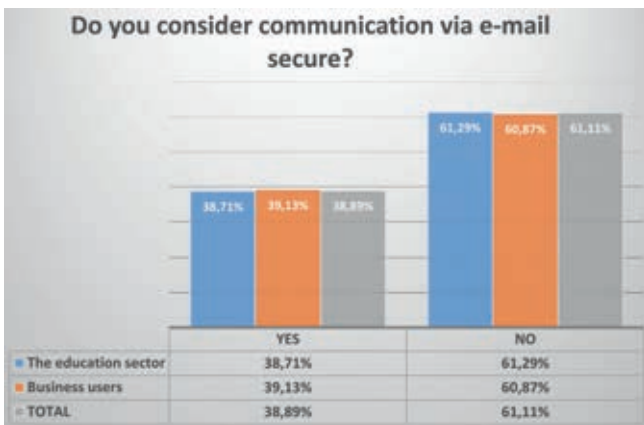


Chart 2.

The chart No. 2 shows that there are no large differences in the responses to the question, "Do you consider communication via e-mail secure?" given by business users in relation to the answers given by the teachers. In both groups, 60% of respondents believe that communication via e-mail is not secure.

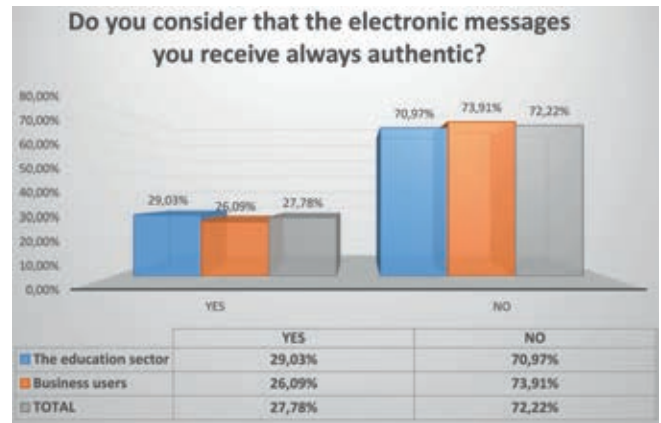


Chart 3.

The second question was about the authenticity of electronic messages. Answers to this question showed no big difference between the two groups of respondents as well.

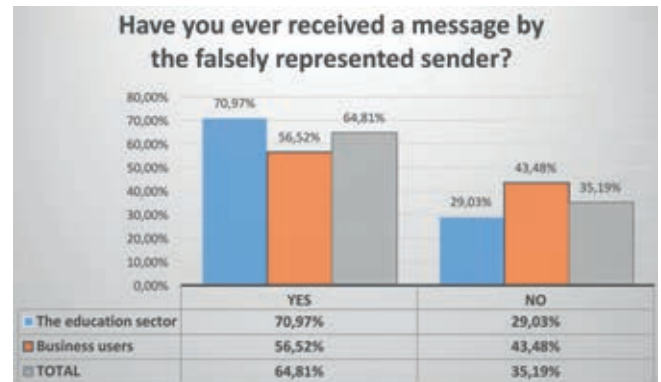


Chart 4.

Chart No 4 shows that 70.97% of education sector employees, and 56.52% of business users replied with "Yes" to the question "Have you ever received a message by the falsely represented sender?"

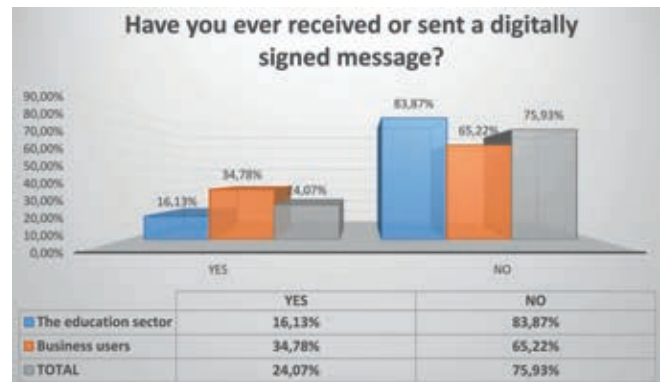


Chart 5.

Chart No 5 shows that only 16.13% of the education sector employees and 36.36% of business users, at least once, used the digital signature.

The second group of questions was answered only by the users who had, at least once, used a digital signature. The aim was to investigate the prevalence, importance and purpose of digital signature.

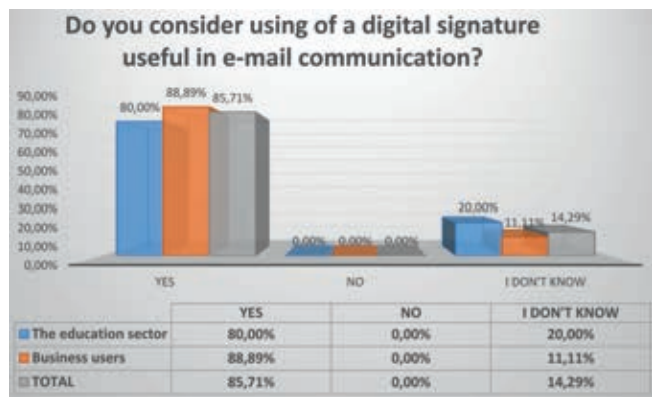


Chart 6.

The chart No. 6 shows that 85.71% of respondents who use digital signature consider it as a useful tool for e-mail communication.

Replies of the surveyed users of digital signature to the question “For what purpose a digital signature is used most often? “ were as follows: e-mail signature, e-payment, signing documents and tax returns.

The third group of questions was only for those who had never sent nor received digitally signed message.

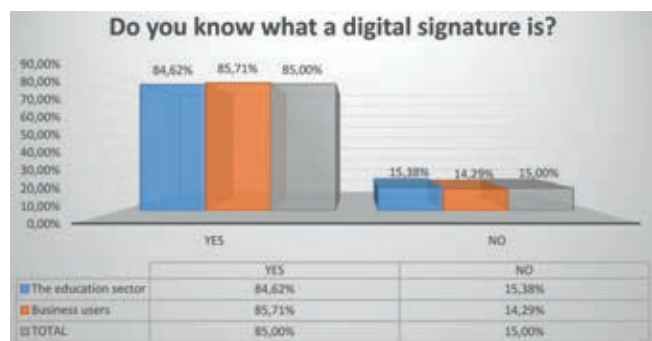


Chart 7.

The chart No. 7 shows that, according to the question “Do you know what a digital signature is?” there were no large differences between respondents who work in the education sector and the respondents who were considered as business users. 85% of the

total number of respondents who had never used a digital signature knew what a digital signature was.

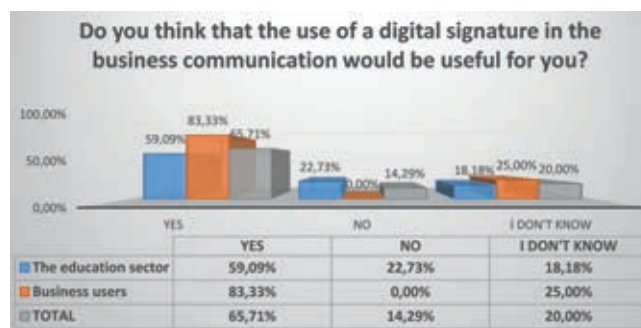


Chart 8.

The chart No. 8 shows that in relation to the education sector employees, significantly more employees in the business sector believed that the use of digital signatures would be useful for them.

The fourth, and the last group of questions was answered only by respondents who answered the question “Do you know what a digital signature is?” with “NO”. Before answering the questions, they had to read a short text in order to learn the meaning and use of digital signature.

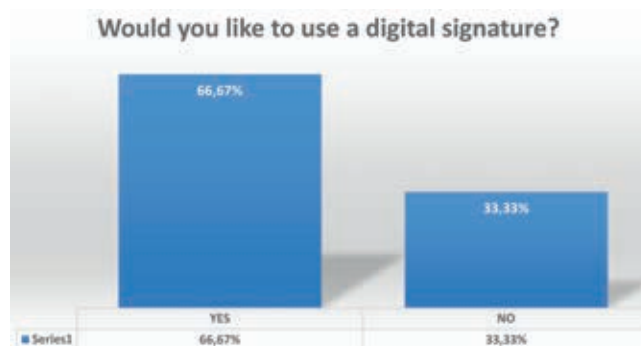


Chart 9.

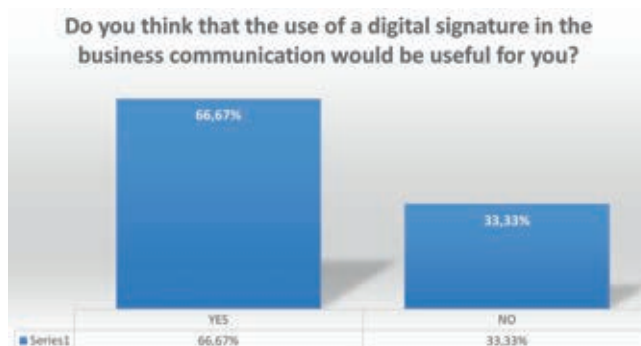


Chart 10.

The chart No. 9 and 10 show that 66.67% of respondents, who did not know what a digital signature was, wanted to use a digital signature and believed that its use would be conducive for them in business communication.

## CONCLUSION

This research determined the use of digital signature in BiH with special emphasis on Banja Luka area as high administrative and business center in BiH.

We also analyzed the results according to the activities of the respondents. We were particularly interested in two groups that were clearly split. Those are:

- Users employed in the education sector. These users can be considered as average users of electronic communication.
- Users from the business sector. We have grouped the staff members both in public administration and in trade, transport and services type of the accounting offices. In the second group the reliability and authentication of the sender is of crucial importance.

We analyzed the respondents' opinions about the importance of digital signature in electronic

communication. The results show that the surveyed business users in our area do not consider that communication by e-mail is completely safe, nor the messages they receive are always credible.

Comparing to the employees in the education sector we note that a greater percentage of employees in the business sector are more likely to use a digital signature and they believe it is useful in business communication. The reason for this result is that commercial communication via electronic media, due to the type of work, requires frequent use of digital signature every day. On the other hand, jobs performed by employees in education sector, still do not require the use of digital signature, even though its use could indeed facilitate the administrative work in educational institutions.

Generally speaking, this study shows that the users are interested in applying the digital signature and the majority believes that its use would be beneficial for them as well.

This study shows that further research in this area of business communication is justified.

The aim of this research is to analyze and propose the best solution for authentication and application of digital signature inside an educational institution.

## LITERATURE

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