

## **Questioned Documents**-2020

## J10 Database Usage in Handwriting Comparisons

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Learning Overview: After attending this presentation, attendees will have knowledge about the different forms and frequencies of some letters used in the alphabet in Turkey.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by giving information about creating a database in forensic document examination in Turkey.

Handwriting reviews are important in terms of identifying the person who writes and signs checks and promissory notes under legal commitment, placing the person who writes threatening letters under criminal responsibility, and playing a large role in solving criminal incidents as well as suicide notes.

In a legal environment, people who are experts are assigned to determine identification by writing examinations. In addition, these experts compare the writings that are known to belong to a person and writings that are in question. In the end, similar and dissimilar aspects are identified and an opinion of authorship is indicated. However, the results of such a review are never conclusive.

In the handwritings which were reviewed, the determination of some characteristic features of the person being compared will reveal the idea that the handwriting being examined belongs to that person, and the greater the number of these characteristic features, the stronger the opinions. One problem that will arise at this point is whether these similarity characteristics are frequently encountered in society.<sup>1,2</sup>

The more often a character is encountered in society, the less it will be useful in determining identification. In the same way, the less it is encountered, the higher its value in determining identification. It should be noted that the findings obtained will not be certain. However, it is important to evaluate the frequency of these encounters with advanced statistical calculations. The analysis is also important for the expert to support or not to support his/her opinion. This study is intended to be a preliminary study for establishing a database in Turkish society.

In this study, a total of 500 text and number samples were taken from university graduates and university students in order to create a database of writing and numbers. When the text and number samples were taken, the participants were asked to write the text above in the space below. This procedure was repeated two times. The text had been prepared to include all letters and numbers. Later, the number and frequency of the forms of the upper and lower case letters found in the writings of 500 subjects were determined.

Groups	Forms	Samples	Number	Frequency
1	ö	00000000	37	0.074
2	Ő	0.0.0.0.0.0.0.0.0.0.0.	126	0.252
3	Ő	さ、 う、 O、 O、 O、 ひ、 ひ、	116	0.232
4	õ	Ö18	2	0.004
5	б	7, 8 0, 6, 01.0. 7, 8, 5, 5, 5, 6,	60	0.12
6	0	On and	3	0.006
7	R	0 dh	2	0.004
8	1	3, 0, 1 (m) Or	5	0.01
9	õ	6100 00 20 1/0.01 5100	12	0.024

The letter "Ö" was found to have 24 different groups of construction. These groups, their numbers, and frequencies are given as a sample in Table 1. The letter "A" was found to have 18 different groups of construction. The letter "b" was found to have 9 different groups of construction. The Turkish conjunction "ve" ("and" in English) was found to have 14 different groups of construction.

In the study, 24 different forms of construction of a letter with no features such as "Ö" were determined. It can be considered as an "individual characteristic" of that person to make different forms to be determined in a review without using the database. However, with a little research in the previously prepared database, it can be understood that the frequency of the construction of this different form is actually high in society and thus, the individuality is weak. One of the important points here is that the database to be created reflects the overall writing forms of society. For this purpose, it is important to establish a database by collecting a sufficient number of samples from all geographic and cultural parts of the country.

Table 1: Detailed results for the letter "Ö"

## **Reference**(s):

- <sup>1.</sup> Thomas W. Vastrick, Ellen Schuetzner, Kelsey Osborn. Measuring the Frequency Occurrence of Handwritten Numeral Characteristics. *Journal* of Forensic Sciences 63, no:4, (July 2018): 1215-1220.
- <sup>2.</sup> Mark E. Johnson, Thomas W. Vastrick, Michele Boulanger, Ellen Schuetzner. Measuring the Frequency Occurrence of Handwriting and Handprinting Characteristics. *Journal of Forensic Sciences* 62, no:1, (January 2017): 142-163.

## Database, Forensic Handwriting Examination, Frequency

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