



Preliminary Investigational Report for Existing Questioned Document Examination and its Effectiveness

Desai Bhavana and Kalyan J.L

Dept of Criminology and Forensic Science, Karnatak Science College, Dharwad, Karnataka, INDIA

Available online at: www.isca.in, www.isca.me

Received 13th February 2015, revised 19th March 2015, accepted 28th March 2015

Abstract

Evidence plays a crucial role in judiciary system and hence the reliability of the evidence is checked by forensic experts. The process of Examination of Documents whose authenticity is in doubt is termed as Questioned Document Examination. It was found that there are no prior literatures that have been focused on effectiveness of techniques adopted at present scenario in the forensic laboratories. It is still an inaccessible area for the common man as well as for any academic personnel. Hence, this paper is first attempt towards investigating the effectiveness of questioned document examination in Indian Court of Law with the support of outcomes originally captured from the state and central laboratories of forensic science in India. Adopting the qualitative mode of analysis, the perceptions of the forensic experts were captured and documented in this paper.

Keywords: Forensic science, questioned document examination, court evidence, court of law.

Introduction

With the increasing adoption of the modern technologies, the area of forensic science has made a serious progress in past decade. Hence both modern as well as conventional techniques are applied in the area of forensic examination process. The proposed paper focuses on the questioned document examination, which plays a critical role in the court cases in judiciary system for any nation¹. Whenever an individual case a file or petition for any civil or criminal case, the hearings are done based on the evidence². Hence, there is a reliability factor associated with the evidence being introduced in the Court of Law. It is quite difficult to understand whether the modern techniques or the age-old techniques of questioned document examination is reliable or is much preferred. Hence, this paper presents a pilot study for the first time on investigating the effectiveness of questioned document examination from the viewpoint of Indian judiciary system.

Questioned Document

A forensic document is the one whose authenticity is unidentified or is in doubt or is alleged of being deceptive or fraudulent. Any object that contains handwritten, typewritten or printed markings whose source or authenticity is in doubt is referred to as "questioned document"². A document is usually questioned because its origin, its contents or the circumstances and story regarding its production, arouse serious suspicion as to its genuineness, or it may be adversely scrutinized simply because it displeases someone by its unexpected provisions³. As all documents are not fraudulent, some of the document raise question so in order to find out the ground truth of the document, Forensic document examination is being done. It

helps in cases such as forgery, robbery, variety of criminal and civil cases, such as contested wills, forgery, robbery, breach of contract, extortion etc. There are several types of question document examination: Handwriting and signature examination, Pen, Paper and Ink examination, Indented writing, Typewriter examination

To ensure the utmost degree of reliability and accuracy in determining the questioned documents, it is always beneficial to have a proper examination technique so that culprits can be punished.

Proposed System

The present study relays much on analysis of questioned documents i.e. the latest forensic techniques adopted to make document evidence more authentic to prove or disprove the innocence or guilt beyond any reasonable doubt and the comparative study of newly established techniques with the older ones. The proposed system attempts to show that Modern methods of examination gives better results than conventional methods and makes questioned document evidence more significant to enhance its admissibility in the court of law as evidence. The objective of the proposed study is to i. collect perceptions from the forensic experts, which are really inaccessible to common man, ii. perform qualitative analysis of the collected data, and iii. draft the structure of the outcomes in plain text for better readability. The study also aims to find the best technique in use ranging from modern to conventional one.

Methodology

The study adopts both qualitative and quantitative research

methodology⁴. The study intends to draw a comparative study of conventional and modern technologies in the examination and analysis of questioned documents. The source of Data Collection details are as follows:

Primary Data: Primary data is gathered personally from the selected concerned courts where the disputes relating questioned documents are undertaken. Data is also collected from Government and Private Forensic experts. Primary data is also obtained from Police Personals, Forensic Science Laboratories and Document bureaus.

Secondary Data: Secondary data will be obtained from Documentary sources like Books, Journals, Reports, Conference Proceedings, Official reports, Statistics, Internet etc.

Estimation of Sample Size: The study ensures that there are at 20 participants are involved in the study. The study considers Forensic experts as the participants. The data were collected from the forensic expert working in, Gujarat State forensic Science Laboratory, Gandhinagar, Andhra Pradesh State Forensic Science Laboratory, Hyderabad, Central Forensic Science Laboratory, Hyderabad, Private document Experts.

Study Outcomes

The outcome of the study shows that 25% of the participants are working as Scientist 'B', Scientific Officer, and Assistance Director. While 12.5% of the participants are working as D.J. Government Examiner as well as Assistant Government Examiner. Out of total number of 8 participants, male respondents are higher with 87.5%. In case of professional experience, almost all the 20 participants are found with different work experience.

37.5% of the participants strongly agree that the likelihood of admissibility of QD is legitimate evidence in court of law when conventional technologies are used where as 25% of the participants agree to it and other 25% of the participants are not sure about it. The outcome of the pilot study shows that 50% of the participants agrees that infrared luminescence is used as a method for differentiating inks and it is still precise than computer aided practices where as 25% of the participants are not sure about it.

The outcome of the pilot study shows that 37.5% of the participants disagrees that thin-layer chromatography is the most preferred for QD analysis and 37.5% are not sure. In case of Spectroscopic methods, 62.5% of the participants agrees that spectroscopic methods for analyzing printers are still adopted frequently. In case of authorship of QD, majority 75% of the participants agrees that handwriting analysis is the best option.

In case of non-original evidence analysis, half of the total participants 50% disagrees to the opinion whereas 37.5% of the participants agrees that traditional techniques of QD are not

effective for non-original evidence analysis. In case of examining ink traces, (50%) of the participants agrees to it and other half (50%) of the participants are not sure about whether microspectrophotometry is reliable or not. In case of QD analysis, half of the participants i.e (50%) agrees that Conventional Spectroscopy is still frequently adopted in QD analysis.

In case of distinguishing between paints of same color, (50%) of the participants are not sure where as other half (50%) of the participants agrees that Pyrolysis gas chromatography is better option for distinguishing between paints of same color. In case of traditional examining techniques, majority (50%) of the participants agrees that traditional examining techniques can illicit more distinguishable facts of crime.

In case of the score of reliability, 50% of the participants agrees that the outcomes by traditional forensic techniques are high. In the above graph, 50% of the participants strongly agrees that they retain massive database of handwriting samples where as other 50% of the participants disagree. In the above graph, 62.5% of the participants strongly agree where as 37.5% of the participants disagree that they have certified qualified document and handwriting samples.

All 100% of the participants strongly agrees that they have full-time practice of forensic document examination. In case of electrostatic detection apparatus, 62.5% of the participants agrees that they use latest version of electrostatic detection apparatus. 62.5% of the participants are not sure about whether 3D modelling and simulation has leveraged the process of examining QD. Majority 37.5% of the participants disagrees that automated computer support can increase render more accuracy in questioned document.

In case of authorship of QD, Most 62.5% of the participants agrees that linguistic analysis is the best option for authorship of QD. Majority 87.5% of the participants disagrees that Modern techniques of QD examination are effective for non-original evidence analysis. In case of Computer aided forensic analysis, 50% of the participants agrees that computer aided forensic analysis gives more scope of investigating the QD.

In case of latest comparative ink analysis equipment, 65% of the participants agrees that latest comparative ink analysis equipment are highly reliable in majority of cases. In case of Reliability of forensic ink analysis equipment, most 50% of the participants are not sure. In case of Computer aided handwriting forgery techniques, 50% of the participants disagrees that computer aided handwriting forgery techniques are highly trustworthy whereas 37.5% are not sure.

In case of Fish and CedarFox software, majority 65% of the participants are not sure whether it escalates the QD examination pertaining to handwriting. In case of Digital image processing technique, 37.5% of the participants agrees where as

other 37.5% are not sure whether digital image processing technique enables better security or not for distinguishing between inks of same color more effectively. In case of questioned documents, 37.5% of the participants are not sure whether it is effective modern forensic technique or not.

37.5% of the participants are not sure where as other 37.5% agrees that writing ink identification is an effective modern forensic technique. 50% of the participants agrees that altered documents is an effective modern forensic technique. 37.5% of the participants agrees that non-destructive examination of paper is an effective modern forensic technique. 37.5% of the participants agrees that indentation is an effective modern forensic technique.

37.5% of the participants agree that writing ink comparison is an effective modern forensic technique. 25% of the participants are not sure that writing ink comparison In case of conventional technique over modern computer aided techniques, 50% of the participants prefer conventional technique sometimes, 37.5% of the participants doesn't prefer any of the two methods where as 12.5% of the participants prefer conventional technique over modern computer aided techniques.

In case of the the services provided by participant's firm, 37.5% of the participants said Authentication of genuine signatures, Examination of disputed and disguised signatures, Examination of anonymous letters and threatening letters, Decipherment of obliterated entries were provided by their firm followed by 25% of the participants said Examination of stamps, charred documents, torn documents, Handwriting analysis, Detection of forgery, such as forged signatures and handwriting, Detection of alterations to documents, Detection and decipherment of indented, traced and transmitted documents, Non-destructive ink comparisons, Examination of medical records for alterations, substituted pages, and non-contemporaneous entries.

Study Findings

It is found that 50% of the participants agrees that Non-destructive techniques are better compared to destructive techniques, where as 37.5% of the participants strongly agree to it followed by 12.5% of the participants are not sure. The Outcome of the pilot study shows that 50% of the participants agrees where as 25% of the participants strongly agrees that traditional methods of QD analysis yeilds precise outcome, where as the rest of the 25% of the participants either disagree or are not sure about it. The outcome of the pilot study shows that 62.5% of the participants agrees about it where as rest of the 37.5% participants are not sure about the traditional methods of QD analysis have time constraint to yield results or not.

62.5% of the participants agrees that traditional methods of QD analysis are more based on Human skills where as 37.5% strongly agrees to the opinion. Almost (87.5%) of the participants strongly agrees that their expert opinions and

reports are acceptable in court in India. (50%) of the participants agrees where as other (50%) are not sure that the latest methods of QD analysis are more based on computing skills, datasets, and imposed standards.

Half 50% of the participants are not sure where as other half 50% of the participants agrees that using latest technologies significantly saves time and increase productivity in QD analysis. 37.5% of the participants are not sure where as other 37.5% of the participants agrees that the chances of admissibility of QD as legitimate evidence in court of law is high when latest technologies are used. In case of level of accuracy, 65% of the participants agrees that level of accuracy for latest techniques in examines QD are quite high. In case of the forensic cases pertaining to questioned documents handled, 87.5% of the participants answer was modern techniques where as 12.5% said conventional techniques.

Conclusion

Although the proposed paper has discussed about the pilot study findings, but it has found some interesting outcomes in the area of questioned document examination. From the study it is found that majority of the forensic experts prefer modern computer aided technique for forensic analysis of questioned documents. The experts feel that the reliability of modern technique is much more than Conventional technique. From the study it is also found that the accuracy of modern technique is quiet high where as convention techniques are more based on human skills. Our future working direction is towards escalating the number of participants and understand more complexities as i. issues in modern techniques, ii. issues in traditional techniques, iii. exploring the cases of admissibility of questioned documents in Indian Judiciary system, iv. compliance to Daubert factor in Indian Court of Law for evidence handling, and v. finally to capture the perception of Indian lawyers and magistrate to elicit more facts in the area of questioned document examination.

References

1. Wilson R. Harrison, *Suspect Document*, (3), 494-533 (2008)
2. Saferstein R., *Criminalistics-An introduction to Forensic Science*, Prentice Hall, (2010)
3. Osborn A.S, *Questioned Documents*, Boyd Printing Company, Toronto, (1929)
4. Creswell J.W., *Research design: Qualitative, quantitative, and mixed methods approaches*, Los Angeles: Sage (2013)
5. Pyrek K, *Forensic Science Under Siege: The Challenges of Forensic Laboratories and the Medico-Legal Investigation System*, Academic Press, (2010)
6. Sharma B.R, *Forensic Science in Criminal Investigation and Trials*, 611-624 (2008)

7. Kelly J.S. and Lindblom B.S., Scientific Examination of Questioned Documents, CRC Press, (2006)
8. Ellen D., Scientific Examination of Documents: Methods and Techniques, CRC Press, 28-Sep-2005, 248 pages, (2005)
9. Levinson J., Questioned Documents: A Lawyer's Handbook, Academic Press, 2001-217 (2001)
10. Douglas et al, Criminal Profiling from Crime Scene Analysis. *Behavioural sciences and the law*, 401-421 (1986)