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Chapter 3

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Oluwasayo Oyelami and Martin Olivier

Abstract At the heart of any forensic science discipline is the need to ensure that a method applied in the discipline is based on a factual foundation or valid scientific method. In digital forensics, the aim of an examination is to make consistent inferences about events with high certainty. The highest state of inference is a determination of causality. Two scientific methods that can be applied in digital forensic examinations to determine causality are experimentation and case studies. Experimentation has been used in a range of scientific studies, but there are situations where it is not always possible to conduct experiments. In these cases, the only option is to carry out case studies. A case study approach is not widely used in the natural sciences, but it has been accepted as a valid method that can produce insightful results in digital forensic examinations. This chapter focuses on conducting digital evidence examinations using Yin's approach to case studies as a paradigm. The goal is to show that Yin's case study approach can be applied suitably and that it is useful in digital forensic settings.

Keywords: Digital forensic science, digital evidence, examination, case study

1. Introduction

Forensic science is an intriguing discipline. It epitomizes the relationship between science and law and the complexities of these two fields working together towards the same goal. The goal is to ensure that the innocent remains free and that the guilty is convicted [11, 12].

In an adversarial system, each party must state its case by presenting evidence or expert testimony that supports its assertions and may also refute the opposing party's assertions [11]. To succeed in a legal dispute, the goal of each disputing party is to convince the court to make a