

**TOPIC:**

**“WHETHER MODERN DEVICES ARE  
USEFUL FOR FAIR INVESTIGATION  
AND TRIAL?”**

Upwork Writer

## Abbreviations

- GIS Geographical Information Systems.
- GPS Global Positioning System.
- DNA De-Oxyribo Nucleic Acid
- CCTV Closed-circuit television.
- BCE Before Common Era.
- MI Military Intelligence.
- ISI Inter-Services Intelligence
- NFSA National Forensic Science Agency
- CSI Crime Scene Investigation
- GSR Gun Shot Residue
- UV Ultraviolet
- IMSI International mobile subscriber identity
- CD-Rom Compact disk Rom
- USB Universal Serial Bus

## Abstract

In this we research regarding the modern technology in criminal investigation and in evidence, a subject of great and present interest, the modern investigation of crime. There is no any field has developed as much, in such a short time, as the modern technology did. Previously, law enforcement agencies have had an unfriendly relationship with technology. . However, there is no way one can ignore and resist the adoption of modern technologies any longer since recent developments in crime investigating technologies which have changed the attitudes and perceptions of law enforcement agencies as well as criminals. The recent innovations and implementations which increase the efficiency and effectiveness of policing including network analysis, GIS, GPS system, Stingray surveillance, crime mapping, biometrics, fingerprints, DNA research, facial recognition, speech recognition, social media policing, shot spotter detection system, CCTV, forensic collection, crime scene proceeding and others are detailed in this study. In this research I will analyses the necessity of technology and for use by professionals engaged in laborious work of investigation and crime prevention of the latest modern techniques of technology. Pakistan use efforts to enhance advance technology in modern era in field of investigation and justice system. The key noting to get criminal investigation system developed as other developing countries carrying worldwide to fight with criminals. The criminal investigative services are strengthened in Punjab and Sindh provinces, enabling them to carry out their roles cooperatively and appropriately within the scope of their responsibilities. This helps them to improve the performance of the criminal justice system and of the rule of law in Pakistan, thereby promoting stability and peaceful development in the country in the long term.

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## CHAPTER NO: 01

### 1. Introduction:

The Universal Declaration of Human Rights (UDHR) was adopted in 1948 by forty-eight (UN) members. One of them was Pakistan<sup>1</sup>. The Declaration was a stunning achievement by a large majority without any direct resistance. The Declaration was simply a first step since the Convention was not a convention whereby Member States were committed to implement and enforce basic human rights; nor was it a provision for enforcement; nonetheless it was a step forward in a great process of evolution. The organized community of countries adopted a statement of human rights and fundamental freedoms for the first time. This text was supported by the authority of the UN's whole opinion body, with millions of people, women, men, and children around the world turning to it for help, advice and inspiration.

Pakistan's Constitution of 1973 (the 'Constitution') demonstrates that several of the UDHR articles have in principle been included. It was striking that, despite Pakistan's pledges to promote and uphold human rights and to take effective measures, both at national and international level, 25 years earlier, in 1948, the "right to a fair trial" was left out. According to Article 10 of the UDHR, 'the right to fair trial' applies to everyone in full equality, by an independent and impartial tribunal, a fair and public hearing in determining their rights, duties, and any criminal accusation against him.<sup>2</sup>

Right to fair trial: a person is entitled to a fair trial and due process for determining his civil rights and obligations or in any criminal charge against him.

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<sup>1</sup> United Nations Yearbook 1948-1949.

<sup>2</sup> National Forensic Scientist Agency 18.Federal Investigation Agency 19.PLD,

The right to fair trial is therefore now a fundamental constitutional right that belongs to all Pakistani citizens, covering not only criminal charges but also civil rights and obligations. The Constitution itself does not define the right, but a reference to international human rights conventions, such as the European Convention on Human Rights (ECHR), might be a good beginning point for trying to describe the main elements of the "fair trial." Article 6 of the ECHR includes as the basic minimum standard required in a 'fair trial' the following elements: a fair and public hearing by an independent and impartial court in civil and criminal cases, in a reasonable period; announcement of the judgement in the open court, although for a number of reasons restrictions on the participation in a trial by both the press and the public may be placed on the presumption of innocence of the defending defence in criminal offences until such time as it appears to be culpable beyond resection.<sup>3</sup>

In Pakistan, there is a progressive development of jurisprudence in addition to international human rights frameworks regarding the significance of a 'fair trial' which refers to a broad reading of Article 10-A of the Constitution. In the context of contempt of the former First Minister Yousaf Raza Gillani, for instance, a seven-member bench of the Supreme Court recently defined the new basic right<sup>4</sup>. The Court said that the right to a fair trial has been recognized for a long time, being constitutionally guaranteed and 'already well-established in our case law.' The Court noted that the right "was lifted up to a higher pedestal by Article 10-A; thus the law or customs or practise which had force of law in conflict with the right to a "fair trial" would be void pursuant to Article 8 of the Constitution." The Court considered that, perhaps intentionally, the term 'fair trial' was left undetermined by the legislature in order to give it a universally accepted meaning including 'a right to a proper hearing by a competent forum without a right' from the point of view that "no human being

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<sup>3</sup> European Scientific Journal February 2013 Edition

<sup>4</sup> Criminal Original Petition No. 6 of 2012 in Suo Motu Case No. 4 of 2010 (Contempt proceedings against Syed Yousaf Raza Gillani, the Prime Minister of Pakistan, regarding noncompliance of this Court's order dated 16.01.2012), decided on 26th April 2012 PLD 2012 SC 553, para 27

can be a judge in his own case.”<sup>3</sup> The Court took the view that, based upon the concept that “justice not only should be made, but should be seen to be done,” the judge could not rule on any case in which he has a personal interest, irrespective of whether its conclusion would probably be influenced by it. In another case, in declaring the presumption of innocence a “core-post for the administration of justice,” the Supreme Court pointed to the courts’ firm acknowledgment that the principles of fairness, fair play, justice and equity had been enshrined in the Constitution well in advance of the right to fair trial<sup>5</sup>.

Indeed, Article 10-A is fundamentally bound up and dependent on other constitutionally guaranteed fundamental rights. The Constitution generally grants every citizen the right to be treated under the law, ensures equality before the law, provides equal protection, offers protection against illegal activities that harm their lives, freedom, body, reputation or property, entitles them to do everything legitimate and prevents them from doing anything which the law does not require. More specifically, in the context of a “fair trial,” the Constitution provides for protection against illegally depriving people of life and freedom, including safeguards for arrest and arrest, which require that an arrested and detained person is informed of his or her arrest, is entitled to be consulted, defended and brought before a counsel of his or her choice.<sup>5</sup> The Constitution also offers safeguards regarding retrospective punishment, double punishment and self-injuriousness, and respects the privacy, dignity and torture of a person designed to submit testimony. The actual practise of arrest and detention, however, shows a litany of abuses of fair trial rights and related fundamental rights<sup>6</sup>.

Being a researcher, we have to be known with proper definition of subject and its origin. The word investigation originates from Late Middle English: from Latin investigation (n-), from the verb investigare (see investigate). Means, the

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<sup>5</sup> Article 10 (clauses 4 to 9) of the Constitution deals with preventive detention. While this phrase has not been defined in the Constitution, J. (R) Fazl Karim, in ‘Judicial Review of Public Actions’ (page 630) relies on *Government of East Pakistan v Rowshan Bijaya Shaukat Ali* PLD 1966 SC 286, 320

<sup>6</sup> Brest, P. (1981). The fundamental rights controversy: The essential contradictions of normative constitutional scholarship. *The Yale Law Journal*, 90 (5), 1063-1109.



action of investigating something or someone or formal or systematic examination or research in result evidence that which tends to prove or disprove something; ground for belief, proof.

Criminal inquiry is an applicable science that includes the analysis of facts used to discover, find and demonstrate the culpability of an accused criminal. A full criminal investigation can include searches, interrogations, interviews, preservation and gathering of evidence and different types of inquiry. Current criminal research usually involves numerous modern scientific methods collectively called as forensic science<sup>7</sup>.

Criminal investigations are also an ancient craft that could have origins in the writings of the Hammurabi Code as far back as 1700 BCE. The code suggests that both the accused and the convicted have the right to present proof they have obtained.<sup>8</sup> In current times, government law enforcement agencies most typically conduct criminal investigations, although private detectives are also frequently engaged to conduct or help with criminal investigations.

A modern technology study refers to an intense search for or assessment of information. This can entail questioning witnesses, forensic examination and records inquiry using contemporary technology. Method Scientific study is the method scientists and researchers systematically tackle questions about the world around us. Read more to try and find out facts (something like a crime or an accident) to learn how this occurred<sup>9</sup>.

The law of land empowers the government agencies to investigate the crime in accordance to rules and regulations and collect evidences. The government established different forces to investigate, in Pakistan, police, rangers, military intelligence MI, inter-services intelligence ISI, levies specially works in Baluchistan to control the crime ratio in Pakistan, which works under the direction of government. Investigative agencies primarily deal to recover,

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<sup>7</sup> Brown, C. S. (2015). Investigating and prosecuting cyber crime: Forensic dependencies and barriers to justice. *International Journal of Cyber Criminology*, 9(1), 55.

<sup>8</sup> The code of Criminal

<sup>9</sup> Osterburg, J., & Ward, R. (2013). *Criminal investigation: A method for reconstructing the past*. Routledge.

evaluate and analyse information about crime and collect evidence. The objective of this research is therefore to investigate whether or not current technology contributes to the result of criminal investigations and to proof and in what extent? Recent technological breakthroughs have changed the way individuals live and work in society. Developments used across as unattainable are now recognised as possible through fresh technology development. Today, technology is an important part of community and appears to be a natural part of our daily lives. Criminal conduct and daily habits, on the other hand, evolved concurrently to these technical changes. Criminals have resorted to exploit technological tools for crimes. They may easily perpetrate offences with improved hardware and software technologies, and crimes have now relocated from their prior more observed operating techniques to the digital field.<sup>10</sup> This means that anyone who understands the relevance of current technology and has sufficient knowledge of its recent developments can now start taking responsibility than in the past. In this respect, what law enforcement authorities should do in order to combat new contemporary technological gadgets for crimes and criminals using modern technology. How can you better prepare yourself to overcome the obstacles of this issue? The significance of new technological advancements should, of course, be given great emphasis by the law enforcement authorities more than just to offenders and the battle against such crimes. This study examines the role of the law enforcement agencies in limiting digital or technical crimes and analyzes certain technology instruments that are employed by police in developing , developed and Pakistani countries<sup>11</sup>.

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<sup>10</sup> Crime Scene Investigation A Guide For Law Enforcement 2000 By Technical Working Group CSI

<sup>11</sup> Haythornthwaite, C., Kazmer, M. M., Robins, J., & Shoemaker, S. (2000). Community development among distance learners: Temporal and technological dimensions. *Journal of Computer-Mediated Communication*, 6 (1), JCMC615.

## CHAPTER NO: 02

### 2. Literature Review:

Criminal inquiry as a field in the realm of criminal law enforcement (criminal justice) that focuses, within a specific jurisdictional area, state and federal levels of government and upon the solution of crime at local. A crime is founded on a strict standard of a state institution, such a legislature.<sup>12</sup>

The following chapter of my research work comprises of several books handouts and articles, statutes and research papers which clearly elaborate the significance of modern technology in criminal investigation and in evidence in the field of law and also defines the interlink between law enforcement agencies, investigating crime scene and legal fields with each other.

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<sup>12</sup> International Journal Of Scientific And Research Publication 2016

It wouldn't be wrong to call this book a versatile book for investigator and lawyers working or willing to work in the field of science. This book is the combination of legal practice and investigation, this work can be used by an expert who is interested to know if the particular finding is an Ante mortem injury or artifact or law enforcement officer wants to know the various aspects of the problem that he is handling at the time of inquest and other crime scenes during investigation. This work ensures the adequate and appropriate coverage of events and situations that were undergone by the experts, investigators, lawyers or officers when facing problem should refer to relevant chapter or topic of the work and there they can find possible questions possible pitfalls and necessary procedures<sup>13</sup>.

The abovementioned work provides a vast and wide knowledge about the study of criminal investigation and evidence and covers it legal explanations as well to provide solid status to its reference. Serdar K gul has also quoted his words in his article that "The investigative job of the police is primarily concerned with the recovery, analyzation of information about criminal acts<sup>14</sup>. As Luen & Al-Hawamdeh (2001) states, reporting that is timely and accurate is essential to police success. To maximise the likelihood of excellent information generation, police use new technologies. IT is a critical part for criminal investigations as it improves the generation, recuperation, storage, application of investigative material and transmission <sup>15</sup>. In addition, IT technology can assist to efficient access dedicated to criminal investigation by automated certain regular inquiry procedures<sup>16</sup>

The criminal investigation and forensic science are both interrelating, and

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<sup>13</sup> Casey, E. (2009). *Handbook of digital forensics and investigation*. Academic Press.

<sup>14</sup> Osterburg, J. W., & Ward, R. H. (2007), *Criminal investigation: A method for reconstructing the past*, LexisNexis, Newark, NJ.

<sup>15</sup> Gottschalk, P. (2007), *Knowledge management systems in law enforcement: technologies and techniques*, Idea Group Pub, Hershey, PA.

<sup>16</sup> Lambri, T. (2014). *Modelling the implementation and acceptance of the Police National Database in UK police forces* (Doctoral dissertation, Loughborough University).

helpful to trace out the criminals, these disciplines are complementary to each other and evidence that has been obtained from the place of incident are reliable to provide justice. This work has explained topics which can be said a baseline to investigation with forensic science and steps to get reliable information which could be used as evidence in court of law.

The term forensics refers to a wide range of professions using methodological approaches for legal purposes to investigate biological , physical and digital evidence. Forensics has been an associate of decades of law enforcement organisations and this connection has been stronger with scientific advances. At the current age, the criminal system focuses on the use of evidence through forensics and has a major effect on the levels of crime. Forensic science involves a variety of subjects within the criminal justice system and this broad framework covers several subcategories. The National Forensic Science Agency (NFSA) is a ministry of the interior project, providing forensic care and supports to other comparable entities around the country as an autonomous body. The establishment of forensical science laboratories will improve crime detection facilities in Pakistan and also build the skills of law enforcement agencies by means of sophisticated training, scientific instruments and equipment under one roof with the newest legal enquiry methodologies. This will help to build people's faith in the country's justice system.<sup>17</sup>

The book by Dr. B. R. Sharma, on law relating to handwriting forensics which provide complete and authentic knowledge about handwriting and their complementary relationship. However, like other disciplines, this subject is also been to dramatic changes and an evaluation, this book is best for those who practices law and also for those who work in the field of handwriting forensics.<sup>18</sup> According to the writer there are many things that should be taught and learn by people of all generations for the sake of administration of

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<sup>17</sup> Penal Code, 1860 15.The Express

<sup>18</sup> Handwriting Forensics By Dr.B.R Sharma

justice in the society. The author has defined the basic terms such as Handwriting and Forensics and their legal status and aspects in the book; "Handwriting of a person is his writing may be alphabets, words, signature, initials, digits, or figures written in some script or non-script form. Writing may consist of signs, symbols, rubrics, lines etc. it is usually written with hand but some people who are unable to write with their hands, uses mouth or foot to hold the writing instrument and create writing."<sup>19</sup>

Thus, in the continuance of above quoted lines, it is clear that every person has its unique style and pattern of writing and thus it looks natural and obvious and effortless, and it has internal consistency and rhythm that shows automatic mature graphics, lines, and words. So on the basis of findings of authors and other researchers the handwriting has been classified as follows;

Artistic Handwriting

Clumsy Handwriting

Tremulous Handwriting

Hesitant Handwriting

Strong and Forceful Handwriting

These classifications are technically based on formation of words and symbols or signatures on a paper by a person but also classified under what circumstances and how much mental capability is used to write it.<sup>20</sup> Moreover, there classification also based on the physical and health issues of

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<sup>19</sup> Khator, R. I. (2020). *Effect of Forensic Document Examination Knowledge on Travel Document Fraud Detection—a Case of Jomo Kenyatta International Airport* (Doctoral dissertation, University of Nairobi).

<sup>20</sup> Crime Scene Investigation A Guide For Law Enforcement 2000 By Technical Working Group CSI

a person who has written something which become part of any incident or crime. Next the author discuss about forensics and according to him; "The term synonymous for scientific methods and techniques used to evaluate evidentiary clues, extract, information from them, rationalize the information and draw conclusions to assist the courts in the dissemination of justice, forensics help criminal investigation and civil inquiry providing answers to various questions which come up to link with criminal with the victim, with the scene, with the instrument of crime, the vehicle used to commit crime, with the modus operandi and to verify the versions and to provide leads."<sup>21</sup>

**CORONER OFFICER AND CORONER COURT:** An official who is obligated to investigate the matter of the death, in questionable circumstances, or in jail, of any person who died or killed. In Pakistan, a coroner is an officer appointed by the government to conduct a death investigation which is suspected of being suspicious and unnatural.

**DUTIES OF CORONER OFFICER:** He will conduct enquiry of those cases which lie in his jurisdiction and find the cause of death. he will enquire all cases relating unnatural death, suicide or homicide, accidents, poisons, death occur in police custody or in court or in asylum or any certified school or in jail. He will pass order for postmortem or may issue summon to medico legal officer for examination at time of evidence. He may also appoint deputy coroner officer for a compliance of duties.

According to this book digital forensics or computer forensics are one of modern techniques in forensics which help to conclude the case and provide justice to aggrieved party, this book completely discuss the scientific evidence and investigation, the author states in accordance to digital or computer forensics: Computer forensics is a discipline of law enforcement found in technology and computer storage media. The purpose of computer forensics is to describe an artifact's current status. The solution can be as simple as the information here. And as thorough as the sequence of events

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<sup>21</sup> Borgo, R., Kehrer, J., Chung, D. H., Maguire, E., Laramée, R. S., Hauser, H., ... & Chen, M. (2013, May). Glyph-based Visualization: Foundations, Design Guidelines, Techniques and Applications. In *Eurographics (State of the Art Reports)* (pp. 39-63).

that is aware of the current scenario. There are numerous sub-branches in the computer forensics area such as forensic firewalls, database analytics and mobile device diagnostics. In the legal case, computer forensic techniques are employed regularly to investigate the computer system belonging to the criminal defendants, as well as the parties in civil cases.<sup>22</sup>

### **Digital Forensics**

Digital forensics is the science to retrieve, examine, report and evaluate the discoveries of digital evidence. The digital forensics is a subsection of forensics and in future years digital evidence is crucial for the investigation of a scene of the crime. Digital devices like smartphones, tablets and laptops are a crucial component of our lives, and these devices manage our virtual life. Information generated by these technologies can be prospective investigative evidence and actually fix difficult criminal cases.

Serology: the name "serology" usually means the non-cellular section of the blood; so serology requires an analysis of the blood when the term is used; but in addition to blood evidence, forensic serologists also carry out chemical tests on other body fluids, for instance semen and saliva. Serology participants underwent researchers to separate these body fluids when they are found on the scene of crimes, and then execute predetermined tests of these liquids so that those secretions may be recognized.

### **Crime Scene Investigation**

There are "silent witnesses" to the sequence of events on the crime scene and these "silent witnesses" tell the entire story when the forensic expert

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Cohen, F. B. (2010). Fundamentals of digital forensic evidence. In *Handbook of Information and Communication Security* (pp. 789-808). Springer, Berlin, Heidelberg.



“interrogates” the workshop. The crucial element, however, is the preservation, processing, packaging, transit and storage of tangible evidence. Crime scene management is a challenging and lengthy task requiring full concentration, experience and skills . It is a teamwork and each team member is given a unique task. The team may be made up of but not confined to: Crime Scene Expert/Team Leader, Designer , Evidence Technician, , Photographer and forensic expert as appropriate<sup>23</sup>.

Nowadays, modern technology has been used widely in law enforcement organisations around the world both for general administration and essential police tasks, such as crime prevention. A number of innovative services are now being used by law enforcement authorities to combat criminals who use the advantages of these technology for undesirable ends. However, law enforcement authorities may need to look for more advanced tools and techniques to defeat this extremely sophisticated application of illegal technology. 24

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<sup>23</sup> Levitt, L. (2020). *The Objects that Remain* . Penn State University Press.

<sup>24</sup> . Luen, T. W., & Al-Hawamdeh, S. (2001), “Knowledge management in the public sector: principles and practices in police work”, *Journal of Information Science*, Vol. 27, No. 5, pp. 311.

## CHAPTER NO: 03

### 3.1 Research Methodology:

The word Hypothesis usually denotes assumption and refers to a definitive and clear clarification of certain facts. It is a blend of two terms 'hypo' and 'thesis' and literally means hypothesis and denotes rational and fair theory. Accordingly, a hypothesis means a theory that may not be entirely explained, but with the supposition of the relationship between two or more variables there is some truth in it. But when the assumption is confirmed, it becomes a hypothesis and a theory. In other words, the hypothesis is regarded to examine facts and to verify the validity of the idea. It is an attempted generalisation and its correctness must always be evaluated in a declaratory form and try to establish a relationship in general or specific. It might be creative, knowledge-based notion. Researchers presupposed activities of different manners: morals, politics, art and so on. For example, morals presupposed concepts of the right and wrong, ethics, principle and morality, politics presupposes the concept of government, political affairs, affairs of state, policy, political viewpoint, political doctrine, political principles and civil defense etc. science presupposes the concept of systematic knowledge, and the art the concept of visual, artistic, aesthetic unity. A hypothesis looks at all such relevant concepts. Presuppositions may take the form not only concepts but also of basic idea, every event and incident has a cause and related reasons. The task of researchers in the view is to express presupposed concepts and belief accurately and clearly, to ascertain which of the beliefs are true and which false and if possible to define some of the concepts in the terms of situation under study.<sup>25</sup> Hatt and Goode have well-defined it is as "a proposition which can be put to a test to determine its validity." It can prove wrong and right. However, it leads to an empirical test in any case. Whatever the outcome, the hypothesis is a query that can lead to an imminent answer of some type. The use and implementation of hypotheses therefore discourages and discourages research without empirical verification and indiscriminate data collection. This kind of hasty move could subsequently

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<sup>25</sup> Sher, G. (1997). *Beyond neutrality: Perfectionism and politics*. Cambridge University Press.

show unrelated to the research problem. In this connection Lundberg observes: "the only difference between gathering data without hypothesis and gathering them which one is that in the latter case we deliberately recognize limitations of our senses and attempt to reduce their fallibility by limiting our field of investigation so as to permit a greater concentration of attention on the particular aspects which past experience lead us to believe are significant for our purpose."<sup>26</sup>

### **3.2 Meaning of hypothesis:**

What is meant by hypothesis or what the hypothesis intend? As we are aware, any scientific research begins with the findings of a solved problem. When the problem has been identified, the researcher presents a tentative solution. This testable statement is called a hypothesis. A hypothesis is therefore offered as a testable answer to a problem and is a testable connection of two or more variables. A hypothesis means what we want. It's a proposal that always looks ahead. But sometimes it seems to be wrong. Mill has defined the hypothesis as "any assumption we take, either without any real evidence or in sufficient degree, so that we can deduce conclusions according to the facts that are known to be real, with the view that if the conclusion that the hypothesis leaps is known to just be true, the hypothesis on its own has to be true either or at least.

### **3.3 Types and classification of hypothesis:**

A hypothesis may be about the cause or reasons of an occurrence, truth, observable fact, experience, happening, incident, event, trend, and phenomenon. A hypothesis may be relating to the law of which it is an illustration. A hypothesis is therefore descriptive, but a hypothesis concerning the law is more relevant. When a phenomenon cannot be comprehended entirely due to certain problems, we establish a tentative hypothesis for investigating and ensuring the validity of the situation.

Sometimes, we simultaneously or consecutively test or more hypothesis on the same problem. Hypotheses are classified in several ways reference to

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<sup>26</sup> Heyes, C. M. (1998). Theory of mind in nonhuman primates. *Behavioral and brain sciences*, 21 (1), 101-114.

their function, hypotheses are: Descriptive, Relational, Null, Statistical, Working. Hypothesis in general may be grouped into two categories; universal and existential. A universal hypothesis is one which denotes that the stated relationship hold for all specified variables for all time and all places, an example of a universal hypothesis is "if the brave soldiers are frequently rewarded for their better military performance, they will perform better." The stated relationship in this hypothesis hold true for all time and places. An existential hypothesis is one in which the stated relationship is said to exist for at least one particular case, an example of an existential hypothesis is "there are at least few cooperate workers who are scrounger and may not perform better despite the fact that he is being rewarded suitably for better performance." In statistical sense a hypothesis may be divided into three categories; the null, alternative and research. The null hypothesis is no difference hypothesis, it states that the relationship between the variables is due to chance factors and thus it does not reflect real differences. The investigators formulates null hypothesis with the sole purpose of rejecting it.<sup>27</sup> The alternative hypothesis is operational or testable statements of research hypothesis. If the null hypothesis is rejected the alternative hypothesis is acceptable and Alternative hypothesis is rejected, if a null hypothesis is accepted. In other words, the decision-maker is rather partial to the null hypothesis and accepts null hypotheses. However, only if the proof against the null hypothesis is too big to be ignored would he reject the null hypothesis. We are going to look at the causes behind this inclination because zero indicates null and zero hypotheses are named because acknowledgment of the hypothesis would lead to zero action in many scenarios. A negative hypothesis is said to be zero hypothesis and to be tested against other hypotheses, for example if a director of the marriage office from the same cast and race was to maintain a status quo ante. On the other side it would lead to a change in the status quo ante and to the marriage matching of the bride or wife. A hypothesis for research is a hypothesis formed from certain theories or observations and investigations. In other terms, the hypothesis of study is the hypothesis based on or on

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<sup>27</sup> Sherif, M. (2015). *Group conflict and co-operation: Their social psychology*. Psychology Press.

logical reasons<sup>28</sup>

### **3.4 Importance of hypothesis:**

A fundamental element of scientific contemplation is the hypothesis. The role of hypothesis in study is important because it clearly and adequately explains the hypothesis facts. Every inquiry is performed and effective significantly because unrelated facts are excluded and the important facts are included. Now the elimination and inclusion of facts or associated hypotheses occurs. It is true that hypothesis is useful and it leads research in its proper direction. Exception may be only in explanatory studies in which it may be not be possible to formulate suitable hypothesis. Thus, it implies and promotes the discovery of order in the natural nature of the study while allowing researchers to proceed in the correct way. It determines the methods of verifications. The significance of an object or event can be determined by hypothesis. The importance of hypothesis can hardly be ignored and overlooked in any scientific research in fact it is very foundation of a scientific research. A clear, straightforward or scientific hypothesis specifies and enables inquiries to be more particular. It helps to decide the way forward, to choose relevant information and associated conclusions. Without study on hypotheses, the results can't be declared facts without a clearly defined significance and random empirical errors. Hypothesis is the essential connection between research and theory, which leads to achieve breakthroughs or facts addition.

### **3.5 Difficulties in hypothesis formulation**

It is difficult to say specifically how a researcher formulates a hypothesis. Because the process of formulation of hypothesis depends on character and course of study and scholastic capability of researcher, Goode and Hatt had point out some difficulties in formulation of good research; firstly, a significant challenge in the formulation of a good hypothesis is the lack of understanding about the theoretical framework. In the absence of thorough theoretical evidence, or in the absence of the relevant theoretical evidence, a

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<sup>28</sup> Regenwetter, M., Dana, J., & Davis-Stober, C. P. (2011). Transitivity of preferences. *Psychological review*, 118 (1), 42.

hypothesis research cannot be made. Second, if the investigator has no theoretical framework understanding then the hypothesis cannot then be stated. The third is that the researcher cannot create a positive research hypothesis if he is not familiar with essential scientific research procedures.

### **3.6 Ways of formulating hypothesis**

A hypothesis is a testable assertion about the connection among the variables under investigation. As it is testable, it can be confirmed if a hypothesis is factual or not. When we are aware of these characteristics of a hypothesis we must know how to formulate it. According to suggestion given by L.Russell the hypothesis should be stated in logical form of general implication. In formulating the hypothesis as general implication there occur common misapprehensions regarding the condition and the effect. Usually it is misconstrued that pre conditions cause successive resultant condition but this is not always acceptable. It is universally accepted that if hypothesis is possibly true then the pre condition and successive resultant condition will arise without any much problem.<sup>29</sup>

### **3.7 Hypothesis verification**

"A part from the stipulation of verifiability and certainty for ask of verifiability without which proposition does not qualify to be cited under a hypothesis. Thus it appears imprudent to lay down rules for a justifiable hypothesis" if a hypothesis is developed, it should also be verified. Sometimes it may not be viable to verify it because of practical and technical difficulties but all efforts must be made to verify the hypothesis. When hypothesis is not verified it means research without direction, hypothesis may be directly or indirectly verifiable. If the same observation or experiment can test it, a hypothesis can be validated directly. The hypothesis of coffee in the night makes a sleepless man able to test him several times by providing coffee in the night and monitoring its effects on them. Where the theory cannot be verified directly, we can indirectly test it by confirming its activity and related impacts and while handling the lift producing surface are maneuvered to achieve the desired position of the aircraft. Therefore the upward force by weight of the

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<sup>29</sup> Binford, L. R. (2017). *Archeological perspectives* (pp. 5-27). Routledge.

aircraft is adjusted according to the need of the flight. Increase and decrease of upward and downward force of aircraft can be felt by its positional effect from outside otherwise one has to be in cockpit to monitor the resultant force on instrumental panel. There will be different opinion on the hypothesis if the cause and effect relationship is an established fact, for example our present day lifestyle eating high fat food and animal meat at road side hotel, misuse of sugar and dairy products. Smoking , alcohol, drug abuse, pervasive impact of pollution and pesticides increase the level of highly reactive and devastating forms of oxygen that damage the cells and play a major role in all diseases and early aging.

### **3.8 Hypothesis testing procedure**

Thereby a claim based on meaning might be viewed as a hypothesis because hypothesis denotes a presumption/assumption. The mean value of the sample element picked at random is compared with the hypothesised mean value in the hypothesis test. If the difference is statistically significant, the claim will otherwise be refused. This is the inductive process that indicates that the correctness of the assumed value of much or population is determined based on sample information. There is a degree of inaccuracy that may be assessed to help the researcher in this procedure. In principle, there are two steps of hypothesis testing. In the first phase, we construct the test and specify the terms under which the null hypothesis is rejected.<sup>30</sup> In the second phase we have performed the test based on sample evidence and concluded that the null hypothesis can be dismissed or that the precise steps involved (as is the P-value?) were the following:

1. State null hypothesis and alternatives.
2. Choose the statistics of the test - that means the sample statistics to determine the crucial region.
3. Identify the significance of hypothesis.
4. Describe the decisive section in conditions of the analysis statistics.

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<sup>30</sup> Vogt, W. P., & Johnson, B. (2011). *Dictionary of statistics & methodology: A nontechnical guide for the social sciences*. Sage.

5. Test the observed value with a decoupled value or a critical value and determine if null hypothesis may be accepted or rejected.

6. The best method to elucidate these steps is through an example and that is what an investigator intends to do in the study.

### **3.9 Modern Technology in criminal investigation and its legal status**

#### **3.9.1 Investigation**

The criminal investigation is an applied science which includes an examination of the facts required to detect, find and prove a criminal's guilt. A full investigation may comprise investigations, interviews, interrogations, collecting and maintenance of evidence and other investigative procedures. Current criminal research usually uses several modern scientific methods together called as forensics.

Criminal research is an old science that can be rooted in the Hammurabi Code as long as about 1700 BCE. The code suggests that both the accuser and the accused are entitled to submit evidence. Criminal investigations by government police forces are usually conducted in the modern age. Private researchers are also frequently engaged to finish or help with criminal inquiries.<sup>31</sup>

As today's speedy life modern technology involves as part of life and very hardly someone can deny the usage of technology. In criminal investigation modern technology plays vital role to collect accurate evidence by usage of technology and in result criminals send behind the bars on basis of evidences and investigation report. Whenever investigation made with modern devices it will become more technical to get the result and that science be done by experts and give perfect result which concludes the issue and its legal status highly probable which tends to final decision .<sup>32</sup> criminals usage of modern devices helps to get them by their usage such as smart phone and other gadgets are traced by GPS system and other advance technology connects their signal towers where it locate which help to find out location and easy to catch them. In Pakistan its usage very limited but need to be enhanced at

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<sup>31</sup> European Scientific Journal April 2015

<sup>32</sup> Ishay, M. (Ed.). (2007). *The human rights reader: Major political essays, speeches, and documents from ancient times to the present*. Taylor & Francis.



police level then investigation become more accurate and perfect. The more perfection will come in investigation when record of people is maintaining in detail by law enforcement agencies at DNA level.

### **3.9.2 Crime Scene Investigation**

The investigator has several major objectives to collect evidence from a crime scene: Reconstruction of the crime, identification of the person doing it, preservation and collection of evidence in a form that can stand before the Court.

Reconstruction of the crime scene relates mainly to scientific procedures, bodily verification, logical reasoning and their inter-relationships in order to get explicit knowledge of the number of events surrounding criminal commission. Induced reasoning is usually used in the reconstruction and deductive reasoning is continued, and the factual analysis in relation to the case is then involved.

Reconstruction of the forensic crime scene is the process of establishing what happened during and after a crime in the sequence of events. Three major forms of reconstruction of the crime scene are particular reconstruction of the incident, specific reconstruction of the event and specific reconstruction of physical evidence. In basic terms it may be said to be implemented in such a way that all possible information accessible can be collected to assist governments construct a case which is enough legitimate to present before the court.

The capacity for solving crimes via use of forensic methods and processes has been considerably extended by contemporary law on cement.

Today, crime may frequently be resolved by examining the crime scene in great detail and analysing forensic proof in civil legal action, significant human and natural catastrophes and investigations of worldwide crimes, not only is forensic science work important in criminal investigations and prosecutions, but also is necessary to conduct the inquiry. The successful analysis of the legal evidence is based on a system emphasizing teamwork, informative expertise and the ability to correctly manage a crime scene by recognizing, collecting and preserving all the relevant physical evidence (such

as GPS positioning, cellular telephone tracking, analyses of image images, artificial intelligences and data mining). The acknowledgement of tangible evidence is a crucial step. If possible physical proofs are not recognized, gathered or correctly stored and examined, their forensic value may be substantially decreased or lost permanently. Many routine and high profile instances have shown the harsh reality that the effective use of physical evidence for the purposes of crime resolution, despite the available existing crime scene technologies, technical equipment and sophisticated forensic lab analyses only exceeds the knowledge and integrity of crime scene personnel and the objective legal system that supports them. Evidence has been faked in certain cases or outcomes defamed, leading the legal system to mislead. Most of the field textbooks are at present limited to investigating the crime scene to documenting the crime scene as well as collecting and packing physical evidence thereafter. Crimes are frequently solely involved in crime scene security, recording of the scene and collection and protection of bodily facts in the crime scene; those who work on the crime scene have unhappily been labelled 'crime scène technicians.'<sup>33</sup>

### **3.9.3 Body fluids**

Crime-scene body fluids may include blood, semen, saliva and vomiting. A CSI may utilise Smear slides, a scalpel, tweezers, scissors, sterile squares, a UV radiator, protective eyedrop and luminous to identify and gather these bits of evidence. He will also utilise a blood collection kit for comparison to get samples from any suspect or a living victim.

The CSI takes a blood spectrum when the victim is dead and blood on the body either by sending a piece of clothing or using a sterile square cloth and a tiny quantity of water to take blood from the body.

A sample can be used to compare blood or saliva obtained by a suspect in the laboratory, and a sample will be analyzed in order to be able to compare it with blood and saliva. If there was a battle, the skin of the suspect (and thus the DNA) might be beneath the nails of the victim. If some of the furniture is

dried in blood, the CSI tries to send the whole piece of furniture to the laboratory. A sofa is not an unusual proof to be gathered. The CSI may take it by scraping it into a sterile container with a scalpel if the blood is on anything not reasonable to the lab, such a cord or bathtub. Luminous and portable UV lighting may also be used by the CSI to reveal blood wiped off the surface.<sup>33</sup>

Blood spreading patterns can also occur if there is blood on the scene. These patterns can disclose the weapon type employed, for example, when something like a baseball bat comes into touch with a blood supply, and swings backwards. These patterns are not used. The gout is big and is usually tear-drop. The pattern may show numerous blows from a blunt weapon, as the first gust does not as a rule come in touch with any blood. On the additional hand over, a "high-energy pattern" consists of many little goutlets and can show a blast of a pistol.

Blood spread study can tell how the blood was moved and how numerous different occurrences the guide was produced. Analysis of the pattern of blood comprises research of the tallness and form of the blood gout, the shape as well as size of the gout and the gout concentration in this pattern. The CSI takes photos of this pattern, which may be analysed by a blood spreader specialist.

#### **3.9.4 Hair and Fibers**

CSI may gather any hair or fibre on a scene with screws, tweezers, containers, and a filtered vacuum equipment. At a rape case involving a living victim, the victim received hair or fibres from the victims in a hospital during medical examination. the victim is accompanied by the CSI In separate containers, the CSI seals every hair or fibre evidence.

A CSI might retrieve fibre from the shoes of a suspect. These fibres can be compared to taped fibres from the residence of the victim. Analysts can utilise hair DNA via comparison to detect or remove culprits.

The presence of hair on a weapon or tool can detect it as a criminal weapon.

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<sup>33</sup> Hedman, J. (2011). *DNA analysis of PCR-inhibitory forensic samples*. Lund University.

The crime laboratory can establish the type of animal from which hair came (human? cow? dog?); and, if a man, analysts can tell the race of the person from which part of the body the hair came, whether it had fallen out or had been torn out and whether it had been coloured.

### 3.9.5 Fingerprints

Fingerprint recovery tools include pins, powders, tape, chemicals, lift cards, loupe and Super Glue. A fingerprinting crime laboratory can identify or identify or exclude a defendant by using a crime laboratory. In a criminal scene, a CSI might uncover various sorts of prints.

Visible. Right on the surface, which is sufficiently smooth to hold the imprimé by transferring blood, paint or other fluid or powder?

Molded: left in the soft medium, such as soap, putty or candle wax.

- Latent: Left to a surface that is smoother enough to keep the print, through the transfer of perspiration and natural oils from the finger; not apparent to the human eye.

An offender may leave prints on porous or non-porous surfaces. Unfinished wood and carton are pore surfaces that hold a print, whereas non-porous surfaces are glass, plastic and metal. Typically, a CSI will check for places that the culprit may have touched latent prints. For example, the outside door pushbutton and the door surface are natural locations to check for prints, if there is evidence of forced entry at the front entrance. A latent print temporarily visible might produce breathing on a surface or a brilliant light on it.

You probably erase a latent print when a TV sensor turns a door knob using a handkerchief. A latent printing on a non-porous surface may only be avoided by not touching it. Repeat latent prints by proper methods:

- Metallic silver powder or velvet black powder (for non-porous surfaces)

- Powdery

A CSI utilises any powder that is most in contrast to the colour of the printing medium. In a circular movement it slowly brushes powder on the surface until the print is visible; it then begins to brush towards the print ridges.

He takes a photo of the print before using tape to lift it (this makes it stand up better in court). He adheres clear tape to the powdered print, draws it back in a smooth motion and then adheres it to a fingerprint card of a contrasting color to the powder.

- Chemicals: iodine, ninhydrine, silver nitrate (for porous surfaces). The CSI sprays the chemicals over the object's surface or dips the material into a chemical solution to disclose the latent printing.

- Super Glue smoking of cyanoacrylate (for porous or non-porous surfaces) The CSI fills a metal plate with the super glue and warms it up to 120 F. He then inserts the plate, source of heat and object in an airtight container that holds the latent print. The Super Glue smoke makes the latent printed material visible without disrupting the substance. The cast is a sample for the student.

The footprints recovered in a crime scene seldom produce such flawless replicas according to Mr Clayton.

### **3.9.6 Footwear Impressions and Tool Marks**

An example of a double-dimensional imprint is a latent fingerprint. An example of a three-dimensional impression is a soccer impression in mud or a tool mark on a window frame. If the whole object holding the imprint cannot be put on the scene in the crime laboratory, a CSI casts on the scene.

Multiple casting chemicals, such as dental gypsum and Silicone rubber, snow wax, bowl, a spatula and cardboard boxes for the castings might be part of the package.

If a CSI discovers an impression of footwear in mud it will take a picture and produce a cast.

To prepare the casting material, she puts casting material in a Ziploc-type bag with water and kneads it around two minutes until it is like a pancaker. Then she pours the mix into the edge of the track so that it runs into the print without bubbling air. Once the material overflows, it allows at least 30 minutes to be set up and lifts the mud carefully. She places the cast in a carton box or paper bag for transfer into the laboratory without clearing or wiping anything off (this would erase any trace evidence).

A cast is significantly more difficult for comparison than with footwear for tool mark imprints. If the whole piece containing the tool mark is not possible to be transported, a CSI can produce the cast silicone rubber with the best chance. Two sorts of tools can be found in a crime scene by a CSI:

Impressed: A hard object connects with a softer item without reversing and continuing forward (for example, a hammer mark on a door frame). The Werkzeugmark is a:

Printing the form of the tool. It is hard to duplicate an impressive tool mark in any particular way.

Striated: A hard item connects and goes on and on to a softer object (for example, pry marks on a window frame). A sequence of parallel lines called the tool mark. A definite match with a striated tool mark is easy to achieve.

The laboratory could establish through the examination of the toolmark what type of tool the mark was created and whether the tool was the tool it was manufactured. The tool mark can also be compared with another tool mark to establish whether the markings were created with the same tool.

### **3.9.7 Firearms**

Where a CSI detects weapons, bullets or boxes, they put on gloves, take up the weapon (not the grip) by the barrel and then store everything separately for the laboratory. Scientists in forensic science can collect serial numbers that match not just the weapon they fired but also bullets and case stones recovered in other crime sites around the country (most ballistics databases are statewide). When bullet hole holes are present in the victim, experts can

establish, by use of a laser trajectory kit, the location of the victim and where from and at what height the bullet was shot from.

If bullets are lodged in a door or wall frame the CSI will chop off the part of a newspaper's wall or frame and dig out the bullet may harm the bullet and render it inappropriate for comparison.

### **3.9.8 Documents**

A CSI gathers or maintains any journals, schedules of the crime site, phone books, or suicide notes. He also sends contracts, receipts, a twisted letter in the garbage, or other written, typed, or photocopied proofs linked to the crime to the laboratory. A document laboratory can frequently recreate even a burnt document and identify whether a document was modified. Technicians examine forgery documentation, assess the victims and suspects' handwriting match and find out what sort of machine the document was used for. You can exclude the printer or copier on the scene or assess whether a machine that is in a suspect's possession is compatible or inconsistent.

When a CSI uncovers an evidence on the scene, she takes pictures, documents them, recovers them and tags them. Evidence tags may include identification information such as the time, date, and accurate recovery location and who found the object, or they may simply reflect a serial number corresponding to the entry in the proof log that includes such data.

## **3.10 Modern Technology in the Investigation of Crime**

In its investigations, below are some high-tech tactics used by law enforcement organizations.

### **3.10.1 Stingrays**

A Stingray is a catcher known as an IMSI brand, also known as a cell-site simulator. Each mobile phone has an IMSI, generally a unique number consisting of 15 numbers saved on the SIM card. The police and military employ Stingrays to identify single cell phones, replicating or imitating the nearest cell site. The phone of the user connects to Stingray since it is the most powerful signal. This signal link is maintained by the IMSI catcher until

the police locate the cellular phone location of an unsuspecting user. It is very secretive and contentious to employ such devices, as they are utilised without a judge first receiving a warrant and the individual or the lawyer seldom knows that such devices have been used. Furthermore it is shown that some of these gadgets can collect text or conversations requiring legal approval.<sup>34</sup>

In order to monitor or physically monitor users' position and movement, not only may cell phone conversations or text messages can be intercepted by way of a legally permitted Title III wiretap. Mobile telephone carriers keep and retain cell records that the phone utilises while switched on. To record the movement of the phone, the individual must not call or text this function. The enforcement of laws may get historical information from a mobile tower locator service and triangle the position or travels of the user.

### 3.11 GPS Tracking



With a guarantee, the agents can put a GPS monitoring device in the automobile of an individual, which records exactly how the vehicle moves 24 hours a day, 7 days a week in real time. Because the police do not have to follow the car physically, the individual who is supervised is totally oblivious.

### 3.12 Facial Recognition

<sup>34</sup> Ooi, J. (2015). IMSI catchers and mobile security. *School of Engineering and Applied Science University of Pennsylvania*.



Next Generation Identification (NGI) is being fully implemented in the United States. However, the state requirement is not introduced in Pakistan. There may be millions of images in the database. In the United States, the FBI accesses pictures of drivers' licence, visa and passport databases of the State Ministry and the Defense department.



When pictures of persons facing forward with no more than 15 degrees off the central axis are used, the FBI software claims an 85 percent accuracy rate. Private businesses, such as Facebook and Google, claim 98 percent accuracy rates.<sup>35</sup> As a result, this technology is rapidly progressing to the point where there will be ever-expanding databases of people's photographs that may be used to identify them via video surveillance cameras, social media posts, government databases, and other media.

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<sup>35</sup> Prevention Of Electronic Crimes Act, 2016 12.Qanoon E Shahadat Order 1984

### 3.13 Gunshot Detection

This system detects the distinctive explosive sound of a rifle using a network of microphones and then triangulates the source of the sound using GPS. Microphones are carefully positioned around many cities and neighbourhoods to catch the sound of gunfire, and cameras can even be turned toward the location of the bullets in an attempt to obtain images of the persons involved. Programs in New York, Chicago, and Washington, D.C. recognise and localise gunshots in real time.



### Smart Home Devices

Intelligent home gadgets such as Amazon Echo, Alexa and Google Home not only record the needs of someone and their search history, but also capture ambient noises in your home. The police have been given warrants to force Amazon and others to return records for assassination probes.

Law enforcement may employ instruments to enquire into criminal activity to make life easier and safer. Security cameras, intelligent video-capable

doorbells, remote access devices are all capable of providing police forces with recordings or a timeframe and actions that may be used as evidence against the homeowner or others. They can be employed.

### 3.14 Computers

We have unfathomable personal information about our everyday lives and activities on our computers and smart phones. Law enforcement searches and downloads the computers and telephones of suspects every day in all types.



Unlike the hunt for actual evidence such as weapons, narcotics, counterfeit cash and so on, seizures of such goods are usually considerably more intractable. Police often grab equipment and technology individuals produce hard drives and databases forensic copies. In those downloads, the law enforcement agencies have no valid justification for examining the gigabyte

of useless but highly intimate information.<sup>36</sup>

Advance level

More and more of them, based on mobile devices, can provide enforcement officers and investigation instruments on the field with software, hardware and communications networks. Police agencies have used a variety of new mobile and standard technology in order not only to keep abreast of criminals and wrongdoers and remain well ahead of them.

'There are a number of problems faced by law enforcement at nearly every meeting in which they are participating, and technology is being increasingly used to deal with them,' says David Roberts, Senior Technology Center Program Manager, International Association of Police Chiefs.

New technologies are increasingly interwoven with the day-to-day operations of law enforcement agents. The mobile system software, hardware and communications networks are growing to enable the police to deliver more and more information on demand in the field with enforcement and investigative capabilities.

### **3.15 Forensic evidence**

I will examine a number of disciplines of forensics which the authorities usually employ to identify the truth and draw conclusions under the umbrella of this chapter. This chapter is about forensic science and its legal standing. With regard to the phrase "legal status," it may be made easier by the public announcement of what is legalised by its authorities inside the area of the country. We may thus say that forensic proof is the lawful thing that authorities acknowledge throughout the performance of their responsibilities.

The laws and guidelines also control such proof along with laboratories and specialists who do such scientific actions in the method authorised. In addition, courts and law enforcement authorities often get authentic and

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<sup>36</sup> Schneier, B. (2015). *Secrets and lies: digital security in a networked world*. John Wiley & Sons.

important information in order to determine the incident sequence and to identify the

Truth on the top, just and plain. However, my subject is restricted to the following subjects, which are widely employed in criminal and civic affairs, for the purpose of resolving the conflict and administering justice to the parties.

In general, forensic evidence is recognised as substantive evidence in courts. Some forensic findings are, nevertheless, viewed as poor evidence simply because such material has been handled inadequately.<sup>37</sup> Since we know that forensic evidence is evidence collected through scientific means like ballistics, chemical analyses, narco-analyses, autopsy etc. Forensic evidence often contributes to the conviction or innocence of suspected persons. Forensic evidence is being analysed for civil as well as criminal investigations and prosecutions, and forensic evidence may be utilised for the connection of crimes believed to be connected to one another. It can thus be considered substantial evidence that refers enough information to establish the reasonable assumption that a certain act or omission concerned has been involved. Who can derive the forensic evidence of a magistrate, police officer or physician? In plain terms, then, the one performing such conduct is known as a forensic expert, so that the person can be an expert with a sufficient understanding of his or her topic, although he or she can be a doctor, judge or police officer or anyone else with an expertise in his or her area. Thus, who carries out his specialty might be considered an expert.

In the furtherance, the topic is divided in sub topics which are also called as branches or disciplines of forensic science and are frequently used in the courts as evidence are discussed below.<sup>38</sup>

### **3.16 Handwriting forensics**

The problem of the assessment of contested handwriting concerns handwriting forensics. For the legitimate or faked character of papers,

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<sup>37</sup> Modi's Medical Jurisprudence And Toxicology 22<sup>nd</sup> Edition

<sup>38</sup> Center, F. J., & National Research Council. (2011). Reference manual on scientific evidence.

signatures or both on the disputed documents the parties involved claim or counter claim. Handwriting forensics employs scientific methods and procedures to assess the handwriting that gives proof that the contested writing was authentic or fabricated. This helps to resolve the disagreement between the parties in the criminal and civil judicial systems.

Here one of valid question arise which is of perfect science? This is an important question though, unfortunately misconduct and misconceived one. In reality there is no such entity as 'Perfect Science' but the theory can be proved by following some scientific ideas which can bring various developmental and correct conclusions. Mislead to handwriting identification can be done by three ways; that everybody believes and behaves as an expert, selling tailor made opinions, graphology and handwriting forensics are considered as synonymous.

Here under this heading I mainly discuss to leading disputes which are highly common in the courts; that are forged signatures and anonymous documents. As these disputes are found in both criminal and civil cases so the court of law is obliged to take in account the advise of handwriting forensics to dig out the truth and get the dispute sorted out.

### **3.17 Forged signatures:**

It is a fake signature not signed by the purported person. It is created through numerous processes. It may be copied, traced, transposed or transformed signature which a forger generates on a document to pass it as genuine signature to detriment of the purported signature or to his near and dear ones. Forged signatures are found on all sorts of documents, prominent ones are as follows:

BANK DOCUMENTS; such as Cheques, Bank draft, and other money related document.

WILLS

CONTRACTS AND AGREEMENTS

RECIPTS OF ALL SORTS

APPOINTMENT AND TRANSFER ORDER

LICENCES AND PERMITS

CERTIFICATES

Upwork Writer

## CHAPTER NO: 4

### HISTORICAL DOCUMENTS

These are the main documents which can be forged and can cause unwanted situations for person and effect badly.<sup>39</sup> The persons who mainly involve in such activities are commonly called CON ARTISTS, in short forged signatures is a big business in all times, ages and in all countries. So , the analyses of such forged documents or signatures a forensic document examiner is one of the reliable source to Courts and investigation officer to find out the truth and make an solid case against such person, so here document examiner's opinion must be produced before court while in proceedings.

#### **4.1 Anonymous documents:**

Anonymous documents and writings are many a splendored thing. They are varied. They do not carry the identity of their writers or they carry fictitious names and addresses. It is lacuna, the lack of information or disinformation about anonymous writer that is catered to by forensics. It unrevealed the anonymity and reveals the identity of con artist.

An anonymous document always has some motive. Usually the following motives are reflected in various types of anonymous communication, and they are as follows:

BLACKMAIL, EXTORTION, RANSOM NOTES

SELF PROMOTION

CHARACTER ASSASSINATION

THREAT LETTERS

MISCELLANOUS; LOVE OR HATRED

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<sup>39</sup> Scientific Criminal Investigation By Br Sharma



These anonymous documents could be used against any person, or state, so it is one of the dangerous and heinous offences which are highly reported nowadays. This can be done by digitalization so here both handwriting or computer forensics are applicable, computer forensics is further discussed in this chapter. But in the following topic there are some major points in the examination of the handwriting of forged or anonymous documents. In general, the inspection of documents has three stages:

1. ANALYSIS: The objects questioned and known are analysed and divided into features which are directly observable.
2. COMPARISON: the features of the object under examination are then compared to the standard known.
3. EVALUATION: Similarities and differences are assessed in the comparative qualities, which are valued for the conclusion. This depends on how distinctive and frequent the things appear.
4. Optionally; a 4th stage consisting of verification or validation or peer review of examination may be involved in the procedures.

So in the ending note of this topic, one can consider a handwriting expert opinion as evidence and can be presented before the court to prove one's guilt or innocence.<sup>40</sup>

## **4.2 Forensic psychology**

It may be used at the pretrial stage, during trial or at post trial stage. It may be for investigation, collection of evidence, its evaluation or for the rationalization of the evidence.

Forensic psychology is a comparatively a new corner in the field of justice system. The major areas in which it is proving indispensable are as follows:

Forensic psychologist determine whether the accused person is capable of

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<sup>40</sup> The code of Criminal Procedure, 1898

undergoing the trial, or he does not understand the nature and the meaning of the proceedings, or is unable to plead his case or to waive his right to defend himself.

Some person act as insane, to avoid responsibility. Whether accused person is really insane or whether he is acting as an insane man, to avoid responsibility for the crime he has committed is determined by forensic psychologist.

A forensic psychologist can evaluate and help the court to decide the issue whether the person undergoing trial should be treated as adult or as juvenile as per his mental capacity and emotional development, at the time of committing crime or at time of trial. What should be the punishment in a given case especially in the case juvenile? Whether the person sent to jail or on probation, these are decided by courts on the opinion of forensic psychologist. Juvenile courts often need a brief on the personality of the delinquent so they can choose the correct sentence, alternative to imprisonment, probation or psychotherapy, to make him a useful citizen without endangering the society at large.

Forensic psychology is playing increasingly important role in the determination of competence of a person for guardianship of a ward, citizenship, making a will, marriage etc.

Forensic psychology is extensively being utilized for developing the profile of criminals from psycho-linguistic analysis, actions at the scene, his treatment of the victims and general behavior. It is most importantly being utilized in the interrogation of the suspects victims and witnesses for finding out the true description of the happening.<sup>41</sup>

### **4.3 Computer or digital forensics**

Computer forensics is the forensics branch of computers and digital storage media with legal evidence. Forensic computers are also known as the

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<sup>41</sup> Scott, E. S., & Grisso, T. (2004). Developmental incompetence, due process, and juvenile justice policy. *NCL Rev.*, 83, 793.

forensic digital computer. Computer forensics is designed to explain digital artefacts in their existing condition. The phrase digital artefact covers computer systems, a storage media such as the hard drive disc or CD-Rom, the email or even a packet sequence that moves across a computer network. As this information is present, may the explain be straightforward? And as comprehensive as the chain of events in charge of the current situation. The forensics field of computers also includes mobile forensics, forensic database and sub branches Forensics network. There are several reasons for using computer forensics techniques:

In cases involving law, computer forensics techniques are often used to analyse computer systems of the parties concerned and to retrieve information in the case of a hardware or software failure or to analysis a computer system after a break-in, for example, in order to determine how the attacker got access and what the attacker did. It should be taken in the course of a forensic inquiry if the results are to be utilised in the courts.<sup>42</sup> One of the most essential steps is to ensure that proof is gathered separately and that the custody chain from the crime scenario to the investigator and finally to the court is unambiguous.<sup>43</sup>

Computer forensics include five fundamental steps: preparation, data gathering, test, analysis and reporting. To conduct the specific type of investigation, the investigator has to be adequately trained. Validation of tools used to create court reports. In the procedure, there are a lot of tools. Based on the scenario, you should identify the right instrument to employ. Digital proofs from numerous sources can be obtained.

Other sources are: hard drives, CD Rom, laptops, digital cameras, USB memory device, mobile phones, etc. Non-obvious sources contain systems that include black boxes of digital thermometers in cars and web pages to be preserved as they undergo change; care must be taken to easily change the majority of digital information when handling computer evidence, and when changed it is usually impossible to detect changes. Otherwise it is standard

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<sup>42</sup> National Forensic Scientist

<sup>43</sup> Pfleeger, C. P., & Pfleeger, S. L. (2012). *Analyzing computer security: A threat/vulnerability/countermeasure approach*. Prentice Hall Professional.

practise to compute cryptographic proof that is submitted in order to reverse data back to its original condition, unless further precautions have been used.

An effective computer specialist can greatly assist in dismantling the crime. He has the expertise of the equipment and he has the necessary experience as a professional. The system's approach consists of the following steps: preparing hard disc or other media backups of all files, discovering or recovering or completing the data files in the evidence computer capable of disclosing different aspects of a crime, revealing the command and application system used, tracing the incriminating data in files, assigning identifier signs to the files, These are possible works which the expert does.

#### **4.4 Postmortem or autopsy**

Autopsy is known also as post-mortem exams or necropsy, is the test of a dead person's body and is done mainly to determine whether the cause of death is responsible for identifying or characterizing the extent of the diseases that a person may experience, or to determine if a specific therapy is effective. A pathologist or doctor, who has been specialized in diagnosing illnesses by testing bodily fluids and tissues, conducts autopsy. Autopsy has legal implications and is carried out to establish if the death was a natural event, murder or suicide. . An autopsy takes place if suspicious circumstances surrounding the death of someone are present or if there are no evidence of the natural causes. The next phases of autopsy are: incision, organ removal, contents of the stomach, sample collection, brain and head check, conclusion.<sup>44</sup> After all the investigations have been performed, a comprehensive report describing autopsy and microscopic results is created, which provides a list of medical diagnoses and a case description. The report highlights the connection or correlation between clinical results. Autopsy is also connected to the chemical and ballistic analyses mentioned below.

#### **4.5 Ballistics or firearm forensics**

Ballistics or firearms forensics is the forensics branch that focuses on analysis and its influence on the kind of weapons such as bullets. Ballistics is

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<sup>44</sup> PLD, Pakistan Legal Decisions

a forensics field dealing with weapons; how are they used, why are they often utilised in killing? What many people don't know is that when a person is shot, he or she can tell a lot of the wound and condition of the victim of the weapon. When a weapon is left on the scene of crimes, which can occur when the offender panics the weapon itself, significant information can be provided about the type of person who perpetrated the act.<sup>45</sup>

#### **4.6 Chemicals or toxicology forensics**

Forensic toxics are used to support medical legal examination of death, poisoning and drug usage in toxicology and other fields, such as analytical chemistry, pharmacology and clinical chemistry. The main interest of forensic toxicology is not the legal result of a toxicology study, but rather the technology and procedures used to achieve the results. Different types of samples may perform a toxicological analysis. The field of toxicology is the field of forensics that deals with categorising and determining substances within the human body.<sup>46</sup> There are currently many different types of medicines available to the public in our culture and many have side effects that might influence the individual's mood and behaviour. In rare circumstances, such behaviour and attitude modifications might purposefully lead to violent outbreaks or murders. The primary responsibility of the toxicologist is to analyse samples of blood and urine to ascertain whether or not a person is taking an illegal narcotic drug.<sup>47</sup>

They may also be responsible for testing samples of blood and tissues obtained from the body, to establish if they have died as a consequence of drugs or other illegal substances can also be considered a poison which can cause serious sickness or death if it is put into the human bloodstream. After drugs have been used, the person might get very tense, deeply depressed or happy or furious and, as a result of these different states of emotion, drug users may conduct levels of crime that are usually unknown unless they are affected. Alcohol is also seen as a narcotic and is unlawful in situations such

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<sup>45</sup> Schwartz, A. (2008). Challenging Firearms and Toolmarks Identification—Part One. *The Champion*, 32.

<sup>46</sup> Federal Investigation Agency

<sup>47</sup> Madea, B. (Ed.). (2014). *Handbook of forensic medicine*. John Wiley & Sons.

at work or if drinking by minors. Two primary toxicological areas exist; Screening is utilised as a fundamental way of determining whether illicit substances are present in the blood sample collected from suspects or bodies. This test results quickly and is based on a specific solution. It is confirmed that the special toxicological approach is employed as a means for the development of medicinal crystal from samples obtained in blood or urine.

A solution is added to the sample and left under a microscope, helping the drug to form crystals that have well-defined properties indicative of particular drugs.

As mentioned above, the subjects in this chapter have narrative instances in the next chapter.

#### **4.7 Surveillance**

We live in an era of tremendous advances in technology. These developments have brought us several benefits, but a plague of new monitoring and spying technology has resulted. These include new or significantly enhanced imaging equipment, localization tracking technology, communications systems and new ways of gathering ever-greater data on individuals and activities of many types.

All too frequently the deployment of this technology occurs quicker than our social, political, educational or judicial systems can react, creating a "land rush" in which corporations and government agencies install new technologies that invade privacy before individuals realise that they do exist.<sup>48</sup>

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<sup>48</sup> Margulis, M. E., McKeon, N., & Borrás Jr, S. M. (2013). Land grabbing and global governance: critical perspectives. *Globalizations*, 10 (1), 1-23.

**CHAPTER NO: 05**  
**Case study reported in Pakistan Complete**  
**Judgment of "ZAINAB MURDER CASE"**

IN THE SUPREME COURT OF PAKISTAN (Appellate  
Jurisdiction) PRESENT:

Mr. Justice Asif Saeed  
Khan Khosa Mr. Justice  
Manzoor Ahmad Malik  
Mr. Justice Syed  
Mansoor Ali Shah Jail  
Petition No. 298 of 2018

(Against the judgment dated 20.03.2018 passed by the Lahore  
High Court, Lahore in Criminal Appeal No. 167868/J of 2018 and  
Capital Sentence Reference No. 1/T of 2018)

Imran Ali.....Petitioner ...

**versus**

**The State.....Respondent**

For the petitioner:

Ms. Sarwat Nawaz, ASC

For the complainant: In person.

For the State: Mr. Mazhar Sher Awan, Additional Prosecutor  
General, Punjab Date of hearing: 12.06.2018

## **JUDGMENT**

Asif Saeed Khan Khosa, J.: For allegedly kidnapping, sodomizing, raping and The petitioner was arrested on 04.01.2018 in case FIR No. 8 registered at Police Station A-Division, Kasur, for the murder of a minor girl named Zainab Amin, aged about 7/8 years, and after a frequent trial, he was prosecuted by the trial court for violations under sections 364-A, 376, 377, 302(b) and 201, PPC, and section 7(a) of the Anti-Terrorism Act, 1997 The petitioner appealed his convictions and punishments, but the conviction was quashed by the High Court, and all of his claims were rejected convictions and sentences recorded by the trial court were upheld and confirmed. Hence, the present petition before this Court.

We have heard the learned lawyer for the petition and the look A lot Defense lawyer, Punjab, who is representing the State, and we have gone over the case record with their help.

We immediately saw that when the complainant's charge was established by the trial court, he confessed guilty of assault and had a lengthy false confession made at that time, in which he accepted practically every part of the case accused against him. Despite the plaintiff's plea of admission to the allegation and giving a false confession, the district court chose to proceed with the gathering of material, and even during the trial, testimonies from as many as 32 defendants accused were collected, as well as numerous other pieces of evidence. In his declaration, which was recorded under section 342, he said: According to the Cr.P.C., the petitioner had confessed that practically all of the crucial pieces of evidence presented by the prosecution against him



were correct, but he had completely apologized for his actions. Even in his remarks before the trial judge, experienced plaintiff simply pleaded for some leniency in the plaintiff's punishment, and no case had been brought before the trial court contesting the government's case against by the petitioner on the merits.

We also noted that the complainant's statement of appeal before the High Court contained only leniency in the matter. The petitioner had requested a punishment without contesting his convictions as recorded by the trial court. The learned plaintiff had maintained for the first time during the assertions before the High Court that the complainant's guilty plea before the district court was the outcome of duress, but he had not supplied any details concerning the threat of force used against the complainant to obtain a surrender during such assertions. The petitioners has argued in paragraph No. 4 of the statement of the present case filed before this Court that Although his confession was obtained under coercion and inducement, the petitioner has acknowledged his participation in the alleged crimes in unambiguous and unequivocal terms in sentence No. 10 of this plea. Apart from the petitioner making a plea pleaded guilty to charges and trying to make a confession, the defendant presented numerous bits of evidence on the file that asserted every word of the conviction to be true, including CCTV vids, images, DNA tests, and medical evidence, all of which confirmed every aspect of the confession made by the complainant All of this information has persuaded us that the plaintiff's admission was not only spontaneous but also accurate. Both judges below agreed that the plaintiff's culpability had been proven to the hilt after proper measurement and planning of the facts on the file, and we have seen no reason to hold a different view of the matter based on our own impartial tribunal of the facts on the record. We're also aware of § 412 of the Criminal Procedure Code, which states that in a case when a defendant person pleads guilty to the charge and he is convicted on the basis of such pleading guilty then he can file an appeal only to the extent or legality of the sentence passed against him and he cannot file an appeal challenging his conviction.

With regard to the sentences imposed by the district court against by the claimant, which were later upheld and affirmed by the High Court, we can state that the plaintiff's atrocities were morally unsound and primitive, and that they were dedicated against one minor and defenceless teen years about 7/8 years. Not only had the applicant dishonestly abducted her, but he had also brutalised her by conducting adultery and rape with her before killing her savagely. In his guilty plea and statement filed under section 342, Cr.P.C., he admitted to the offence the petitioner had admitted committing similar offences with eight other minor victims and in that backdrop the petitioner did not deserve any sympathy in the matter of his sentences. This petition is, therefore, dismissed and leave to appeal is refused.

## **5.1: CASE NO.1**

### **5.1.1 CASE SUMMARY**

1966 PLD 1718 FAKHARUDDIN

VS STATE

FACTS: Fakharuddin consistent top licences to the organisation's office on November 28, 1960. Exs.P 28, 30, 35 are written on three of them. Munna lal, Devi lal, and Laxminaryam are their names. These were all made-up names. The police arrived and detained Fakhruddin before the iron sheets could be weighted and other procedures could be completed. On further inquiry, it was discovered that Fakharuddin had filed multiple applications in fake names, and the allegation in this case is in relation to Exs.P13, 15, 16, 17 and 24, which were filed in the names of Manikchand, Surojmal, Hiralal s/o Chotelal, and others Munna lal, Gulabchand, who were fictitious persons.

ISSUE: First, the infraction of collusion can no longer stand because Fakharuddin is the only one left and it is unknown with whom he colluded; second, the infraction of forgery was not founded by the high court since it relied solely on the testimony of a legal professional with whom there was no direct or situational verification; and third, the infraction of forgery was not formed by the high court because it relied solely on the witness statements of a legal professional for whose In terms of forgery, there is little doubt that

perhaps the high court based its decision entirely on the handwriting expert's testimony. It is observed that expert evidence as handwriting is an opinion, these evidence rarely take the place of substantive evidence.

JUDGEMENT: Once the forgery offence has been demonstrated, the evidence of the other charges is evident, leading to Fakhruddin's conviction on the other charges. In the end, his appeal is denied, with the exception of his acquittal for conspiracy. However, because the sentences were made concurrently, this does not aid him. As a result, the appeal will be rejected, but the judgment and penalty under section 120B of the IPC will be annulled. The remaining verdicts and penalties will stand.

## **5.2 CASE No. 2**

### **5.2.1 CASE SUMMARY**

2006 SCMR 1617 AMANULLAH VS

STAT

NATURE OF THE CASE: Reappraisal of facts, abscondence of accused in line with section 302(b) of the Criminal Code and Article 183(2) of the Constitutional Provision. Effect- the High Court rejected the accused's plea; the trial court had condemned him and condemned him to death, but the High Court upheld the conviction and commuted the death sentence to life in prison. The accused has brought the same arguments before the Supreme Court that were brought before the High Court and were dismissed with cogent grounds. The High Court had correctly upheld the conviction based on the accused's confessional testimony, which was found to be substantiated by the motivation. recovery of pellets from dead body, noticeable absconsion for five years and firearm expert reports.

FACTS AND ISSUE: The applicant was found guilty under section 302b of the Penal Code and condemned to death, with a payment of Rs. 1,00,000 to be paid to the deceased's rightful heirs, or two years in prison if he did not pay the money. PW.4 was submitted by the petitioner, and his confession testimony was transcribed without any formal requirements. That the acquisition of a crime instrument at the plaintiff's request is unlikely. As a

result, the respondent's attorney backed the trial court's and High Court's decisions.

JUDGEMENT: In the accordance of all aspects of the case the supreme court has dismissed the petition and the leave is also dismissed. Because the decision which maintained by High court on the ground that confessional statement alongwith corroboration of Fire Arm expert report.

### **5.3 CASE NO. 3**

#### **5.3.1 CASE SUMMARY**

2009 SCMR 985 MUHAMMAD ASLAM VERSUS

SHABBIR HUSSAIN AND OTHERS.

NATURE OF CASE: According to Section 302b/34 PPC, an appeal after conviction has been filed under Section 417 CrPC, the evidence of conspiracy is false and contrived, and the prosecuting witness's testimony alleging an extrajudicial confession supposedly made by the defendant before him is untrue. The accused had not had the opportunity to make such a confession in front of their paternal first cousins, who had not even attempted to catch them after altering their confession. The one eye witness's statement was contradicted by a slew of conditions, and her lone evidence could not be trusted in the lack of any other proof impartial and unquestionable source of confirmation So, despite the fact that the accused's pistol was recovered and linked with one of the crime empty, the prosecution's case was rendered moot due to some rewriting and trimming in the discovery document. Hence The impugned judgement of acquittal could not support the investigation edition event of needing same being proven through reliable ocular account, non misrepresentative or non evaluation of evidence warranting intervention could be pointed out in the impugned judgement of acquittal and is neither imaginative nor conjectural judge's decision was replete with doubts and infirmities

EVIDENTIARY VALUE OF FORENSICS IN THIS CASE: Extra judicial

confession under section 164 of CrPC is always treated as weak type of evidence. Medical evidence may confirm the ocular evidence with regard to seat of injury, nature of injury, kind of weapon used in the occurrence but it would not connect the accused with commission of crime.

JUDGMENT: In light of the foregoing, the court finds that the sole eye witness is not an impartial and natural testimony of the incidence, that infirmities have been discovered in the state's case, that doubts have crept into the prosecution version, that the prospect of incidence has gone apneic, and that no impartial corroboration is accessible in assistance of the ocular evidence, it cannot be said that the sole eye witness is not independent and natural witness of the occurrence. Having thoroughly investigated all facets of the situation,

We believe that the High Court's acquittal is not based on irrational or whimsical reasoning. Resultantly finding on merit in these petitions, we dismiss same and refuse the grant of leave.

## **LAWS/ PROVISIONS/ STATUTES IN PAKISTAN**

CONSTITUTION OF PAKISTAN 1973  
THE CODE OF CRIMINAL PROCEDURE, 1898  
THE CODE OF CIVIL PROCEDURE, 1908  
QANOON E SHAHDAT ORDER 1984  
POLICE RULES 1934  
PREVENTION OF ELECTRONIC CRIMES ACT, 2016  
ANTI-TERRORISM ACT, 1997  
INVESTIGATION FOR FAIR TRIAL ACT, 2013  
THE ANTI NARCOTICS FORCE ACT, 1997  
THE ARMS ACT, 1878  
THE OFFENCE OF ZINA (HUDOOD) ORDINANCE, 1979  
THE OFFENCES AGAINST PROPERTY (HUDOOD) ORDINANCE, 1979  
THE PAKISTAN PENAL CODE, 1860  
THE PREVENTION OF CORRUPTION ACT, 1947  
THE CATTLE-TRESPASS ACT, 1871  
ANTI-MONEY LAUNDERING ACT, 2010  
ELECTRONIC MEDIA REGULATORY ORDINANCE, 1997  
ELECTRONIC TRANSACTIONS ORDINANCE, 2002  
FEDERAL INVESTIGATION ACT, 1974  
FEDERAL INVESTIGATION AGENCY (INQUIRIES & INVESTIGATION) RULES, 2002  
FEDERAL INVESTIGATION AGENCY ACT, 1974  
PREVENTION OF ELECTRONIC CRIMES ORDINANCE, 2009  
REGISTERED DESIGNS ORDINANCE, 2000  
THE PAYMENTS SYSTEMS AND ELECTRONIC FUND TRANSFERS ACT

### **6.1 RECOMMENDATIONS**

As far as I researched on criminal investigation, it is wider topic and I found there is number of loopholes in criminal investigation system of Pakistan which need to be removed or filled with proper measures. After doing work on

the topic I can say that criminal investigation is neither much difficult to find out the culprits or criminals nor easy but can achieve the target if necessary improvements made in investigation system as developed countries does. Most of the countries using modern technology in every field, investigation is one of them. With the usage of modern technology law enforcement agencies getting fast result in catching of criminals and wrongdoers around the world. There is number of cases reported in Pakistan which decided on basis of modern investigation or usage of digital gadgets and with help of forensic science in which basis judge decides matters. Easly and investigation officers report might be more considered than old system. Furthermore, what steps should be taken by government of Pakistan for the getting accuracy in criminal investigation system?

I suggest, First of all government should make entire record of population which is very much difficult but not impossible. Record of people with all necessary information such as;

Blood group

Photograph

Facial recognition

DNA

Finger prints

Crime record

Place of origin

Information of family

Other necessary information

There must be required heavy data storage system and rapid search engine system to find the record of person. It should be recorded as like NADRA maintain the record of every citizen. After doing this with the help of modern technology and forensic science, criminal investigation may become much better and every clue can be tally with the record already maintained in the data storage system.

The device which is used by UK in investigation namely `stingray` connects with towers and give location of cell phones might be much useful to trace the criminal location by his phone.

Most of the technology used by MI and ISI law enforcement agencies but limited access to local forces where much need of advancement to catch criminals and may precaution be taken before happening of crime or criminals may catches by forces before incident happens which might be possible after doing all steps given.

I conclude on this note that the case I brought namely ZAINAB MURDER CASE 2018 AND 2006 SCMR 1617 both shows a clear scenario of my research that importance of modern technology in criminal investigation and in evidence with forensic science is required in every stage of crime investigation and legal system and there relation among them is complementary. In research I emphasis on this point that investigation and forensic implications are most important part of the crime scene investigation and legal system.

## **6.2 CONCLUSION**

In the modern era development of mankind took million years and along with it, modern technology and forensic science is also developed to leap and bound. With it crime scene investigation and legal aspects of science came into picture which leads to the development of this subject of criminal investigation and evidence in modern science.

There is unanimity that modern technology in criminal investigation and in evidence plays a crucial role in helping the law enforcement agencies to arrive factual and logical conclusion. The world has known for benefits of having modern technology for which they are still striving hard to get better and better in this regard, benefits not only help in solving crime but also helps in cutting down crime rate by showing it to the people in general that they will be convicted for their acts and that have plenty of that technology that helps them to do so. The modern technology firstly started by fingerprinting which had been drawback of being subject but with passage of time forensics developed and introduced a method of digitalization, biometric, reconstruction of crime scene and forensic photography, which is considered one of the authentic procedures in criminal investigation in the present world.

Pakistan yet has a long a way to develop itself in this field as Pakistan lacks modern technology and forensic science and laws, it lacks the technology that



is required to carry such cases, it lacks experts in the field of crime scene and forensic science, it lacks the training of the authorities that are involved in investigations and evidence collecting methods, Pakistan is deficient in having high tech digital modern forensic laboratories and is also missing crime scene investigation experts related to this field. However there are many investigation officers and medical graduates but they lack in training and appointments of such officials and also lack in funds and building structure within the country.

Understanding in today's world a country is recognized from its development in technology and recognizing that flowing with technology is not only important but also a basic need of a country to survive, as compared to other states, Pakistan is not only way behind in development of crime scene investigation but in other fields too. The lack of investigation officers and modern technology forensics effects on the justice, proceedings, confinements, evidences, and much more these are something that cannot be ignored at all, making it important for Pakistan to develop itself in the field of crime scene investigation to overcome the above listed short comes.

The government of Pakistan should understand the necessity of modern technology and modern science and should start acting seriously in this view, the government should establish more of crime scene investigation institutes and forensic science laboratories it should be spread the awareness of modern technology in criminal investigation to law enforcement personnel's and showing the importance, scope of this particular field, authorities that are responsible for working or acting upon the modern technology and forensic science like lawyers, doctors, police department and other enforcement agencies, this is the subject in which trainings should be kept compulsory, police investigating officer should be specially trained by the experts on how to act or handle a crime scene properly without contaminating any evidences and scrutinizing the scene for the purpose of getting more vivid evidences and clues that may lead to the criminal, the detective and other responsible authorities should be highly skilled for positive results.

Judges should have decent knowledge of modern technology and forensic science so that they will be able to draw out logic inference from the

evidences and explanation produced in court and lawyer should be clever enough to catch any loophole in the forensic reports or any crime scene report that all will be possible if this subject and its training is involved in other courses.

## APPENDIX-A

### References/Bibliography

1. Scientific Criminal Investigation By Br Sharma
2. Modi's Medical Jurisprudence And Toxicology 22<sup>nd</sup> Edition
3. Handwriting Forensics By Dr.B.R Sharma
4. Forensic Science Digital War Against Crimes By M.Khurram
5. Digital Crime Investigation By Khurram
6. Crime Scene Investigation A Guide For Law Enforcement  
2000 By Technical Working Group CSI
7. International Journal Of Scientific And Research Publication  
2016
8. European Scientific Journal February 2013 Edition
9. European Scientific Journal  
April 2015 Edition 10.Police Rules  
1934
11. Prevention Of Electronic  
Crimes Act, 2016 12.Qanoon E  
Shahadat Order 1984
- 13.The code of Criminal  
Procedure, 1898 14.The  
Pakistan Penal Code,  
1860 15.The Express  
Tribune
- 16.The Dawn News

17.National Forensic

Scientist Agency

18.Federal

Investigation Agency

19.PLD, Pakistan

Legal Decisions

20.SCMR, Supreme Court Monthly Review

21. Osterburg, J. W., & Ward, R. H. (2007), *Criminal investigation: A method for reconstructing the past*, LexisNexis, Newark, NJ.

22. Luen, T. W., & Al-Hawamdeh, S. (2001), "Knowledge management in the public sector: principles and practices in police work", *Journal of Information Science*, Vol. 27, No. 5, pp. 311.

23. Gottschalk, P. (2007), *Knowledge management systems in law enforcement: technologies and techniques*, Idea Group Pub, Hershey, PA.

24. Eck, J. E. (2008), "Foreword: Investigators, information, and interpretation: A summary of criminal investigation research", in Rossmo, D. (Ed.), *Criminal investigative failures*, CRC.

25. United Nations Yearbook 1948-1949.

26. Criminal Original Petition No. 6 of 2012 in *Suo Motu Case No. 4 of 2010* (Contempt proceedings against Syed Yousaf Raza Gillani, the Prime Minister of Pakistan, regarding noncompliance of this Court's order dated 16.01.2012), decided on 26th April 2012 PLD 2012 SC 553, para 27.

27. *Suo Motu Action Regarding Allegation of Business Deal between Malik Riaz Hussain and Dr Arsalan Iftikhar Attempting to Influence the Judicial Process in Suo Motu Case No. 5 of 2012*, decided on 14th June 2012 PLD 2012 SC 664.

28. Article 10 (clauses 4 to 9) of the Constitution deals with preventive detention. While this phrase has not been defined in the Constitution, J. (R) Fazl Karim, in 'Judicial Review of Public Actions' (page 630) relies on *Government of East Pakistan v Rowshan Bijaya Shaukat Ali* PLD 1966 SC 286, 320