

FORENSIC EVIDENCE: HOW DOES ADMISSIBILITY INFLUENCE WEIGHT IN THE LAW OF EVIDENCE?

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ABSTRACT

Convicting the innocent and acquitting the guilty makes one ponders over the admissibility (relevance and reliability) and weight (believability and persuasiveness) of the evidence tendered in our law courts. This study examines the relationship between admissibility of forensic evidence and weight of forensic evidence. To achieve the foregoing objective, a 5-point likert scale research questionnaire was used to collect primary data while the secondary data were sourced from journals, textbooks and the internet. Data analysis was done using a simple linear regression technique. The study revealed that there is no significant relationship between admissibility of forensic evidence and weight of forensic evidence suggesting that factors which make evidence admissible do not have logical connections with factors that make evidence weighty. It was therefore, recommended that reliable and valid court verdicts be obtained using proactive methods and principles that will reveal faulty evidence before they are tendered in court by forensic accountants or expert witnesses. The findings of this study imply that judges and jury will be encouraged to shift their attention from roles distinction to roles alignment and this will further encourage the engagement of competent forensic accountants.

Keywords: Forensic accounting, Forensic evidence, Admissibility of forensic evidence and Weight of forensic evidence.

1. BACKGROUND OF THE STUDY

Evidence is anything that proves that a crime has been committed. A forensic evidence is an evidence which is scientifically derived for use in the court of law. Ballistics, blood test, DNA test and other relevant scientific methods are used to obtain forensic evidence (USlegal.com, 2020). The importance of forensic evidence cannot be overemphasized. In all witness testimonies, it is the forensic evidence that is important and not the person giving the evidence (Bangerter, 2016). Forensic evidence helps in solving both violent and non-violent cases. For example, DNA tests are useful for solving cases relating to murder and sexual assault. Furthermore, ballistics are useful for testing weapons used at crime scenes while close circuit cameras, phones and computer circuits are useful for solving cases relating to white collar crimes and cybercrimes. However, forensic science in developing countries including Nigeria is not yet as developed and sophisticated as the ones we have in developed nations of the world. Forensic evidence can be categorised into the following: direct (eye witness confessions or statements), circumstantial (suspect's fingerprints or hair found at crime scenes), physical (non-living or organic items like fingerprints, shoe and tyre impression etc., biological (blood, saliva, urine, semen etc., reconstructive (broken glass, open doors or windows etc.) and associative (objects, and substances that ties a suspect to a crime scene like gun, paint or soil etc.).

In recent times, the subject of evidence has dominated the literature of law of evidence. What has prompted the increasing interest in this area of research is the ever rising number of people that are wrongfully convicted of crimes they never committed. Sherrer n.d as cited in Medill Justice Project (2019) reported that 5,731 people world-wide are said to have been convicted wrongfully. Furthermore, at least 135 people in the United States confessed to crimes they did not commit while another 129 were convicted of crimes that never happened (Purpura, 2012).

In the UK, the Jury was seen as not competent to handle fraud cases because of the long time and huge sums of tax payers' moneys spent on three fraud cases that unnecessarily collapsed after wasting time and money (1992 Blue Arrow Fraud Trial; 1996 Trial of Brothers Ian and Kevin Maxwell; and 2005 London Underground Jubilee Line Case as cited in BBC News, 2017). In Nigeria, the controversial Bode George case is a good example where after a lower court had convicted him and five others of committing a large scale fraud to the tune of ₦84 billion and granting them a controversial 2 years Jail term, the Supreme Court on what they termed technical grounds, overturned the case in his favour (Sahara Reporters, 2013). Something therefore, seems to have gone wrong with the role of the Judge as the gatekeeper who determines the admissibility of evidence and the Jury whose role is to assess the weight of the evidence tendered in court. It will therefore, not be out of point to reason that the effective determination of admissibility and assessment of weight of evidence will definitely lead to reliable and valid evidence. The foregoing suggests that unreliable and invalid pieces of evidence were principally responsible for all the numerous wrongful convictions and acquittal thus making one to ponder over the type of relationship that exists between admissibility and weight of evidence. Majority of the previous studies reviewed dwelt mostly on the distinction between the role of the trial Judge (admissibility) and that of the Jury (weight).

This researcher has not come across any previous work that specifically attempted to determine the relationship between admissibility of evidence and weight of evidence. The current research will attempt to fill this gap. This study is therefore, aimed at verifying the type of relationship that exists between admissibility of forensic evidence and weight of forensic evidence. What type of relationship exists between admissibility as determined by the Judge and weight as assessed by the Jury? This question will give a direction to the current research.

2. STATEMENT OF THE PROBLEM

In law of evidence, all the pieces of evidence tendered in court by forensic experts are expected to have admissibility status and probative value (tending towards truth). The Judge and Jury are therefore, legally mandated to carry out these two evidential responsibilities separately. The separation of the Judge's function of determining the admissibility of evidence from the Jury's function of assessing the weight of evidence does not preclude a relationship between admissibility and weight. The objective of the foregoing judicial separation of functions between the judge and Jury is to ensure that evidence brought before the court is scientifically valid and reliable.

Unfortunately, many innocent people have been convicted of white collar and other crimes they never committed. For example, in June, 1997, the Grand Jury wrongfully indicted Mr. Rick Hoyle of Idaho in the United States, on eight counts of insurance fraud, forgery, grand theft and racketeering based on journal entries in the Hoyle's insurance books and records. Hoyle legally challenged this court decision and on June 13, 1999, a twelve-person Jury returned not guilty verdicts on all counts. It is ironical and unfortunate that the false evidence used in convicting innocent people and the ones used in acquitting those who are guilty even including the valid and reliable evidence used in reversing wrongful convictions all come from the same court of law.

The above scenarios suggest that pieces of evidence usually tendered in court are oftentimes not admissible and weighty and thus giving rise to the question as to whether any significant relationship exists between admissibility and weight of forensic evidence. The main issue to be addressed in this paper is that not all pieces of forensic evidence that are tendered in court are admissible i.e. relevant and reliable. Where forensic evidence is not admissible, its believability, persuasiveness and probative value will be adversely affected and vice versa. Therefore, it will be hypothesized that admissibility of forensic evidence influences the weight of forensic evidence. Therefore, the main purpose of this study is to verify whether the Jury's conclusion about the weight of forensic evidence aligns with the Judge's decision that considered the forensic evidence as being admissible. Is there any significant relationship between Judge's method of determining admissibility of forensic evidence and Jury's method of assessing weight of forensic evidence? Once again, this question is central to this research and will be used to direct it.

3. OBJECTIVES OF THE STUDY

The main objective of this study is to determine the relationship between admissibility and weight of forensic evidence by investigating whether the Jury's conclusion about the weight of tendered evidence was ever material to the Judge's decision to admit or reject the evidence. The specific objectives are:

- a. To determine whether relevance and reliability of evidence make forensic evidence admissible in the court of law.
- b. To determine whether believability and persuasiveness of evidence make forensic evidence weighty in the court of law.
- c. To determine whether any significant relationship exists between admissibility of forensic evidence and weight of forensic evidence.

4. RESEARCH QUESTIONS

The following research questions will give a direction to the study:

- a. Does the forensic evidence usually admitted in court by the trial Judge have attributes of relevance and reliability?
- b. Does the forensic evidence usually accepted in court by the Jury as weighty have attributes of believability, persuasiveness and probative value?
- c. Does admissibility of forensic evidence have any significant influence on the weight of forensic evidence?

5. RESEARCH HYPOTHESES

H₀: Admissibility (relevance and reliability) of forensic evidence does not have any significant influence on weight (believability and persuasiveness) of forensic evidence.

H₁: Admissibility (relevance and reliability) of forensic evidence has a significant influence on the weight (believability and persuasiveness) of forensic evidence.

6. OPERATIONAL DEFINITION OF STUDY VARIABLES

- 6.1 *Admissibility of Forensic Evidence*: This is the independent variable in the study and it is operationally defined as the scores assigned to the perceptions which respondents have about the factors that make evidence relevant and reliable.
- 6.2 *Weight of Forensic Evidence*: This is the dependent variable in the study and it is operationally defined as the scores assigned to the perceptions which respondents have about the factors that make evidence believable, persuasive and have probative value.

7. LITERATURE REVIEW

a. Conceptual Framework

Evidence is admissible in the court of law if it is relevant and reliable and it is weighty if it is believable, persuasive and have probative value. The Jury assess the weight of evidence after the Judge has determined the admissibility of the evidence. Therefore, the specific circumstances or factors which the Jury use in assessing the weight of evidence depend on the factors that have enabled the Judge to consider the evidence admissible. This is the fundamental reason why the study of admissibility-weight relationship has become necessary.

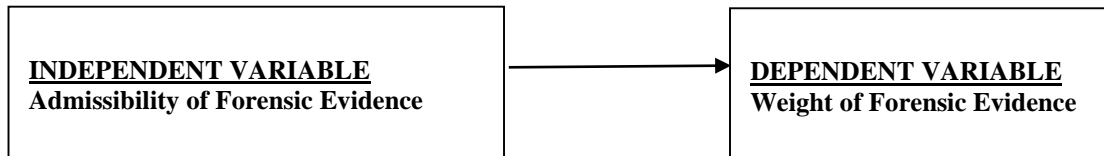


Figure 1: Research Model

The above research model depicts a relationship between admissibility of forensic evidence and weight of forensic evidence. This relationship will be used to verify whether or not the methods used by the Judge (usually regarded as gatekeeper) in admitting evidence in court, have any influence on the methods used by the Jury in assessing the weight of evidence brought before it. These specific study variables ('admissibility of forensic evidence' and 'weight of forensic evidence') will be supported by the theoretical framework and empirical review. Admissibility related factors can lead to weight related factors thereby causing admissibility to influence weight. Therefore, weight should depend on the factors that make forensic evidence admissible. But, it is the weight of forensic evidence that ultimately leads to the final court verdict (Jury's decision). For example, what constitute a fraud may be acts such as deliberately putting down wrong totals, wrong brought forward figures, failure to record revenue or expenditure, failure to issue receipts or committing teeming and lading and these may be admissible in court as a general framework of reference by the Judge if these are relevant and reliable (admissibility) and this will then lead to the defendant being convicted if it is believable and persuasive that he or she actually committed any of the foregoing fraudulent acts (weight). The relationship between admissibility and weight therefore, conforms to the nature of science which usually commences from the general factors to case-specific factor.

b. THEORETICAL FRAMEWORK

2.2.1 Fraud Scale Theory of 1984: This theory was propounded in 1984 by Howe and Romney. It holds that there is an association between personal integrity and each individual personal code of ethical behaviour. Personal integrity is observable both in the decision of an individual and decision making process. This association enables us to assess integrity and to determine the tendency of individuals to commit fraud. Relating this theory to the current study, it can be said that admissibility of forensic evidence (independent variable) will have a positive impact on the weight of forensic evidence (dependent variable) when high integrity is demonstrated by the forensic accountant, forensic experts, the trial Judge and the Jury. There is therefore, a very strong association between the personal integrity of the aforementioned people and the code of ethics that regulate their work.

2.2.2 Fraud Diamond Theory of 2004: This theory was first presented by Wolfe and Hermanson in the CPA Journal of December, 2004 and it is an extension of the fraud triangle theory. This extension simply involves the addition of a fourth component called capability. The theory holds that without the present of capability, the other three elements namely, pressure, opportunity and rationalization cannot make a person to commit fraud. The fraud diamond theory is related to this study because forensic accountants or scientists, the trial Judge and the Jury all have the capability to become dishonest because of the unlimited authority they sometimes possess. According to Mathuva (2009) of the Institute of Certified Public Accountants of Kenya (CPAK), 44 percent of fraud perpetrators have unlimited authority in their companies or endeavour. It is fraudulent when the trial judge deliberately admits irrelevant and unreliable evidence in court or when the Jury intentionally uses unbelievable evidence to give a verdict in court. In the foregoing instances, integrity must be demonstrated irrespective of the high position occupied by the trial Judge and members of the Jury.

2.3 EMPIRICAL REVIEW OF LITERATURE

The review of empirical studies will be based on studies that support the theoretical basis of this study and on studies that have attempted to provide answers to the following questions: Firstly, what are the empirical factors that make forensic evidence admissible in the court of law? Secondly, what are the empirical factors that make forensic evidence weighty in the court of law? Finally, what type of relationship exists between admissibility of forensic evidence as determined by the Judge and weight of forensic evidence as assessed by the Jury?

Nutter (2019) first described machine learning as a process that exposed a machine to a large quantity of data and infers a rule from the observed patterns. After establishing that machine learning evidence is admissible, Nutter explained that counsel for both sides must be aware of how machine learning will affect the weight the trier of fact will assign to such evidence. The aim of

Nutter's comment was to envision or envisage the possible evidentiary issues that will arise when the output of machine learning algorithm is used as substantive evidence in court. He further explained the three significant ways Artificial Intelligence software will affect criminal and civil litigations in the future. Firstly, the liability which the decision of the algorithm will expose user to, secondly, the alteration of the predictive technologies in the criminal justice system and thirdly, AI can aid the legal reasoning process. The comments of Nutter focussed specifically on using the results of the machine learning process as substantive evidence in litigation. The author concluded by making the following quoted comments: "For instance, in a blurry surveillance video or an unclear audio recording, the naked eye and ear may be insufficient to prove guilt beyond a reasonable doubt, but certain recognition algorithms could do so easily". "Lip-reading algorithms might tell jurors what was said on video where there is no audio available". "A machine might construct an estimation of a perpetrator's face from only a DNA sample", or "in other DNA analysis of corrupted samples". (Condliffe, 2016; PARABON NANOLABS, 2018 and Adelman & Marciano, 2017 as cited in Nutter, 2017).

Fisher (2017) made a short commentary which offered a different assessment. The author argued that pattern evidence is valuable in court cases, even without statistics to assess its worth. He was reacting to the claim made by critics that expert opinion should depend on objective data. Arguing against this claim, he said that expert opinion or evidence should not depend on only statistics in order to make evidence admissible in court since expert conclusions on legal matters are based on professional training, knowledge, skills and experience all of which are also based on empirical data. The author further argued that requiring pattern evidence cases to be supported with statistical data is like saying that all expert testimony cases should also depend on statistical evidence. Opinion evidence according to the author, which is based on subjectivity should not be rejected out of hand since any information presented to the court to make decisions depend on admissibility and weight of the evidence. Despite the statistical evidence claim made by critics of pattern evidence cases, the Judge who is the gatekeeper is still the one to decide what is admissible and what is not for the jury to assess. The author finally supported his points using the U. S. Federal Rules of Evidence (FRE) Rules 702 and 703 respectively as follows:

"A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if: (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case. *Further, FRE Rule 703 under the Bases of an Expert:* An expert may base an opinion on facts or data in the case that the expert has been made aware of or personally observed. If experts in the particular field would reasonably rely on those kinds of facts or data in forming an opinion on the subject, they need not be admissible for the opinion to be admitted. But if the facts or data would otherwise be inadmissible, the proponent of the opinion may disclose them to the Jury only if their probative value in helping the jury evaluate the opinion substantially outweighs their prejudicial effect."

Faigman, Slobogin and Monahan (2016) sought to use the nature of science in conceptualizing gatekeeping analysis in scientific evidence cases. The authors specifically made a clear distinction between general and case-specific scientific findings. The trial Judge, according to the authors should assess the reliability of both the method used and the conclusion reached by the expert. The authors further asserted that whether or not the expert's methods and conclusions are reliable or credible are matters of weight which concern the Jury unless the Judge can prove that no rational Jury will accept the expert's assertions. Faigman et al further emphasized that aligning the admissibility-weight determination with the nature of science is in line with constitutional and evidential desideratum.

Mcdermott (2013) used his article to quantitatively and qualitatively analyse the use of written witness statements instead of oral testimony and to assess how this impacts practically on the rules of admissibility of written witness testimony brought before the international Criminal Tribunal for the former Yugoslavia, the International Criminal Tribunal for Rwanda and the Special Court for Sierra Leone. Evidence under current and less stringent rules on written witness testimony, were traced from admissibility to judgement. The author found that current rules on admissibility are relatively not frequently used in some tribunals and that the question of equality of arms in others, could be raised when written statements are admitted in court since prosecution use more liberal rules on written statement more than the way the defence do. Other findings disclosed by the author included continued emphasis on the importance of oral testimony by some chambers and the request by others that less weight should not be given to written testimony that is not subjected to full cross examination. The article recommended that the weight of evidence should be totally analysed from a practical stand-point and a more particularized approach to pieces of evidence in the future. This study supports the Faigman, et al (2017) that prescribed the general-specific factors for admissibility-weight determination.

Idhjarhi (2018) explain the concepts of evidence and types of evidence and highlighted the provisions of evidence Act of 2011. The author used the decision taken in *Oghoyone v. Oghohone* (2010) to conclude that because we operate in a system where we oppose and attack each other, the court has no duty to raise matters of inadmissibility or non-compliance with laid down rules. Any objection raised to non-compliance according to Idhjarhi should come from the opposite party. Inadmissibility would be taken as having been waived if no objection is raised by the opposite party. However, Idhjarhi has used this article to debunk his earlier position which he used the judicial decision in *Attorney-General, Oyo State v. Fairlakes Hotels* to support.

Watney (2009) focused his attention on rules that govern admissibility of electronic evidence as they relate to the South African legal framework in law of evidence. The argument put forward by the author is that admissibility centers on the establishment of the type of electronic evidence that is being used whether it is documentary or real evidence. According to Watney, admissibility of electronic evidence is functionally similar to traditional evidence in South Africa and that this country does not have special rules governing electronic evidence. He further disclosed that South African law of evidence is bedevilled by the absence of

procedures regulating the collection, storage and presentation of electronic evidence when if addressed, will make the country to successfully face the 21st century challenges and its role in proving electronically committed crimes will be improved.

Jerrold (2015) attempted in his short but, very important article to answer two questions: what makes some scientific evidence admissible? And who makes this decision? The author argue that anything that is generally accepted has many ways of treatment and experts who engage in condemning one another at trials are the real culprits. He asserted that errors are inevitable and having differing views and approaches are not failures but, they can be regarded as simple beliefs and approaches that have gained general acceptance. He agreed with an article that stated that junk science is able to find its way into the court room because Judges and Jurors are given too much responsibilities in deciding expert testimony that is or is not admissible and weighty. This work seems to be slightly similar to the position held by Idhiahri (2018).

In an attempt to discuss the role of forensic science experts in criminal investigation, Idhiahri (2018) used the decision taken in Attorney-General, Oyo State v. Fairlakes Hotels to conclude that “...it is not sufficient to say that where a document written by an expert is tendered in evidence and that document or the testimony through which it is tendered if unchallenged, then it must be acted upon. The document is certainly subject to scrutiny by the trial court and its contents could, in the process of the scrutiny, be rejected if there is reason to do so. It will be interesting to recall that Idhiahri in his article of 18th April, 2018 used the decision taken in Oghoyone v. Oghohone (2010) to argue that it is not the duty of the court to raise matters of inadmissibility or non-compliance and that it is the opposite party’s duty to raise objection and if objection is not raised, the non-compliance will be taken as having been waived.

A 5 – 4 decision was taken by U. S. Supreme court that defendants have the right to cross-examine forensic analysts who handle scientific evidence in criminal cases. This suggest that forensic findings are open to interpretation and could be manipulated. According to a report on forensic released by U. S. National Academy of Sciences and Justice Antonin Scalia’s majority opinion, serious deficiencies have been found in the forensic evidence used at criminal trials. This decision is in line with the decision taken under Crawford v. Washington that a witness testimony against a defendant is inadmissible unless the witness appears at trial or if the witness is unavailable, the defendant had a prior opportunity for cross-examination. The weight of evidence used in arriving at a verdict for this case is that the substance mentioned in the expert testimony was confirmed as cocaine. The appearance of the expert witness for cross-examination is therefore, immaterial.

Faigman (2017) attempted to draw a dividing line between admissibility and weight of evidence. The author asserted that the distinction between admissibility and weight is fundamental to all evidence codes but, little attention was given to it in courts. It was therefore, according to the author, the court decision in Daubert v. Merrel Dow Pharmaceuticals Inc that held that Judges are gatekeepers and are the ones to determine the expert testimonies that are or are not reliable or valid for Jury’s assessment. Faigman therefore, distinguished between a general assertion and general framework of reference that will help Judges in determining evidence that is or is not admissible in court and a case-specific assertion or conditional facts that will assist jury in assessing the weight of evidence.

The work carried out by Dyson (2014) was a brilliant attempt to verify whether there was any logical connection between admissibility and weight in matters concerning pieces of evidence tendered in courts of law. The issue addressed by Byrne (2014) as cited in Dyson (2014) was whether that classical division between the judge’s responsibility (admissibility) and Jury responsibility (weight determination) is breaking down. What probably prompted this enquiring question is the frequent report of deficiencies in forensic science and the ever-increasing number of wrongful convictions globally. Dyson asserted that the question which is exclusively left to the Judge to answer is: “Is this evidence admissible?” while the other question which is left to the Jury to answer is: “Is this evidence, which is admissible and has been admitted, evidence of sufficient weight to act on in resolving the controversy being tried?” This therefore, shows a clear distinction between the function of a Judge and that of a Jury.

A conference paper was written and presented by ACFE member in 2011 at the 22nd Annual ACFE Fraud Conference and Exhibition aimed at assisting professionals in forensic investigations and audit including other relevant professionals in knowing the elements of fraud, why fraud happens and how to analyse whether fraud could or often has occurred. The author asserted that where a witness lacks credibility, his testimony will not be admissible in court. According to the author of the paper, it is usually risky to admit the testimony of a witness or a forensic scientist or expert who lacks credibility and integrity. The paper emphasized that in order to prove or disprove a circumstantial case in court, fact witnesses and expert witnesses must be used, whether you are on the investigating side or the side of the investigated. Careful screening of witnesses and the fact patterns in each case is the key to having a positive result and that investigators should be sure of their facts and witnesses and accountants who represent clients should remember that the client is innocent until proven guilty no matter what law enforcement or the news media have to say, the paper concluded. All the studies so far reviewed focussed principally on the distinction between admissibility of evidence and weight of evidence and on factors that make evidence admissible and weighty. None of the studies reviewed attempted to determine the relationship between admissibility of evidence and weight of evidence. The determination of that relationship is what the current research is going to do.

8. RESEARCH METHODOLOGY

The research design adopted for this study was the survey design using a one-time-only observation. The data for the study came from both primary and secondary sources. 21 participants which consisted of professional accountants, professional auditors, forensic experts, financial analysts and legal practitioners, constituted the target population. All the 21 participants were accessible from which a sample size of 20 was determined, using Yaro Yamani formula as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where n = sample size, N = accessible population and e = level of significance. After substituting the appropriate values into the above formula, the sample size, n becomes:

$$\begin{aligned} n &= \frac{21}{1 + 21(0.05)^2} \\ &= n(1 + 21(0.05)^2) = 21 \\ &= n(1 + 0.0525) = 21 \\ &= n(1.0525) = 21 \\ &= 1.0525n = 21 \\ n &= \frac{21}{1.0525} = 19.95 = 20 \text{ approx.} \end{aligned}$$

The survey research design was adopted and this gave rise to the ex-post facto approach due to the inability of the researcher to manipulate the independent variable, admissibility of evidence (independent variable) had already exerted its influence on weight of evidence (dependent variable) before the researcher started the work. The nature of the effect of this independent variable was therefore, what the study investigated. The random sampling technique was used to select the 20 participants from the target population. An eleven-item (11 items or statements) structured questionnaire was developed and circulated to sample members using a 5 – point likert scale. (Please see table 1 on page 13). All the participants responded and returned their questionnaires.

The reliability of the ordinal data which was collected on a 5 – point likert scale, was tested using Cronbach alpha. The ordinal data was converted to interval scale data in order to facilitate the application of simple linear regression technique. The relationship between the two study variables, ‘admissibility of forensic evidence’ and ‘weight of forensic evidence’ was expressed using the following equation:

$$WOE = f(AOE)$$

This regression model now becomes:

$$WOE = b_0 + b_1AOE + e_i$$

where,

WOE = Weight of Forensic Evidence

AOE = Admissibility of Forensic Evidence

b_0 = expected value (a constant amount) of the dependent variable (WOE) when the independent variable (AOE) becomes zero.

b_1 = A coefficient which represents the contribution of admissibility of forensic evidence (independent variable) to the occurrence of weight of forensic evidence.

e_i = error term

$b_0, b_1, \geq 0$

The distribution of composite likert scores of AOE and WOE used in running the simple linear regression, is shown on tables 2 and 3 on page 14

9. RESULTS FROM PRIMARY RESEARCH

a. Test of Reliability and Validity of primary data prior to data analysis

The independent variable data and dependent variable data conformed to Cronbach alpha which showed a reliability coefficient of above the required 0.70. The reliability coefficients of 0.72 and 0.79 were respectively obtained for admissibility of forensic evidence data and weight of forensic evidence data respectively (please see tables 4 and 5 on pages 15 and 16 respectively).

b. Regression analysis (see table 6 on page 17)

The contribution of the independent variable (admissibility of forensic evidence) was very low while there was no significant relationship between the variables ($R^2 = 0.134$, $F(1, 18) = 2.784$, n.s). The intercept of weight of forensic evidence (the dependent variable) was positive when admissibility of forensic evidence (the independent variable) equals to zero and it was not significant ($\beta_0 = .380$, n.s).

c. Hypotheses testing (see regression output table 6 on page 17)

The results obtained after testing the null hypothesis were as follows:

Hypothesis: There is no significant relationship between admissibility of forensic evidence as determined by the Judge and weight of forensic evidence as assessed by the Jury. This regression analysis results represented a correlation coefficient that is

positive and weak and this was not significant. ($\beta_1 = .431, n. s$). The null hypothesis was therefore, accepted while the alternative hypothesis was rejected.

10. DISCUSSION OF FINDINGS

The variability of the dependent variable (weight of forensic evidence) as explained by the independent variable (admissibility of forensic evidence) is indicated by an adjusted R square of .086 which is approximately .09 (please see table 6 on page 17). The model generated an F – statistic of 2.784 at an alpha level of .11 (.113) and it was not significant. Therefore, the model has a very low explanatory power. The simple linear regression output shown in table 6 on page 17 forms the basis for analysing the hypothesis.

a. Hypothesis: (as table 6 on page 17 shows)

There is no significant relationship between admissibility of forensic evidence and weight of forensic evidence ($\beta_1 = .431, n. s$). What this means is that given an unstandardized coefficient of .431, any increase in admissibility of forensic evidence by 1 point will cause the weight of forensic evidence to increase by 0.431 point only, with all other variables being held constant. A standardized coefficient of 0.366, means that as admissibility of forensic evidence increases by 1 standard deviation, weight of forensic evidence will increase by 0.366 standard deviation with all other variables being held constant. However, this positive relationship was not significant or not being true at a t-test statistic of 1.669 based on the alpha level of .05 (i.e. .113). The positive relationship that would have existed between admissibility of forensic evidence and weight of forensic evidence is very weak and not significant mostly due to the inappropriateness of the factors used by the trial Judge in determining admissibility. Admission of forensic evidence into the court was mostly based on non-admissibility-weight related factors. For instance, inadmissible pieces of forensic evidence still found their way to the court rooms. Pieces of forensic evidence are admissible only when they are relevant and reliable and they are weighty only when they are believable, persuasive and have probative value.

11. CONTRIBUTION TO KNOWLEDGE AND POLICY IMPLICATIONS

This study has demonstrated that without the existence of a positive and significant relationship between admissibility of forensic evidence as determined by the Judge and weight of forensic evidence as assessed by the Jury, a reliable and valid court verdict cannot be obtained. The factors that make all pieces of forensic evidence admissible in court should always align with factors used in assessing the weight of all pieces of forensic evidence. The presence of a logical connection between the admissibility determination function of the Judge and the weight assessment function of the Jury is what gives credibility to the admissibility-weight distinction. The time has come for us to pay more attention to the connection between what the Judge is doing and what the Jury is doing instead of laying emphasis only on the distinction between admissibility of forensic evidence and weight of forensic evidence. This distinction will be beneficial if what the Judge is doing aligns with what the Jury is doing. The implication for practice is that competent expert witnesses with relevant, reliable, believable and persuasive evidence will be used to get justice while trial Judges and Jury will see their separate roles as related and complementary. The findings of the study implies that Judges and Jury will be encouraged to pay more attention to the connection between their separate roles instead of concentrating on the distinction between their roles. Connection between roles in this case is better than distinction between roles as attention to connection will lead to the pursuit of a common goal while distinction made between roles will lead to the pursuit of different goals. The findings of the study also imply that the use of competent forensic accountants and forensic scientists will be encouraged.

12. CONCLUSION

Evidence helps to prove that a crime has been committed. It is categorized into direct, circumstantial, physical, biological, reconstructive and associative. Evidence is relevant if it relates to the fact of the case and reliable if it is obtained from a credible source. Evidence is weighty if it is believable, persuasive and have probative value. In this study, forensic evidence is not admissible suggesting that it is not relevant and reliable. Forensic evidence is also not weighty meaning that it is not believable and persuasive. Past studies focussed principally on the distinction between the roles of trial Judges and Jury. The relationship between admissibility of forensic evidence and weight of forensic evidence was not investigated by previous studies. This relationship was therefore, determined by the current study. There is no significant relationship between admissibility as determined by the Judge and weight as assessed by the Jury implying that factors which the Judge considered before admitting evidence in court did not have any logical connection with the factors used by the Jury in assessing the weight of the evidence which the Judge considered admissible.

13. RECOMMENDATIONS

- The quality of forensic evidence will be improved when admissibility related factors and weight related factors are taken into consideration before arriving at a verdict.
- The practice of determining the admissibility and weight of forensic evidence should be based on general-specific approach which conforms to the nature of science.
- Relevance and reliability which make forensic evidence admissible must also be able to attract believability and persuasiveness which make forensic evidence weighty.
- The Judge and the Jury should not perform only the roles that are assigned to them.
- The Judge and the Jury should ensure that pieces of evidence are testimonial, real, documentary and demonstrative.
- The Judge and the Jury should note that ‘this is the goat that X stole’ from me (admissibility) is not as believable and persuasive as a picture or video or any other acceptable means of proving that X stole the goat (weight). Even the

inability of the prosecution to prove that the goat is the same as the one purported to have been stolen renders the evidence inadmissible.

14. DIRECTION FOR FUTURE RESEARCH

Future research work in this area should be focussed on answering the following questions: Why has forensic science not prevented the Judge and Jury from convicting innocent people and from acquitting those who are actually guilty?

What proactive steps should we take to ensure that forensic errors are discovered long before Jurors give their final verdict?

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APPENDIX

TABLE 1: RESEARCH QUESTIONNAIRE

S/N	Section A Admissibility of Forensic Evidence (AOE)	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	Expert testimonies are used in criminal and civil proceedings	1	2	3	4	5
2	Stolen and injury inflicting items are tendered in court	1	2	3	4	5
3	Pictures and videos are used to show how and where crime was committed	1	2	3	4	5
4	Written confessions and agreements are tendered in court	1	2	3	4	5
5	In all the trials witnessed, the Jury has never been outraged	1	2	3	4	5
6	I have never witnessed any trial where a good thing is overly emphasized	1	2	3	4	5
7	Nothing is done to take the Jury's attention from the main issue	1	2	3	4	5
8	Other witness testimonies are accepted only when they are relevant and reliable	1	2	3	4	5
9	Non-experts are never allowed to give testimonies in court	1	2	3	4	5
10	Defendant's personality trait is used to support evidence only when they are relevant and reliable	1	2	3	4	5
11	Information from privilege sources are rejected when tendered in court	1	2	3	4	5
S/N	Section B Weight of Forensic Evidence (WOE)	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	Defendants are convicted only when the crimes mentioned in the testimonies are committed beyond a reasonable doubt	1	2	3	4	5
2	The Jury ensures that the stolen and injury-inflicted items are exactly the ones recovered from the defendants	1	2	3	4	5
3	The pictures and videos actually display how and where the defendants committed the crime.	1	2	3	4	5
4	Defendants are convicted only when tendered confessions and agreements are actually written by them	1	2	3	4	5
5	Nothing prejudicial has ever been presented before the Jury	1	2	3	4	5
6	No good thing has ever been overly emphasized during trial sessions	1	2	3	4	5
7	Deviation from the main issue does not occur during trial sessions	1	2	3	4	5
8	Believable and persuasive hear-says are used to convict defendants	1	2	3	4	5
9	All the testimonies come from experts	1	2	3	4	5
10	Only relevant and reliable personality traits are used as evidence	1	2	3	4	5
11	The Jury uses only privilege information from independent sources	1	2	3	4	5

Table 2: DISTRIBUTION OF 5-POINTS LIKERT SCALE RESPONSE SCORES AND TOTAL SCORES FOR ADMISSIBILITY OF EVIDENCE (AOE)

ID Number	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Total Scores
1	4	4	3	4	4	4	4	4	3	4	3	41
2	3	4	4	3	4	5	5	4	5	4	4	45
3	3	4	4	3	4	5	5	5	5	4	5	47
4	3	4	4	3	5	5	4	4	5	4	4	45
5	4	4	5	3	4	4	4	4	5	4	5	46
6	4	4	5	3	4	4	4	4	4	4	4	44
7	4	4	5	3	4	4	4	4	4	4	5	45
8	3	4	4	3	4	4	5	5	4	5	4	45
9	3	3	4	2	3	3	3	3	3	4	5	36
10	4	4	4	3	4	4	4	4	4	4	3	42
11	4	4	4	3	4	3	4	3	4	4	4	41
12	4	5	5	4	5	5	5	5	5	5	3	51
13	4	4	5	3	4	4	4	4	4	4	4	44
14	4	4	5	3	4	4	3	4	4	4	3	42
15	4	5	4	3	3	3	5	4	4	5	3	43
16	4	4	4	2	3	4	4	4	4	5	4	42
17	3	3	3	4	4	3	3	3	5	3	3	37
18	4	4	4	3	5	3	3	5	4	4	3	42
19	4	4	4	4	4	5	5	4	4	4	4	46
20	3	3	3	3	4	4	3	3	4	5	3	38

Table 3: DISTRIBUTION OF 5-POINTS LIKERT SCALE RESPONSE SCORES AND TOTAL SCORES FOR WEIGHT OF EVIDENCE (WOE)

ID Number	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Total Scores
1	3	2	1	4	2	2	2	2	1	1	1	21
2	2	2	2	3	2	3	3	2	3	2	3	27
3	2	2	2	3	2	3	3	3	3	2	4	29
4	2	2	2	3	3	3	2	2	3	2	3	27
5	2	1	2	2	1	1	1	1	2	2	3	18
6	2	1	2	2	1	1	1	1	1	1	2	15
7	2	1	2	2	1	1	1	1	1	1	3	16
8	2	2	2	3	2	2	3	3	2	3	3	27
9	2	1	3	2	1	1	1	1	1	1	3	17
10	3	2	2	3	2	2	2	2	2	2	2	24
11	3	2	2	3	2	1	2	1	2	2	3	23
12	2	2	2	3	2	2	2	2	2	2	1	22
13	3	2	3	3	2	2	2	2	2	2	3	26
14	3	2	3	3	2	2	1	2	2	2	2	24
15	3	3	2	3	1	1	3	2	2	3	2	25
16	3	2	2	2	1	2	2	2	2	3	3	24
17	2	1	1	4	2	1	1	1	3	1	2	19
18	3	2	2	3	3	1	1	3	2	2	2	24
19	3	2	2	4	2	3	3	2	2	2	3	28
20	2	1	1	3	2	2	1	1	2	3	2	20

TABLE 4: Results of Testing the Reliability of the Primary Data Collected for Admissibility of Evidence Using Cronbach's Alpha Technique (The acceptable Reliability Coefficient of 0.72 was obtained for the data. Reliability Statistics table is displayed below)

Reliability

Scale: ALL

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded ^a	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.719	11

Item Statistics

	Mean	Std. Deviation	N
Item_1	3.65	.489	20
Item_2	3.95	.510	20
Item_3	4.15	.671	20
Item_4	3.10	.553	20
Item_5	4.00	.562	20
Item_6	4.00	.725	20
Item_7	4.05	.759	20
Item_8	4.00	.649	20
Item_9	4.20	.616	20
Item_10	4.20	.523	20
Item_11	3.80	.768	20

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Item_1	39.45	11.839	.130	.727
Item_2	39.15	10.029	.689	.659
Item_3	38.95	10.155	.447	.686
Item_4	40.00	11.684	.139	.728
Item_5	39.10	11.042	.310	.706
Item_6	39.10	9.358	.593	.659
Item_7	39.05	8.997	.646	.647
Item_8	39.10	9.463	.659	.651
Item_9	38.90	10.621	.378	.697
Item_10	38.90	11.779	.129	.728
Item_11	39.30	12.011	-.016	.764

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
43.10	12.516	3.538	11

TABLE 5: Results of Testing the Reliability of the Primary Data Collected for Weight of Evidence Using Cronbach's Alpha Technique (The acceptable Reliability Coefficient of 0.79 was obtained for the data. Please see Reliability Statistics table as shown below)

Reliability

Scale: ALL

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded ^a	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.791	11

Item Statistics

	Mean	Std. Deviation	N
Item_1	2.45	.510	20
Item_2	1.75	.550	20
Item_3	2.00	.562	20
Item_4	2.90	.641	20
Item_5	1.80	.616	20
Item_6	1.80	.768	20
Item_7	1.85	.813	20
Item_8	1.80	.696	20
Item_9	2.00	.649	20
Item_10	1.95	.686	20
Item_11	2.50	.761	20

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Item_1	20.35	16.134	.227	.793
Item_2	21.05	14.050	.721	.750
Item_3	20.80	16.905	.023	.812
Item_4	19.90	15.253	.332	.786
Item_5	21.00	14.842	.444	.775
Item_6	21.00	13.158	.643	.749
Item_7	20.95	12.576	.709	.739
Item_8	21.00	13.263	.706	.743
Item_9	20.80	14.274	.537	.765
Item_10	20.85	14.555	.439	.775
Item_11	20.30	15.800	.157	.809

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
22.80	17.326	4.162	11

TABLE 6: The results of simple regression analysis of the data collected for AOE and WOE

Regression

[DataSet1] C:\Users\Lizzy\Documents\Regression Output for Admissibility of evidence and weight of evidence.sav

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	ADMISSIBILITY OF EVIDENCE ^a	.	Enter

- a. All requested variables entered.
- b. Dependent Variable: WEIGHT OF EVIDENCE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.366 ^a	.134	.086	3.980

- a. Predictors: (Constant), ADMISSIBILITY OF EVIDENCE

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	44.095	1	44.095	2.784	.113 ^a
	Residual	285.105	18	15.839		
	Total	329.200	19			

- a. Predictors: (Constant), ADMISSIBILITY OF EVIDENCE
- b. Dependent Variable: WEIGHT OF EVIDENCE

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.241	11.159		.380	.708
	ADMISSIBILITY OF EVIDENCE	.431	.258	.366	1.669	.113

- a. Dependent Variable: WEIGHT OF EVIDENCE

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