TRENDS OF USING FORENSIC EVIDENCE FOR JUDGE'S CONSIDERATION OF COURT IN THAILAND

Sarat Luandee[1], Sarit Suebpongsiri[2] and Choawit Rakangthong[*3]

[1]Graduate School, Silpakorn University, Sanam Chandra Palace Campus, Nakhon Pathom 73000, Thailand
[2]Faculty of Forensic Science, Royal Police Cadet Academy, Royal Thai Police, Nakhon Pathom 73220, Thailand
[3]Department of Animal Science, Faculty of Agriculture, Kasetsart University, Bangkok 10900, Thailand

[*] Corresponding author: fagrcwr@ku.ac.th

Abstract

The research used data from 690 cases judged in the supreme court of Thailand between 2003 and 2016 classified into two groups: general factor and factors based on the evidence for the case proceeding. The results of general factors showed that 62.90% of prosecutors and 99.13% of defendants were male. Prosecutors related to defendants as known persons in 66.94% of the cases. Crimes in the cases occurred in similar proportions during the day and night. The results of factors based on the evidence for case-proceedings indicated that prosecutors' testimonies, the autopsy, and forensic evidence were related to the judgement (P<0.01), with the value of the odds ratio being 29.67, 5.46, and 3.70, respectively. In cases involving forensic evidence in the case proceedings, the court can punish 87.57% of the offenders. However, when factors which could determine the value of the odds ratio were analyzed using logistic regression, the judgement was affected by: testimonies, the report to the police, testimonies related to the prosecutor's evidence, the autopsy, and forensic evidence (P<0.01). Factors on testimonies corresponding to the prosecutor's evidence had the highest value of Exp(B) of 23.16. The research showed that the case-proceedings of the supreme court of Thailand used many kinds of evidence for judgement but that cases using forensic evidence resulted in the court decided without any question.

Keywords: Case processing; criminal justice; forensic evidence; judge's consideration

Introduction

For the last century, the progress of the forensic science has resulted in a greater use of DNA typing, an expansion in the physical database, and the development of more specialized instrumentation. Consequently, the public have come to realize the value and efficiency of forensic evidence in producing criminal prosecutions and solving criminal problems, following the presentation on television of crime series such as CSI and Forensic Files and via the online media, with other shows presenting how to use forensic evidence in criminal cases (Baskin and Sommers, 2010a).

The value of the more distinguished forensic evidence has encouraged research to be published on the success of such evidence on the stages of the criminal justice system. Looking back to 1963, there were initially studies showing that the forensic evidence had only a slight impact from Parker and Peterson (1972)'s survey. It showed that the results of cases were based on using the scientific evidence in only 1% from almost 90% of the cases of interest. A similar result was reported in the research of Wellford and Cronin (2000). They considered both the scientific and nonscientific evidence collected from the crime scene; it was found that the factors tending to result in an arrest were mostly based on the police having sufficient and rapidly applied resources, including to computerized databases. Throughout this period, there was little research focusing on forensic evidence. However, Briody (2004) reported changes in this pattern as there was a clear impact from the results of DNA typing affecting the case proceedings but in conjunction with other evidence. Baskin and Sommers (2010b) focused on forensic evidence and confirmed that this was auxiliary and non-determinative in homicide cases. This was elaborated on by Peterson et al. (2013) who showed the value of the forensic evidence in every step of the process of the judgement when there was also other evidence.

The research above showed that the forensic evidence was interesting and it was used in the process of the judgement from the investigation, to the arrest, and then to the case proceeding in order to seek a prosecution. However, this hypothesis has not yet been adequately confirmed. There has been some limitation on understanding about this, especially in the comparison of the forensic evidence with other evidence by Peterson et al. (2013). Furthermore,

some research indicated that the forensic evidence played less of a role when compared to the testimony according to Baskin and Sommers (2011) who started to be more interested in the effects of the forensic evidence. This research also tried to show the greater value and impact of forensics compared to the other evidence.

The present study analyzed the effects of using the forensic evidence in cases involving property, sexual crimes, or assault on body or life that were considered in the proceedings of the supreme court of Thailand.

Research Methodology

Data collection

The present research used the data from judgements by searching the database of the Information Technology and Communication Center of the supreme court (Software Deka version 1.9) which contained judgements from 2003 to 2016. They were chosen from the cases having a penalty of more than 3 years or a fine of more than 60,000 baht under the 36 items in the penal code of Thailand, resulting in a sample of 690 cases. These cases were classified into cases against property (N=301) according to the penal codes: 335-340, 342, 343, 355, 357, 359, 360, and 365; cases against body and life (N=196) according to the penal codes: 288, 289, 297, 298, 300, 302, 303, 306, and 370; and cases involving sex (N=193) according to the penal codes: 276-280, 282-286, and 290-293.

Variable and data analysis

The data from the judgements were divided into 2 groups: 1) factors associated with the general case (victim gender, suspect gender, relationships, crime scene, and time); and 2) factors associated with the evidence (testimonies, reports to police, prosecutors' testimonies, defendants' testimonies, witnesses, crime scene analysis, evidence from crime scene, forensic evidence, autopsy, and weapon).

Statistical analysis was used: 1) descriptive analysis; 2) relationship tests between the factors and the trial results using the chi-square test; 3) the level of the relationships of the factors using the odds ratio; and 4) prediction of trial results using logistic regression analysis.

Results

   The results of the factors of the 690 general cases are shown in Table 1. It was found that more prosecutors were male (62.90%) than female and that also more defendants were male (99.13%), with only 0.87% being female defendants. The correlation analysis of the factors indicated that the gender of the prosecutors and defendants was not statistically significant regarding the trial results. However, the factor analysis of the relationship between the prosecutors and the defendants found that they knew each other (65.94%) more than having never previously met (34.06%). Moreover, the crime scene was more often in a private place (82.32%) than a public place (17.68%). The crimes occurred relatively evenly during the day (44.78%) and the night (55.22%)

Table 1: Descriptive statistics for studying variables (N = 690 cases)

| Variable | N (%) | Judgement | |
		Dismiss N (%)	Convict N (%)
1. Victim gender			
Male	434 (62.90)	111 (25.58)	323 (74.42)
Female	256 (37.10)	47 (18.36)	209 (81.64)
2. Suspect gender			
Male	684(99.13)	157 (22.95)	527 (77.05)
Female	6 (0.87)	1 (16.67)	5 (83.33)
3. Relationship			
Known to each other	455 (65.94)	109 (23.96)	346 (76.04)
Strangers	235 (34.06)	49 (20.85)	186 (79.15)
5. Crime scene			
Public place	284 (41.16)	61 (21.48)	223 (78.52)
Private place	406 (58.84)	97 (23.89)	309 (76.11)
6. Time			
Night	309 (44.78)	63 (20.39)	246 (79.61)
Day	381 (55.22)	95 (24.93)	286 (75.07)

The results of the factor analysis of the evidences of the testimonies affecting case proceeding are shown in Table 2. There was a large proportion (90.44%) of case processing that used the data from the record of the testimonies with the inquiry officials for judgement (90.44%) resulting in 78.53% convictions and only 21.47% dismissals. The factor of testimonies with the inquiry officials relating to the case proceeding was statistically significant (χ^2 = 6.66, P< 0.05) and the correlation value of the odds ratio was 2.09. The factor of the oral confession of the defendants being related to the case proceeding was involved in 89.24% of cases but if the defendants denied the charge, the conviction rate was 70.16% with only 29.84% dismissals. The factor of the testimonies of the prosecutors being used by the court for the case proceeding was involved in 95.22% of cases and in 4.78% of them they were not used. Furthermore, in 87.88% of the cases, the court dismissed the use of testimonies. However, only a few testimonies of the defendants were used by the court for the case proceeding. The used and unused rate of the data of defendants' testimonies was 26.70% and 73.30%, respectively. Regardless of whether the court used or did not use the defendants' testimonies for the case proceeding, most of the judgements were convictions with 73.96% and 78.22%, respectively. However, when analyzing the correlation of the factor of prosecutors' and defendants' testimonies, it was found that only the prosecutors' testimonies were significantly related to the judgement of the supreme court (P<0.01). The correlation analysis of the odds ratio of the factor on prosecutors' testimonies was 29.67 corresponding to the analysis of results of the factor of witnesses. The witnesses were significantly related to the judgement of the supreme court (P<0.05). Most criminal cases had witnesses (82.75%). The court had a conviction rate of 80.74% and a dismissal of the action of 19.26%. However, when cases did not have witnesses, the court often dismissed the case (40.34%), with an odds ratio of 2.83.

Table 2: Relationships test between factors and trial results
(chi-square test and odds ratio)

| Variable | N (%) | Judgement | | χ² | Odds ratio |
		Dismiss N (%)	Convict N (%)	P-value	P-value
1. Testimony					
Oral confession	251 (36.37)	27 (10.76)	224 (89.24)	31.82	3.52
Innocent plea	439 (63.63)	131 (29.84)	308 (70.16)	< 0.01	< 0.01
2. Report to police					
Used	624 (90.44)	134 (21.47)	490 (78.53)	6.66	2.09
Unused	66 (9.56)	24 (36.36)	42 (63.64)	< 0.05	<0.01
3. Testimonies of the prosecutors					
Effective	657 (95.22)	129 (19.63)	528 (80.37)	78.95	29.67
Non-effective	33 (4.78)	29 (87.88)	4 (12.12)	<0.01	< 0.01
4. Testimonies of the defendants					
Effective	184 (26.70)	48 (26.09)	136 (73.91)	1.17	0.78
Non-effective	505 (73.30)	110 (21.78)	395 (78.22)	0.27	0.23
5. Witnesses					
Yes	571 (82.75)	110 (19.26)	461 (80.74)	23.55	2.83
No	119 (17.25)	48 (40.34)	71 (59.66)	<0.01	<0.01
6. Crime scene analysis					
Yes	585 (84.78)	126 (21.54)	459 (78.46)	3.53	1.59
No	105 (15.22)	32 (30.48)	73 (69.52)	0.06	<0.05
7. Evidence from crime scene					
Yes	310 (44.93)	49 (15.81)	261 (84.19)	15.29	2.14
No	380 (55.07)	109 (28.68)	271 (71.32)	<0.01	< 0.01
8. Forensic evidence					
Yes	362 (52.46)	45 (12.43)	317 (87.57)	45.95	3.70
No	328 (47.54)	113 (34.54)	215 (65.55)	<0.01	< 0.01
9. Forensic medicine					
Yes	142 (20.58)	18 (12.68)	124 (87.32)	9.85	2.36
No	548 (79.42)	140 (25.55)	408 (74.45)	< 0.01	< 0.01
10. Autopsy					
Yes	141 (20.43)	9 (6.38)	132 (93.62)	26.17	5.46
No	549 (79.57)	149 (27.14)	400 (72.86)	<0.01	< 0.01

Table 2: (Continued)

Variable	N (%)	Judgement		χ^2	Odds ratio
		Dismiss N (%)	Convict N (%)	P-value	P-value
11. Weapon					
Yes	246 (35.75)	41 (16.67)	205 (83.33)	8.03	1.80
No	442 (64.25)	119 (26.92)	325 (73.53)	< 0.01	< 0.01

The results of the multivariate model are presented in Table 3. The 10 factors relating to evidence used to determine the odds ratio (from Table 2) were analyzed using logistic regression analysis in order to predict the chance of resulting in a conviction. Five were identified as significant (P<0.01): the testimonies, the report to police, the forensic evidence, the autopsy, and the prosecutors' testimonies in court. The prosecutors' testimonies in court corresponded to the evidence with an Exp(B) value of 23.16, indicating that where the case proceeded with the same evidence or the other same factors, it increased the chance of a prosecution by 23.16 times compared to not having those factors. It was a similar situation with the report to police, the forensic evidence, and the autopsy which had Exp(B) values of 3.70, 2.40, and 3.60 respectively. This meant that when the other factors were stable, and those factors were added, they increased the chance of a prosecution by 3.70 times when the offenders confessed after they were arrested, when they confessed to police officers, or when they confessed to the court. The record of the testimonies with the inquiry officials affected the judgement by 2.40 times whether it was used or was not used for the judgement. The forensic evidence and the autopsy affected the judgement in almost the same way. In other words, when the factors above in the case were used, the forensic evidence and the autopsy together increased the chance of a prosecution by 3.54 and 3.60 times compared to the absence of these factors. Furthermore, the regression equation from the analysis was able to correctly predict the trial results of the offences compared to the actual records in 81.40% of cases, as shown in the Table 3

Table 3: Logistic regression model predicting each decision outcome

Variable	B	S.E.	Wald	df	P-value	Exp(B)
Testimonies	1.31	0.25	27.89	1	<0.01	3.70
Report to police	8.79	0.38	5.28	1	0.021	2.40
Forensic evidence	1.26	0.23	29.26	1	<0.01	3.54
Autopsy	1.28	0.38	11.10	1	<0.01	3.60
Testimonies of the prosecutors	3.14	0.61	26.07	1	<0.01	23.16
Constant	-3.64	0.68	28.34	1	<0.01	0.03
Percentage correct						**81.40**

Discussion

The present research tried to present a new point of view regarding evidence affecting the judgement by focusing on studying the forensic evidence affecting the case proceeding and the different values of each kind of evidence and its effect on the case proceeding in the supreme court, since these data had been published and were available for judgements in Thailand. Therefore, we assumed the data sourced were correct and reliable.

The data appearing in the judgements by the supreme court were selected for two different parts of the analysis. The first part involved general data (such as gender, the crime scene, the relationships between the persecutor and the defendant and the time of the crime). We hypothesized that the general data did not affect the judgement. The results above showed this was statistically correct. The gender analysis indicated that both sexes could be convicted and that the victim tended to be male more often than female. There was no relationship found between the victim and the defendant regarding judgements by the court, though a positive relationship has been reported regarding the arrest of the offender and the confession (Peterson et al., 2013) The second part involved analysis of the evidence which we hypothesized affected the judgement in different ways.

The analysis of the relationships and the possibilities together with the evidence in this research show different values associated with the witnesses, the testimonies, the report to police including evidence at the crime scene, the forensic evidence, forensic medicine, the autopsy, or even weapons found at the

crime scene. The results showed that the ways the witnesses affected the judgment corresponded to the study by Baskin and Sommers (2010a) which found that the witnesses in the case gave the necessary data for the investigation leading to identifying a suspect and ultimately the offender (Baskin and Sommers, 2010b). The current study showed that the report to police was used in the case proceeding in the supreme court and that it helped to decrease deviation from the data regarding the victim's testimony and the evidence. In addition, the analysis found that the defendant's confession to the police officer or to the court made the police collect all evidence and this resulted in a clear decision by the court.

The forensic evidence influenced the judgement more than the nonscientific evidence. Peterson et al. (2013) reported that the use of forensic evidence in cases involving property increased the chance of an arrest compared to using nonforensic evidence. The same outcome was identified in the present research, involving forensic examination of finger prints, DNA, and gunshot residue which had a greater effect than the nonforensic examination of clothing and the vehicle involved. The analysis showed that forensic medicine and the autopsy involving DNA analysis for example were regarded as reliable and scientific proof and they were able to identify an individual. Examination of the injury or the autopsy results was also important as was analysis of any weapon in the case. These factors were also considered important in previous studies (Gray-Eurom et al., 2002).

The relationships of the testimonies corresponding to the prosecutor's evidence resulted in a high probability of a conviction involving the highest punishment (Exp(B) = 23.16), when this was used together with the other evidence in a case. Baskin and Johnson (2010) also stated that to use more than two kinds of evidence would be more reliable and facilitated predicting trends and the order of importance of the evidence in order to proceed more efficiently. McEwen (2010) considered it was always necessary to use the forensic evidence in the judgement.

Burrows and Tarling (2004) reported on the value of the types of forensic evidence such as finger prints, DNA, and footprints which increased the chance of an arrest. This was also the case in a study of results involving child kidnapping by Brown and Keppel (2011). They showed the positive value

of the forensic evidence in increasing the chances of a successful police investigation and this was also acknowledged for complicated serial murderer cases (White et al., 2011), where the forensic evidence played an important role in getting a successful conviction. Martire et al. (2014) applied the likelihood ratio to enhance knowledge on presenting evidence to the court.

The study also highlighted the development of forensic science to encourage the justice process to keep up with the rapid developments in science and the technology, as the forms of crime are also evolving and becoming more complex.

Conclusion

Based on all 690 judgements of the supreme court considered in the study, the general data did not influence the outcome, while all the factors on evidence did relate to the judgement. The factor having the highest value of odd ratio was witness. It also found that the testimonies also affected the judgment. Especially, the factor on victim's testimonies related to the judgement with the highest value of odd ratio at 29.67. When analyzing the factors affecting the judgement using logistics regression analysis, it was found that the factor of the testimonies corresponding to the prosecutor's evidence increased the chances of the highest punishment being applied (Exp(B) = 23.16).

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