# Digital Forensic Analysis of Online Gambling Cases on Instagram Application using National Institute of Standards and Technology Method

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## ABSTRACT
Advances in communication technology and social media, particularly Instagram, have created opportunities for the misuse of digital platforms to promote online gambling via the Direct Message (DM) feature. The private nature of this communication and the dynamic nature of digital data make the identification and verification processes more complex, necessitating a systematic digital forensic approach. This study aims to analyze the process of collecting and examining digital evidence in cases involving online gambling promotion on Instagram, using the National Institute of Standards and Technology (NIST) method, which comprises the stages of collection, examination, analysis, and reporting. The data acquisition process was conducted from mobile devices using the tools MOBILedit Forensic Express, Magnet AXIOM, and Hash My Files. The study identified 30 message artifacts and 10 image files related to online gambling promotional activities. The verification process, which utilized MD5 and SHA-256 hash values, demonstrated that the data had not been altered, thereby ensuring its integrity. These findings indicate that the NIST methodology, when combined with several digital forensic tools, is capable of producing valid and reliable digital evidence.

## Keyword
Digital Forensics, Instagram, Online Gambling, NIST, MOBILedit Forensic Express, Magnet AXIOM.

## 1. INTRODUCTION
Advances in information and communication technology have brought about significant changes in the way people interact and have driven the formation of a complex and dynamic digital ecosystem [1]. The Internet serves not only as a medium of communication but has also become an integral part of social, economic, and entertainment activities. One such development is the emergence of social media platforms like Instagram, which allow users to share information and interact widely [2]. Instagram is a visual-content-based platform equipped with interactive features, one of which is Direct Message (DM), enabling private communication [3]. The high number of active Instagram users in Indonesia gives the platform a wide reach for information dissemination [4]. However, this situation also creates opportunities for misuse, such as its use as a medium for promoting online gambling conducted covertly via private messages [4], [5]. Digital forensics plays a role in identifying, collecting, and analyzing digital evidence to support legal proceedings [6], [7]. This process is conducted systematically to ensure the integrity and authenticity of the data so that it can be held accountable [8]. In addition to the NIST method, there are several other methods in digital forensics, such as the Digital Forensic Research Workshop (DFRWS), which divides the investigative process into seven stages: identification, preservation, collection, examination, analysis, presentation, and decision [9]. The National Institute of Justice (NIJ) method emphasizes the stages of acquisition, identification, evaluation, and admission, focusing on the validation of digital evidence [10]. The Association of Chief Police Officers (ACPO) method emphasizes the principle of maintaining the integrity of digital evidence throughout the investigative process [11].

The NIST method was chosen for this study because it offers a simpler and more systematic structure for the digital investigation process [12]. This method is capable of accommodating all stages of digital investigation, from the collection and examination of digital evidence to the analysis and structured reporting of investigation results [13]. The approach used in the NIST method is considered effective in producing valid and accountable digital evidence analysis. Therefore, this study aims to analyze digital evidence in cases of online gambling promotion via Instagram using the NIST method and utilizing several digital forensic tools to obtain optimal results [14]

## 2. LITERATURE STUDY

### 2.1 Digital Forensics
Digital forensics is the scientific process of collecting, analyzing, and interpreting digital evidence from electronic devices to support legal investigations [15]. This process is conducted systematically to ensure the integrity, authenticity, and reliability of digital evidence throughout the investigation. In practice, digital forensics is used to identify user activities, trace digital footprints, and reconstruct user activities. An illustration of digital forensics process can be seen in Figure 1.

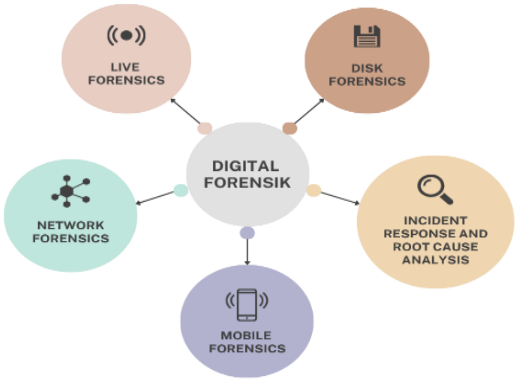


**Figure 1 : Digital Forensics Process**

## 2.2 National Institute of Standards and Technology Method

The National Institute of Standards and Technology (NIST) method is a digital forensic framework commonly used in mobile forensic investigations. This method consists of four main stages: collection, examination, analysis, and reporting [16]. The framework is designed to ensure that the investigation process is conducted systematically while maintaining the integrity and authenticity of digital evidence throughout the forensic process. In mobile forensics, the NIST method is applied to analyze digital evidence obtained from mobile devices such as smartphones, including messages, images, and user activity data that are relevant to investigations [17]. The workflow of the National Institute of Standards and Technology method is shown in Figure 2.


**Figure 2 : Workflow Diagram of the National Institute of Standards and Technology Method**

## 2.3 Instagram Mobile

Instagram, as a social media platform, is frequently used as a promotional tool, including for illegal activities such as online gambling. Promotions are typically conducted covertly through private messages and visual media [18]. An illustration of Instagram's system workflow can be seen in Figure 3.

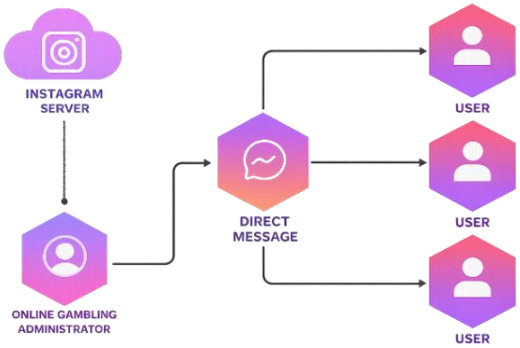


**Figure 3 : Simplified Workflow of Instagram Mobile**

## 2.4 Online Gambling

Online gambling is a form of gambling conducted via digital media and the internet. This activity often leverages social media as a promotional tool due to its wide reach and the difficulty of direct oversight. Promotions are typically conducted covertly through private messages and visually appealing content, such as images of wins and persuasive calls to action designed to capture users attention [19].

## 2.5 Digital Evidence

Digital evidence refers to electronic information such as messages, images, and metadata used in legal proceedings. The authenticity and integrity of the data are critical factors for the evidence to be admissible in court [20]. Proper handling of digital evidence is essential to prevent alteration, contamination, or loss of information during the forensic investigation process. Therefore, a structured evidence handling procedure is required to maintain the reliability and credibility of the collected data. An illustration of the digital evidence handling workflow is shown in Figure 4.


**Figure 4 : Digital Evidence Handling Workflow Model**

## 2.6 Data Recovery

Data recovery is the process of retrieving lost or deleted data from digital storage media. This process aims to recover information that can still be used as evidence in digital forensic investigations [21]. The stages of the data recovery process are shown in Figure 5.

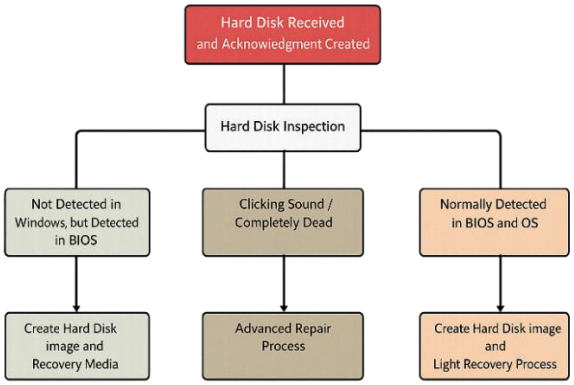


**Figure 5 : Data Recovery Process Workflow**

## 2.7 MOBILedit Forensic Express

MOBILedit Forensic Express is a digital forensic tool used to extract data from mobile devices, such as messages, contacts, call logs, and media files. This tool is capable of accessing both existing and deleted data, thereby supporting a more comprehensive digital investigation process [22] In addition, MOBILedit Forensic Express provides structured extraction results that assist investigators in identifying and analyzing digital artifacts relevant to a case. The MOBILedit Forensic workflow is shown in Figure 6.


**Figure 6 : MOBILedit Forensic Express Workflow**

## 2.8 Magnet AXIOM

Magnet AXIOM is a digital forensic tool used to analyze and manage digital artifacts from various sources. This tool displays data in a structured manner, thereby facilitating the analysis and identification of digital evidence [23]. The Magnet AXIOM workflow is shown in Figure 7.

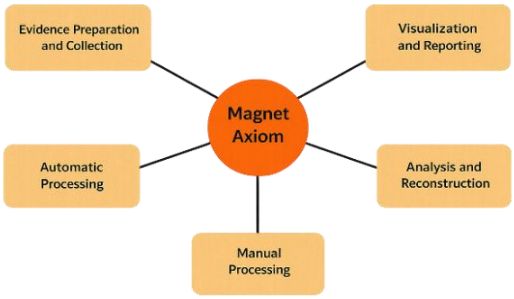


**Figure 7 : Magnet AXIOM Workflow**

## 2.9 Hash My Files

Hash My Files is a tool used to verify data integrity by calculating hash values such as MD5 and SHA-256. If the hash values match, the data can be confirmed as unchanged during the investigation process [24].

# 3. RESEARCH METHOD

This study uses the NIST digital forensics framework consisting of four stages: collection, examination, analysis, and reporting. In the collection stage, Instagram DM data was extracted from a smartphone using MOBILedit Forensic Express and Magnet AXIOM, then verified using MD5 and SHA-256 via Hash My Files to ensure data integrity. The examination stage involved organizing and validating digital artifacts such as messages and images. In the analysis stage, Magnet AXIOM was used to identify communication patterns and evidence related to online gambling promotion activities. Finally, the reporting stage documented all findings systematically. This framework ensures that the digital forensic process is conducted in a structured and repeatable manner in accordance with established standards, as shown in Figure 8.


**Figure 8 : Stages of the National Institute of Standards and Technology Method**

The forensic scenario begins when the perpetrator sends an online gambling promotional message via the DM feature to the victim. After receiving the message, the victim suspects illegal activity and reports it to the authorities. The investigator then performs data acquisition from the involved devices, followed by verification, analysis, and the preparation of a forensic report as the basis for legal evidence.

# 4. RESULT AND DISCUSSION

This study simulates a case of online gambling promotion via the Instagram app using a three-stage approach: pre-incident, incident, and post-incident. These stages describe the sequence of events, starting from the initial communication between the perpetrator and the victim, the emergence of indications of illegal activity, to the conduct of the digital forensic investigation process. In the pre-incident stage, the perpetrator sent a message via the Direct Message (DM) feature containing an invitation to participate in online gambling activities, accompanied by an image file displaying claims of winnings to attract the victim's attention. Next, during the incident stage, the victim begins to notice signs of illegal activity marked by the use of persuasive language such as "jackpot" and "big winning opportunities," leading the victim to cease communication. In the post-incident stage, a digital forensic investigation is conducted on the device to obtain digital artifacts related to the activity. These three stages are illustrated in Figure 9.

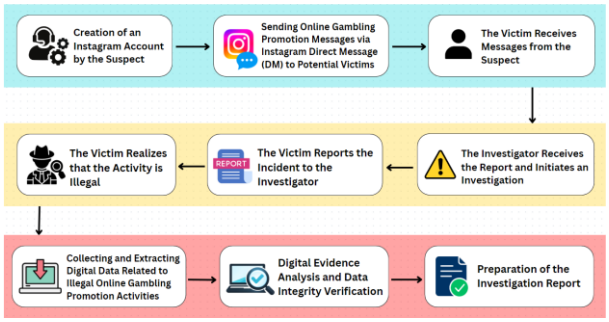


**Figure 9 : Case Simulation**

## 4.1 Collection

The collection stage is conducted to obtain digital evidence from the smartphone used in communication via the Instagram app, specifically the Direct Message (DM) feature. The data obtained consists of conversation messages and image files related to online gambling promotion activities. The acquisition process was performed using MOBILedit Forensic Express and Magnet AXIOM to extract digital artifacts from a Xiaomi Redmi 5A device. The specifications of the device used are shown in Table 1.

**Table 1. Smartphone Evidence Specifications**

| No | Specification | Details |
|---|---|---|
| 1 | Brand | Xiaomi |
| 2 | Model | Redmi 5A |
| 3 | IMEI | 868939035729102 |
| 4 | Operating System | Android |
| 5 | OS Version | 7.1.2 |

In MOBILedit Forensic Express, extraction is performed by connecting the smartphone to a computer to obtain data such as chat messages, image files, and application information. This tool also generates a structured report as a basis for analysis. The extraction process using MOBILedit is shown in Figure 10.

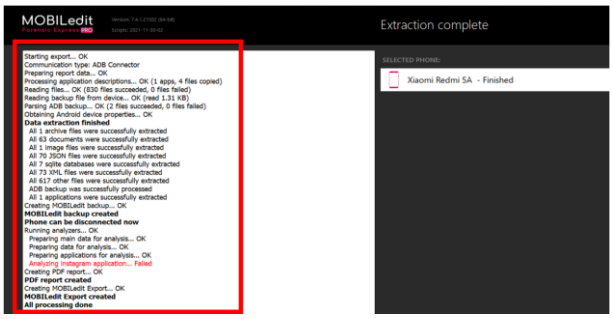


**Figure 10 : Extraction Process Using MOBILedit Forensic**

Figure 10 shows the process of retrieving data from a smartphone device using MOBILedit Forensic Express via a direct connection. The extraction results consist of a report containing digital artifacts such as conversations and media files related to online gambling promotions, organized systematically to facilitate identification. As shown in Figure 11.


**Figure 11 : MOBILedit Forensic Extraction Results**

Figure 11 shows the data extraction results in the form of digital artifacts from the Instagram app presented as a report. Magnet AXIOM is used for more in-depth data extraction to obtain artifacts such as messages, media files, and metadata. This tool presents the data in the form of a structured database, thereby facilitating the analysis process. The usage process is shown in Figure 12.


**Figure 12 : Extraction Process Using Magnet AXIOM**

Figure 12 illustrates the data acquisition process using Magnet AXIOM to obtain digital artifacts more comprehensively. The extraction results using Magnet AXIOM are presented in the form of a database containing digital artifacts such as conversations and image files related to online gambling promotions. This data structure enables systematic tracing of relationships between artifacts, as shown in Figure 13.

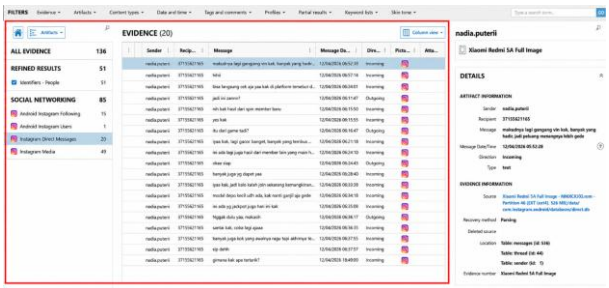


**Figure 13 : Magnet AXIOM Extraction Results**

Figure 13 shows the data extraction results in the form of a database that facilitates the analysis process. Hash My Files is used to verify data integrity by calculating MD5 and SHA-256 hash values for the extracted files. This process ensures that the data has not been altered from acquisition through analysis, thereby preserving the authenticity and validity of the digital evidence.

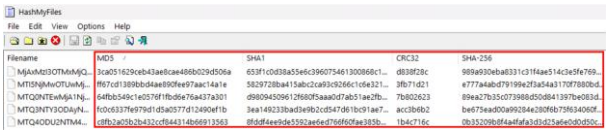


**Figure 14 : Verification Results Using Hash My Files**

Figure 14 shows consistent hash value verification results, confirming that the data has not changed during the investigation process. Thus, the collection phase is conducted systematically using a combination of digital forensic tools to maintain the integrity and authenticity of the data.

## 4.2 Examination

The examination phase involves reviewing collected data to identify its structure and storage location, as well as to verify the integrity and authenticity of digital artifacts. The data examined includes chat messages and image files from the Instagram app using MOBILedit Forensic Express, Magnet AXIOM, and Hash My Files. In MOBILedit Forensic Express, the examination was conducted on data stored in the Instagram app database. The directory com.instagram.android/live_data/database/direct.db serves as the primary location for Direct Message conversations. The results indicate the presence of messages containing references to online gambling promotions, invitations to play, and the use of persuasive language. The examination results are shown in Figure 15.


**Figure 15 : Message Extraction Results Using MOBILedit Forensic Express**

Figure 15 shows the message data structure and conversation content pointing to online gambling promotion activities. Image files in the directory com.instagram.android/live_data/cache/images.stash though lacking an extension were identified as image/jpeg and are linked to promotional activities. The examination results are shown in Figure 16.

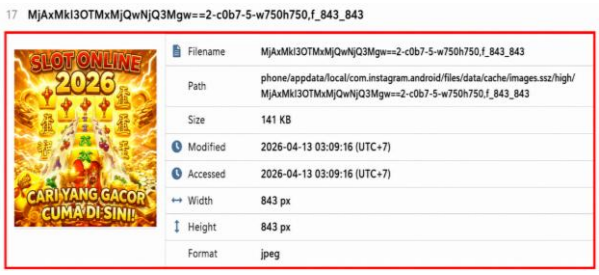


**Figure 16 : Image Extraction Results Using MOBILedit Forensic Express**

Figure 16 shows the results of the image file identification along with its characteristics. Subsequently, an examination using Magnet AXIOM was conducted to validate the previous results. The message data showed consistency in terms of content and structure, indicating consistency between the tools. The examination results are shown in Figure 17.


**Figure 17 : Message Examination Results Using Magnet AXIOM**

Figure 17 shows the consistency of message data with the previous results. The examination of image files using Magnet AXIOM also showed consistency, including size, dimensions, and image/JPEG format, thereby demonstrating the validity of the digital artifacts. The results are shown in Figure 18.


**Figure 18 : Image Examination Results Using Magnet AXIOM**

Figure 18 displays detailed image file information that is consistent with the results obtained from previous forensic tools. This consistency indicates that the recovered image artifacts originate from the same source and retain identical characteristics across different examination tools. To further validate the authenticity of the evidence, hash verification was performed using Hash My Files by calculating the MD5 and SHA-256 values of the acquired files. The matching hash values confirm that the files remained unchanged throughout the acquisition and examination processes. The verification results are presented in Figure 19.

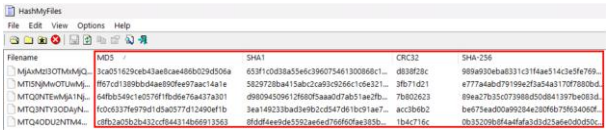


**Figure 19 : Hash Calculation Results Using Hash My Files**

Figure 19 shows the hash value calculation results to verify the authenticity and integrity of the data as digital evidence. Thus, the examination phase not only serves to inspect the data but also to validate the consistency of digital artifacts and ensure their integrity and authenticity.

## 4.3 Analysis

Analysis using MOBILedit Forensic Express revealed conversations containing indications of online gambling promotion, marked by the use of persuasive language such as “easy win,” “jackpot,” and “big winning chances.” These keywords indicate a deliberate promotional strategy aimed at attracting potential victims by emphasizing financial rewards and increasing user curiosity. The recurring appearance of such expressions suggests that the communication was not random but systematically designed to encourage user participation in online gambling activities. This finding strengthens the indication that the Instagram Direct Message feature was used as a medium for promoting online gambling. The results of this analysis are shown in Figure 20.


**Figure 20 : Chat Extraction Results Using MOBILedit Forensic Express**

Figure 20 illustrates conversation content containing persuasive elements and invitations related to online gambling promotion activities. The recovered messages indicate an effort to attract users through promises of winnings and gambling opportunities. Analysis of the image files also revealed a relationship with the message content, including visuals of slot games and winning claims used to increase the attractiveness of the promotion. This consistency between textual and visual artifacts strengthens the indication of online gambling promotional activities. The results of the image analysis are shown in Figure 21.

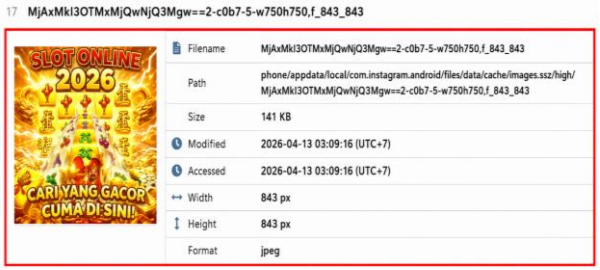


**Figure 21 : Image Extraction Results Using MOBILedit Forensic Express**

Figure 21 shows visual content that supports the promotional messages. The image contains gambling-related elements, including slot game graphics and claims of winning opportunities, which are commonly used to attract user attention. The consistency between the visual content and the message conversations indicates that both artifacts were used together as part of a promotional strategy to increase the effectiveness of online gambling advertisements.


**Figure 22 : Conversation Extraction Results Using Magnet AXIOM**

Figure 22 presents the structured format of conversation data, which is consistent with the previous extraction results. The identification of text fragments such as “gacor” and “jackpot” provides additional evidence of gambling-related communication. These terms are frequently associated with online gambling promotions and are commonly used to persuade users by suggesting high winning potential. The consistency of these findings across different forensic tools increases the reliability of the recovered digital evidence. The results are shown in Figure 23.

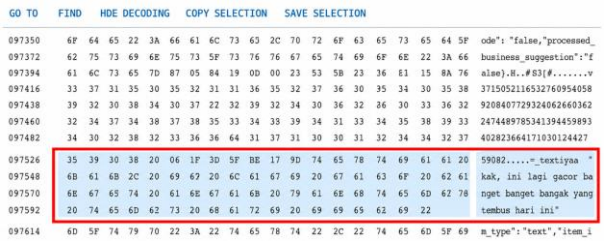


**Figure 23 : Chat Data in Text Format**

Figure 23 illustrates raw data fragments that still contain relevant information related to promotional activities. Analysis of image files using Magnet AXIOM also demonstrated consistency in both content and metadata, reinforcing the relationship between textual messages and visual media. The results are shown in Figure 24.


**Figure 24 : Image Extraction Results Using Magnet AXIOM**

Figure 24 shows the consistency of visual content with previous findings. Verification using Hash My Files confirmed that the MD5 and SHA-256 hash values remained consistent, indicating that the data were not altered during the investigation process. This confirms the integrity of the digital evidence. The results are shown in Figure 25.


**Figure 25 : MD5 Matching Results with file_hashes_backup**

Figure 25 presents the consistent results of the hash value calculations. In addition, the comparison of hash values between MOBILedit Forensic Express and Magnet AXIOM demonstrated matching results, confirming that the digital artifacts originated from the same source and remained unchanged throughout the extraction and analysis processes. The results are shown in Figure 26.

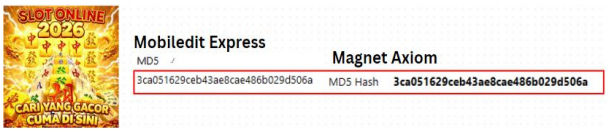


**Figure 26 : MD5 Hash Comparison Between MOBILedit Forensic Express and Magnet AXIOM**

Figure 26 illustrates the consistency of hash values across forensic tools. The overall analysis demonstrates a strong relationship between the recovered message conversations, image files, and hash verification results. The extracted messages contain persuasive terms such as “gacor” and “jackpot,” which are commonly associated with online gambling promotions. These findings are further supported by the recovered image files that display gambling-related content and promotional visuals, indicating a coordinated promotional strategy. In addition, the consistency of artifacts identified by MOBILedit Forensic Express and Magnet AXIOM, together with the matching MD5 and SHA-256 hash values, confirms the reliability, integrity, and authenticity of the recovered evidence. The consistency of findings across different forensic tools also demonstrates the effectiveness of the NIST framework in preserving and validating digital evidence throughout the investigation process. Collectively, these findings indicate that the digital artifacts form a coherent body of evidence supporting online gambling promotional activities conducted through Instagram Direct Messages. Therefore, the analysis results indicate that the obtained digital artifacts possess consistency, authenticity, and validity that can be scientifically justified within the digital forensic investigation process.

## 4.4 Reporting

The reporting stage is the final phase of the digital forensic process, aimed at documenting and presenting the examination and analysis results systematically. The findings focus on digital artifacts in the form of message conversations and image files associated with online gambling promotion activities. Data integrity verification was conducted through hash value comparison using Hash My Files. The results indicate that the

MD5 and SHA-256 hash values remain consistent, confirming that the data were not altered and can therefore be considered valid digital evidence. These findings demonstrate that the recovered digital evidence meets the requirements of integrity and authenticity, making it suitable for use in digital forensic investigations and legal proceedings. A summary of findings is presented in Table 2.

**Table 2. Final Digital Evidence Findings**

| Type of Evidence | Specification |
|---|---|
| Brand | Xiaomi |
| Model | Redmi 5A |
| IMEI | 868939035729102 |
| Operating System | Android |
| OS Version | 7.1.2 |
| Application | Instagram |
| Account Name | pratamarizeki |
| Number of Image Evidence | 10 |
| Number of Message Evidence | 30 |
| Number of MD5 Hash Codes | 15 |
| Number of SHA-256 Hash Codes | 10 |
| Number of SHA1 Hash Codes | 15 |

Table 2 shows that 30 message conversations and 10 image files related to online gambling promotion activities were successfully identified, indicating an active communication pattern conducted through the Direct Message feature. The findings demonstrate that both textual and visual artifacts play an important role in promoting online gambling activities on social media platforms. The presence of multiple evidence types also strengthens the reliability of the recovered digital artifact. A comparison of findings is presented in Table 3.

**Table 3. Findings from Each Forensic Tool**

| Findings | MOBILedit Forensic Express | Magnet AXIOM | Hash My Files |
|---|---|---|---|
| Messages | 15 | 15 | 0 |
| Images | 5 | 5 | 0 |
| Number of MD5 Hash Codes | 5 | 5 | 5 |
| Number of SHA-256 Hash Codes | 5 | 0 | 5 |
| Number of SHA1 Hash Codes | 5 | 5 | 5 |
| Total Findings | 35 | 30 | 15 |

Table 3 shows that MOBILedit Forensic Express produced the highest number of findings, followed by Magnet AXIOM and Hash My Files. These differences reflect the distinct functions of each tool: MOBILedit Forensic Express focuses on artifact extraction, Magnet AXIOM on structured analysis and artifact correlation, and Hash My Files on integrity verification. The findings suggest that combining multiple forensic tools provides a more comprehensive investigation outcome than relying on a single tool. Illustrated in Figure 27.

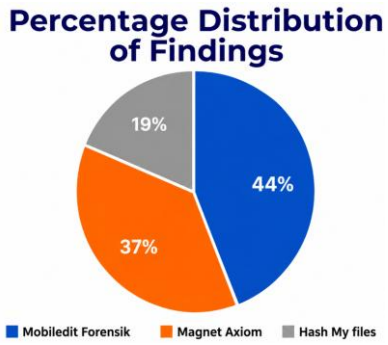


**Figure 27 : Percentage Distribution of Findings**

Figure 27 illustrates that MOBILedit Forensic Express contributes 44%, followed by Magnet AXIOM at 37%, and Hash My Files at 19%, emphasizing the respective roles of each tool in extraction, analysis, and verification processes. Overall, the implementation of the NIST method combined with multiple digital forensic tools successfully produced a systematic investigation process and generated valid and reliable digital evidence.

## 5. CONCLUSIONS

This study demonstrated the successful implementation of the National Institute of Standards and Technology (NIST) framework in investigating online gambling promotion activities on Instagram. Through the collection, examination, analysis, and reporting stages, digital artifacts in the form of message conversations and image files were successfully recovered and analyzed. The findings identified 30 message records and 10 image files containing persuasive and promotional elements related to online gambling activities. Hash verification using MD5 and SHA-256 confirmed the integrity and authenticity of the recovered evidence. In addition, the comparison of forensic tools showed that MOBILedit Forensic Express contributed 44%, Magnet AXIOM 37%, and Hash My Files 19%, indicating that the combined use of multiple forensic tools can produce more comprehensive and reliable investigation results. These findings demonstrate the importance of integrating multiple forensic tools to enhance evidence recovery and validation in digital investigations. Furthermore, the consistency of digital artifacts across different forensic tools strengthens the credibility and evidential value of the recovered data. This study was limited to a single smartphone device, one Instagram account, and a specific online gambling promotion scenario. Therefore, the findings may not represent all digital forensic cases involving social media platforms. Future research should evaluate multiple devices, operating system versions, social media applications, and investigation scenarios, as well as incorporate additional forensic tools to provide a broader assessment of forensic tool performance and evidence recovery capabilities.

## 6. REFERENCES

[1] R. Rahayu, R. Aulia, E. Atriani, and M. Arsal, “Dampak sosial dan ekonomi terhadap pengembangan industri dan ekonomi digital,” IJMA (Indonesian Journal of Manage¬ment and Accounting, vol. 5, no. 2, 2024, [Online]. Avail¬able: https://ejournal.almaata.ac.id/index.php/IJMA/index

[2] B. Uddin, A. Z. Maharani, K. Wafa, and A. Baren, “Pem¬anfaatan fitur Instagram untuk efektivitas

komunikasi," Jurnal Nasional Komputasi dan Teknologi Informasi (JNKTI), vol. 7, no. 6, 2024.

[3] B. A. H. Pratama, "Analisis dan investigasi forensik ap¬likasi Instagram dan Threads dalam mendapatkan bukti digital menggunakan Metode NIST 800-86," Kohesi: Jurnal Sains dan Teknologi, no. 1, pp. 21–30, Dec. 2024.

[4] H. D. Hendarto and R. S. Handayani, "Pencegahan keja¬hatan siber terkait distribusi perjudian online di Indonesia dalam rangka mewujudkan keamanan dan ketertiban masyarakat," Jurnal Syntax Dmiration, vol. 5, no. 5, p. p-ISSN, 2024.

[5] E. Saputra, satrio aji Pratama, and K. Oksandy Rama¬dhani, "Tantangan penegaan hukum terhadap perjudian online yang menggunakan jaringan media sosial," Intelek Insan Cendekia, vol. 2 No. 5, May 2025, [Online]. Avail¬able: https://jicnusantara.com/index.php/jiic

[6] T. A. Maryam, M. A. Maharani, T. A. Fahrezi, and A. A. Nugroho, "Peran digital forensik dalam pengumpulan bukti pada kasus judi online di Kabupaten Demak," Kon¬sensus: Jurnal Ilmu Pertahanan, Hukum dan Ilmu Komu¬nikasi, vol. Vol. 1, No. 3, pp. 33–43, Jun. 2024.

[7] D. Restya Anggraeni and M. Salsabila, "Analisis yuridis peran digital forensik dalam pembuktian tindak pidana di Indonesia," Media Hukum Indonesia (MHI), vol. 2, No.2, no. 2, p. 593, May 2024, doi: 10.5281/zenodo.12513470.

[8] E. Setiawan, "Pemanfaatan digital forensik dan teknologi informasi dalam proses pembuktian tindak pidana pem¬alsuan dokumen elektronik," Prosiding Seminar Nasional Ilmu Hukum, vol. 1, No.2, no. 2, p. 2024, Dec. 2024, [Online]. Available: https://prosid-ing.appihi.or.id/index.php/PROSEMNASHUK

[9] A. Q. I. Hidayat, E. I. Alwi, and A. W. M. Gaffar, "Ana¬lisis bukti video TikTok dengan metode DFRWS," Jurnal Minfo Polgan, vol. 13, no. 1, pp. 1138–1146, Aug. 2024, doi: 10.33395/jmp.v13i1.13966.

[10] A. Primukti, P. K. Sari, D. Suhartono, and K. N. Isnaini, "Analisis memori forensik pada aplikasi Tiktok berbasis web menggunakan metode National Institute of Justice (NIJ)," Jurnal Informatika dan Teknik Elektro Terapan, vol. 13, no. 2, Apr. 2025, doi: 10.23960/jitet.v13i2.6108.

[11] A. Tofik and G. Zaida Muflih, "Akuisisi barang bukti dig¬ital pada aplikasi Discord menggunakan metode ACPO," Jurnal Mahasiswa Teknik Informatika, vol. 8, no. 6, 2024.

[12] M. A. D. Putra, A. W. Muhammad, B. P. Zen, R. Y. Kis¬worini, and T. Rohayati, "Analisis forensik pada Insta¬gram dan Tik Tok dalam mendapatkan bukti digital dengan menggunakan metode NIST 800-86," Jurnal Sis¬tem Informasi Galuh, vol. 2, no. 1, pp. 44–54, Jan. 2024, [Online]. Available: https://ojs.uni¬gal.ac.id/index.php/jsig/index

[13] W. Agustiono, D. Wulan Suci, and N. Prastiti, "Analisis forensik digital menggunakan metode NIST untuk memulihkan barang bukti yang dihapus," Jurnal Teknologi dan Informasi (JATI), vol. 14, No. 2, Sep. 2024, doi: 10.34010/jati.v14i2.

[14] R. N. Dasmen, M. Reihan Pratama, H. Yasir, and A. Bu¬diman, "Analisis forensik Digital pada kasus cyberbullying dengan metode National Institute of Standard and Tech¬nology SP 800-86," Jurnal Ilmiah Informatika, vol. 12, No.1, no. 3, Mar. 2024.

[15] H. S. Mikayla, A. Kusyanti, and P. H. Trisnawan, "Ana¬lisis Forensik Digital untuk Investigasi Kasus Cyberbully¬ing pada Media Sosial Tiktok," Jurnal Teknologi Infor¬masi dan Ilmu Komputer, vol. 11, no. 5, pp. 1113–1124, Oct. 2024, doi: 10.25126/jtiik.2024118017.

[16] A. Wijaya Kusuma, E. I. Alwi, and R. Ramdaniah, "Ana¬lisis Bukti Digital Pada Media Penyimpanan Flash Disk Menggunakan Metode National Institute Of Standards And Technology (NIST)," 2024.

[17] D. Mualfah, Muhammad Iqbal Syam, and Baidarus, "An¬alisis perbandingan tools mobile forensic menggunakan metode national institute of justice (NIJ)," Jurnal CoSciTech (Computer Science and Information Technol¬ogy), vol. 4, no. 1, pp. 283–292, May 2023, doi: 10.37859/coscitech.v4i1.4767.

[18] K. Rizeta, P. Ermanu, and P. Febriana, "iPhone sebagai Simbol Identitas Anak Muda di Instagram Dieksplorasi," 2024.

[19] N. K. Majid and A. Maskur, "Tinjauan Terhadap Legalitas Dan Tanggung Jawab Hukum Selebgram Dalam Promosi Judi Online," Jurnal Hukum dan Kebijakan, vol. Vol. 1, No.1, no. 1, pp. 68–74, Oct. 2023, [Online]. Available: https://journal.awatarapublisher.com/index.php/leo

[20] F. Syukri, "Penggunaan Bukti Digital Dalam Persidangan Pidana: Antara Validitas Dan Keadilan," Jurnal Hukum dan Kewarganegaraan, vol. Vol 6 No 6, Oct. 2024, doi: 10.3783/causa.v2i9.2461.

[21] W. Aji Purnama, Y. Servanda, A. Wijayanto, U. Mulia, K. Balikpapan, and P. Kalimantan Timur, "Analisis Kasus Kehilangan Data Akibat Format dan Pemulihan Data Menggunakan Aplikasi Wondershare Recoverit," Jurnal Teknologi Informasi dan Komunikasi), vol. 8, no. 4, p. 2024, 2024, doi: 10.35870/jti.

[22] M. F. Fadillah and T. Yuniati, "Perbandingan Hasil Re¬covery Tools Mobile Forensic Di Smartphone Android Menggunakan Metode National Institute Of Justice (NIJ)," Jurnal Ilmiah Keamanan Siber (Cyber Security Scientific Journal), vol. 6, no. 2, pp. 54–61, Nov. 2023.

[23] R. R. Syahputra and Y. Prayudi, "Perbandingan Hasil Re¬covery File terhadap Penghapusan File menggunakan Perintah Sdelete dan Shift+Delete," AJIE-Asian Journal of Innovation and Entrepreneurship, vol. 09, p. 2, 2025, doi: 10.20885/ajie.vol9.iss2.art5.

[24] R. Anjelina, I. Shanti Bhuana Suka Bangun, B. Regency, and K. Barat, "Analisis Forensik Dengan Menerapkan Metadata Dan Hash Studi Kasus Pada Rekaman Video," Jurnal Informatik, vol. Vol. 20, No. 3, Dec. 2024.