

# Industrialisation Through the Digitalisation of Fingerprint-taking in the Criminal Justice System

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**Abstract:** Identification through fingerprints is very crucial and it is trusted by law enforcement worldwide. Fingerprints are said to be unique in every individual no person shares the same fingerprint as the other even the identical twins. Therefore, obtaining of fingerprints when police are charging suspects, Department of Home Affairs capturing passports and Identity books, Correctional services admitting offenders, courts transferring offenders to the correctional centres, calls for a thorough and accurate capturing of fingerprints so that the information is correctly stored or correctly conveyed to where it is needed. Using of paper and ink to obtain fingerprints and then transport that paper to the Local Criminal Record centre (LCRC) is not feasible, the process needs to be changed. Problems associated with manually obtaining fingerprints include offenders who can go the whole process of incarceration with clean record, because fingerprints were unreadable during the LCRC capturing. Includes offenders who are charges, released and evade prosecution without being recorded as a wanted or as a suspect in the case. This happens when LCRC finds that the obtained fingerprints (SAP 76) are poorly obtained, and they are unreadable. They return the SAP 76 to the police station for retake, that time, the offender has already been released and cannot be traced because they normally give wrong details. Therefore, the use of digital fingerprint scanners will be a solution. Hospitals and mortuaries need to be part of this industrialisation to minimise fraudulent deaths and false birth registrations. This can be done by utilising digital fingerprint scanners in hospitals to confirm visitation without divulging patient's medical information and to confirm identity of the deceased in mortuaries.

**Keywords:** Digitalisation, digital scanners, fingerprints, industrialisation

## Introduction

Given the advent of the Fourth Industrial Revolution (4IR) and 5IR, it is important that South Africa's criminal justice system keep abreast of technological developments. This, because when new technology is introduced, criminals always ensure that they are in the loop, or even ahead of the curve when it comes to law-enforcement officials. Leopold (as quoted by Asghar, Rextina, Ahmed and Tamimy, 2020), points out that although many countries in Africa have made progress in adopting diverse technologies, the continent still lags behind in comparison to the rest of the world. This necessitates better performance when it comes to the detection and investigation of crime, and improved record-keeping for the numerous departments which rely on those records. Leopold (as quoted by Asghar et al., 2020) indicates that some African countries (South Africa, Mauritius and Botswana) have a higher percentage of skilled workers than the rest of Africa, which should facilitate this process. This article seeks to unpack the importance of taking fingerprints using digital scanners, obviating the need for paper and ink, or (crucially) travelling from point A to point B in order to submit manually obtained fingerprints.

## Research methodology

The researchers employed a qualitative approach, with a case study research design. As De Vos, Strydom, Fouché and Delpont (2011: 379) explain, since qualitative researchers are primarily interested in the meanings which subjects ascribe to their life experiences, those researchers must use some form of case study to immerse themselves in the activities of their subjects, thereby familiarising themselves with the social worlds of those individuals or groups. In this instance, a literature review was conducted to provide background on the topic and highlight international standards when obtaining fingerprints and implementing FIR technologies. As De Vos et al. (2011: 379) point out, documents that may be used for data collection include official texts, mass media and archival material. In this study,

the researchers focused on published articles, books, news reports, documents and journals. Data was also collected through interviews using purposive sampling where only participants who worked with fingerprints were selected from the correctional centre and the police department.

### **Purpose of the article**

The purpose of this article is to seek to revolutionise and innovate the South African criminal justice system, by proposing improvements. South Africa is rated as a one of the on the continent, and to contribute to its current progress, policing must improve even further. Benchmarking or comparisons with best practices is needed, to continue making progress in this regard. The digitalising of fingerprints in correctional centres, police stations and any government entity where fingerprints are still taken using ink and paper, must be prioritised. Digitalising other government services will save the country a lot of time, effort and money. In that respect, the researchers propose digitalising hospital admissions and administration, in order for birth records to be submitted to Home Affairs by hospitals, instead of the parents, to curb the scourge of false birth registrations. According to the personal experience of one of the authors – a former Department of Health (DoH) investigator – many false birth registrations are made by culprits seeking to benefit from social grants.

### **Discussion**

#### **The Fourth Industrial Revolution**

The adoption of FIR technologies has resulted in fundamental changes in the way we live, work and relate to one another; it affects our sense of privacy, our notions of ownership, our consumption patterns, the time we devote to work and leisure, how we develop our careers and cultivate our skills, and how we meet people and nurture relationships (South African Parliamentary Research Unit, 2023).

The South African Parliamentary Research Unit (2023) briefly outlines all four types of industrial revolution, noting the following:

- The First Industrial Revolution saw the introduction of railways and steam engines, which culminated in mechanical production.
- The second saw the generation of electricity, which largely affected and improved the modes of transportation of goods and related services.
- The third focused on electronic technologies, such as the transformation of the information and communication sector, which significantly affected the use of fixed and mobile communications (phones, televisions, computers, etc.).
- The fourth relates to the wide-scale adoption of digital technologies, and advances which build on the digital revolution, driven by artificial intelligence (AI). Notably, FIR is enabled by technological developments which already exceed the impact of the first, second and third industrial revolutions combined.

The South African Parliamentary Research Unit (2023) is of the view that FIR advances are merging the physical, digital and biological worlds in ways that create both massive opportunities and potential threats. The speed, breadth and depth of this revolution are forcing societies to rethink how countries develop, how organisations create value, and even what it means to be human.

According to Yury Fedotov (2022), the then Executive Director of the United Nations Office on Drugs and Crime (UNODC), technology enables criminals to work across regions, thereby increasing their reach, crimes and profits. Albeit that the internet has transformed every aspect of life, it has also facilitated crime. The more criminals equip themselves with technology, the more challenging it becomes for the police to keep up to date with the latest technological knowledge and skills. Deloitte (2022) suggests that any innovation that shapes the future of law enforcement must begin with the emerging technology that supports new concepts of operations. Asghar et al. (2020) emphasise that, in view of the growing importance of taking advantage of FIR technologies, many developed countries have adopted and implemented public policies that spell out strategies for implementation, with several developing nations starting to do the same.

#### **Policing and the Fourth Industrial Revolution**

Government departments are working on sharing fingerprint information through a database known as PIVA (Personal Identification Verification Application) (Dube & Mabudusha, 2024). This can easily be achieved if all departments which are required to share information, use fingerprint scanners which can directly send data to the database, as it retrieves information from the individual being scanned. As Wyllie (2017) indicates, the large number of remand or

incarcerated offenders makes it difficult to manage their identification records, and for that reason correctional centres in the United States of America are moving away from manually obtaining fingerprints, to adopting fingerprint identification systems. This was an issue at the correctional centre where a study into sharing fingerprint information was conducted by Dube and Mabudusha (2024): they found that the centres visited had no fingerprint system, and the manual filing of fingerprints was reported to be an inconvenience, also when it came to searching hand-written documents and files.

Police stations and correctional centres encounter problems when manually obtaining fingerprints, as the process is not always performed properly. The implementation of FIR technologies at police stations and in correctional service centres calls for the use of digital scanners to obtain fingerprints. This, when creating fingerprint forms known as SAP76s, which are subsequently sent to the Local Criminal Record Centre (LCRC) for record-keeping and for the retrieval of SAP69s (criminal records). Komarinski (2005: 15) indicates that, since the rolling of inked fingertips onto a ten-print card has been replaced with digital capture devices (livescans), the turnaround time for identifications has been greatly reduced, as the speed of technology in confirming or rejecting identifications happens within minutes.

Asghar et al. (2020) are of the view that African countries have great potential for economic growth if they adopt FIR technologies but warn that failing to do so will further increase the developmental divide between the continent and the rest of the world. As far as Asghar et al. (2020) are concerned, most African countries are far from ready to tackle the challenges associated with FIR, hence it is imperative to develop infrastructure and take other necessary steps such as improving standards of education across nations. Criminals locally and internationally are aware which countries are more easily accessible, which systems are lagging behind, and which states have advanced criminal detection systems. This makes it crucial that the South African Police Service (SAPS) set the example by upgrading its detection capabilities, in order to align with those of developed countries.

As Komarinski (2005: 15) explains, in United States of America (USA) livescan images can be sent to the State Identification Bureau electronically. Similarly, as Wylie (2017) mentions, correctional centres in the USA are no longer manually collecting fingerprints but are turning to biometric fingerprint identification technology. If that were the case locally, fingerprint information which is obtained digitally during that process could be processed to the LCRC immediately, and records on prior convictions (SAP69s) might also be available immediately for court processes. The courts will not need to remand an offender postpone a court hearing while waiting for his or her criminal record(s), as is currently the case.

The use of fingerprint papers should ideally be phased out. This will save government departments a lot of travelling to and from the LCRC, to submit SAP76s and collect SAP69s. Interpol (2022) confirms that the fingerprints of charged persons can be obtained digitally by means of scanners. The SAPS should therefore do away with fingerprint forms (SAP76s) to obtain the fingerprints of an arrested person, along with SAP91(a) which is used for enquiry or security checks, and any other forms featuring fingerprints. This will save the state from having to purchase ink and paper for forms, limit the costs associated with using manual and paper fingerprinting, as well as concomitant travel costs. There will also be no need to retake the fingerprints of charged persons in cases where such prints were taken poorly.

The rigmarole of using paper and ink to obtain fingerprints before taking them to the LCRC for capturing, confirms that this is a process which can and should be streamlined. Another reason for doing away with paper and ink is that after the prints have reached the LCRC, they are captured on the fingerprint database, hard copies archived and later destroyed. At no stage do police/investigators (from one author's experience as a former detective) go back to the LCRC to request a hard copy of SAP76. They only go to LCRC to request SAP 69s. Thus, the storage of physically obtained fingerprints (SAP 76s) represents a waste of space, as they are filed for a period before being destroyed. Komarinski (2005: 85) indicates that the clerical work performed by the Federal Bureau of Investigation's (FBI) Criminal Justice Information Services (CJIS), which includes retrieving and classifying fingerprint cards, storing them in filing cabinets, and looking for a misplaced or misfiled card in the United States of America has either been reduced or eliminated since the advent of appropriate technologies.

Asghar et al. (2020) emphasise that the evolution of human resources is one of the most important facets for responding to the demands of the FIR era, as without an adequate number of knowledgeable scientific and technical employees, any investment in buildings and equipment would be counterproductive. For Asghar et al. (2020), the Center for the Fourth Industrial Revolution (CFIR) which resorts under the World Economic Forum (WEF), for them the first step in responding to FIR is to prepare a well-qualified, knowledgeable, motivated, dynamic and adaptive workforce which can meet the needs of developing and developed countries.

The South African government identified the need to establish a commission to ensure the implementation of FIR in South Africa. According to the terms of reference for the nominations of the Presidential Commission for the Fourth Industrial Revolution, as indicated in Government Gazette No. 42068. The mandate of the commission will be to develop an integrated national strategy and plan, to respond to the era of FIR. This will include detailed interventions to be carried out in achieving competitiveness in key economic sectors, including agriculture, finance, mining, manufacturing, information and communication technology (ICT) and electronics, as well as business, and do so by using science, technology and innovation as cross-cutting enablers.

Government support for the implementation of FIR is indicative of its concerns about developing and improving local systems to be in line with those of developed countries. For this reason, it has become imperative for improved security systems to align with current trends, to prevent criminality. The researchers emphasise the importance of prioritising security measures, in order to secure the country's competitiveness in fighting crime, through its detection, investigation and prevention.

### **FIR in the Department of Health**

#### ***Registration of non-existent children***

The DoH, together with the Department of Home Affairs (DHA), is facing a rise in fraudulent births, where fraudsters falsify the birth of children in hospitals or clinics, with the intention of benefiting from social grants. A way of resolving this would be to have pregnant mothers who are admitted to hospital in labour, registered by means of fingerprint scanners during the admissions process, after which that data can be linked directly with the Department of Home Affairs. In that way, there is a record of both the mother and the newborn, as well as the hospital where the child was born. From the researcher's experience as a former DoH investigator, fraudsters acquire hospital documents or a 'Road to Health'/immunization card (which is issued at the birth of a baby), completing it with false information, before going to the Department of Home Affairs where they register non-existent children. The card contains all the information which the Department of Home Affairs requires. Currently, the Department of Home Affairs does verify with the hospital whether the information given is true.

In light of such fraudulent actions, the Department of Home Affairs has published a warning for those seeking to register 'ghost' children:

*“When you take a payment to act as a parent on behalf of someone who is not your child, you are committing fraud.*

*When you make an unlawful and intentional misrepresentation of yourself, it is a crime.*

*Fraudulently registered children are as equally entitled to your inheritance as your actual beneficiaries.*

*When you register a child that does not exist, an ID number is assigned and can later be used for criminal purposes.”*

These warnings confirm that Department of Home Affairs does not have the tools or system in place to liaise with the DoH or hospitals, to confirm the birth of a child. Therefore, the use of a database which is shared with the Department of Home Affairs will be invaluable in curbing the scourge of false birth registrations. Given the current unavailability of electronic files, hospitals cannot confirm a birth which ostensibly took place years ago, because the hard copy registers are filed in filing rooms and sorted in a way that makes it impossible to look for a single register, let alone a patient file.

In 2016, the Department of Home Affairs reported that an internal suspect was arrested for participating in fraudulent birth registrations:

*“The Hawks had received information about the fraudulent activities at the said department and investigations were launched. Twelve false birth registrations were found to have been done by the suspect and a further 388 fraudulent births were found to have been registered at the Department of Home Affairs in Alberton, allegedly by the same suspect”.*

FIR technologies driven by AI will obviate the need for manual filing. *Private* hospitals' filing systems are already on par meaning private hospitals do forward birth information to the Department of Home Affairs themselves, and birth certificates are delivered to hospitals where mothers can collect them. This system does prevent fraudulent registration and can minimize associated types of fraud. However, the number of births in *public* hospitals makes it impossible for the Department of Home Affairs to follow up on, or confirm, births. This can be resolved by making available a

database which reports the birth of children directly to the Department of Home Affairs from the DoH or from hospitals.

According to Molosankwe (2025), the police reported the following, as a case in point of how criminals defraud the system:

*The information received was that the women had defrauded the SA Social Security Agency (Sassa) by colluding with an unknown nurse, who then gave them fraudulent proof of the children's birth. They then registered the ghost children with the Department of Home Affairs and acquired birth certificates.*

### **Registration of fraudulent deaths**

Another dishonest practice involving the Department of Home Affairs is the registration of deaths, where culprits register false deaths for insurance claim purposes. For an *unnatural death*, the Department of Home Affairs requires the identity document of the deceased, the identity document of a next of kin, and an important document (IB1663) in which a doctor confirms that an autopsy has been conducted. If government mortuaries were to use fingerprint scanners on all bodies admitted to their mortuaries, they would have the correct identity of the deceased, before a fake relative can claim the body. False claims result in people who are still alive being written off in Department of Home Affairs records as 'deceased'.

The current situation is that once an unknown/unidentified body is admitted to a mortuary (Department of Health), the investigator manually obtains the fingerprints and sends them to the LCRC who then forward them to Department of Home Affairs for identification. By the time the results are returned, the body has already been buried by the fraudster who claimed the body as that of a relative. This is usually the work of a syndicate involving a number of people, including government officials (as is the case with most fraud syndicates). Evert (2011: 58) confirms that if an unknown deceased has not been identified within seven days, his or her fingerprints are submitted to the Criminal Record Centre (CRC) and then to the Department of Home Affairs for identification. Although these types of cases are rare, they are on the increase where bodies lying unclaimed before being claimed and then quickly buried. As a former investigator for the DoH, the author can confirm that these cases end up with officers securing a summons to exhume the body.

According to the Association for Savings and Investment South Africa (ASISA, 2024:1), life insurers and investment firms have resolved to deploy preventive measures to combat insurance fraud, by deploying digital technologies. As ASISA (2024: 3) reveals, in this country, fraudulent and dishonest life insurance claims involving murder and deceased estate fraud resulted in a loss of R69.8 million in 2023. Life insurance fraud syndicates have many role players, including mortuary staff. Several cases have been published involving fraudulent deaths:

- In *The Citizen*, Matsimela's (2016) article read, "Home Affairs says I'm dead but I'm alive – Boksburg resident". The victim discovered that she had been declared dead, with a death certificate having been issued in her name.
- Viljoen (2019), of News 24, reported, "Alive and kicking even though Home Affairs declared her dead". The victim was told by a bank that the Department of Home Affairs had declared her dead. She went to Home Affairs and discovered that she had been declared dead, supposedly having died of unnatural causes.
- Myeza (2024), of *The Witness*, reported, "Home Affairs thinks I'm dead". The victim discovered that the Department of Home Affairs had recorded her as deceased from March 2022. Myeza (2024) indicated that, during interviews with a Department of Home Affairs manager, it was revealed that these cases were common, and that fraudsters were doing it for insurance policy claims.

The Department of Home Affairs (2025) has warned the public that if a person has been erroneously or fraudulently recorded as dead in the National Population Register, despite still being alive, they have to report it to the department for urgent investigation and corrective action. Although not all fraudulent deaths involve a physical body/deceased, in cases where an actual body is involved, fingerprint scanners must be used to confirm the identity of each deceased before his/her burial, as that will minimise criminal activities.

Even if there is a *natural cause* of death, the DoH has hospital mortuaries where the deceased can be scanned (with livescan), and the correct information of the individual is obtained or recorded using fingerprints, as a means of deterring fraudsters. As Garzon (2017) points out, several industries – including in the healthcare sector – have their own set of key players and are adopting AI technologies to improve their operations. The South African Parliamentary

Research Unit (2023) emphasises that FIR, driven by AI, is vital for digital technology uptake, and as a means of building on the digital revolution.

The South African government (2020) reports that, during the 2020 State of the Nation Address, the South African president indicated that, in preparing for a National Health Insurance (NHI) system, government has already registered more than 44 million people at over 3 000 clinics in the electronic Health Patient Registration System, which it is now being implemented in hospitals. The Auditor General (Makwethu, 2020: 5) emphasises the importance of data being shared between government departments, indicating that such information can be used by SASSA to check whether those applying for social grants are indeed eligible.

During the Covid-19 pandemic, people were required to produce their identity documents during vaccination drives. Had every person been registered to receive the vaccination, the DoH would have had the entire population recorded in its database. The vaccination process proved that the DoH can also require identity information for health services, just like private hospitals do – their patients are required to produce full identity information prior to admission. Patient information can be retrieved using fingerprint scanners or thumbprints, and the scanner must be able to record or retrieve information. Such scanners can also assist the DoH in registering patients for the NHI, as proposed by the South African government (2020).

### **Artificial intelligence**

One cannot discuss FIR without mentioning AI. Garzon (2017) defines AI as a set of technologies that enable computers to perform a variety of advanced functions, including the ability to read, understand and translate spoken and written language, analyse data, make recommendations, and more. This definition shows that digitalising fingerprints by using digital scanners means the system will be AI driven. AI has been part of our lives but is becoming increasingly sophisticated. South Africa is attempting to keep up with developments in robotics and coding, by introducing related curricula from the lowest levels of education.

The South African Parliamentary Research Unit (2023) is of the view that FIR includes the unity, interaction and complementarity of massive data fields, analytics and AI. As Garzon (2017) indicates that AI applications are wide-ranging and could revolutionise almost all industries and domains, including being used in fraud detection and medical diagnoses, amongst others. AI is already used in image and speech recognition systems, and by virtual personal assistants such as Siri and Alexa, and in autonomous vehicles. Government agencies around the globe are acknowledging the magnitude of AI and investing in related research and development. National research agencies, defence organisations and intelligence agencies often have dedicated AI programmes and initiatives (Garzon, 2017). This confirms that AI not only benefits the economy, but also most government sectors.

### **FIR challenges in rural areas**

South Africa is confronted by the challenge of establishing network connectivity in rural areas where power supply is erratic. Rural regions are known for being inhabited by less skilled or qualified workers. Even police stations in those areas are mostly headed by captains, whilst satellite police stations tend to have inspectors as heads. Police stations in rural areas report fewer crimes than those in cities, given the population density of urban areas. Poor infrastructure and the slower pace of development in rural areas can present a challenge when implementing technological innovations.

Aruleba and Jere (2022) describe rural areas as lying outside of densely populated spaces in towns or cities. In South Africa, most rural areas now have good network signals for cell phone and internet connectivity. Despite this, government offices in rural areas are notorious for their lack of network connectivity, and for phones and emails that are not working, or certain cell phone networks not being supported in outlying regions. Despite improvements, the implementation of FIR in rural areas can be so challenging that many opt to continue with manual operations. All rural government offices have a district office (which is normally located in an urban area), thus there should be no excuse for a failure to modernise.

Many police stations and clinics/hospitals in rural areas are not reachable by landline because of poor network infrastructure but can be reached via the cell phones of those in charge. In many government offices, if phones are not answered they are not working, and this compels staff to use private cell phones. Government has opted to provide some employees with devices, thus acknowledging infrastructural challenges or poor infrastructure development in government entities. This has an adverse impact on service delivery, because not all numbers can be found using a Google search – often only landline numbers appear. However, the police stations in rural areas are still able to charge

suspects on SAPS system known as 5.3 (the charging of suspects) and their detectives are still able to distribute and receive dockets on the system which is known as 4.8, therefore the same connectivity can be used on digital scanners.

FIR and AI adoption in rural area will assist law-enforcement officers in detecting criminals or offenders who hide away in outlying areas which are often inaccessible due to bad roads, flooding or adverse weather. Some offenders own big homes in rural areas where they know police patrols are not common, and use these places as hideouts, since rural areas seldom have house numbers or street addresses.

### Findings

Using of paper and ink to obtain fingerprints and then transport that paper to the Local Criminal Record centre (LCRC) is not feasible, the process needs to be changed. Problems associated with manually obtaining fingerprints include offenders who can go the whole process of incarceration with a clean record, because fingerprints were unreadable during the LCRC capturing.

As indicated by Wyllie (2017) that during the booking process, a correctional centre must establish the subject's identity by collecting readable fingerprints because failure to do so, can present a number of problems including having an offender go through the entire criminal justice process without having had his or her fingerprints properly captured. In South Africa this is possible in the case where LCRC finds that the obtained fingerprints (SAP 76) are poorly obtained or unreadable. They return the SAP 76 to the police station for a retake, by that time, the offender has already been released through admission of guilt or transferred to a correctional centre, by that time only a dedicated police officer will trace that offender for a retake of fingerprints.

### Recommendations

It is recommended that government implement FIR across all spheres, thereby ensuring greater collaboration between departments and across databases, as a means of transmitting accurate and vital information. FIR is not only useful in financial industries – in fact, technology adoption is deemed important not only for the country's economy, but also criminal justice in fighting crime and safeguarding the resources of the state and its investors. Using fingerprint scanners to capture fingerprints will minimise the risks of identity theft, and of falsified birth registrations. The birth of children will be recorded and forwarded to the Department of Home Affairs by hospitals, instead of mothers or fathers performing this task, thus curbing the scourge of false birth registrations. It will also minimise the stockpiling of hard copies of fingerprints, thus freeing up a lot of office space where these documents are currently stored.

### Conclusion

Government's initiative to implement FIR technologies with the intention of being competitive on the global stage, is a positive step towards aligning with best practices worldwide. Admittedly, the economy and security of the country are equally important. The use of fingerprint scanners in police stations, correctional centres and hospitals, is highly recommended. The world is radically advancing in terms of adopting and implementing technology at ever-increasing speeds, hence it is advisable for the criminal justice system not to be left behind.

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