

End-to-end digital transformation for document flow at a professional council in South Africa

End-to-end
digital
transformation

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Abstract

Purpose – Many organisations, including professional councils, operate manually to ensure document flow to clients and stakeholders. This results in the loss of valuable documentation such as certificates and the incurring of costs due to the returning of post to the sender. The purpose of this study was to explore digital transformation of document flow at the South African Council for Social Science Professionals.

Design/methodology/approach – The methodological approach involved qualitative data collected through interviews, observation and document analysis in response to research questions. The study was a participatory action research project that involved collaboration between researchers and study participants in defining and solving the problem through needs assessment exercise. All three phases of participatory action research were followed, namely, the “look phase”: getting to know stakeholders so that the problem is defined on their terms and the problem definition is reflective of the community context; the “think phase”: interpretation and analysis of what was learned in the “look phase” and the “act phase”: planning, implementing, and evaluating, based on information collected and interpreted in the first two phases.

Findings – The study identified various issues relating to poor data quality, high rate of registered postal returns and non-delivery electronic messages that cannot reach all the intended recipients and accumulation of data for decades. In this regard, the study proposes a framework that can be used by SACSSP to update and verify their details on the portal, as well as digital certificates for membership.

Research limitations/implications – Although the proposed framework is tailor-made for the professional council, it is not depended on prescribed technologies due to usage of open standards that can be used by industry and researchers. Therefore, it can be applied in other context where institutions such as universities communicate with many clients via postal or courier services.

Originality/value – The study used participatory action research involving the researchers and the organisation to solve the problem. The study presented a workflow that the council can use to ensure that the documents reach intended recipients. Furthermore, digital transformation of the process will ensure that the registered professionals are able to access their certificates online and can print them when necessary.

Keywords Digital transformation, Document flow, COBIT, Data management, Postal service, Records

Paper type Research paper



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1. Introduction and background to the problem

Many organisations in the global south, including the South African Council for Social Science Professionals (SACSSP), use postal and messenger services to deliver documents to their remote clients, as well as internal and external stakeholders. This happens because some of the clients of such organisations reside in rural areas without access to a technological infrastructure. The postal service has been in existence in one form or another since time immemorial. This used to be a physical delivery service. For example, sending letters through the postal system occurred from around 2400 BC in Egypt, when Pharaohs were sending decrees throughout the state (Bellis, 2019). The current method of prepaid postage was introduced through the publication of *Post Office Reform: Its Importance and Practicability* in England (Hill, 1837). Prior to this period, postage used to be post-paid and the receiver was supposed to pay when receiving. This has led to postal returns in the USA where postal receivers were not accepting the post; the first cases of such were recorded in the year 1773 (National Archives Catalog, 2020). By 2015, this prepaid method was costing the United States Postal Service (USPS) about \$20bn annually in mail returned to the sender (Office of Inspector General, 2015). Stangle (2017) has identified factors that lead to postal returns such as: residents not updating their addresses upon moving and people who intentionally do not want to be found.

The Republic of South Africa (RSA) has its own share of postal activities, and evidence of regulation of the post office occurred in 1911, through the enacting of the Post Office Administration and Shipping Combinations Discouragement Act (Republic of South Africa, 1911). Further amendments were made in 1934 to make provision for postage by the licenced receiver of unpaid postal service (Hoal *et al.*, 1936). The RSA Government regards the post office as a channel for communities that do not have access to e-mail in the most rural parts of the country without access to electronic media and the internet (Republic of South Africa, 2016). One of the challenges that has been experienced is that there has been limited intervention to ensure universal access of internet connectivity to help marginalised, remote rural communities. Muriithi, Horner and Pemberton (2016) state that adequate internet connectivity, institution strategies aiding access and the level of complexity and use are factors inhibiting the adoption of the use of technology (National Planning Commission, 2012). However, external factors such as the advent of artificial intelligence, blockchain, Internet of Things and robotics are considered driving the need for digital transformation worldwide (Verhoef *et al.*, 2019). Digital transformation brings processes that rely on digital technologies and capabilities, to enable business models to be adopted to create value (Morakanyane *et al.*, 2020, p. 4356). While the digitisation of records process is ongoing, organisations are confronted with limited lifespan of digital records which has effect on digital continuity (ISO 16175–2:2020, p. 3).

For those who are unable to adopt technology, the South African Post Office (SAPO) has been providing advice on reducing undelivered mail, by asking people to ensure the correctness of addresses and the spelling of street names and towns so that they can receive their post (SAPO, 2020b). However, the SACSSP is not immune to this challenge because it has received its share of undelivered mail, as it relies on SAPO for delivery of post to social service professionals (SACSSP, 2018). Among the items that go through the postal services are practicing certificates by professionals, invoices, payment receipts, notifications of membership renewal and other communication to its members. The current regulatory constraint is that the SACSSP Act only makes provision for notices to social professionals by registered letter sent through the post to their address as registered in the register concerned (SACSSP, 1998). The delivery of certificates is important to social service professionals because it allows them to practice and they are required to produce proof of

their professional status when they change jobs. Hard copies are prone to manipulation and digital certificates can be digitally verified with corresponding information in a certificate vault or database. The SACSSP has been operating on a manual filing system and disparaged information technology (IT) systems that made it difficult to have an integrated view in support of digital transformation. All IT services are outsourced and it becomes difficult for the organisation to access reports, as all access to the databases is controlled by the service provider (SACSSP, 2018). The members' qualifications are sent for verification to the South African Qualifications Authority (SAQA) on an annual basis and the verification process is delayed due to inconsistent data.

This study was conducted at SACSSP. The SACSSP is a statutory body established in terms of Section 2 of the Social Service Professions Act, No. 100 of 1978 (RSA 1978: 4) as amended by Act No. 102 of 1998 (RSA 1998: 4). The council guides and regulates the professions of social work and child youth care work in aspects pertaining to registration, education and training, professional conduct and ethical behaviour, ensuring continuing professional development and fostering compliance with professional standards (SACSSP, 2018). The council's office is situated in Pretoria, South Africa (RSA 1998: 4). The SACSSP has been operating on a manual filing system and disparaged IT systems that made it difficult to have an integrated view in support of IG. The organisation used an obsolete Silverlight-based application (SACSSP, 2018). All IT services are outsourced, and it becomes difficult for the organisation to access reports, as all access to the databases is controlled by the service provider (SACSSP, 2018). The members' qualifications are sent for verification to the SAQA on an annual basis and the verification process is delayed due to inconsistent data. The researcher was part of the exploratory meeting where challenges to information access were raised, and permission was given for system overhaul to take place with a view to maximise information efficiency and integration within the organisation (SACSSP, 2018).

The underlying rationale of this study was informed by the challenge of high numbers of undeliverable documents, including practicing certificates at the SACSSP through the postal services due to professionals who provide the SACSSP with incorrect addresses or SAPO delivering to the wrong recipients. This study used three concepts of Control Objective for Information and Related Technology (COBIT) 2019 under the planning domain as a lens to explore digital transformation of document flow at the SACSSP.

2. Purpose and objectives of the study

The purpose of the study was to propose a digital transformation framework for document flow at a professional council in South Africa. The specific objectives were to:

- determine data quality that can be attained to assist in the cleansing of organisational data;
- assess current data management practices based on COBIT model;
- determine innovative solutions that can ensure that documents are delivered to the intended recipients; and
- develop a framework for digital transformation for document flow.

The objectives have linkages to COBIT constructs chosen, namely, data quality, data management and innovation, are explain further in the next section.

3. Theoretical framework and literature review

This study adopted COBIT 2019 as an underpinning framework. The COBIT framework provides an integrated, top-to-bottom approach to IT governance from a business

perspective (Samiotakis, 2013, p. 15). The framework as described by Mourad *et al.* (2017, p. 4) is that COBIT is providing the “why” in solving business problems and supporting the achievement of business goals. Mourad *et al.* (2017, p. 45) opine that COBIT may be perceived as theoretical, as it does not deal with daily operational issues, it rather looks at the organisation as a whole. Motii and Semma (2017, p. 49) state that COBIT provides a set of rules for the effective management of IT governance. To reiterate, in this study, three concepts from COBIT, that is, data quality, management and innovation within a plan domain, were used to inform the literature review and data collection.

3.1 Data quality

COBIT outlines the definition and communication of quality requirements of all the processes, and the procedures of enterprises to the satisfaction of the stakeholders (ISACA, 2018, p. 125). The process helps to identify quality requirements and/or standards and its deliverables and to document how it demonstrates compliance with quality requirements and/or standards (PMI, 2017, p. 277). The quality of services provided is determined by the customer, based on whether their needs were met (Motii and Semma, 2017, p. 53). According to ISO 16175–2:2020 standard the use of software applications enables business activities or transactions that captures through the involvement of identifying sets of digital information to serve as records that are linked to their business context using metadata. Once data has been processed, the contents need to be described and organised in a way to facilitate its access through metadata (Borgman, 2003, p. 68).

Enterprises should decide that the sources of their data require quality checking before analysis (Zikopoulos *et al.*, 2013, p. 228). According to Heim (2020), the US National Archives had altered images of a women’s march that was critical of previous US President, Donald Trump at the time, which raises concerns about the quality of data presented to the unsuspecting public. The process involved the blurring, editing and digitally altering of images, thereby erasing something that was accurately captured by camera. The same happened to a young climate activist, Vanessa Nakate from Uganda (Nakate, 2020), who stated on social media that she was cropped out of a group photo taken at the World Economic Forum in Davos 2020. When she complained about the omission, the altered photo was removed and the original picture was published (Dahir, 2020). The original intent of digitising records was to improve and expand access, and this is evident in the increased access to online museums and libraries (Borgman, 2003, p. 64).

A data quality assessment approach that must be adopted by organisations dictates that data should be explored, transformed, prepared and cleansed before the application of algorithms (Polzonetti and Sagratella, 2017, p. 1481). The components that are needed in data quality assessment are tabulated in Table 1 to ensure cleanliness and accuracy of information.

After data standards have been set, underlying technologies such as unstructured supplementary service data (USSD) and the quick response (QR) code system will have to be deployed to support the contact verification processes that is executed in data management.

3.2 Data management

Data management as described in COBIT is regarded as the achievement and sustenance of “effective management of the enterprise data assets across the data life cycle, from creation through delivery, maintenance and archiving” (ISACA, 2018, p. 143). Data embedded in paper records have been accumulated and preserved for decades by public institutions, and therefore it has been difficult for organisations to digitise legacy documents to support data-driven decision-making (Brown and Toze, 2017, p. 587). Such data will become inaccessible

because of the degradation of storage media or because of obsolescence of the hardware, which led to software being used to create them (Borgman, 2003, p. 230). Han *et al.* (2011, p. 5) point out the challenges encountered by organisations that have accumulated large deposits of data in their databases, known as big data.

Gartner (2012) defines big data as “high-volume, high-velocity or high-variety information assets that demand cost-effective, innovative forms of information processing for enhanced insight, decision making and process optimisation.” Walker and Brown (2019, p. 1) describe three characteristics of big data, namely, volume, which is regarded as a large amount of data; velocity, which refers to the speed of data creation transfer; and variety, which refers to different types of data collected. However, there is a serious challenge in analysing huge amounts of data when an organisation tries to harness big data for making business decisions (Valacich and Schneider, 2018, p. 43). SAPO (2020a) has incentivised organisations and people to update their records on the postal data description enhancement system for data cleansing and verification. Figure 1 is a depiction of the adoption of mail workflow by the United States Patent Classification to update addresses of customers.

Before access can be granted to anybody to update records, technologies such as a facial recognition system can be used. Facial recognition is based on accessing human faces from several databases and shows variability in facial expression, resolution, gender, age, lighting, background and makeup, among other facial attributes (Kak *et al.*, 2018, p. 164). However, there has been growing resistance to the implementation of facial recognition systems, which has led to San Francisco public agencies banning the use of these, due to tracking and monitoring that have led to compromised civil rights (Andrejevic and Selwyn, 2019, p. 3). Activists in the UK have painted their faces as a form of protest against mass surveillance (Laney, 2020).

3.3 Innovation

The most important aspect of record creation is that it must be linked to the context of the business processes and use. Despite these linkages and business classifications, most computing solutions fail because basic human factors are not considered, whereas the focus is on features, among other things (Borgman, 2003). One example stated by Katuu (2016) would be the standards that do not move with times in embracing collaborative approach and not responding to current electronic records management software. The creation of business processes can ensure that innovation as seeking to “achieve competitive advantage, business innovation, improved customer experience, and improved operational effectiveness and efficiency by exploiting information and technology developments and emerging technologies” (ISACA, 2018, p. 18). A study conducted by Mhlungu *et al.* (2019, p. 7) concludes that customers’ favour enterprises that provide digital offerings, which

Component	Component explanation
Parsing	Separation of data and parsing it into a structured format
Standardisation	Determination of the placement of data in each field and ensuring its storage in standardised format
Validation	Ensuring the consistency of data against the pre-set validation rules
Verification	It involves checking of data against a source of verified information
Matching	It identifies duplicate records and merges those records correctly

Table 1.
Data quality
components

Source: Zikopoulos *et al.* (2013, p. 228)

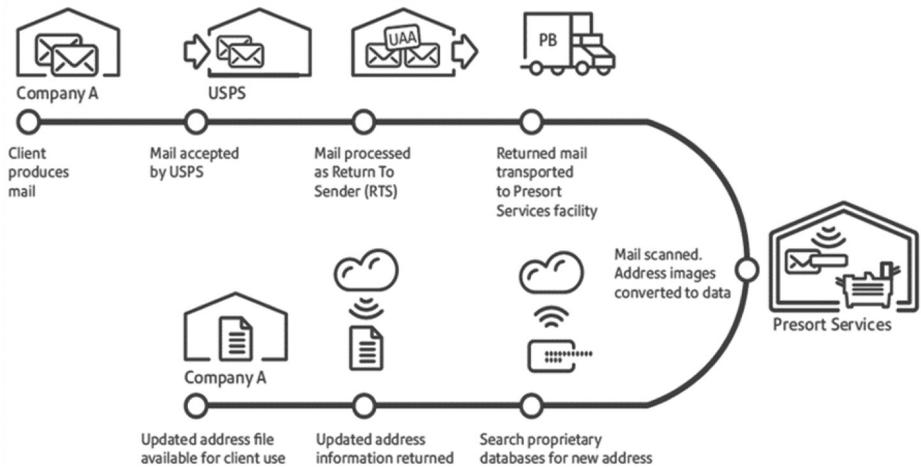


Figure 1.
Mail workflow
(Stangle, 2017)

clearly shows that an organisation has the capability to respond to the market. These initiatives have brought a huge improvement in bringing innovative solutions to the market. Previously, universities and companies had research programmes that were complex and involved bureaucratic processes, which often resulted in the actual innovations becoming outdated and failing to reach the intended market (Valacich and Schneider, 2018, p. 30). The organisations such as Kodak and Blackberry that became obsolete due to their failure to innovate (Mui, 2012).

To counter that, Chesbrough and Bogers (2014, p. 12) use the term “open innovation,” which is defined as a

Distributed process based on purposively managed knowledge flows across organisational boundaries, using pecuniary and non-pecuniary mechanisms in line with the organisational business model. These flows of knowledge may involve knowledge inflows to the focal organisation (leveraging external knowledge sources through internal processes), knowledge outflows from a focal organisation (leveraging internal knowledge through external commercialisation activities).

3.3.1 Drivers of innovation. Organisations that innovate will be able to do things faster, better and cheaper than its competitors and in the process gain a more competitive advantage (Valacich and Schneider, 2018, p. 102). Email, audio and video-conferencing have assisted in speeding up the flow of information and eased the task of coordinating and controlling business activities (Wild and Wild, 2016, p. 42). Investing in intellectual capital that would work in a shared-effort strategy through open source systems to produce large-scale efficiencies can be advantageous (Maney et al., 2011, p. 192).

3.3.2 Challenges in the adoption of innovation. Despite the advances in innovations, most computing solutions fail because basic human factors were not considered, whereas the focus was on features, release timing and price, among other things (Borgman, 2003). Innovation is short lived, risky and open to be replicated by competitors: one example that comes to mind is the Uber ridesharing app that was disrupted by its own invention in China by Didi Chuxing (Valacich and Schneider, 2018, p. 93). Most publishers suffer financial losses due to copyright infringements resulting from them photocopying and printing from one purchased copy and providing a mass delivery service at a cheaper rate (Feather, 2013).

3.3.3 Unstructured supplementary service data technology for contacts verification. The USSD technology has primarily been used by cell phone providers in Africa to perform money transactions and certain enquiries, such as requesting prepaid airtime from the cell phone network provider (Zhou *et al.*, 2015, p. 57). According to Nkoma (2018), USSD uses a protocol used by global system for mobile communication networks for communication between a subscriber and the service provider's servers to provide a service. Unlike short messaging service (SMS), USSD is a service-oriented technology that provides immediate warranty on delivery of messages sent (Black *et al.*, 2012). This form of technology is not reliant on the internet or a smartphone to be accessed, but uses simple USSD instructions that bear no costs. USSD is considered a better solution that offers more privacy, even when used in the least expensive phones. Since USSD is session-based technology, sensitive data of the customer is encrypted in the servers of the service provider (Kumar *et al.*, 2019).

3.3.4 Quick response code system. One of the mitigating factors that can be used is the QR code system that can be used to verify the validity of the certificate presented by social service professionals (Goyal *et al.*, 2016). The QR code was developed by Denso Wave Incorporated, a division of Toyota, Japan, in 1994 as a code for quick reaction (Kiryakova *et al.*, 2013, p. 370). The QR code is a machine-readable two-dimensional (2D) label that contains information that is encoded in four standardised encoding formats such as, numeric, alphanumeric, byte/binary and kanji, as depicted in Figure 2 (Ozkaya *et al.*, 2015, p. 210). A convenience of QR codes is that they can be designed without any costs involved to developing websites. One of the benefits that a QR code brings is that it can be used by the elderly because of the limitation on typing either uniform resource locator addresses or telephone numbers on the cell phone screens (Baik, 2012, p. 3).

The use of this technology requires a compatible camera and a QR reader on a smartphone. Valacich and Schneider (2018, p. 182) found that an important aspect of a QR code is that it points a customer to an intended Web service with predetermined actions that must be acted upon to achieve desired results. Kiryakova *et al.* (2013, p. 374) identify one of its drawbacks as its inability to provide the requesters with the information they need or to



Source: Kiryakova *et al.* (2013), p. 370

Figure 2.
QR code example

provide adequate content. Baik (2012, p. 7) proposes a QR code technology to conveniently retrieve and access digital information as depicted in Figure 3 as follows:

- The requester will scan a QR 2D bar code using a smartphone.
- The translation service is activated by scanning software.
- Information is transmitted to a portal.
- Information is classified, and stored in the database.
- The requester obtains access to the requested information service.

4. Methodology

This study is a participatory action research project that involved collaboration between researchers and study participants in defining and solving the problem through needs assessment exercise (Creswell and Creswell, 2018). In this study, all three phases of participatory action research were followed, that is, the “look phase”: getting to know stakeholders so that the problem is defined on their terms and the problem definition is reflective of the community context; the “think phase”: interpretation and analysis of what was learned in the “Look phase”; and the “act phase”: planning, implementing, and evaluating, based on information collected and interpreted in the other phases (Stringer, 2014). The current study made use of the qualitative research approach which involved the collection of data through interviews, observations and document analysis (Bryman, 2016). Interviews were conducted with purposively chosen staff members responsible for postal dispatching – Participant A, communication – Participant B, registration – Participant C and a board member – Participant D, as well as a representative of the service providers for digital systems – Participant E and Participant F. Observations were also made in the storage, as well as the registry where postage were sorted. Documents such as policies, templates and directives were analysed. Data collected were integrated and organised thematically to address the objectives of the study.

5. Ethical considerations

The researchers were part of the exploratory meetings where challenges to information access were raised and permission was given for system digitisation to take place, with a view to maximising information efficiency and integration within the organisation (SACSSP, 2018, p. 1). We also participated in meetings where the issues involving digital

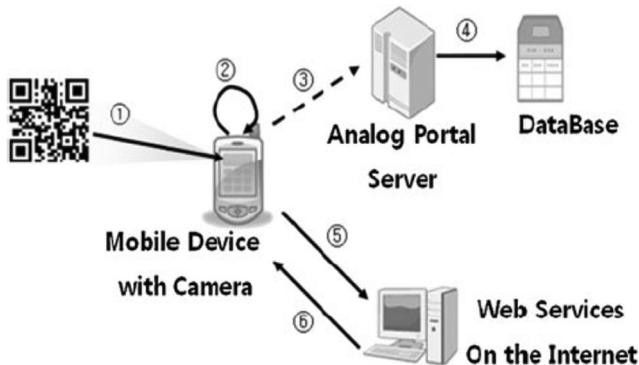


Figure 3.
QR process flow
(Baik, 2012, p. 7)

certificates and enterprise resource planning system were discussed. Ethical clearance was requested as prescribed by the policy of the University of South Africa for the ethical issues that arose during the study. Furthermore, the SACSSP granted access to the researchers to conduct the study. One of the ethical principles in governing research is that the researcher should act with integrity at all stages of the project, which are design, implementation, and dissemination (Given, 2016). All pictures taken during the study were presented to management and permission was granted to include them in the study. Interviews were conducted in the organisation and the interviewer took notes of the discussions, and adjustments were made where necessary.

6. Presentation of data

The study used the constructs: data quality, data management and innovation of the planning domain from the COBIT 2019 Framework, to inform the objectives, literature review, as well as categorise the results. The results are presented alongside issues encountered, as well as through pictures and verbatim quotes of the participants. To ensure anonymity, participants had been assigned codes from A to F.

6.1 Data quality

COBIT 2019 requires organisations to do data quality before analysis to identify situations where data have been altered. For example, according to Heim (2020), the US National Archives altered images of women's march that was critical to US President, Donald Trump, which brings concerns with regard to the quality of data presented to unsuspecting public consuming this information. The process involved blurring, editing and digitally altering of images, thereby erasing something that was accurately captured by camera. In the current study, the biggest issue concerning quality of data in the organisation was inconsistencies that led to the rejection of social service professionals' qualifications. The following factors (SACSSP, 2019) were found to contribute to data quality issues:

- No identity or passport number was found on some records.
- Incorrect identity values did not follow the numbering convention.
- Date of birth not matching identity number.
- Garbage values rejected – records which would be rejected by SAQA.
- Duplicate identity numbers.
- Invalid email addresses – submitted e-mail address validation checks failed, records submitted with blank e-mails but need to be fixed on register for communications aspects, etc.
- Physical address fields left blank with the input field defined as not compulsory.

It was found that the current system of sending documents by registered post had a high rate of returns. The cost of postage and storage of returned items is about R32 for hard-copy certificates and R18 for invoices and other small-sized documents. All undelivered post is considered as a loss because the organisation incurs costs for posting and reprinting. For example, Participant A, who was responsible for dispatching post, indicated that:

We suffer significant losses due to undeliverable post. We are bound to create new files monthly to archive these certificates and only go to them when the social professional concerned calls to request an undelivered certificate. This is the time we get updated contact details. I can say that if we post 100 documents, 60 of the posted documents are returned.

This problem is also identified by [Maluleke \(2019\)](#) when he states that university libraries experience the problem of losing materials in transit due to document delivery services by the post office. This places significant financial burdens on academic libraries, as the costs cannot be recovered ([Maluleke et al., 2020](#)). However, the SACSSP has mitigation strategies to deal with the anticipated loss of certificates by sending them by registered post. This process involves documents being tracked from source to collection point and SAPO sending a slip to the recipient to collect from the relevant SAPO branch.

In other instances, it was noted that social service professionals incur costs when travelling to SACSSP offices to physically collect the returned certificates. [Figure 4](#) depicts files and cabinets with returned certificates that SAPO found to be undeliverable.

6.2 Data management

Data management is regarded as achievement and sustenance of “effective management of the enterprise data assets across the data life cycle, from creation through delivery, maintenance and archiving” ([ISACA, 2018](#), p. 143). Data embedded in paper records have been accumulated and preserved for decades by many public institutions, and now it has been difficult for organisations to digitise legacy documents to support data-driven decision-making ([Brown and Toze, 2017](#), p. 587). This has also been a challenge for the SACSSP. As a start, the SACSSP sent bulk SMSs with notices to all social service professionals to update their details. For example, Participant B indicated that:

We have a contracted company that provides bulk SMSs that are sent to all social service professionals that are on our databases. Through those notices, they must update their details if they have changed, but it is not the case.

Alternatively, periodic notices are posted on the SACSSP website for the social service professionals to make direct enquiries about specific matters of concern ([SACSSP, 2020](#)). [Figure 5](#) is an example of one of the notices that the organisation uses as a form of communication with social service professionals.

The current registration certificate has an embossment and other security features that indicate authenticity. It was also found that the hardcopy certificates are posted together with the practice cards as seen in [Figure 6](#). A social service professional is not regarded as an authorised practicing professional without the certificate and the practice card used to verify the holder.

Participant C stated that:

The current hardcopy certificate has been created with a unique artwork that is embossed with a red die that is impressed onto the specially bought paper that is difficult to replicate.



Figure 4.
Returned documents

GENERAL NOTICE 8 of 2020

REF: 3/7/6/1/8

6 May 2020

End-to-end
digital
transformation

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NOTICE TO:

ALL SOCIAL SERVICE PROFESSIONALS (*social workers, social auxiliary workers, student social workers, student social auxiliary workers, child and youth care workers, auxiliary child and youth care workers and student child and youth care workers*)

CONTACTS FOR DIRECT ENQUIRIES

Notice is hereby given that registrants wishing to make enquiries must please direct their enquiries to the emails below, and not contact the Registrar, so as to receive immediate attention.

- **Registration related enquiries** (*new applications, fees payable, registration certificates, restoration, change of particulars and status report*): registrationsmanager@sacssp.co.za
- **Finance enquiries** (*receipts, proof of payment, invoices and statements*): elvis@sacssp.co.za or regtemp1@sacssp.co.za
- **CPD or any education and training related enquiries**: cpd@sacssp.co.za
- **Professional conduct related enquiries**: profconmanager@sacssp.co.za

Council banking details for any payments is: **BANK DETAILS: NEDBANK, ACCOUNT NO.: 1190739410**
BRANCH NAME: MENLYN MAINE, CODE 198765

Issued by: Ms. Langi LC Malamba

REGISTRAR

Figure 5.
Notice posted on the
website

6.3 Innovation

According to [Valacich and Schneider \(2018\)](#), organisations that innovate will be able to do things faster, better and cheaper than its competitors and in the process become more competitive advantageous. To be innovative, the SACSSP, together with the researchers,

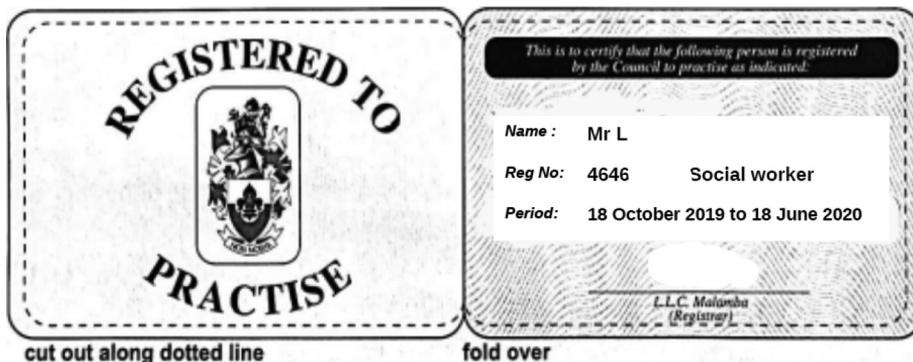


Figure 6.
Sample practice card

conducted three benchmarking processes of digitising the certificates. Two service providers were invited to make presentations. The first company wanted to completely control the issuance of the certificates with a requirement that the SACSSP should provide a comma separated values file with a list of social service professionals to the service provider. Participant C raised a privacy concern that:

Giving the job to the external service provider will be a violation of our customers' data privacy and open to manipulation. What if data is exposed to external people who are not supposed to view it and, in the process, violating the Protection of Personal Information (POPI) Act?

The process includes converting manual certificates to generate digital certificates and to ensure that the service provider offers storage facilities in their digital vault for the created certificates (LimeLight Software, 2020). Participant E from the service provider indicated that:

Access is ensured through authentication on internet from anywhere for customers to view their certificates. The costs involved for hosting the digital certificates were setup fees of 15 000 South African Rands, while each certificate generated would cost seven (7) South African Rands and access would be valid for one year with unlimited access for that period.

Benchmarking with the second service provider provided a proposal for the development of an in-house certificate vault to be integrated with the enterprise resource planning (ERP) system and did not involve any human intervention. It was found that the solution addresses the concerns with the first benchmarking session. Service provider B, Participant 1 stated that:

Our solution only involves integration with your database through an application program interface (API) and all data is hosted in your premises. The only things we need to work on are inclusion of security features as per your requirements.

Further benchmarking was done with an organisation in the pharmaceutical industry that provides the same service on data verification and updating. The response from their IT participant was that:

Our practitioners have user credentials to log on to our portal and update their own details onto a staging database. What is happening in the background is that a registration officer at the back office will verify the changes and apply the new details.

7. Discussions

The results are discussed as per the themes emanating from the objectives of the study which include data quality, data management, and innovation.

7.1 Data quality

The process of sending notices and bulk SMSs to all social service professionals to update their records has not yielded the desired results. Authentication methods such as username and password, and linkage of the handset used must be implemented to ensure that the person updating the records is the person authorised to do so. A two-factor authentication can be used if a user is using either Web-enabled computing equipment or the fingerprint reader of any smartphone. These are represented by a facial image that is then compared to a stored image of a social professional with facial recognition software or the scanning of fingerprints to complete the comparison. Sending documents to third parties creates POPI issues, as data are exposed. The

organisation should implement mechanisms to mitigate data privacy issues that might arise. Systems proposed will have an API to send data for printing without human interaction. Section 107 of the POPI Act details punitive actions that would apply to organisations, such as a maximum penalty of R 10m or imprisonment for a period not exceeding ten years, or both, for guilty offenses as outlined in Sections 100 to 106 (Republic of South Africa, 2013, p. 108). ISACA (2018, p. 28) warns organisations that issues of data quality or data integration can have a serious impact on the success of an organisation, and that it is very important to establish correct processes, roles and responsibilities, among other requirements, to furnish the organisation with value from information. However, having analysed the records that were managed in a group, the researchers could not ascertain which organisation dealt with the preservation period of returned post and the disposal thereof.

7.2 Data management

The current system of filing the returned mail is unsustainable because of the organisation's space limitations. It would be of great service to the organisation to implement data management strategies to achieve effective management of the enterprise data assets across the data life cycle from creation to delivery, maintenance and archiving (ISACA, 2018, p. 18). In future, this will assist the organisation in overcoming cost-related problems related to returned mail such as information technology, data collection and information sharing (Badenhorst, 2013). What the study uncovered is that the SACSSP has been communicating with its stakeholders through websites, social media and direct contacts such as bulk SMS and emails (SACSSP, 2020). Implementation of innovative solutions would complement and enhance the strategies that are already in place.

7.3 Innovation

The implementation of digital certificates – electronic certification service – dramatically speeds up the documentation process, helping social service professionals to avoid the costs and delays associated with the issuing and transportation of hard copy certificates. The certificates can be verified by scanning a QR code, which would contain information that is cross-referenced with an organisation's database containing the social professional's details, such as full name, practice number and validity of the certificate (Narayanan, 2012). The practice card as depicted in Figure 6 will be imprinted with a QR code to assist with verifications. This can happen if data are cleansed when transferred between systems before any processing can take place, and the reliability of the destination system has been controlled and secured (International Organization for Standardisation, 2016). In addition, the SACSSP needs to create agile structures that would support automation and enhanced customer experiences, while supporting digital transformation initiatives are highlighted (Verhoef, 2019, p. 7).

8. Conclusion and recommendations

The presentation of summary of findings is based on the research objectives. Furthermore, conclusions of the study are stated and recommendations are drawn from them. The study proposes a digital transformation framework for SACSSP.

8.1 Data quality

Multiple sources, such as website portal access, QR codes and USSD technologies can be provided to social service professionals to give them direct access to their membership records at their convenience. The availability of communication technology systems such as email and social media can greatly assist in ensuring that people who are in remote areas or who have mobility limitations or disabilities are catered for (PMI, 2017). Kiryakova *et al.* (2013) advise organisations to create a successful marketing strategy through planning, by using technology that is fit for use and purpose.

8.2 Data management

Security measures need to be implemented to protect the social service professionals' information from unauthorised access. The use of cloud technology ensures that digitised data, information and records are always available because they are backed up on multiple computing storage devices, which increases the possibility of data availability and retention for the clients to access (Mosweu, Luthuli and Mosweu, 2019).

8.3 Innovation

The study proposed innovative technologies such as USSD and QR code systems for entry-level handsets and smartphones, respectively. These interventions will ensure that rural and marginalised communities are not left out when innovative plans are conceptualised and implemented. The journey to digital transformation is driven by the changing needs and behaviours of an organisation and external factors impacting on the organisation, whereas the organisational heads must champion the digital agenda (Morakanyane *et al.*, 2020, p. 4360). It is recommended that the professional council can also consider introducing digital certificates for registered professionals. Digital transformation of the process will ensure that the registered professionals will be able to access their certificates online and to print them when necessary.

8.4 Proposed framework for digital transformation

The proposed digital transformation framework would enable the SACSSP to adopt tailored technologies for document flow within the organisation. The social service professionals will be able to change details about their address, cell phone number and other details from a predetermined menu item (Figure 7).

The implementation of USSD technology proved successful to rural health practitioners in Uganda when they migrated from paper-based reporting to USSD-based reporting, because it was possible even on entry level handsets (Nakibuuka *et al.*, 2019, p. 164). The advantage of adopting USSD technology is that it creates a real-time connectivity with the server, that

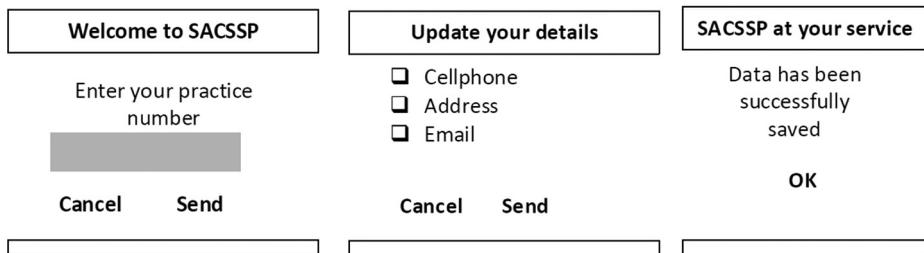


Figure 7. Sample of proposed phone USSD-based contacts update interface

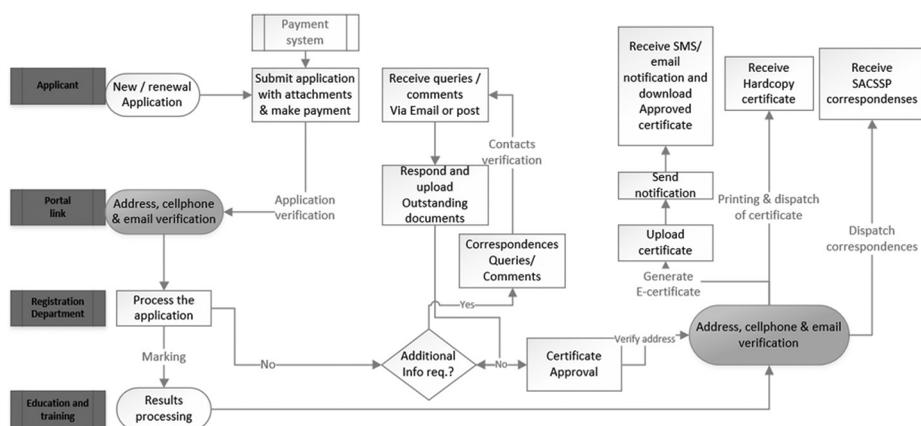


Figure 8.
Workflow for details
verification

allows a two-way exchange of data for a limited time (Robertson and Jeffreys-Leach, 2017, p. 12).

Sending of personalised QR codes to social service professionals can help to verify their credentials when needed. QR code implementation has the advantage of being easily created and can be used by mobile subscribers with smartphones to update their records (Ozkaya, *et al.*, 2015, p. 211). According to Valacich and Schneider (2018, p. 189), the use of QR coding can digitally transform the organisation by enabling social service practitioners to update their contact details or verify their membership status.

Postal services are still playing a big role and the complementary services will reduce the burden of returned letters that contain confidential information about social service professionals. SAPO still has the largest footprint of mail deliveries through a network of 5,500 outlets (Trimble *et al.*, 2015). The use of technology to update contact details will help improve the cleansing of data and enable the SACSSP to overcome the challenge of high rates of non-delivery of mail to affected social professionals (Ordóñez, 2015). Figure 8 depicts the proposed process flow that can be used by social service professionals to update/verify their detail on the portal.

It is concluded that the proposed process flow can be used by social service professionals to update/verify their detail on the portal. Failure to digitally transform the current situation will result in increasing numbers of certificates not reaching the intended recipients.

References

- Andrejevic, M. and Selwyn, N. (2019), "Facial recognition technology in schools: critical questions and concerns", available at: www.tandfonline.com/doi/full/10.1080/17439884.2020.1686014?af=Rand (accessed 7 March 2020).
- Badenhorst, A. (2013), "A framework for prioritising practices to overcome cost-related problems in reverse logistics", *Journal of Transport and Supply Chain Management*, Vol. 7 No. 1, pp. 1-10.
- Baik, S. (2012), "Rethinking QR code: analog portal to digital world", *Multimedia Tools and Applications*, Vol. 58 No. 2, pp. 427-434.
- Bellis, M. (2019), "History of mail and the postal system", available at: www.thoughtco.com/history-of-mail-1992142 (accessed 24 May 2020).

- Black, G.R., Carlson, M.J. and Marchevsky, V.F. (2012), US Patent No. 8,228,832, Patent and Trademark Office, Washington, DC.
- Borgman, C.L. (2003), *From Gutenberg to the Global Information Infrastructure: Access to Information in the Networked World*, MIT Press, Cambridge.
- Brown, D.C. and Toze, S. (2017), "Information governance in digitized public administration", *Canadian Public Administration*, Vol. 60 No. 4, pp. 581-604.
- Bryman, A. (2016), *Social Research Methods*, 5th ed. Oxford University Press, Oxford.
- Chesbrough, H. and Bogers, M. (2014), "Explicating open innovation: clarifying an emerging paradigm for understanding innovation", In *New Frontiers in Open Innovation*, Oxford University Press, Oxford, pp. 3-28.
- Creswell, J.W. and Creswell, J.D. (2018), *Research Design: Qualitative, Quantitative, and Mixed Methods*, (5th ed.), Sage Publications Inc, CA.
- Dahir, I. (2020), "BuzzFeed news: a Ugandan climate activist was cropped out of a news agency photo of Greta Thunberg at Davos", available at: www.buzzfeednews.com/article/ikrd/vanessa-nakate-greta-thunberg-davos (accessed 25 January 2020).
- Feather, J. (2013), *The Information Society: A Study of Continuity and Change*, 6th ed. Facet publishing, London.
- Gartner (2012), "The importance of 'big data': a definition", available at: www.gartner.com/id=2057415 (accessed 28 July 2020).
- Given, L.M. (2016), *100 Questions (and Answers) about Qualitative Research*, Sage Publications Inc, CA.
- Goyal, S., Yadav, S. and Mathuria, M. (2016), "Exploring concept of QR code and its benefits in digital education system", In *2016 International Conference on Advances in Computing, Communications and Informatics (ICACCI)*, IEEE, pp. 1141-1147.
- Han, J., Kamber, M. and Pei, J. (2011), *Data Mining: Concepts and Techniques*, 3rd ed. [Database] Elsevier, Waltham.
- Heim, J. (2020), "The Washington post: national archives exhibit blurs images critical of president trump", available at: www.washingtonpost.com/local/national-archives-exhibit-blurs-images-critical-of-president-trump/2020/01/17/71d8e80c-37e3-11ea-9541-9107303481a4_story.html (accessed 20 January 2021).
- Hill, R. (1837), *Post Office Reform: Its Importance and Practicability*, William Clowes and Sons, London, available at: [www.gbpa.org.uk/information/downloads/files/penny-postage/post%20office%20reform,%20its%20importance%20and%20practicability%20-%20rowland%20hill%20\(3rd%20edition,%201837\).pdf](http://www.gbpa.org.uk/information/downloads/files/penny-postage/post%20office%20reform,%20its%20importance%20and%20practicability%20-%20rowland%20hill%20(3rd%20edition,%201837).pdf) (accessed 29 July 2020).
- Hoal, W., Pienaar, A., Lansdown, J., Pring, H., Hope, A., Roe, A. and Morton, R. (1936), "South Africa", *Journal of Comparative Legislation and International Law*, Vol. 18 No. 2, pp. 119-140.
- International Organization for Standardisation (2016), *ISO 15489-1:2016 (en) Information and Documentation – Records Management – Part 1: Concepts and Principles*, ISO, Geneva.
- ISACA (2018), *COBIT 2019 Framework: Governance and Management Objectives*, Information Systems Audit and Control Association, Schaumburg.
- Kak, S.F., Mustafa, F.M. and Valente, P. (2018), "A review of person recognition based on face model", *Eurasian Journal of Science and Engineering*, Vol. 4 No. 1, pp. 157-168.
- Katuu, S. (2016), "Managing digital records in a global environment: a review of the landscape of international standards and good practice guidelines", *The Electronic Library*, Vol. 34 No. 5, pp. 869-894.
- Kiryakova, G., Angelova, N. and Yordanova, L. (2013), "QR codes in the business world", *Trakia Journal of Sciences*, Vol. 11 No. 1, pp. 370-376.

- Kumar, R., Sharan, P. and Devi, A. (2019), "Web-based electronic money for online banking", In *Digital Currency: Breakthroughs in Research and Practice*, IGI Global, Hershey, pp. 59-65.
- Laney, C. (2020), "The observer: Emily Roderick, Evie price and Anna hart, founders of the dazzle club, wearing makeup designed to confuse facial recognition cameras", available at: www.theguardian.com/world/2020/feb/01/privacy-campaigners-dazzle-camouflage-met-police-surveillance (accessed 26 May 2020).
- Limelight Software (2020), "Certificate of analysis: COA system and COA vault", available at: www.limelightsoftware.co.za/coa-system (accessed 25 May 2020).
- Maluleke, S. (2019), "Document delivery services in an open distance learning environment with reference to the university of South Africa", Masters Dissertation, University of South Africa, Pretoria.
- Maluleke, S., Ngoepe, M. and Marutha, N.S. (2020), "A framework for document delivery services in an open distance e-learning environment library", *Journal of Interlibrary Loan, Document Delivery and Electronic Reserve*, pp. 1-11.
- Maney, K., Hamm, S. and O'Brien, J. (2011), *Making the World Work Better: The Ideas That Shaped a Century and a Company*, Pearson Education, London.
- Mhlungu, N.S.M., Chen, J.Y.J. and Alkema, P. (2019), "The underlying factors of a successful organisational digital transformation", *South African Journal of Information Management*, Vol. 21 No. 1, p. a995.
- Morakanyane, R., O'Reilly, P., McAvoy, J. and Grace, A. (2020), "Determining digital transformation success factors", In *Proceedings of the 53rd HI International Conference on System Sciences*, Maui, HI, pp. 4356-4365, Viewed on 14 May 2021, available at: <https://hdl.handle.net/10125/64274> (accessed 18 June 2020).
- Mosweu, T., Luthuli, L. and Mosweu, O. (2019), "Implications of cloud-computing services in records management in Africa: Achilles heels of the digital era?", *South African Journal of Information Management*, Vol. 21 No. 1, p. 12 (a1069).
- Motii, M. and Semma, A. (2017), "Towards a new approach to pooling COBIT 5 and ITIL V 3 with ISO/IEC 27002 for better use of ITG in the Moroccan parliament", *International Journal of Computer Science Issues*, May 2017, Vol. 14 No. 3.
- Mourad, E.B., Malik, M., Anong, A.C. and Mustappa, B. (2017), "Combination between COBIT and ITIL V3 2011", *International Journal of Advanced Engineering Research and Science*, Vol. 1 No. 5, pp. 41-47.
- Mui, C. (2012), "How Kodak failed", available at: www.forbes.com/sites/chunkamui/2012/01/18/how-kodak-failed/#198012696f27 (accessed 12 December 2020).
- Muriithi, P., Horner, D. and Pemberton, L. (2016), "Factors contributing to adoption and use of information and communication technologies within research collaborations in Kenya", *Information Technology for Development*, Vol. 22 No. 1, pp. 84-100.
- Nakate, V. (2020), "Facebook post 25 January", available at: https://twitter.com/vanessa_vash/status/1220936740665511936 (accessed 30 August 2020).
- Nakibuuka, J., Semwanga, A.R. and Were, M.C. (2019), "Implementation of USSD technology to improve quality of routinely reported health data in a resource-limited setting", *Studies in Health Technology and Informatics*, Vol. 262, pp. 162-165.
- Narayanan, A.S. (2012), "QR codes and security solutions", *International Journal of Computer Science and Telecommunications*, Vol. 3 No. 7, pp. 69-72.
- National Archives Catalog (2020), "Records of first returns received from postmaster, ca. 1836 – ca. 1836 record group 28: records of the post office department, 1773–1971", available at: <https://catalog.archives.gov/id/75493318> (accessed 31 July 2020).
- National Planning Commission (2012), *National Development Plan 2030: Our Future-Make It Work*, Office of the Presidency, Pretoria.
- Nkoma, J.S. (2018), *Introduction to Basic Concepts for Engineers and Scientists: electromagnetic, Quantum, Statistical and Relativistic Concepts*, Mkuki na Nyota Publishers, Dar es Salaam.

- Office of Inspector General (2015), "United States postal service: strategies for reducing undeliverable as addressed mail", available at: www.uspsaig.gov/sites/default/files/document-library-files/2015/ms-ma-15-006.pdf (accessed 12 August 2020).
- Ordóñez, de Pablos, P. (Ed.) (2015), *Technological Solutions for Sustainable Business Practice in Asia*, IGI Global, Hershey.
- Ozkaya, E., Ozkaya, H.E., Roxas, J., Bryant, F. and Whitson, D. (2015), "Factors affecting consumer usage of QR codes", *Journal of Direct, Data and Digital Marketing Practice*, Vol. 16 No. 3, pp. 209-224.
- Polzonetti, A. and Sagratella, M. (2017), "Towards a data-driven enterprise: effects on information, governance, infrastructures and security", In *Proceedings of the 2017 IEEE International Conference on Industrial Engineering Management (IEEM 2017)*, IEEE, Singapore, 10-13 December, pp. 1480-1484.
- Project Management Institute (2017), *A Guide to the Project Management Body of Knowledge*, (6th ed.), PA: Project Management Institute.
- Republic of South Africa (1911), "Post office administration and shipping combinations discouragement act, 1911", available at: www.icasa.org.za/uploads/files/Postal-Act.pdf (accessed 30 July 2020).
- Republic of South Africa (2011), "Regulations regarding the registration of social auxiliary workers and the holding of disciplinary inquiries", SAPO, Pretoria, available at: [www.sacssp.co.za/documents/REGULATIONS%20regarding%20the%20registration%20of%20social%20auxiliary%20workers%20and%20the%20holding%20of%20disciplinary%20inquiries%20\(18.02.2011\)%20-web.pdf](http://www.sacssp.co.za/documents/REGULATIONS%20regarding%20the%20registration%20of%20social%20auxiliary%20workers%20and%20the%20holding%20of%20disciplinary%20inquiries%20(18.02.2011)%20-web.pdf) (accessed 31 July 2020).
- Republic of South Africa (2013), *Protection of Personal Information Act No. 4 of 2013*, Government Printers, Pretoria, available at: www.gov.za/sites/default/files/gcis_document/201409/3706726-11act4of2013popi.pdf (accessed 30 June 2020).
- Republic of South Africa (2016), "Department of telecommunications and postal services: National integrated ICT policy review report", available at: www.dtps.gov.za/images/phocagallery/Popular_Topic_Pictures/National_Integrated_ICT_Policy_White.pdf (accessed 30 June 2020).
- Robertson, G. and Jeffreys-Leach, S. (2017), "Sustainable data collection: mobile modes. Fin-Mark trust insight2impact facility", available at: www.i2ifacility.org (accessed 31 July 2020).
- Samiotakis, M. (2013), "Integrating ITIL and COBIT 5 to optimize IT process and service delivery", *6th itSMF South East Europe Conference*. Athens, Greece, 19 April.
- South African Council for Social Service Professions (1998), Social Service Professions Act, No. 102 of 1998. Republic of South Africa, Pretoria.
- South African Council for Social Service Professions (2020), "SACSSP general notice 8 of 2020 contacts for direct enquiries", available at: www.sacssp.co.za/2020/SACSSP%20GENERAL%20NOTICE%208%20of%202020%20CONTACTS%20FOR%20DIRECT%20ENQUIRIES.pdf (accessed 30 August 2020).
- South African Post Office (2020a), "Data cleansing", available at: www.postoffice.co.za/Business/datacleansing.html (accessed 30 June 2020).
- South African Post Office (2020b), "Rate brochure 2020/21", available at: www.postoffice.co.za/Questions/Postalrates.pdf (accessed 30 June 2020).
- Stangle, J. (2017), "Mailing systems technology. Undeliverable mail today: the solutions (part two)", available at: [mailingsystemstechnology.com/article-4208-Undeliverable-Mail-Today-The-Solutions-\(Part-Two\).html](http://mailingsystemstechnology.com/article-4208-Undeliverable-Mail-Today-The-Solutions-(Part-Two).html) (accessed 1 July 2020).
- Stringer, E.T. (2014), *Action Research*, 4th ed., Sage Publications, CA.
- Trimble, J., Chilumani, K.R. and Sibangiso, N. (2015), "Strategies for community focused postal service development", *African Journal of Science, Technology, Innovation and Development*, Vol. 7 No. 5, pp. 358-363.
- Valacich, J. and Schneider, C. (2018), *Information Systems Today. Managing the Digital World*, Global Edition, Pearson Education Limited, Harlow.

-
- Verhoef, P.C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J.Q., Fabian, N. and Haenlein, M. (2019), "Digital transformation: a multidisciplinary reflection and research agenda", *Journal of Business Research*, Vol. 36 No. 2, pp. 889-901.
- Walker, R.S. and Brown, I. (2019), "Big data analytics adoption: a case study in a large South African telecommunications organisation", *South African Journal of Information Management*, Vol. 21 No. 1, p. a1079.
- Wild, J.J. and Wild, K.L. (2016), *International Business: The Challenges of Globalization*, 8th ed., England: Pearson Education Limited, Harlow.
- Zhou, M., Herselman, M. and Coleman, A. (2015), "USSD technology, a low cost asset in complementing public health workers' work processes", In *International Conference on Bioinformatics and Biomedical Engineering*, Springer, Cham, pp. 57-64.
- Zikopoulos, P.C., deRoos, D., Parasuraman, K., Deutsch, T., Corrigan, D. and Giles, J. (2013), *Harness the Power of Big Data: The IBM Big Data Platform*, McGraw-Hill, New York, NY.

Further reading

- De Haes, S., Van Grembergen, W., Joshi, A. and Huygh, T. (2020), "Enterprise governance of information technology", *Achieving Alignment and Value in Digital Organisations*, 3rd edn., Springer, Cham.
- International Organization for Standardisation (2020), "ISO 16175-2:2020", *Information and Documentation – Processes and Functional Requirements for Software for Managing Records – Part 2: Guidance for Selecting, Designing, Implementing and Maintaining Software for Managing Records*, ISO, Geneva.

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