

## Digital transformation in City of Johannesburg Libraries post pandemic: redesigning and repurposing the use of library spaces through hybrid library services

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### Abstract:

*Digital transformation of City of Johannesburg Library and Information Services (COJ LIS) in South Africa began more than 7 years ago with the introduction of the eLearning Services division that focused on implementing technology-based programs in libraries and offering services such as access to Free WIFI, Digital literacy programs, access to ICTs (laptops, tablets, e-resources, etc), and the introduction of three new libraries built to focus on effective use of spaces for digital literacy programs, community activities and access to different technologies. These libraries were designed to embrace the fourth industrial revolution and the digital economy demands such as eLearning, understanding emerging technologies, and connecting communities with the global village. The Covid19 pandemic disrupted the digital transformation journey in COJ libraries and presented challenges. This forced COJ libraries to explore the options offered by technology for reading development, lifelong learning, and community development. Africa as a continent has different challenges concerning embracing and learning about new technologies compared to other continents. Libraries in Johannesburg have positioned themselves as community-centered spaces with the intention of not only transforming library buildings and services but also transforming the lives of the Johannesburg. This paper will detail the journey of transforming COJ libraries through the introduction of hybrid library services and modernized buildings. The discussion will focus on four areas, namely:*

- *The use of the newly designed libraries -for digital literacy and the introduction of new technologies to communities*
- *The concept of resource sharing*
- *The introduction of a unique library services website [www.cojelearning.org.za](http://www.cojelearning.org.za) where high school learners are encouraged to use mobile devices and digital reading*
- *The introduction of a new integrated library and learning management system.*

**Keywords:** Digital Transformation, digital literacy, hybrid services, eLearning/ Online learning, redesigning libraries

## City of Johannesburg in Context

The City of Johannesburg (City of Joburg / CoJ) is a metropolitan municipality situated in the Gauteng Province of the Republic of South Africa. The current population figures as per the last Census is six (6) million inhabitants.<sup>1</sup> It is difficult to have the exact population figures due to in-migration and a large number of immigrants (approximately 10 000 a month) moving into the so-called, “City of Gold”. Johannesburg is the economic hub of South Africa and is highly urbanized, however, it is also characterized by a large number of informal settlements. Currently, there are 181 informal settlements, with 180 000 households and a population of 500 000.<sup>2</sup>([www.joburg.org.za](http://www.joburg.org.za)). The disparities between the rich and the poor are very wide, consisting of highly advantaged and previously disadvantaged communities. The City of Johannesburg Metropolitan Council has from 1996, gone through various transformations to try and narrow the gap between the rich and the poor by increasing services and building facilities in communities that are desperately in need. As such, several library facilities were built in these areas, where a majority of residents are of African descent.

## Library and Information Services of the City of Johannesburg

The Library and Information Services of the City of Johannesburg (LIS) has a staff complement of over five hundred (500) and ninety (90) library facilities, spread across seven (7) regions. It offers various services to a wide range of community groups, from Early Childhood Development phase (ECD) to elderly patrons. It also caters to patrons with varying skill levels, in terms of functional literacy and digital literacy skills. The City’s residents can range from those living in posh suburbs, working-class settlements known as townships, apartments that are mainly part of government housing, and rural and urban informal settlements.

Despite many challenges faced by the City of Joburg as a developmental local government; the automation of libraries was prioritized in the 1990’s, and budget was provided to integrate collections of different local authorities, that were the legacy of the apartheid regime. The City Libraries offer a number of programmes such as, Reading development for learners and youth/ young people, Early Childhood Development (ECD) reading programme, various elearning programmes and recently a number of digital literacy programmes in an effort to bridge the digital divide. From 2006, various online programmes have been implemented by the City to enable community access to Internet and computers, from Public Access to Internet in Libraries (PAIL), Massive Open Online Varsity (MOOV), various elearning/ techno literacy skills programmes to digital skills programmes. In an effort to keep up with technological developments/ innovations, and community needs, the City Libraries are embracing new technologies to deliver services. The CoJ Library is in the process of finalizing the Digital Transformation Strategy, a blueprint that will give a five (5) year road map. <sup>3</sup> Our new vision for CoJ Libraries is, “*Library @ your Palm*”, in line with new developments in the LIS sector.

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<sup>1</sup> Statistics South Africa- Johannesburg Metropolitan Municipality Statistics

<sup>2</sup> CoJ Integrated Development Plan (IDP) 2022-2027

<sup>3</sup> CoJ LIS Draft Digital Transformation Strategy

## Digital transformation in the City of Johannesburg

In 2021, as part of the GDS 2040 vision, the City of Johannesburg adopted the Smart City Concept, aimed at using ICTs as an enabler that will allow the City to “leapfrog to a higher state of development”<sup>4</sup>. The objective was to enable the City to provide smart utilities, smart mobility, smart economy, smart education, smart people, smart living etc. A huge investment in broadband network was undertaken, which resulted in the availability of Wi-Fi hotspots in all City facilities. The Smart City programme was therefore seen as a way of bringing about changes in how citizens communicate with government, drive the economy, use libraries to drive the knowledge economy, and create Smart Citizens.

The Smart City programme office is currently driving the Digital Transformation Programme for the entire City, and library services are recognized as an important vehicle to empower and train communities to be ‘smart citizens’.

### Digital transformation (DX) defined

There are various definitions of Digital Transformation. According to Savic’ (2021), Digital Transformation is about doing things differently, creating a completely different business model using ICTs.<sup>5</sup> Digital transformation is only possible through the proper use of new and emerging technologies.

#### Digital transformation (CoJ Library definition)

The COJ LIS defines digital transformation as, *the Integration of digital technologies into all areas of library work, resulting in a fundamental change in how libraries operate in bringing value to the communities, thereby increasing efficiency and productivity.* Digital Transformation has a huge impact on the future of CoJ library work, as it has created new opportunities for communities to interact with libraries in different ways rather than dependency on visiting physical facilities. This forces library staff to learn new skills, that are not currently offered by library schools. As societies transform due to the availability of Internet access, smart devices and 4<sup>th</sup> Industrial Revolution (4IR), libraries have to adapt to ensure survival.

There are various forces that enable digital transformation globally, and South Africa is no exception. Johannesburg Libraries have experienced a lot of changes in the past ten (10) years due to changes in government, economic instability, growing demands by the communities for basic services, and more importantly the COVID 19 pandemic. As budgets are decreasing, it is important for all sectors, including libraries to justify their existence by clarifying their value proposition.

#### Enablers of DX

Various developments enabled the move to digitally transform CoJ Libraries:

- **Growth and Development Strategy – GDS 2040 vision:** one of the outcomes of the strategy is “Improved quality of life and development driven resilience for all”, which emphasizes issues of Livability, resilience, Smart City, increasing the happiness index, and providing

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<sup>4</sup> Joburg 2040: Growth and development Strategy (2011)

<sup>5</sup> Institute for Digital Transformation/ Dobrica Savic’:

services that will contribute to - improved literacy, skills and lifelong learning and bridging the digital divide.<sup>6</sup>

- Adoption of the Smart City Strategy, enabling innovation (various departments encouraged to try new things) using ICTs, as well as creating Smart Citizens- partnering with various academic and research institutes, for example, University of Johannesburg, University of Witwatersrand, University of South Africa, and the Centre for Science and Industrial Research.
- Installation of fibre optic cables throughout the City, enabling free public WiFi for communities in all City facilities prioritizing libraries
- Budget provision for hybrid library services (Public Access to Internet in Libraries (PAIL), Massive Open Online Varsity which enabled reconfiguration of twelve library facilities and created fully equipped eLearning centres.
- Introduction of automation – libraries in the City have been automated for over 30 years, enabling communities to find information via the Integrated Library System
- Wide penetration of Smart devices - South Africans own 90 million cell phone devices. With a population of 60 million, this translates to 187.4% cell phone ownership. 20-22 million people own Smart devices, which is one-third of the population. The majority of people access the Internet mostly via Cell phone devices.<sup>7</sup> The biggest challenge in the country is high cost of data, therefore, public facilities especially libraries are expected to provide free unlimited WiFi.

#### Drivers of DX:

As indicated above, community members expect the government to provide not only free Internet access, but also ICT equipment as part of basic services. The following are some of the drivers of digital transformation in the City of Joburg;

- User expectations - access to Internet and ICT equipment and devices has become a norm in government facilities, as such, communities expect libraries to provide these for free
- Competition - Libraries have to compete with other media/ information sources (eg Google-Social media, YouTube etc), and this has an impact on the usage of libraries.
- New normal – COVID 19 pandemic forced everyone to use online channels for learning, teaching, shopping, banking, and all services were conducted online, this forced libraries to explore ways of introducing more technology supported services. There is currently an expectation from communities for libraries to continue to provide online services as these are convenient.
- There is an increase in online teaching and learning in schools and universities, as such, libraries are forced to provide support services.
- Increase in user needs and declining budgets, inability to provide physical facilities or physical information resources to the satisfaction of all citizens/users, virtual library services are becoming a reality
- Preference for online services by the younger generation

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<sup>6</sup> Joburg 2040: GDS

<sup>7</sup> Statista.com 2023 Petro Taylor

## **Library Transformation in practice**

- Redesigning Library spaces

The majority of CoJ public libraries built before 1990 were designed as circulation or lending libraries that also provided reference services for children youth and adults in one open space. In most of these libraries, there is little to no space for study purposes. Public libraries built between 1990 and 2014 provide demarcated sections for reference and study services, separate children and young adult sections, adult lending sections as well as activity rooms that serve as social and information-sharing spaces and additional study space during examination periods. Information and Communication Technologies (ICTs) and the way communities use the library facilities had a big impact on the design of new libraries and remodeling of the existing facilities. Since 2014 the layout of public libraries incorporate space for Information Technology Services and lately, the design makes provision for separate areas that can be opened after hours for study purposes and access to the Internet using their own devices.

CoJ libraries are in the process of being redesigned, and repurposed as library spaces that are community-centered, to embrace technological changes:

- To Support Work-From-Home, e.g spaces inside and outside the libraries with WiFi access, used by community members who need Internet access
- To Support Learning-From-Home, e.g provision of online courses and access to electronic resources via the Library website
- To Support E-Business Startups and reduce the unemployment rate
- To Support Transactions in the Digital Economy: banking, shopping etc
- To Support eGovernment Programs and activities: applying for social grants, online school applications, Job searches, and other services

## **Introduction of electronic classrooms in selected libraries**

To support the Smart City priority, the municipality invested in a city-wide upgrade of network infrastructure, to enable free public access to the Internet and enable ICT-based projects implemented by various departments and entities. Libraries introduced a lot of programmes to ensure that communities can easily access library services and also receive training on different ICTs. The following ventures were undertaken:

- eWorld (through the Public Access to Internet project) – a joint venture with Group ICT provided workstations in the City’s facilities (initially in the libraries) with free access to the Internet, and information-rich landing pages (information portals), including eLearning content. This enabled library users to access Internet and also receive training, from basic computer literacy, using email and general information searches etc
- Techno-literacy training – this skills development programme for youth, focused on job searches, writing CVs, job applications and various entrepreneurial activities. The emphasis was on information and ICT literacy skills.
- MOOV (using the free Massive Open Online Courses) – this was a partnership with various stakeholders, Core Group, Think Ahead, Harambee NGO, providing access to carefully selected and free online courses, using MOOCs (Massive Open Online

Courses) from various institutions, Massachusetts Institute of Technology, Harvard University, etc. The municipality funded the creation of 12 fully equipped electronic classrooms in selected libraries. The idea was to ensure that each region of the City has an elearning classroom that can be used by everyone in the area. The project was coordinated by an educational specialist, assisted by trained youth facilitators. The project did not only benefit libraries and communities but also provided employment opportunities and work experience for the young facilitators. Participants were introduced to online learning and online courses paid for by the municipality. The project was implemented over a two year period, with a cost of almost R15 million, which included creating separate classrooms within the library and equipping the facility with furniture, network equipment , computers, branding, laptops, iPads, printers, cameras etc. The value of the project was three-fold;

- More than 100 youth benefited from the project through a two-year learnership programme, which provided employment and training opportunities
- 15,000 youth registered for various programmes, introducing them to online learning and other training programmes
- At the end of the project, all the equipment was donated to the libraries and could be used by other libraries as part of resource sharing.
- Mobile literacy via Free WiFi (BYOD- Bring Your Own Device) – a training program, enabled by the City’s WiFi, which teaches users to access the information on the Internet using their own smart devices (phones, tablets, etc.)

### Resource sharing

Due to budgetary constraints, the library could not continue with redesigning other facilities and had to look at various ways of providing elearning services to all the citizens. The eLearning section within the library services had to reassess the entire function, look for new partners and generally come up with a new way of delivering elearning services. The concept of resource sharing was adopted to ensure that under-resourced libraries also access the devices for various online activities. This gave rise to Mobile Literacy, in which, libraries that needed to conduct training could borrow the laptops or tablets for the period of training to enable everyone to benefit from the online programmes offered by libraries. Through various partners, including Google, IBM, Goethe Institut, Microsoft, African Storybook, Fundza etc, that provided training, content, equipment, routers etc, elearning services could continue to make an impact for both library employees and communities. This resulted in staff experimenting with various technologies that are cost effective. A reading development program called Mobireadathon was introduced in 2022, using the library website, Microsoft form, and free to download ebooks and stories. It encourages use of mobile devices and digital platforms to find reading content to compete in reading development competitions.

### New library facilities

In keeping with the needs of the communities, the City of Johannesburg built three (3) new facilities, Noordgesig Library and Paterson Park Library, which opened in 2021 and Leahae Library which recently opened in May 2023. These facilities were specifically designed to accommodate digitalization. The profile and usage of each library are unique and are also influenced by their respective locations.

## Noordgesig Library (Soweto – Region D)

The development of the Noordgesig Social Cluster forms part of the City of Johannesburg's 'Corridors of Freedom', a spatial development programme aimed at "re-stitching the city and creating a people-centered, inclusive urban environments". The Noordgesig Library is located within the Social Cluster that is the heart of Noordgesig, comprising a library, community hall, recreation centre, park and public swimming pool. The facilities were fragmented, separated from each other by fences and had limited public interfaces. The project's Urban Design philosophy was to integrate the facilities into a cohesive Social Cluster centred on a public plaza. The conceptualization of the overall development framework was formulated through the community engagement process taking into consideration the views of the residents and the needs of the client. The brief for the library to function as a traditional library, IT resource centre and community centre also evolved from this engagement process. The design intent was to create a public building that had a strong interface with the plaza, creating a landmark within the Social Cluster. The building is a two-story, double-winged form that defines both the plaza and the existing park on its two edge.

The library offers the following services: Reading development, Digital literacy and skills development, children's services, Lending services for all age groups, Reference services' Study rooms and Space for group activities. It also has space that can be accessible after hours. This library has become a great example of hybrid services in CoJ libraries. The activities organized for children and youth range from traditional storytelling and reading programs for children, to technology-based activities such as coding, computer lessons, gamification, and QR code activities using donated x-boxes, tablets and laptops. Various NGO's collaborate with the library to regularly bring a group of children for reading programs.

## Paterson Park Library (Norwood – Region E)

CoJ committed a budget of R151 million (+755,000 USD) in the 2014/15 financial year for the construction of a multipurpose centre at Paterson Park precinct, which includes a state-of-the-art library facility. This was built as part of the "Corridors of Freedom" project, which emphasized building communities that are resilient, livable, sustainable urban environment – underpinned by infrastructure supportive of low carbon economy. Located in a garden suburb of Norwood, with +\_5000 residents, the library is part of the Multipurpose Paterson Park Sports and Recreation facility. The facility consists of soccer fields, tennis courts, basketball court with a pavilion and an enclosed multi-functional sports hall with a fully equipped gym and crafts center, and an Amphitheatre.

The Facility opened in 2021 with the following services: Lending, reference, elearning classroom, group study rooms, activity / training rooms. The new Paterson Park Multi-Purpose Centre is an excellent example of the City's commitments to Livability. It is also an attempt by the City to build "Libraries of the Future".

The library offers the following services -Reading development for all age groups, Digital literacy, and skills development, childrens' services, Lending services for all age groups, Reference services, Study rooms, Space for group activities, eLearning classroom and a functional hall that can be used for different activities. The library consists of a basement area that can be accessible after-hours for individual and group studying. Since opening, the most

used space is the eLearning classroom, where groups of youth attend computer lessons, and the activities room where holiday activities and school programs are held. The location of the library within a sports and arts facility, allows the library to take some programmes outside to the sports and arts areas, which demonstrates collaboration between libraries and other departments and introduces communities to both facilities.

### Lehae Library (Region G)

Lehae is one of Gauteng's newest and most promising residential areas developed through government housing subsidy scheme. It is approximately 20-minutes by road from the Johannesburg Central Business District, locate centrally near other 2 smaller municipalities. It has a population of just over 15,000 and mainly working class and youth, with high levels of unemployment and lower education levels. The facility was built specifically to ensure wider access to education and learning opportunities by the community. The library was built as Phase One of the multi-purpose centre at an amount of R26 million (1.460 USD) and will be followed by the construction of sports and recreation facilities. The library offers the same services as the two libraries above, however, the City is awaiting delivery of computer equipment for use by members of the public. The City installed fibre optic cables to enable Wi-Fi connectivity for both staff and community, as such, patrons can bring their own smart devices to access the Internet. The library was officially opened in May 2023 and offers a range of services and programmes for all age groups. It offers an open space outside that attracts many children who participate in indigenous games and other sporting activities. The COJ Library services department has a vision of exploring the use of the space outside to expand library programs outside library walls, as it is an area within the library space that encourages community engagement and social cohesion

### **Integrated Library System (ILS)**

The City libraries have recently conducted thorough research into integrated library systems, and came up with own Business Requirement Specification (BRS). The new system will accommodate all the user needs and expectations, taking into consideration the emergence of new technologies for libraries and will also incorporate a learning management system. The specification is for a 'next generation' user-centric automated library solution, which is about the user experience.

The "CoJ LIS ONLINE" – the heart of the users' online experience - a one-stop public 'Discovery and user engagement' platform – if you can think of a library service to offer online, this is where we'll deliver it".

- A staff empowerment tool – helping librarians to work even smarter,
- Allowing more time for staff to do professional library activities, e.g. developing collections, sourcing and curating information, reading programmes, library literacy, etc.
- Data analytics dashboards (customized statistics when and how you need them)
- Enabling a flexible working environment in the libraries / support offices - using mobile / tablet technology and increased online / remote processes
- Integrated eResources collections and curated digital content

Other activities that are part of the ILS Project include the following:



- A Learning Management System:
  - o Supporting blended learning and training for both staff and communities
  - o Supporting locally developed online courses, also accommodating local languages.
- A Makerspace
  - o Support communities in exploring innovative ideas, testing new inventions encouraging creativity and entrepreneurship.
  - o Facilitate digital content creation as a multimedia space, where staff can test and experiment with audio-visual equipment, editing software and techniques.
- Implementing a GRAP compliant inventory management solution / Integrated asset management processes (Hybrid RFID/EM)
- Digitising the Johannesburg City Library Card catalogues (increasing access)
- Capitalisation of Heritage assets (preserving and recording)
- Automating Departmental collections, e.g. Law library, Public Safety, Arts and Culture libraries

### Library website

As part of the digital transformation strategy, COJ LIS introduced an eLearning website that is aimed at providing communities with access to free digital content and information about COJ Library facilities and services. The website [www.cojelearning.org.za](http://www.cojelearning.org.za) is a mobile-friendly platform that is accessible anywhere and was developed to strengthen the Library Services Digital Literacy programme. While libraries are not training centres, they play a major role in supporting literacies. Digital literacy has become a priority in the digital economy as part of lifelong learning and personal development of all communities. By providing access to carefully selected online courses and other e-resources and digital content, libraries enable the public to participate in the digital economy, and to develop basic, intermediate, and advanced digital skills. The website offers access to free eResources, links to online courses, and information about library activities and services.

### Conclusion

Digital transformation in COJ libraries is a continuous journey with challenges and successes. Since 2016, Johannesburg libraries have successfully introduced innovative programmes in library spaces, such as Coding and Mobile Literacy which have been accessed by over 20 000 youth. The digital platforms – website and Facebook page, that were utilized as tools to continue providing library services and information, ring the COVID19 lockdown, resulted in over 500 000 visits and views. COJ libraries managed to overcome challenges of resource scarcity and connectivity challenges by partnering with various organizations and encouraging libraries to share resources. The future of COJ Libraries and the success of the digital transformation strategy will be driven by the willingness of leadership to adapt to change, the commitment to reskilling and upskilling of staff, and the support for digital literacy in communities to prepare them for change. These factors will be crucial to redesigning and repurposing library buildings of the future.

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