

Insight



How does access to a local data centre affect business productivity?

Evidence from Kenya, Zambia, Zimbabwe and South Africa

Practical thinking on investing for development

Insight is a series of practical and digestible lessons on the issues of private sector investment and development. They're based on our experiences, knowledge and research and are aimed at investors, businesses, development professionals, and anyone with an interest in private sector development.

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Foreword

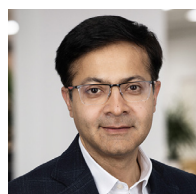
Access to affordable, good-quality internet and data services is central to development. It can increase access to education, healthcare, banking and government services as well as strengthen the growth of businesses and local economies and create new jobs.

At BII we support digital transformation across Africa and South Asia. We invest in digital infrastructure such as telecom towers, fibre lines, data centres, mobile networks and in innovative digital businesses. One example is our investment in Liquid Intelligent Technologies, the largest independent fibre and cloud provider in Africa. We are proud that our partnership with Liquid (including two equity investments totalling \$220 million), has helped **bring access to faster, more reliable and cheaper internet connectivity** for millions of people across Africa. This includes supporting the development of a new Liquid data centre in South Africa.

It's vital that we understand the impact of our investments and learn from our experience, to ensure that our future investments maximise social impact. That's why we joined forces with Liquid to commission this report. It examines the effects of local data centres on the use of cloud services and productivity for Liquid business clients in four countries: Kenya, Zambia, Zimbabwe and South Africa.

The impact of data centres is a relatively unexplored area of analysis with limited data and I really welcome the findings and implications from this study. I am encouraged to see that Liquid's customers have experienced improvements in the latency and reliability of cloud services, and that improved reliability was a driver of increased cloud service use. The study highlights a range of benefits of cloud service use for businesses that support their productivity. This includes helping to launch new products and services, expanding into new markets and offering existing services and products faster or at a lower cost. It also points to opportunities for BII and other investors to further support the digital transformation of African economies. This includes investment in data infrastructure, particularly in markets with lower data reliability and higher latency, and investment in renewable energy to sustainably power this data infrastructure and the businesses that can benefit from it.

I wish to thank the independent evaluators at Steward Redqueen and Itad for their work, and Liquid for their valuable partnership in generating these insights.



Abhinav Sinha

Managing Director and Head of Technology and Telecoms
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Executive summary

Liquid Intelligent Technologies (Liquid) is a leading technology and digital solutions provider in eastern, central and southern Africa. As Africa's largest independent fibre and cloud provider, it has built the continent's largest independent fibre network, covering over 100,000km. It also operates state-of-the-art data centres in Johannesburg, Cape Town, and Nairobi, and is a leading provider of cloud-based services across Africa.

An initial British International Investment (BII) investment in Liquid in 2018 focused on building critical digital infrastructure to improve access, quality and affordability of internet and digital services across Africa. We made a follow-on investment in 2020 to support a new Liquid data centre in South Africa. This investment aimed to improve the quality and reduce the cost of cloud services through access to a 'local' data centre, and thus support firm productivity and growth opportunities for businesses in eastern, central and southern Africa.

This study examines how having access to the new data centre and its services has affected the productivity of Liquid business clients in four markets (Kenya, Zambia, Zimbabwe, and South Africa). The study was conducted by Steward Redqueen and Itad in partnership with Liquid. It involved a desk review of external evidence and a survey of a sample of 97 Liquid client companies across Kenya, Zambia, Zimbabwe, and South Africa to capture their experiences of using cloud services and its effects on their business productivity and opportunities.

Main insights from the survey findings include:

- **The local data centre improved the latency (the time it takes for data to travel between two points) and reliability (the consistency of uninterrupted cloud services) reported by Liquid customers**, in line with external evidence.
- **While data reliability was not the main reported driver of companies' cloud service use, the results suggest improved data reliability from using the local data centre supported their increased use of cloud services**, particularly for digital native companies most likely to benefit from improved access and quality of cloud services.
- **The findings highlight how using cloud services supports the productivity of Liquid client companies**, including helping them launch new products and services, expand in new markets and offer existing services and products faster or at a lower cost. Given these benefits, and the remaining need for more digital infrastructure in Africa to meet growing demand, further investment in local data centres appears key to support business growth, particularly in markets with lower data reliability and higher latency.
- **Cost and quality were among the barriers to greater cloud service use, suggesting that investing to improve affordability and reliability could further unlock the benefits of cloud service use for businesses**, particularly among digital native and small companies.
- **Making electricity affordable and reliable is another highlighted growth barrier that development finance institutions (DFIs) and private sector investment can help address**. Investments in renewable energy can help improve the cost and reliability challenges faced by businesses. They can also support additional investments in data-related infrastructure by providing the necessary power while staying aligned with energy transition goals.

Although African businesses are increasingly adopting digital technologies, most do not make intensive use of them for business purposes, and even digitally-enabled businesses rarely use them for productive tasks. DFIs have an opportunity to support businesses to make fuller use of cloud and other digital technologies, through direct or fund investments in companies that can provide this support and through technical assistance where practical and appropriate.

We hope this research provides useful insights into the challenges and opportunities for investors to support the growth and productivity of businesses through digital infrastructure investments.



1

Introduction

A major focus of BII, the UK's development finance institution (DFI), is to support digital transformation by pursuing investments in critical digital infrastructure and providing capital to innovative digital businesses. Expanding critical digital infrastructure can improve access, quality, and affordability of internet services in markets with limited existing infrastructure. Internet access, in turn, has the potential to help businesses to grow and strengthen local economies (Hjort & Poulsen, 2019). Digital infrastructure includes fibre backbone, data centres¹ and access networks such as towers and mobile phone operating companies. Improved internet access also means better access to information and services, potentially enhancing social outcomes in a range of development areas such as financial services, agriculture, civil engagement, health and education.

In 2018, we made an initial \$180 million investment in Liquid Telecom (now Liquid Intelligent Technologies, or 'Liquid' for short), to improve access, quality and affordability of internet and digital services across Africa. Liquid is a leading technology and digital solutions provider in eastern, central and southern Africa. It is also Africa's largest independent fibre and cloud provider, and built Africa's largest independent fibre network covering over 100,000km. It operates state-of-the-art data centres in Johannesburg, Cape Town, and Nairobi, and its services include cloud computing services,² modern work software packages (such as Microsoft 365), and cyber security advisory and management.

In 2020, we made a follow-on \$40 million investment to support a new Liquid data centre in South Africa. The objective of this follow-on investment was to improve the quality and reduce the cost of cloud services through access to a 'local' data centre, thereby supporting productivity and growth opportunities for businesses in eastern, central and southern Africa.

Three years after this follow-on investment, we commissioned Steward Redqueen and Itad to examine how having access to Liquid's new data centre and its services has affected the productivity of Liquid business clients in four markets (Kenya, Zambia, Zimbabwe, and South Africa).

- 1 A data centre is a physical room, building or facility that houses Information Technology (IT) infrastructure for building, running and delivering applications and services. It also stores and manages the data associated with those applications and services (IBM, n.d.).
- 2 Cloud services refers to on-demand, scalable computing resources like computing power, data storage, or applications over the internet. These resources are stored in data centres.

Expanding critical digital infrastructure can improve access, quality, and affordability of internet services.

Over
100,000km

of fibre network built by Liquid to date.



2

Study overview

2.1 Objectives

The study sought context-specific evidence of the impact of our investment in the new Liquid data centre in South Africa, and to learn lessons that will inform how we assess future data centre development investment opportunities. Our impact case for data centre investments is summarised in the theory of change in Figure 1. While data centres can support digital inclusion beyond its effects on businesses by improving internet connectivity for households, the theory of change below and this study focus on their effects on businesses.

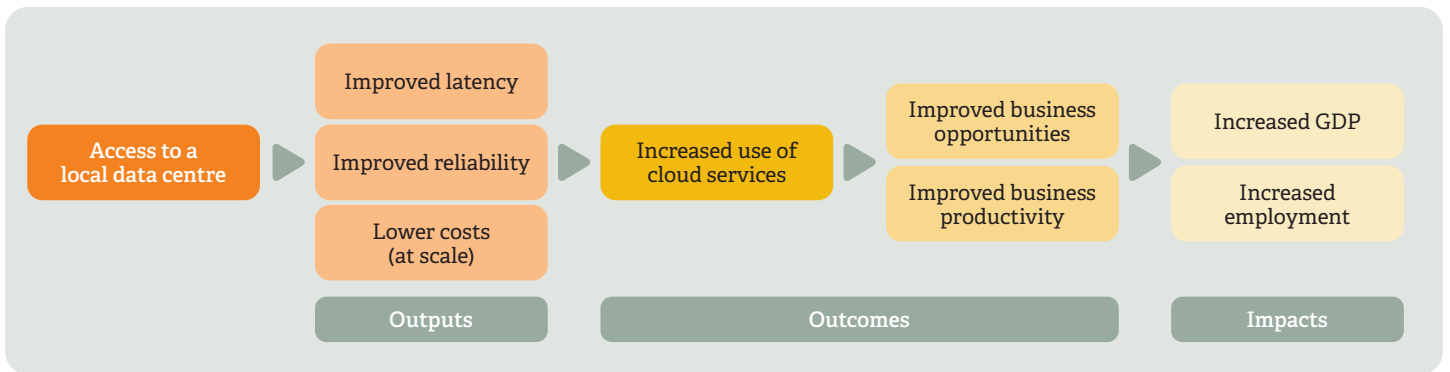


Figure 1: Theory of change for the impact of BII data centre investments on businesses

Our overview of the external evidence supporting this theory of change is in the next section. While the existing evidence helps make the impact case for data centre investments, it doesn't fully explain by how much or in what way local data centres can encourage greater use of cloud services, and in turn support business productivity and local economic growth. This study aims to fill some of these evidence gaps in the specific context of Liquid's business clients with access to its South Africa data centre.

2.2. Existing evidence of the impact of local data centres

Some external evidence suggests local data centres improve reliability and latency, and may lower costs at scale.

- Local data centres improve reliability by lessening the risk of internet services disruption caused by faults in damage-prone submarine cables, with an estimated 100 incidents a year affecting undersea cables (Knapp, 2024).
- New African data centres have helped to reduce latency³ times (African Data Centres Association, 2021), which can be particularly beneficial for businesses that need to exchange data quickly. Cloud service users in Africa mostly use content distribution network⁴ (CDN) nodes located outside the continent, resulting in higher latencies relative to CDN nodes in Africa. While increasing CDN presence in Africa can help, using CDNs in Africa provides lower latencies than local data centres.⁵
- Over time and at sufficient scale, local data centres could lead to lower costs, particularly by reducing transit costs to deliver content to local users (Maaref, 2012).
- Local data centres may also deliver legal and security benefits. Local data centres can offer legal advantages for business customers that prefer to store their data in the same jurisdiction as their operations. Also, data residency and protection laws often require regulated data to be localised within the country's borders, requiring local data storage to enable access (Blumberg, et al., 2024).
- Compared to companies having their own on-premises data centre, using a larger multi-tenant data centre can improve data security by ensuring backup power, infrastructure maintenance, and security links.

While it appears logical that improvements in data latency, reliability and cost would encourage greater adoption and use of cloud services, there is little evidence available to quantify the impact of these improvements on cloud service use. On the other hand, there is evidence that once businesses adopt cloud services, it can provide a range of benefits including ease of scaling, operational efficiencies and digital innovation. Cloud service use can also help reduce IT spending, particularly for smaller businesses which tend to have a higher ratio of cloud-to-total IT expenditure (Blumberg, et al., 2024). There is evidence from wealthier economies suggesting that cloud service use particularly benefits start-ups and small firms, as the lower cost of acquiring IT capabilities through cloud removes a big entry barrier (Ewens, et al., 2018; Blumberg, et al., 2024).

Some evidence suggests data centres have a positive impact on local employment and economic growth. As well as facilitating cloud service use by businesses, the data centres' own operations can create employment. While most of these jobs are created in the construction phase and are therefore temporary, the development of skills among the local workforce related to the running and management of data centres can contribute to a favourable environment for further data infrastructure investments and the creation of additional jobs (Bell & Mondliwa, 2020). Several studies also estimate the positive contribution towards gross domestic product (GDP) of data centres in high-income countries (Thelle, et al., 2017; Oxford Economics, 2018; GrantThornton, 2018). More broadly, there is strong evidence from Brazil (Hjort & Tian, 2021; Poliquin, 2020), China (Chen & Song, 2020) and India (Khanna & Sharma, 2018) that improved internet connectivity and investment in IT has a positive impact on wages and productivity, suggesting that to the extent that they meaningfully contribute to improving connectivity, data centres can support these positive economic impacts.

3 The more latency improves, the less time it takes for the information to be transferred.

4 A CDN is a collection of servers that store cached content (caching is the process of storing copies of files in a cache, or temporary storage location, so that they can be accessed more quickly). When requesting content, users will be routed to the nearest server. This improves latency (see [Data Center Knowledge](#)).

5 Babasanmi & Chavula (2022) found that using CDN nodes in Africa provides up to 87 per cent lower latencies than accessing the data centres directly.

Local data centres improve data reliability and latency, and may lower costs at scale.

Cloud services can provide a range of benefits for businesses including ease of scaling, operational efficiencies and digital innovation.

2.3. Research questions

The study asked five research questions (RQ) related to the theory of change in Figure 1:

1. What is the current data centre landscape and regulatory situation across selected African markets?
2. Have Liquid customers experienced changes in data latency and reliability⁶ since 2020, and if so, what were the perceived drivers of such changes?
3. How has the use of cloud services changed since 2020, and what were the drivers of these change?
4. Does the use of cloud services open new business opportunities and enhance productivity for Liquid customers?
5. If such effects take place, does the use of cloud services and their perceived benefits vary across different type of companies?

2.4. Methodology

Study activities included a desk review of external evidence, analysis of client and billing data provided by Liquid, and a phone survey of a sample of 97 Liquid client companies across Kenya, Zambia, Zimbabwe, and South Africa. The aim was to capture their experiences and perceptions of cloud services users and the effects on business performance and opportunities.⁷

The current data centre landscape and regulatory situation across the selected African markets was reviewed using desk research and is described in Section 3. To explore the effects of the local data centre that became operational in late 2019 on data latency, reliability and security (RQ2), relevant survey data was disaggregated in two groups: business clients that used cloud services through Liquid before 2020, and thus experienced any changes associated with the move from having their data stored outside of Africa to having it stored in the new South Africa data centre; and clients that only used cloud services after 2020 and therefore have only had their data stored 'locally'.

While other factors are expected to have affected data latency, reliability and security for both groups of companies since 2019, comparing these two groups for relevant survey variables provides an indicative sense of the new data centre's contribution to the reported experience of Liquid business clients.

To analyse how improved access to and use of cloud services can benefit different types of companies (RQ5), the evaluators disaggregated some of the analysis by company size (defined by the number of employees) and digital business type (defined as per BII's categorisation in its digital transformation strategy, described in Section 4).

⁶ While local data centres are expected to reduce cost of cloud services over time, this is not expected to occur over the time period considered for this study, hence was not tested in the study.

⁷ The survey was conducted by DataNoble, a company specialising in business-to-business customer experience and sentiment-based research using mobile and video conference interviews.



3

The data centre landscape across Africa

The data centres landscape in Africa has seen significant transformation over the past decade due to increased connectivity, growing demand for digital services, and the rise of cloud computing.

Between 2016 and 2021, capacity doubled to around 250 megawatts (The Economist, 2021). At the same time, demand for data centres in Africa has grown, notably due to the sizable and young population combined with growing network penetration increasing demand for higher-speed mobile data services (African Data Centres Association, 2021). Moreover, and especially after Covid-19, African consumers are primarily dependent on mobile phones for product and content consumption, in addition to communication. Digitalisation and 4G/5G rollout mean that data centre infrastructure is projected to increase by 50 per cent from 2021 to 2026, and the [2021 report on the 'State of the African Data Centre Market'](#) estimates that Africa as a whole will need up to 1,000 megawatts and 700 facilities to meet demand and bring capacity up to par with the continental leader, South Africa. While most of Africa's data centre capacity has historically been in South Africa, which houses two-thirds of the continent's capacity (Data Center Dynamics, 2022), new clusters are emerging in Kenya, Ghana and Nigeria, where the long distance from European data centres can offer competitive advantages to local data centres in terms of speed and reliability.

Despite this growth in capacity and investments, several important challenges remain to opening a data centre in Africa, particularly the scarcity of power and connectivity (i.e., closeness to existing hubs). Scarcity of water needed for cooling can also be a challenge, and, while land is often available, it is not necessarily well-connected (Oxford Business Group, 2021). Legal and regulatory divergence across countries can also discourage the development of data centres (Data Center Dynamics, 2022).

Demand for data centres in Africa has grown, notably due to the sizable and young population combined with growing network penetration increasing demand for higher-speed mobile data services.

The African data regulatory environment is developing quickly, in part due to General Data Protection Regulation (GDPR) requirements. As of 2020, no African country had domestic laws compliant with GDPR's extraterritorial provisions, which impose privacy obligations on non-European Union (EU) companies that offer products/services to EU residents. This resulted in African businesses being cut off from engaging with digital users in the EU in 2020 (Mannion, 2020). As of late 2023, 19 out of 54 African countries had signed (and 15 ratified) the 2014 African Union Convention on Cyber Security and Personal Data Protection ('Malabo Convention'), and more than 35 countries had national data protection laws and/or regulations (Hogan Lovells, 2023). Additionally, various African governments, including in the four markets of interest for this study (Kenya, Zambia, Zimbabwe, and South Africa), have developed incentives to bolster investment in the Information, Communications and Technology (ICT) sector, including financial incentives, streamlined regulatory processes, and research and development (R&D) funding to encourage the development of local ICT infrastructure.

These improvements in the regulatory and economic environment will be important to encourage further data centre development in Africa, and thus enable the impacts described in the theory of change in Figure 1.

While data infrastructure such as data centres are essential to the digital transformation of economies, they are also highly energy-intensive and contribute to greenhouse gas emissions. Innovation and government regulation will be crucial to increase the efficiency of data centres and reduce their climate and environmental footprint (World Bank, 2023).



4

Survey findings

4.1. Survey sample

Alongside telecommunication services, Liquid offers its clients data centre access and digital services, such as cloud computing services, modern work software packages (Microsoft 365), and cyber security advisory and management. The population of interest for the survey included clients operating in the four focus markets (Kenya, Zambia, Zimbabwe, South Africa) that paid to use computing services and/or work software packages through Liquid in the last year for which client spending data was available as of the time of the survey (October 2022 to September 2023).⁸ From this list of clients, 356 companies were contacted, of which 97 could be reached, agreed to participate in the survey and confirmed being cloud service users.⁹

The companies surveyed were categorised in line with BII’s framework for categorising businesses into digital infrastructure, digital native, digitally enabled and disruptive digital (see Figure 2).¹⁰ Respondents were asked to identify which of the descriptions associated with these categories best described their company.

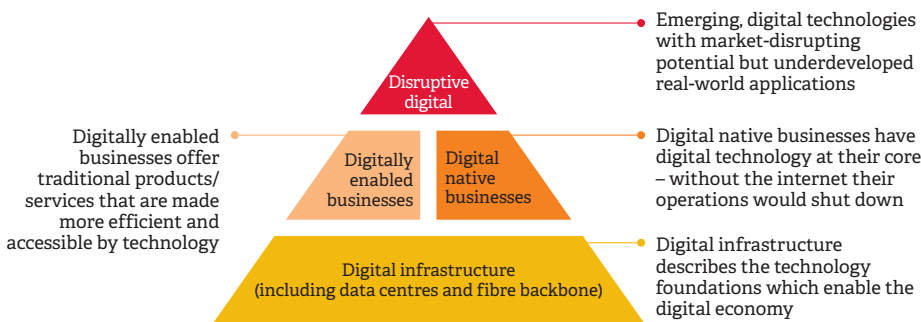


Figure 2: Digital business types

⁸ An estimated 39 per cent of these clients were served directly and 61 per cent were served indirectly via third-party resellers, and all received the same access and quality of services provided by Liquid.

⁹ Companies reached that were modern work software package users but did not use cloud services were not included in the main analysis presented in the report.

¹⁰ Further information and examples on these categories are described in our article: [How can development finance catalyse investment in digital infrastructure?](#)

Figure 3 describes the sample of 97 companies along key characteristics including digital business type, primary country and sector of operations, and company size based on number of employees, as per the thresholds used in the International Finance Corporation (IFC) definitions of micro (<10), small (10-49), medium (50-300) and large (>300) enterprises.¹¹

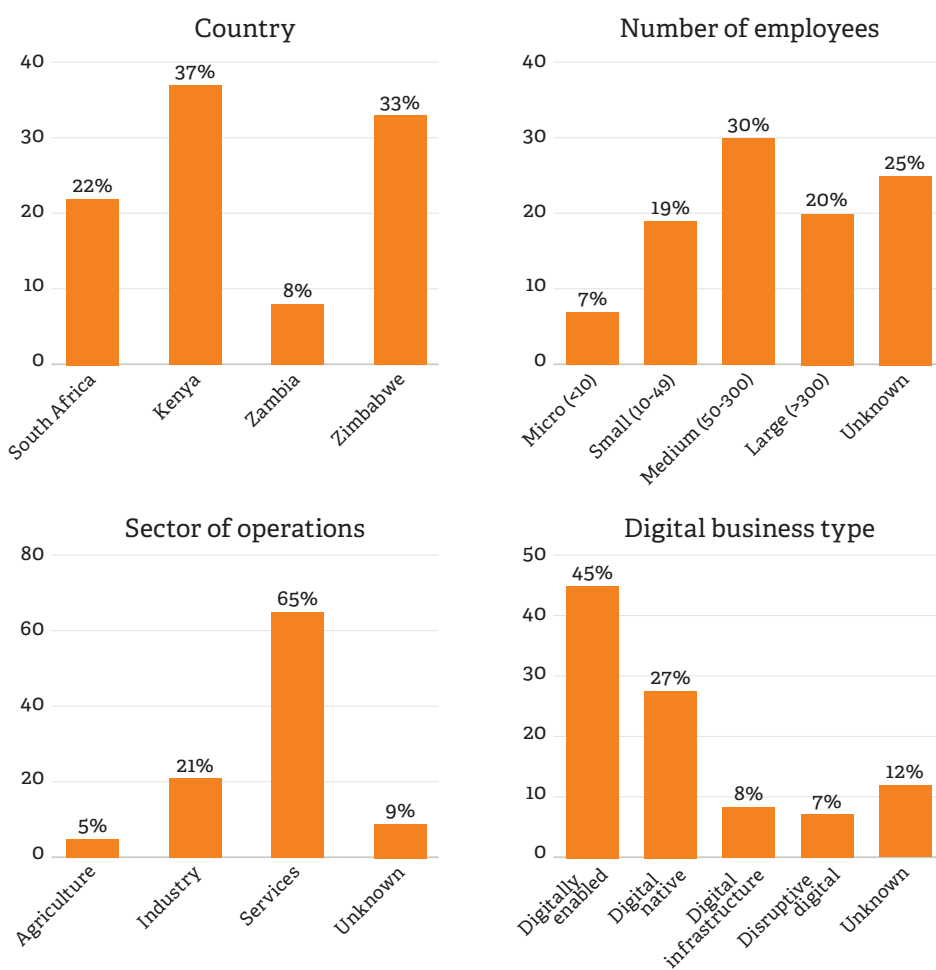


Figure 3: Breakdown of the sample (97 cloud-using companies) by country, number of employees, sector, and digital business type

Respondents were asked about the type of cloud services they use. The most frequent type of cloud service used was storage (83 per cent of respondents), followed by computing (68 per cent). Most companies used two (27 per cent) or three (24 per cent) different types of cloud services.

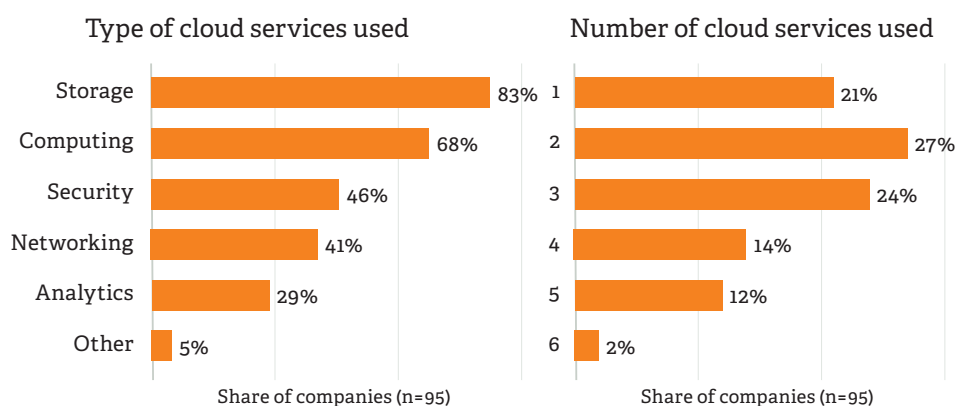


Figure 4: Breakdown of the sample by type and number of cloud services used

83%

of Liquid clients surveyed use cloud storage services.

¹¹ See IFC's Definitions of Targeted Sectors.

From the 97 cloud using companies surveyed, 83 of the respondents reported the year in which they started using cloud services. About half (42) of these companies, the 'pre-2020' clients, were using cloud services before the South African data centre became operational, and would therefore be expected to have experienced any changes from their data being stored in this data centre rather than outside Africa.¹² The remaining half (41 companies), the '2020-onwards' clients, would be expected to only have experienced cloud services with their data stored in a South Africa data centre. Thirty-nine out of the 41 '2020-onwards' clients were first-time cloud users when they became Liquid cloud service clients (compared to 34 out of the 42 'pre-2020' clients).

Comparing these two groups helps to separate the effects of the local data centre on data reliability and latency from general changes in digital infrastructure available, although the direction and magnitude of any differences cannot be rigorously attributed to the new data centre and should be treated as indicative. Figure 5 illustrates that the two groups of clients are similarly distributed in terms of location, sector, size, and digital business type.

The two groups of clients were also similarly distributed in terms of the types and numbers of cloud services used, with storage and computing reported as the most frequently used types of services, followed by security, networking and analytics.

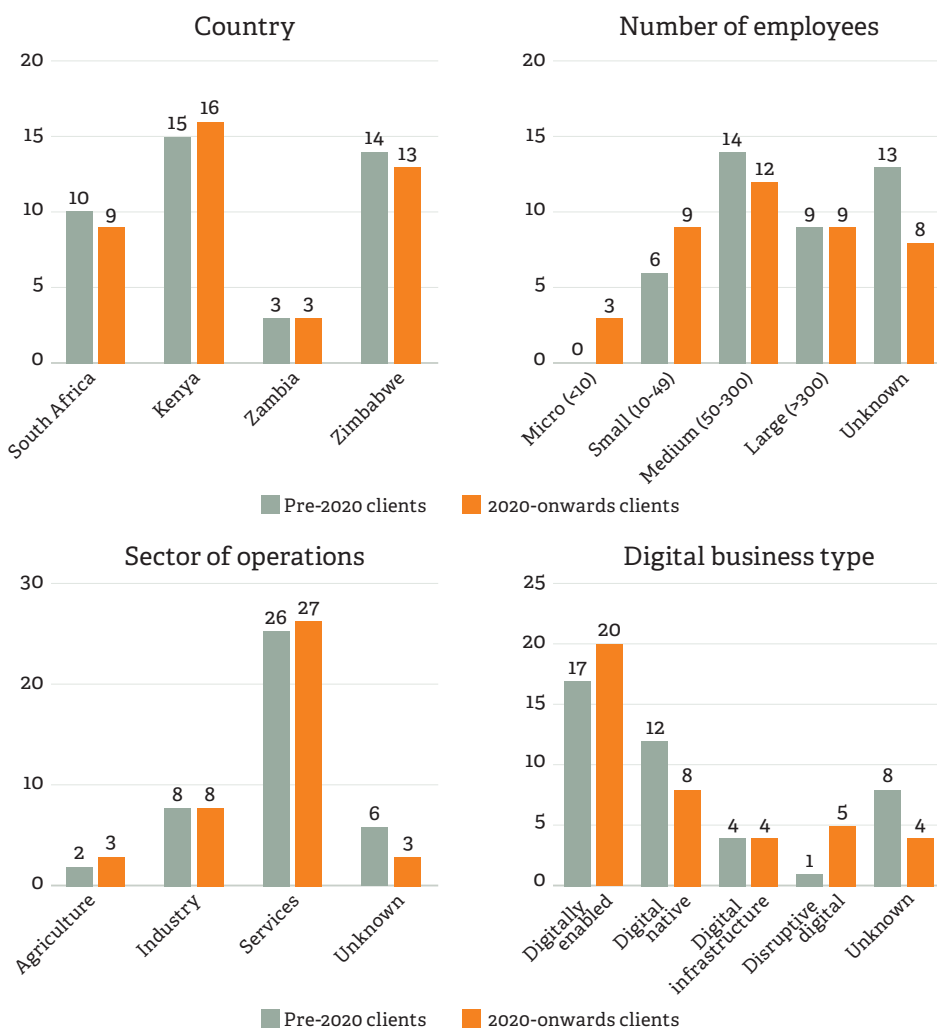


Figure 5: Breakdown of the sample by country, number of employees, sector, and digital business type for 42 pre-2020 companies and 41 2020-onwards companies

12 Among these 42 companies, six started purchasing cloud services from Liquid after 2019, but were already cloud service users before then. These companies would still be expected to have experienced changes from having their data stored in the new Liquid South Africa data centre if their data was hosted by Liquid in South Africa on behalf of cloud service providers once the data centre became operational, even if these companies didn't initially purchase their cloud services from Liquid. In the event that their data was not stored in the Liquid data centre, their data may still have been moved to being stored in their country or region given increasing data sovereignty regulation encouraging the use of local data centres.

4.2. Reported changes in data latency and reliability

Survey findings suggest the local data centre has improved the latency and reliability of cloud services reported by Liquid customers. As shown in Figure 6, customers that were already using cloud services before the new Liquid data centre became operational (pre-2020 clients) were much more likely to report improvements in latency (50 per cent vs 25 per cent) and reliability (59 per cent vs 48 per cent) since 2019 than customers that only started using cloud services in 2020 (2020-onwards clients).¹³ Furthermore, most customers that reported improvements saw a strong or some relationship between these improvements and the availability of a local data centre (58 per cent for latency, 73 per cent for reliability), suggesting that customers experienced the benefits anticipated from having their data stored locally.¹⁴

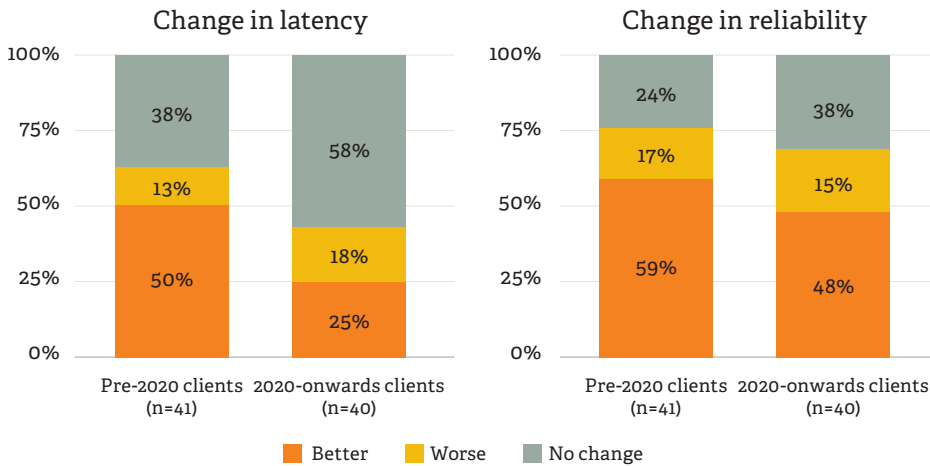


Figure 6: Reported experienced changes in latency and reliability for pre-2020 clients and 2020-onwards clients

Surveyors asked customers to indicate the change in latency in percentage terms. On average, customers that adopted cloud services in 2020 or later reported a 2 per cent deterioration in latency since they started using these services, whereas pre-2020 clients reported on average a 23 per cent improvement since 2019 (when the data centre became operational).

4.3. Reported changes in use of cloud services

Though not the main reported driver of companies' cloud service use, there is some indication that improved data reliability has supported the increased use of cloud services. Most respondents in the overall sample (63 of 85, or 74 per cent) reported increasing their use of cloud services since they started using them, with a similar proportion reporting an increase in the pre-2020 (79 per cent) and 2020-onward (77 per cent) groups.¹⁵

The most frequently reported driver (75 per cent of respondents) for changes in cloud service use was a change in business proposition and operations (rather than factors related to the availability or quality of cloud services. Another driver reported by 49 per cent of respondents was change in reliability; this was more frequently reported among the pre-2020 group (60 per cent vs. 44 per cent in the 2020-onwards group), the same group which reported experiencing a greater improvement in reliability since using cloud services. This is consistent with the notion that by improving reliability, local data centres can support increased cloud service use.

¹³ Respondents of companies that used cloud services before 2020 (while their data was stored outside of Africa) were asked if they experienced a change since that year, while respondents of 2020-onwards companies were asked if they have experienced changes since they started using cloud services.

¹⁴ Respondents who reported a change in latency (or reliability) were asked if they perceived a 'strong', 'some', 'weak' or 'no' relationship between the change and the availability of a South Africa data centre. Of 26 respondents who reported an improvement in reliability, 19 reported some or a strong relationship. Of 19 respondents who reported an improvement in latency, 11 reported some or a strong relationship.

¹⁵ The date of cloud service adoption was unknown for 12 respondents, only six of which (50 per cent) reported an increase in cloud service use since adoption. This explains why the proportion of respondents reporting an increase in the overall sample (74 per cent) is lower than both the pre-2020 (30 of 38 or 79%) and 2020-onward (27 of 35, or 77 per cent) group.

59%

of pre-2020 Liquid clients surveyed reported an improvement in reliability since the data centre became operational.

49%

of Liquid clients surveyed reported change in reliability as a driver for increasing their cloud service use.

Changes in latency were reported as a driver for changed cloud service use by only 10 per cent of respondents (11 per cent among pre-2020 companies and 11 per cent for post-2020 companies). This suggests changes in latency aren't likely to drive substantial increases in cloud service use for most companies. While one would still expect sufficiently good latency to enable cloud service use, it could be that once a minimum level of latency is reached, companies' cloud service use is not very sensitive to additional latency improvements.

Most respondents (95 per cent in each group and across the overall sample) reported it has become easier to scale storage and computing power since they adopted cloud services, suggesting this anticipated benefit of cloud service use is widely perceived among Liquid clients.

While reported drivers for change in cloud service use were mostly similar across company characteristics, a few variations emerged. However, these should be interpreted cautiously given the small number of companies in each category:

- Service companies were more likely than non-service sector (agriculture and industry) companies to report reliability and (to a lesser degree) latency as drivers of change in cloud use.¹⁶ This suggests that service companies may be more likely to increase their cloud service use in response to changes in reliability.
- Reliability was reported by a meaningful proportion of companies (42 per cent to 55 per cent) across company size categories (micro, small, medium and large). Large companies were the most frequent to report scalability as a driver (79 per cent, Figure 7).
- Digital native companies were most likely to report any increase (85 per cent) or a substantial increase in cloud service use (62 per cent), and to report scalability (61%) and reliability (56 per cent) as drivers of cloud service use (Figure 8). This is consistent with the notion that digital native companies are particularly reliant on cloud service use and especially benefit from improved access and quality of cloud services.

95%

of Liquid clients surveyed reported it has become easier to scale storage and computing power since they adopted cloud services.

¹⁶ Of the 42 service companies that reported a change in their cloud service use, 25 (60 per cent) reported data reliability and six (15 per cent) reported latency as a driver for this change, compared to four out of 16 (20 per cent) and none out of 20 (0 per cent) for non-service companies.

Proportion of respondents reporting each factor as a driver for change in cloud service use

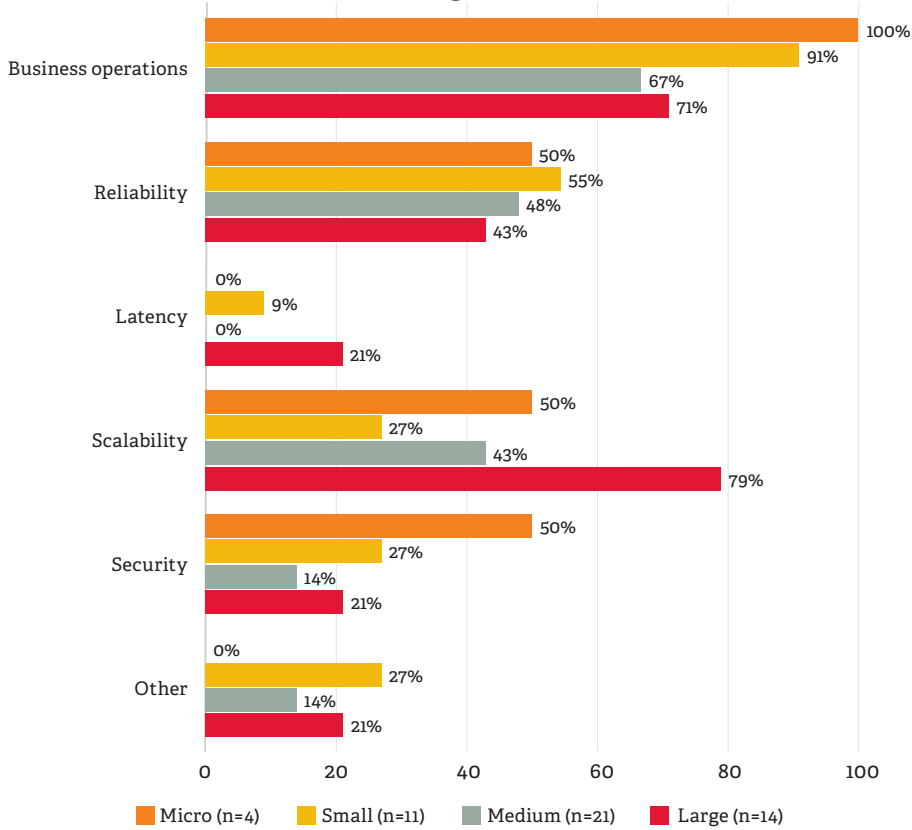


Figure 7: Reported drivers for change in cloud service use, by company size (sample only includes respondents that reported a change in cloud service use)

Proportion of respondents reporting each factor as a driver for change in cloud service use

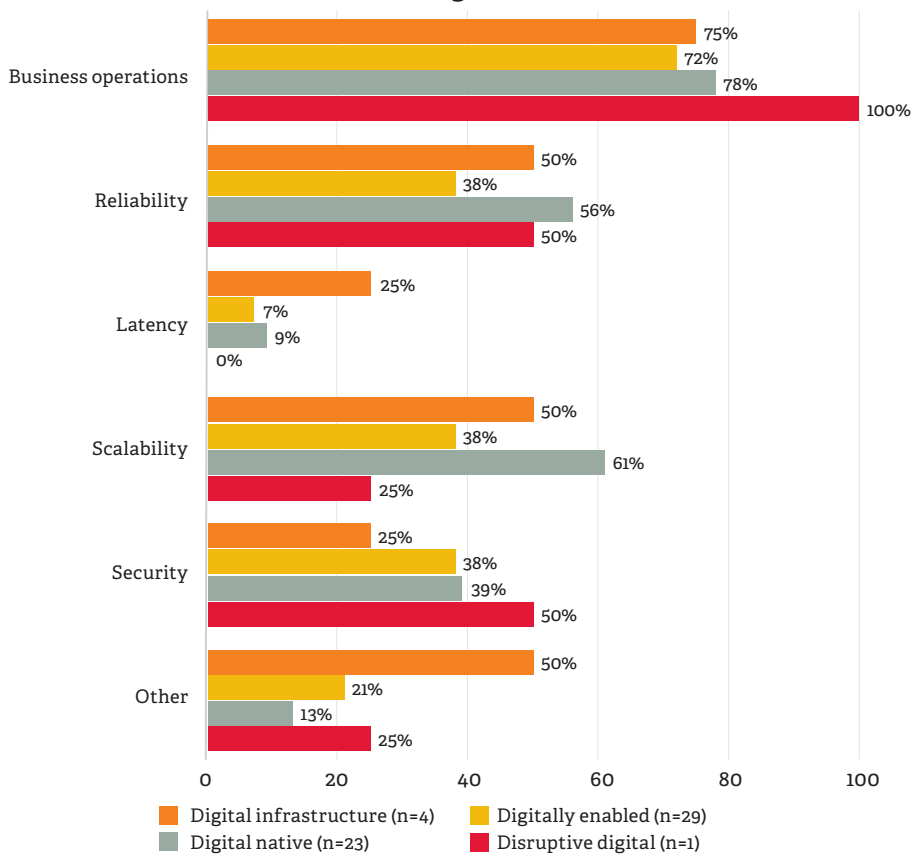


Figure 8: Reported drivers for change in cloud service use, by company digital business type (sample only includes respondents that reported a change in cloud service use)

4.4. Reported business benefits of cloud service use

The survey results highlight the benefits of cloud service use for productivity experienced by Liquid client companies. The benefits most frequently reported were better data management (90 per cent), offering existing services faster or at a lower cost (76 per cent) and launching new products or services (71 per cent), as shown in Figure 9.¹⁷ These cloud use benefits were widely reported by respondents across companies of different sector, company size and digital business type, with some variation in order of frequency.

73%

of Liquid clients surveyed reported that the share of their revenue dependent on cloud services has increased over the past five years.

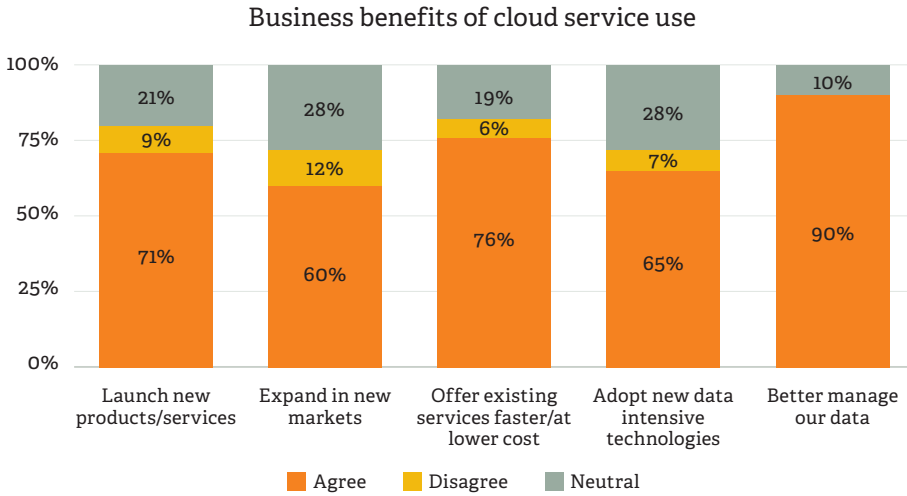


Figure 9: Reported benefits of using cloud services (n=93)

Roughly half of respondents also stated that more than 50 per cent of their revenues are dependent on cloud services (Figure 10), and 73 per cent reported that this share of revenue has increased over the past five years.

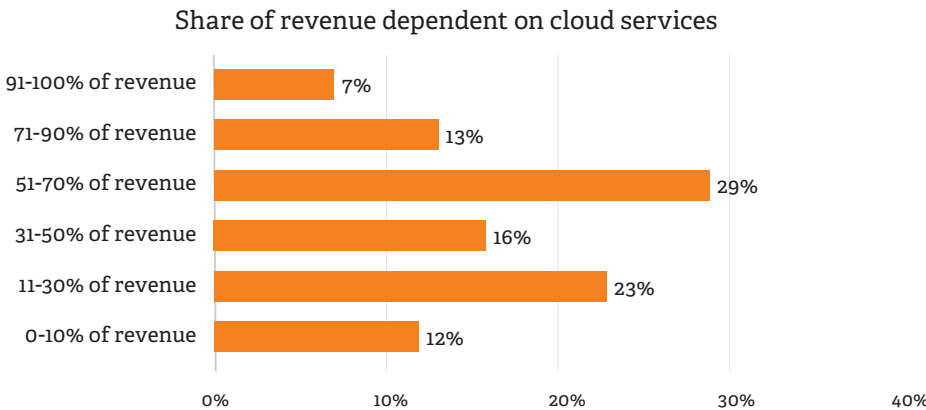


Figure 10: Reported share of revenues dependent on cloud services for the total sample (n=83)

However, most companies (56 per cent) did not report perceiving a relation between cloud service use and any change in their number of employees in the last five years (2018-2022), with only 24 per cent reporting perceiving some or a strong relationship. This suggests that cloud service use on its own is unlikely to support change in company size.

¹⁷ Respondents were asked to rate the extent to which a given benefit applied to their business on a scale of 0 (does not apply at all) to 5 (very much applies). Responses were categorised as 'Disagree' (0 or 1), 'Neutral' (2 or 3) and 'Agree' (4 or 5).

4.5. Barriers to further cloud service use and business growth

Cost and quality were identified among the barriers to greater cloud service use, suggesting additional investment to improve affordability and reliability could further unlock the benefits of cloud service use for businesses.

High cost of cloud services was the most frequently reported bottleneck (37 per cent), followed by poor quality of internet (25 per cent) and regulatory and compliance challenges (20 per cent), as shown in Figure 11. Companies which identified other bottlenecks raised costs and specific skillset needed for working with cloud computing, security concerns, resistance to change, customer buy-in, or the fact that the company wasn't yet at the stage in its growth to adopt further cloud services.

37%

of Liquid clients surveyed reported that high cost of cloud services was a bottleneck to further cloud service use.

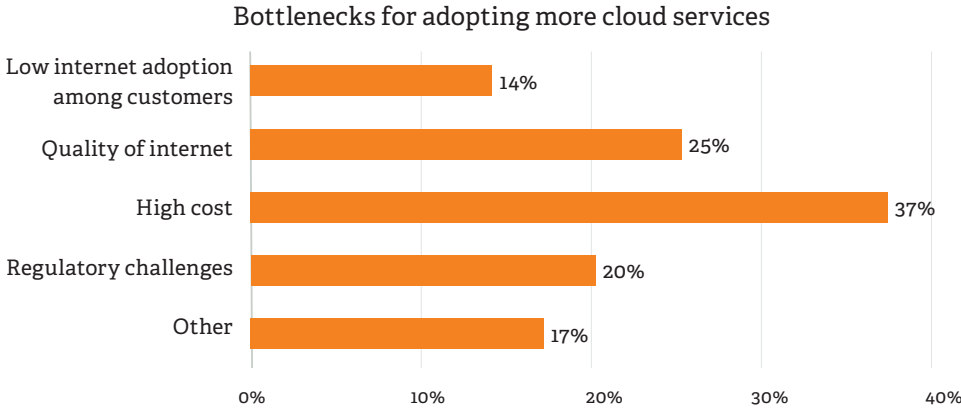


Figure 11: Reported bottlenecks for adopting more cloud services (multiple responses possible) (n=95)

A higher share of large companies reported low internet adoption among consumers and regulatory and compliances challenges as barriers to greater cloud service use relative to smaller companies (Figure 12). Among companies categorised as disruptive digital, the most frequently cited barrier was low internet quality (Figure 13). High cost was the most frequently cited barrier among digital native companies and among small companies.

Proportion of respondents reporting each factor as a barrier to further cloud service use

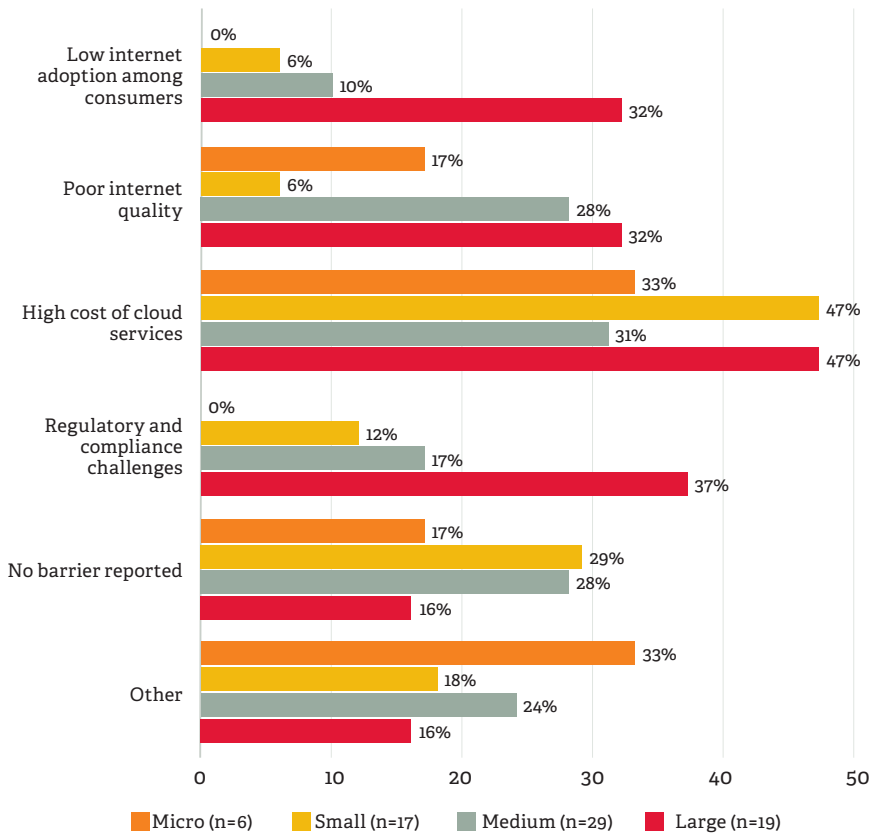


Figure 12: Reported barriers to greater cloud service use, by company size

Proportion of respondents reporting each factor as a barrier to further cloud service use

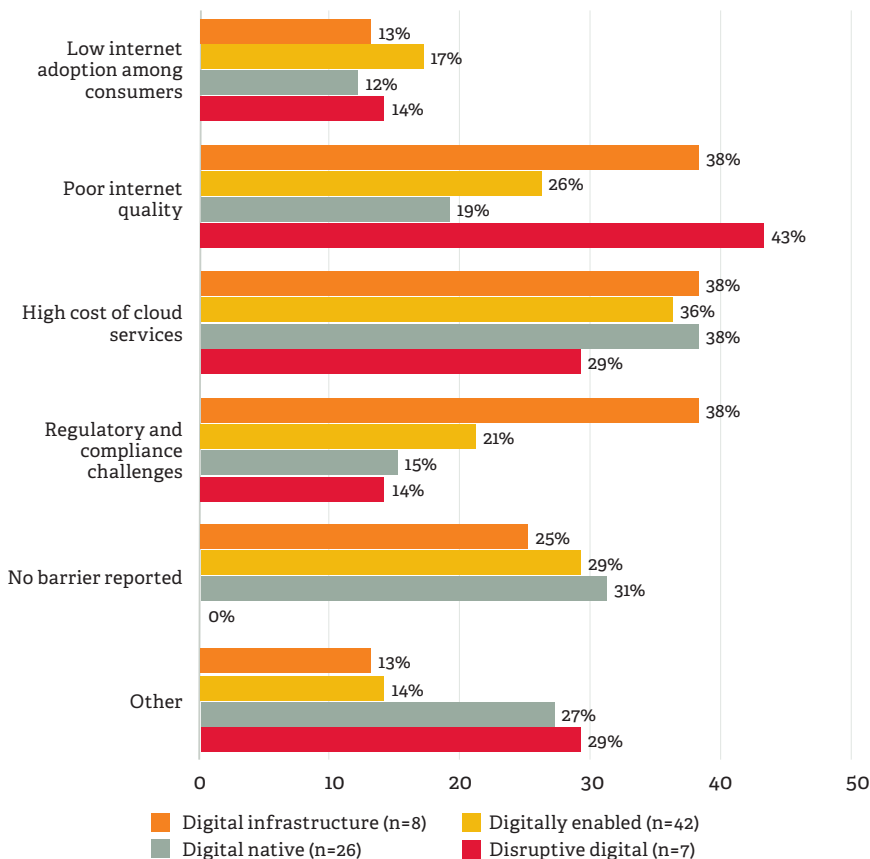


Figure 13: Reported barriers to greater cloud service use, by company digital business type

While improved access to reliable cloud services can support company growth, other barriers remain for businesses. Figure 14 shows how survey respondents rate some common obstacles to doing business in their markets. For the overall sample, tax rates (3.3 average on a 0-5 scale), electricity (2.6 out of 5) and political instability (2.5 out of 5) are rated as most severe. The findings also highlight the other important barriers that must be lifted to support further business growth, and the barriers most relevant to different types of businesses.

While most of these barriers cannot be directly addressed by private sector investment, DFIs can contribute to increasing the availability of affordable and reliable electricity, which was rated as one of the most severe constraints, particularly among large companies (3.1 out of 5 severity score on average) and digital infrastructure companies (3.3 out of 5).

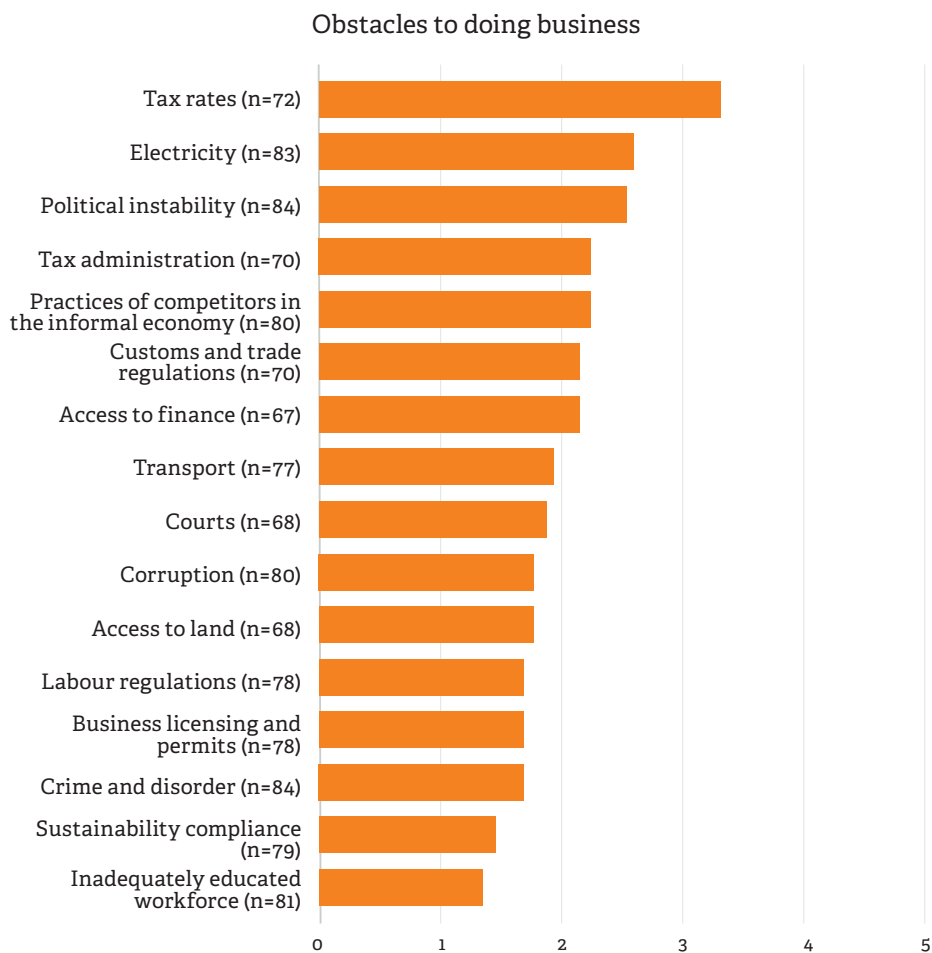


Figure 14: Reported obstacles faced by companies (from 0: not an obstacle to 5: severe obstacle)¹⁸

¹⁸ The number of responses varies by obstacle as respondents were asked about each obstacle through a different question, and some respondents did not provide an answer to all questions.



5

Implications

The survey findings highlight some important considerations to understand how local data centres can support business productivity through increased cloud service use.

In line with available external evidence, the reported experiences of the companies surveyed suggest that using the South Africa data centre has improved the latency and reliability of cloud services perceived by Liquid customers in Kenya, South Africa, Zambia, and Zimbabwe. A high share of new Liquid clients since the data centre became operational in 2019 were first-time cloud service users, in line with the trend of increasing adoption of cloud services among companies in the region.

While data reliability was not the main reported driver of companies' cloud service use, there is some indication that improved data reliability associated with the local data centre has supported their increased use of cloud services, particularly for digital native companies especially reliant on cloud service use and therefore most likely to benefit from improved access and quality of cloud services.

The survey findings highlight that cloud service use supports the productivity of Liquid business customers, including helping them to launch new products and services, expand in new markets and offer existing services and products faster or at a lower cost. This suggests local data centres can support the productivity of businesses by improving their access to reliable cloud services. Given these positive effects, and the remaining need for more digital infrastructure in Africa to meet growing demand, further investment in local data centres appears key to supporting business productivity.

The survey findings highlight that cloud service use supports the productivity of Liquid business customers.

More specifically, data centre investments are most likely to support business productivity through increased cloud service use in geographies where data reliability and latency are poor. In the context of the increasing number and capacity of data centres across Africa, the additionality of investments in data centres should be carefully considered. It is plausible that markets with lower data reliability and higher latency would also be markets less likely to attract commercial finance.

Even with an operational local data centre, barriers to further increasing cloud service use for Liquid business clients remain. The identification of cost and quality as such barriers by respondents suggests additional investment to improve affordability and reliability could further unlock the benefits of cloud service use for businesses, particularly among digital native and small companies.

While providing improved access to reliable cloud services can support company productivity, other barriers remain for businesses. One such barrier that DFIs and private sector investment can help address is the availability of affordable and reliable electricity. This is particularly important in supporting the growth and productivity of large companies and digital infrastructure companies. Providing this electricity through renewable energy is critical to ensuring investments in data-related infrastructure are aligned with the goal of building resilient and sustainable economies. Further, data centre and renewable energy investments could have mutually reinforcing effects. On the one hand, access to reliable and clean energy can encourage investment in more data centres and other digital infrastructure, thereby supporting the digital transformation of economies. This is particularly true in markets where cost and reliability of electricity supply are persistent challenges. On the other hand, energy-intensive data centres can provide anchor customers for renewable power infrastructure, especially as data centres require increasing amounts of energy to support artificial intelligence (Mutiso, 2024b).

Beyond data centres, the numerous benefits of cloud service use reported by business clients, including among small companies, suggest that investments in companies that aim to increase access and the ability of businesses to make use of cloud services can support business productivity. While the adoption of digital technologies by African businesses has significantly increased, there is robust evidence (see Cruz, 2024) that most of these businesses do not make intensive use of them for business purposes, and that even digitally enabled businesses are not yet adopting digital technologies for productive tasks such as business administration, planning, sales, and payments. This highlights an opportunity to increase business productivity through fuller use of digitalisation. It is therefore important for DFIs to find ways to support businesses to use of cloud and other digital technologies, through direct or fund investments in companies that can provide this support, and through technical assistance where practical and appropriate.

Additional investment to improve affordability and reliability could further unlock the benefits of cloud service use for businesses.

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