

Digital behaviors of Kenyan micro-entrepreneurs

Doing business in the age of social commerce

June 2020



Partnership for **FINANCE**
in a **DIGITAL AFRICA**



**Caribou
Data**

Insights built on privacy

About

About the partnership



The Mastercard Foundation Partnership for Finance in a Digital Africa (FiDA) aggregates and synthesizes knowledge, conducts research to address key gaps, and identifies implications for the diverse actors working in the digital finance space. In collaboration with [our partners](#), FiDA strives to inform decisions with facts and accelerate meaningful financial inclusion for people across sub-Saharan Africa. Additional information and resources can be found at financedigitalafrica.org.

About Caribou Data



Caribou Data's unique privacy-preserving approach provides deep insights into the digital lives of consumers in emerging markets.

Using only anonymous data, we develop granular insights on app, network, content, and transactional behaviors, all structured and protected within our GDPR-compliant differential privacy layer.

The appendix contains further details on these methods.

Acknowledgements

The authors of this report are Bryan Pon and Will Croft based on panels and research conducted by Caribou Data in Kenya during 2019.

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Notes

The views presented in this report are those of the authors and do not necessarily represent the views of the Mastercard Foundation or Caribou Digital.

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For questions or comments, please contact us at

ideas@financedigitalafrica.org.

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■ *Key findings*

Social commerce permeates the digital lives of micro-entrepreneurs

Social commerce is ubiquitous; formal platforms less so

92% of MSEs in our panel used social apps such as Facebook, WhatsApp, YouTube, or Instagram to enable business functions, while only 27% used formal platforms such as Jumia or Upwork

Social apps each serve different business use cases

Facebook and WhatsApp are by far the most-used platforms, and are used across business functions, while Instagram and YouTube have more niche use cases, used more for training and inspiration

Increased use of digital platforms corresponds with healthier businesses

MSEs who used the highest number of digital platforms were twice as likely to report their business as being in good health compared to those using the lowest number of digital platforms

Even for the most digital MSEs, business use is a fraction of personal

MSEs who reported using Facebook or other social apps to a high degree for their business have essentially similar usage profiles as those who don't engage in social commerce

ii Introduction

In this section

We introduce the project objectives and methodology for using anonymous panels to understand digital activity

Understanding the platform practices of micro-entrepreneurs in Kenya

Micro and small enterprises (MSEs) have long been a focus of development actors due to their outsized role in economic livelihoods in the Global South.

As mobile technology and digital products become ever more pervasive in social and economic life, we believe it is important to understand how MSEs are using digital “platforms”¹ such as Facebook, YouTube, and WhatsApp to enable their work.

This work, in collaboration with the Partnership for Finance in a Digital Africa (FiDA) and supported by the Mastercard Foundation, complements

field work that interviewed business owners to better understand their platform practices.

This study focuses on the smallest of MSEs, the **micro-entrepreneurs** that either work by themselves or have fewer than 10 additional employees.

We use survey responses and data directly from smartphones to explore the digital behaviors of MSEs, measuring the impact and role that platforms play when advertising their business, communicating with customers, and more.



Photo: Caribou Digital

[1] We use the FiDA definition of **platforms** as “mechanisms for hosting interaction and exchange between third parties in which the host (a) facilitates value creation (financial or otherwise) and (b) takes a share of that value but (c) doesn’t completely control the scope of interactions or their outcomes”

Using a new research approach of anonymous panels that link survey responses with passive digital activity data

This research by Caribou Data provides a new perspective to better our understanding of micro-entrepreneurs and how they use digital platforms to enable their business practices.

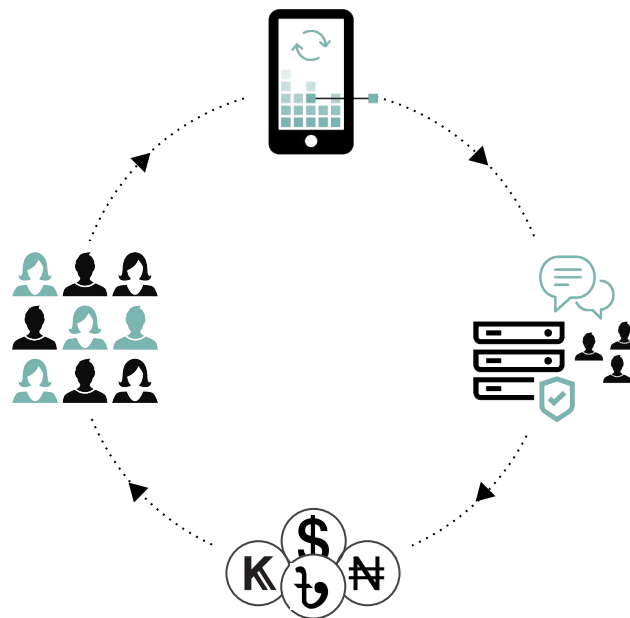
This study combines two data sources: survey responses from panelists when they enrolled in the study, and then three months of digital activity data shared by those panelists from their Android smartphone.

Panelists are paid a monthly stipend to anonymously share data from their device.

The combined dataset shows patterns in how people use their devices for communications, entertainment, and financial transactions.

Caribou Data employs the highest standard in respectful treatment of data, including differential privacy techniques that ensure effective anonymity.

For example, data is anonymized and encrypted before leaving the device, and data queries are always aggregated—there are no individual records. See Appendix A for full details on how we handle privacy and security.



To quantify how Kenyan MSEs use digital apps and services for key business functions, especially “social commerce”

The increasing number of small businesses that have access to data-enabled devices and internet is leading to new approaches to doing business for micro-entrepreneurs.

While about a quarter of MSEs use dedicated marketplace platforms such as Jumia or Upwork, 9 in 10 MSEs who use digital tools rely on personal consumer apps such as Facebook and WhatsApp to carry out key business functions, a practice typically referred to as “social commerce.” These apps enjoy deep penetration and helpful features that make them an easy (and free) choice.

This appropriation of general purpose mobile technology for business use is by no means new,¹ but its occurrence is likely increasing as more emerging market micro-entrepreneurs become digitally active.²

To explore what this activity looks like, we asked panelists to list the apps they use for different business functions, including advertising, communications, training, delivery, payments, and inspiration/information. We then analyze these responses with actual activity data that panelists share from their device, providing a robust view of intention and behavior.



Photo: Caribou Digital

■ Kenyan micro-entrepreneurs

In this section

We describe the general business characteristics of the micro-entrepreneurs in our panel, using self-reported responses from each respondent

Our panel is composed of 500 MSEs across five sectors, representative of 85% of Kenya MSEs by sector and licensing status

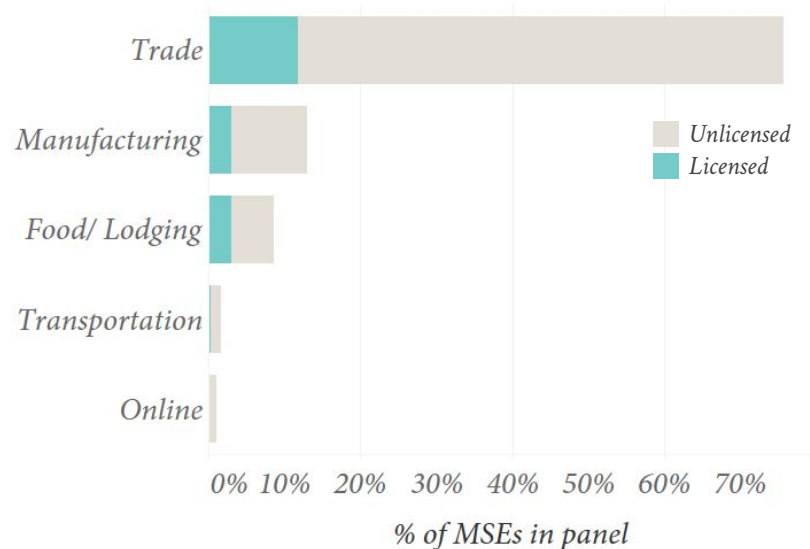
Kenya is home to ~7 million non-agricultural micro-enterprises, which contribute roughly 30% of the Kenyan national output.¹

The demographics of this panel were defined along multiple dimensions using data from the 2016 Kenya National Bureau of Statistics report.² First, we limited the study to micro-enterprises, defined by the KNBS as those businesses with <10 employees.

Secondly, we limited the sectors to the top four in the KNBS classification (manufacturing, wholesale/retail trade, transportation, and food/lodging service), which represent 85% of all MSEs,³ and then added the “online” category, which we defined as activity that is fully virtual (such as iWriter).

Third, we recruited the appropriate ratio of licensed vs. unlicensed businesses per sector, with a total ratio of 21% licensed, 79% unlicensed. We did not explicitly define quotas for individual age or gender.

Sector and licensing status
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Sources: [1] Kenya National Bureau of Statistics, “Micro, Small, and Medium establishment (MSME) Survey,” 2016; [2] Ibid.; [3] We also added the category “Online” in order to capture business activity that is digital in nature.

Almost half (42%) of the MSEs in our panel had no employees, and two-thirds had been in business for two years or less

We limited our study to MSEs of <10 employees, with almost half (42%) of our panellists having no additional employees at all, i.e., solo entrepreneurs.

The majority of MSEs in our panel were newer businesses, with 66% of them being in business for two years or less.

We believe this focus on smaller, younger MSEs provides insights into the most vulnerable or precarious businesses, and can thus better inform policies or interventions—such as business or digital skills training—that can have broad based impact on a large and underserved population.

Number of employees and age of business

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Across all sectors, businesses with higher number of employees were more likely to be licensed

Unsurprisingly, higher numbers of employees meant businesses were more likely to have an official business license, with 82% of businesses with 5+ employees having a license.

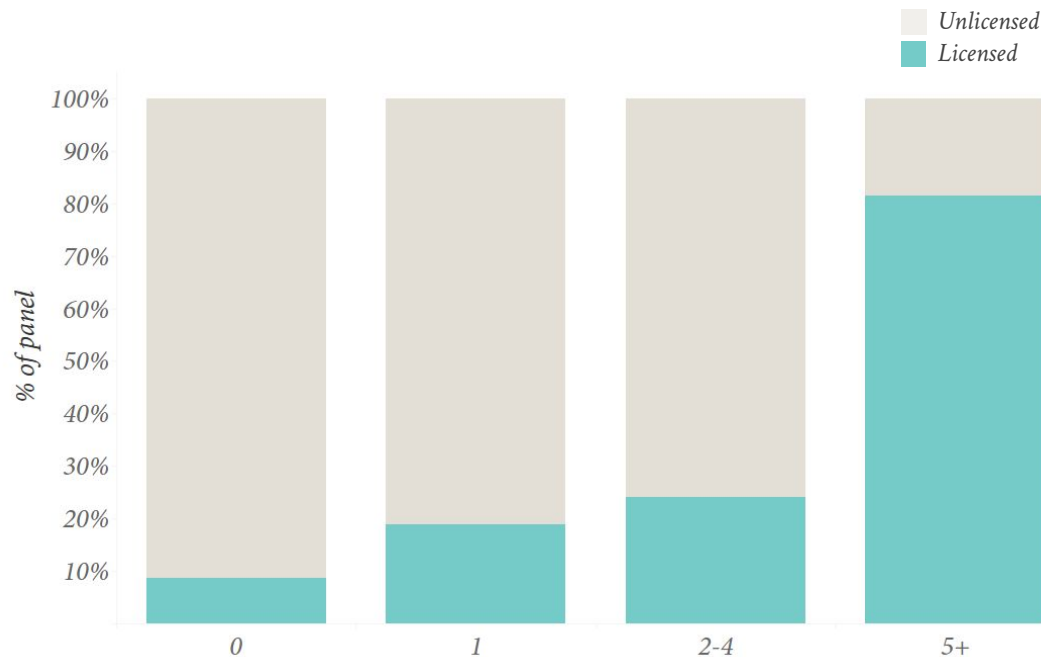
Only 9% of solo entrepreneurs (0 employees) had a formal business license, compared to 82% of MSEs with 5+ employees.

Many MSEs avoid getting a license because of the cost—the annual fee ranges from 200,000 Ksh (~\$1,900 USD) for large hotels to 2,000 (~\$19 USD) for the smallest informal kiosk.

In addition to the fee, the act of formalizing the business also may put the business on the map in terms of the tax authority and other regulatory requirements.

Licensing status, by number of employees

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Segmenting the panel into four groups—based on licensing and number of employees—reveals trends in business practices and digital activity

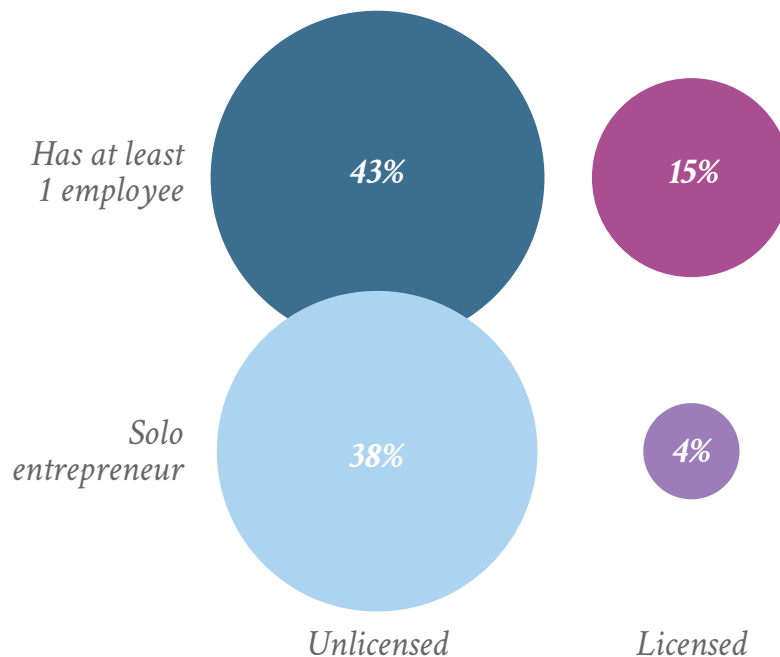
Because our panel is representative of MSEs in Kenya, most businesses are small and unlicensed. In order to best capture the range of formality in in the panel, we asked multiple proxy questions, including whether it had a business license and how many additional employees (beyond the owner/entrepreneur) it had.

Together these two dimensions offer a simple 4-way segmentation that is a useful lens for comparing business practices and digital behavior across the segments.

Where useful, we employ this segmentation to highlight that MSEs are not a homogenous group, and that business formality and maturity matter when trying to understand digital behaviors.

Simple segmentation of MSEs

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Larger, more formal businesses were twice as likely to report good business health compared to the smallest and least formal MSEs

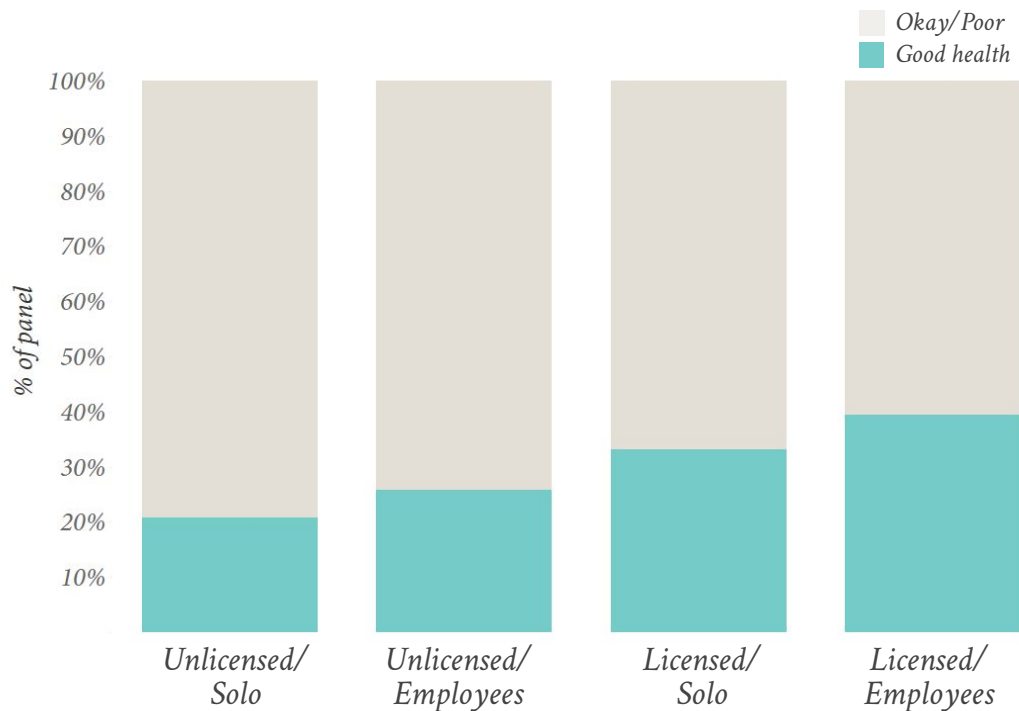
MSEs were asked to rate their business' health with three potential answers: Poor, Okay, or Good.

Across our four segments, there was a clear trend toward larger, more formal businesses being perceived by their owners as more successful, with 40% of licensed businesses with employees reporting “good” health, compared to only 21% of unlicensed/solo MSEs.

This pattern was expected, as businesses that have survived and grown sufficiently to warrant the additional cost of a business license and risk of hiring additional employees should be more successful, on average, than those which are still smaller and less formal.

Share of MSEs reporting business is in good health

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iv Digital activity of micro-entrepreneurs

In this section

We explore digital activity by
micro-entrepreneurs, including network
activity and specifics around app use

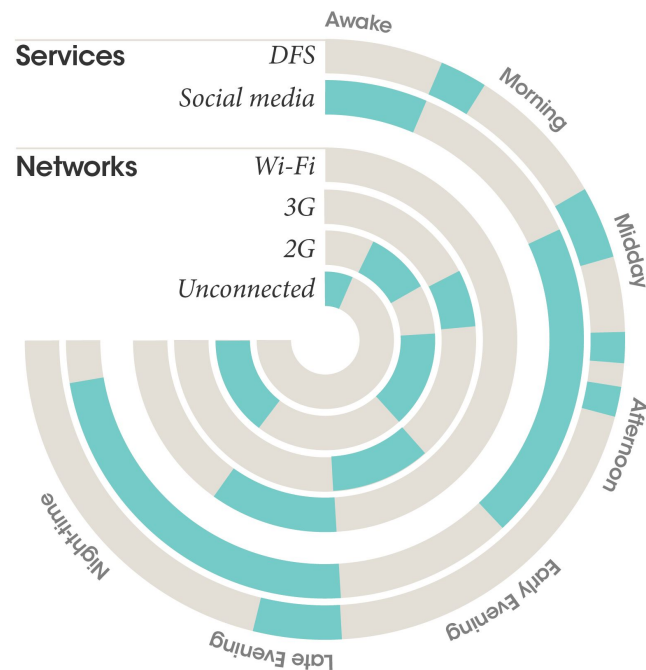
Quantifying the digital activity of micro-entrepreneurs helps identify how digital tools are used for business activity

To better understand how MSEs use digital tools, we explore a range of digital activity and behaviors.

We analyze time spent under different network modalities, data consumption, and multiple dimensions of app usage in order to paint a picture of the digital lives of MSEs and how they compare to the general population.

By measuring data from the device and linking it to self-reported responses to a survey questionnaire, we're able to highlight trends in activity that correlate with different business characteristics and outcomes. The following slides in this section offer a unique view into the digital activity of Kenyan MSEs.

Example representation of activities during a “Digital Day”



MSEs in our panel spend less time connected to networks, but consume substantially more data when they are online

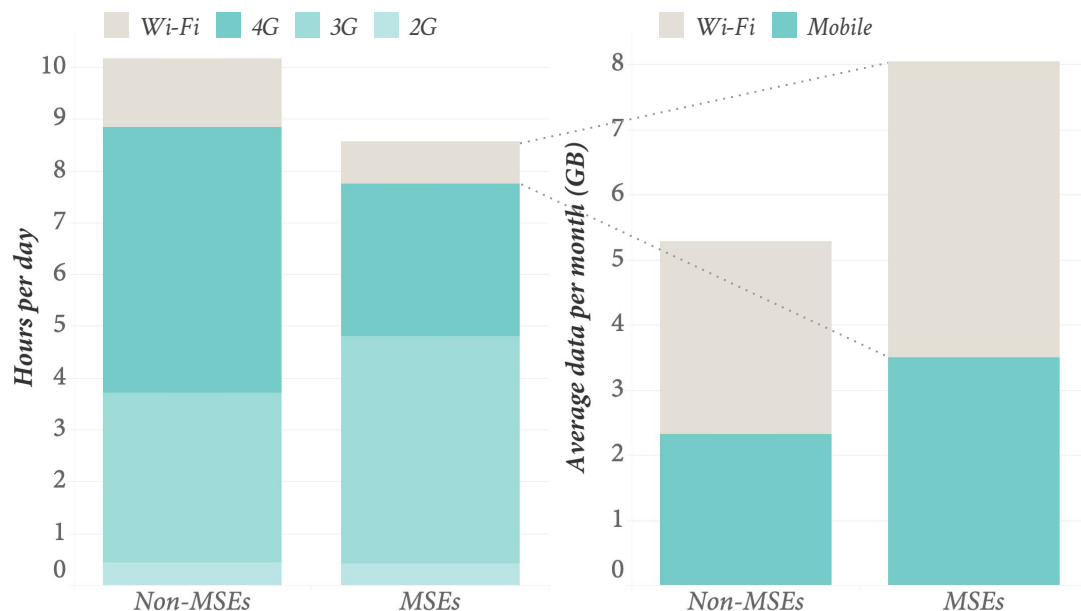
In Kenya, people with smartphones spend on average about 10 hours per day connected to a network, primarily mobile but also Wi-Fi. For the MSEs in our study, this average was lower, at 8.5 hours, the vast majority of that on mobile networks. This might reflect higher rates of second phone ownership in the MSE group.¹

Both those ratios change when considering data consumption, however. MSEs consumed almost 8GB per month vs 5GB for non-MSEs, and in both groups data consumption over Wi-Fi was about 1.5× as much as data over cellular.

This suggests that MSEs as a group are able to afford larger data bundles, but that both groups have cost sensitivity to data charges and try to move usage to Wi-Fi when possible.

Connectivity and data usage

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MSEs tend to own higher-value handsets, especially in the \$200+ range, compared to the general population

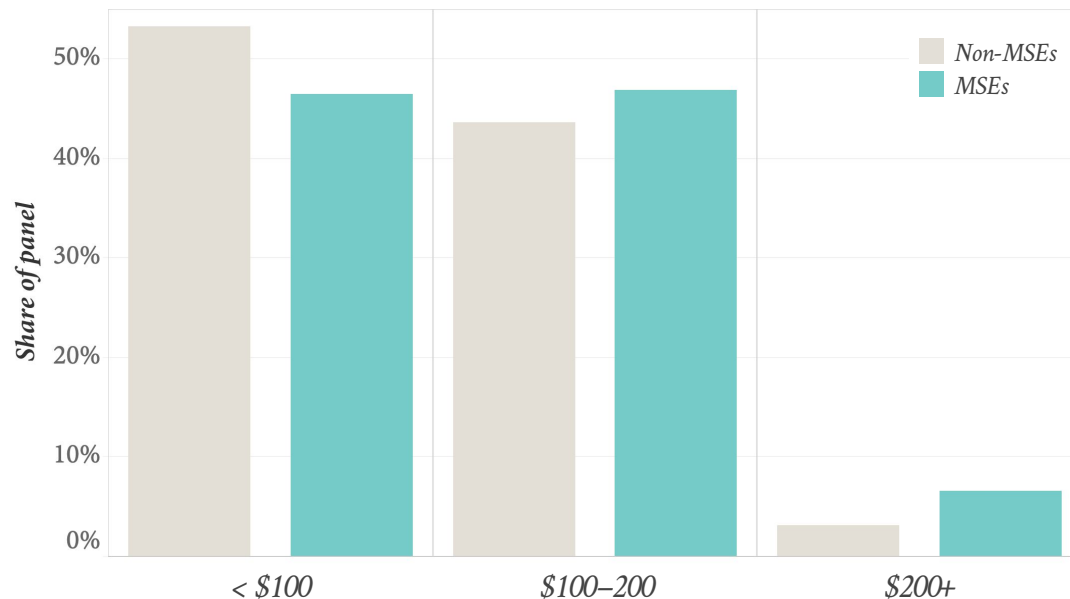
By finding current retail pricing for the top 100 make and model of devices used in our panel, we can estimate the value of mobile handsets used by panellists.

We find that compared to the general population, MSEs tend to have more costly mobile handsets, especially in the most expensive tier of \$200+, with about 7% of MSEs having these most expensive devices, compared to 3% of the general population.

This could be a function of higher income levels amongst MSEs, but it could also be due to MSE use cases that benefit from higher-end devices—bigger screens, better performance, and more storage—all important enablers and more justifiable as an income-generating tool.

Device handset price distribution

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MSEs use apps just as frequently and for the same amount of time as the general population

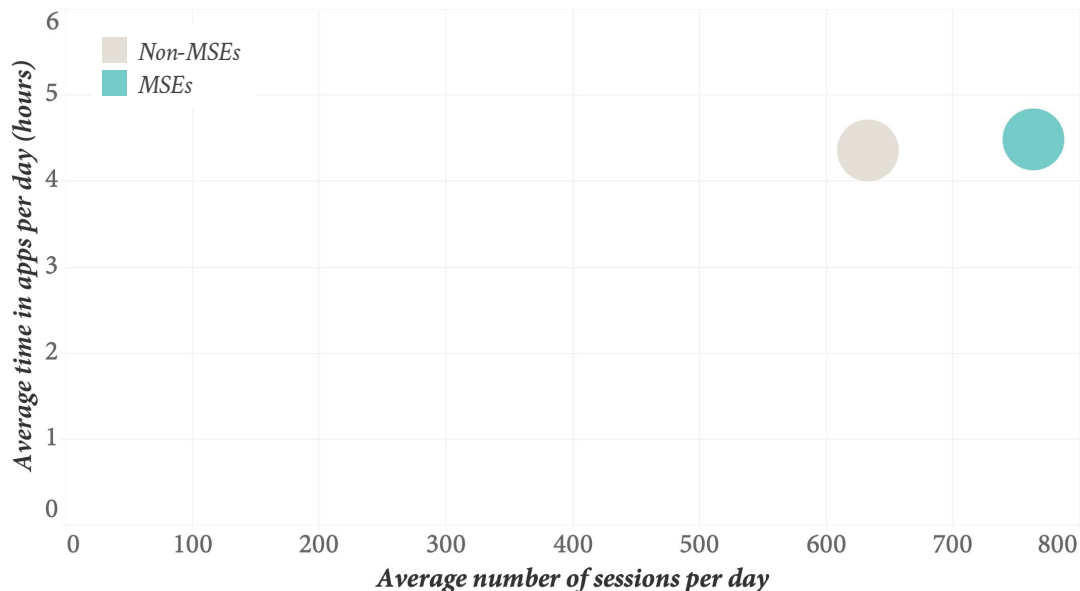
At the most aggregated measures of app usage frequency and time, MSEs are essentially no different from the general population.

MSEs average about 760 sessions per day across all apps, with a “session” measured between the opening/foregrounding and closing/backgrounding of an individual app. Nationally, Kenyans are more digitally active than other markets with an average of 630 sessions/day, compared with 440 in Nigeria and 560 in South Africa, and thus many MSEs fall into the bracket of ‘super users’ or the heaviest users of apps.

In terms of time spent per day, again both groups are essentially equal at around 4.5 hours per day of total app usage.

App session frequency and duration

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MSEs utilize a range of digital platforms for business use, but social/messaging apps are by far the most popular

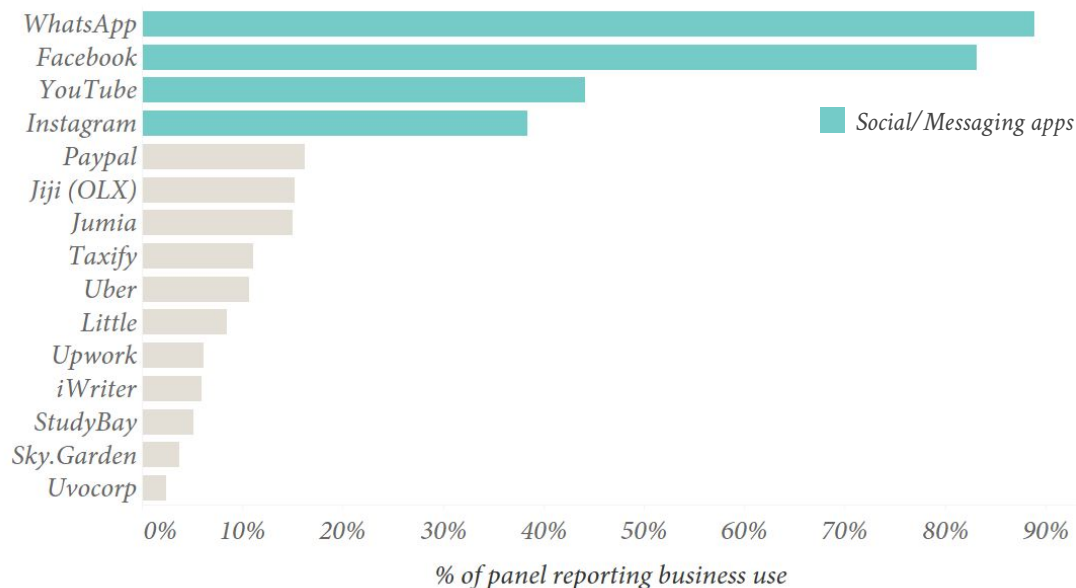
While some MSEs use dedicated marketplace platforms such as Jumia or Upwork, most MSEs conduct social commerce through general messaging and social media apps such as Facebook and WhatsApp.

In all, 92% of MSEs reported using one of the social/messaging apps for business use, compared to 27% reporting use of a formal business platform such as Jumia or Jiji (OLX).

Given their existing popularity, penetration, and functionality, Facebook, WhatsApp, Instagram, and YouTube have all become critical tools for many MSEs. As they were by far the most popular apps cited in our panel, the rest of the analysis focuses on these four social/messaging apps and the social commerce that they enable.

Reported use of apps for business functions

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The four popular social apps have very different usage profiles based on average frequency and duration of use

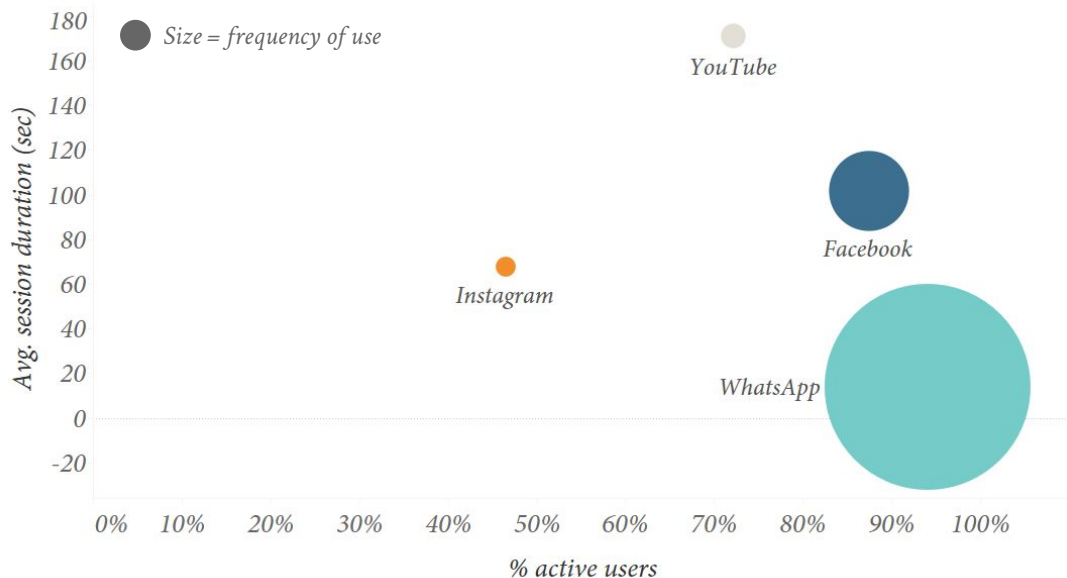
While not originally designed for business use, Facebook, WhatsApp, Instagram, and YouTube have all become critical tools for many MSEs.

Each of these apps has a distinct usage profile based on its typical use cases: dedicated messaging apps like WhatsApp tend to be used all the time, for very short sessions (14 seconds average), while data-heavy media like YouTube are consumed less often (3x/day) but for much longer sessions (2m45s).

In terms of active users, 94% of MSEs logged at least one session of WhatsApp, followed by 87% for Facebook, 72% for YouTube, and 47% for Instagram.

Average usage of four social/messaging apps

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Facebook and WhatsApp are used across multiple business functions, while YouTube and Instagram are most used for training/inspiration

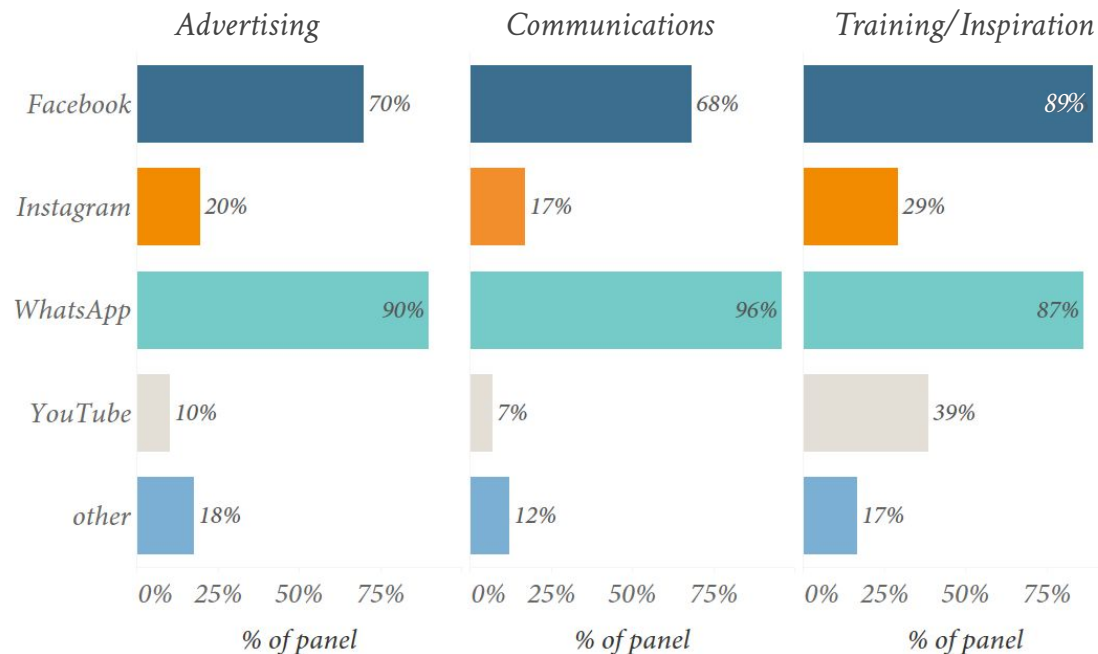
Facebook and WhatsApp are deeply embedded in many facets of daily life, so it isn't surprising that MSEs have adopted them and other social media/messaging apps to perform different business functions.

Almost all MSEs reported using WhatsApp for a business use, while about 3 in 4 reported using Facebook. The wide adoption of these products and their general flexibility means that MSEs use them across multiple use cases.

Instagram and YouTube, however, are much less popular and more specifically used. Both are media-heavy apps that are more broadcast oriented vs interactive, which helps explain their popularity being used for training and inspiration/ideas.

Reported use of apps for business functions

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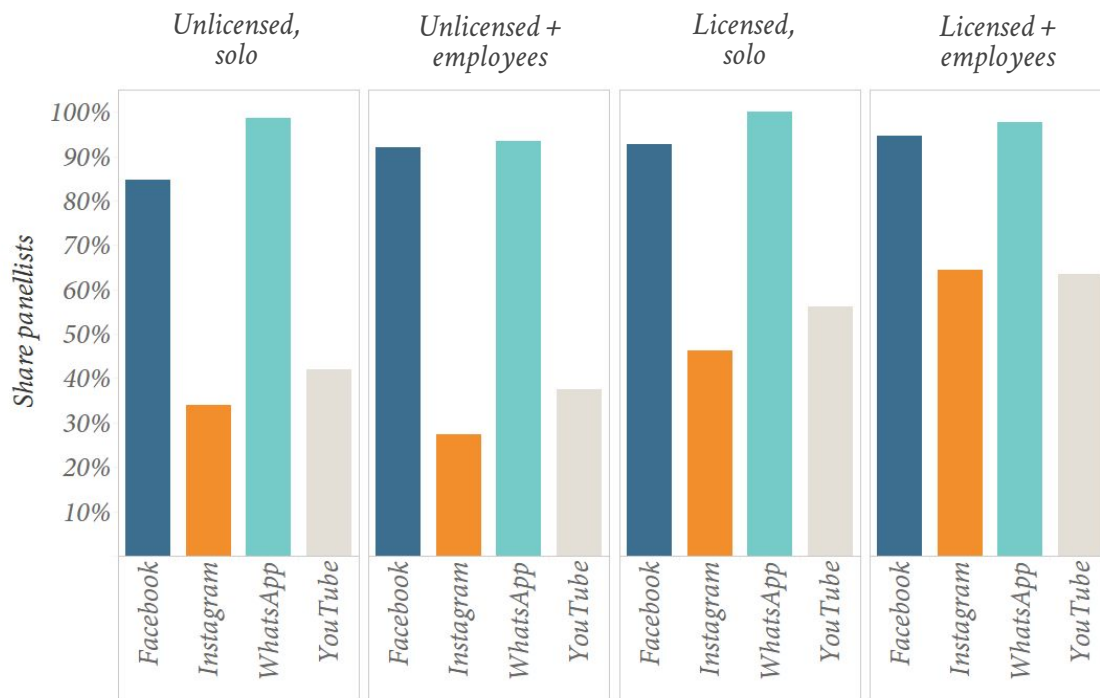
Across the four segments, Instagram and YouTube were cited more by larger/licensed MSEs, while WhatsApp and Facebook are constants

In terms of who uses each of the four apps, there are two clear trends: First, everyone reports using Facebook and WhatsApp for business. Already prominent in many people's lives, it's unsurprising that they would be utilized for commercial purposes as well.

The second trend is that for Instagram and YouTube, which are in general less popular, rates of reported use increase with the size and formality of the business. Only 35% of *unlicensed/solo* MSEs reported using Instagram, compared to 64% of *licensed/employees*; YouTube has a similar trend. This could be the effect of more established businesses being more digitally savvy to use a broader range of tools, but we expect that another factor is the latter group being higher-income and able to better afford the associated data costs with heavy media use.

Reported business use of key apps, share of segment

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Comparing MSEs who reported using apps for business vs those who did not shows the largest differences in Instagram and YouTube

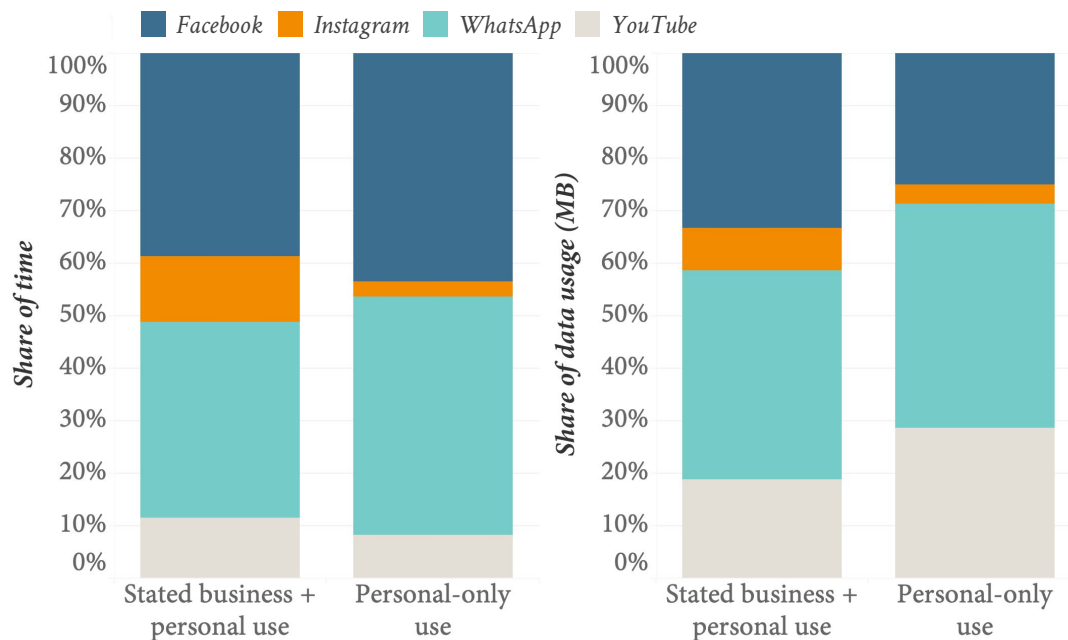
Further, we examined the time spent and data consumed for MSE activity on the same four apps, comparing those MSEs who reported using these apps for business vs. those who did not.

While the profiles are similar—highlighting that personal usage is so frequent that even a notable amount of business use gets drowned out by the baseline activity—there are visible increases in usage and data for both Instagram and YouTube, which suggests that business usage for these two apps is substantive and additive over personal.

In fact, minute-for-minute, Instagram data usage is actually *higher than YouTube* for MSEs, indicating heavier use of video on that channel. The opposite is true for non-MSEs.

Share of actual app activity, by reported business use

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Analyzing use by time of day shows consistent use of Facebook 24/7, while media-heavy YouTube and Instagram peak at night

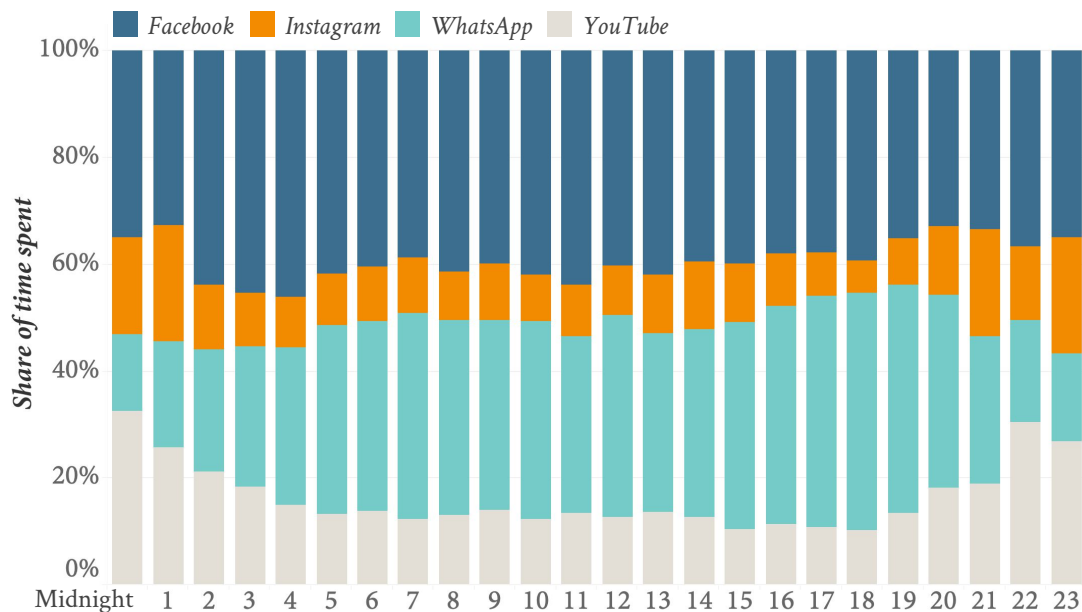
Time-of-use data demonstrates Facebook's role as the do-everything digital utility, with high levels of use on an almost constant basis throughout the day and evening.

YouTube and Instagram, which are media-first and designed more as broadcast or consumption models vs. interactive communications, peak during the night, with YouTube especially popular from 10pm–1am.

WhatsApp, which like Facebook has become deeply embedded in daily digital life, is most used from 7am–10pm. This reflects the interactive messaging nature, where most use cases are interactive and thus work best when more people in one's network are awake and online.

Share of app sessions, by hour of day

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All segments use social platforms, but licensed MSEs are twice as likely as unlicensed to use formal commercial platforms

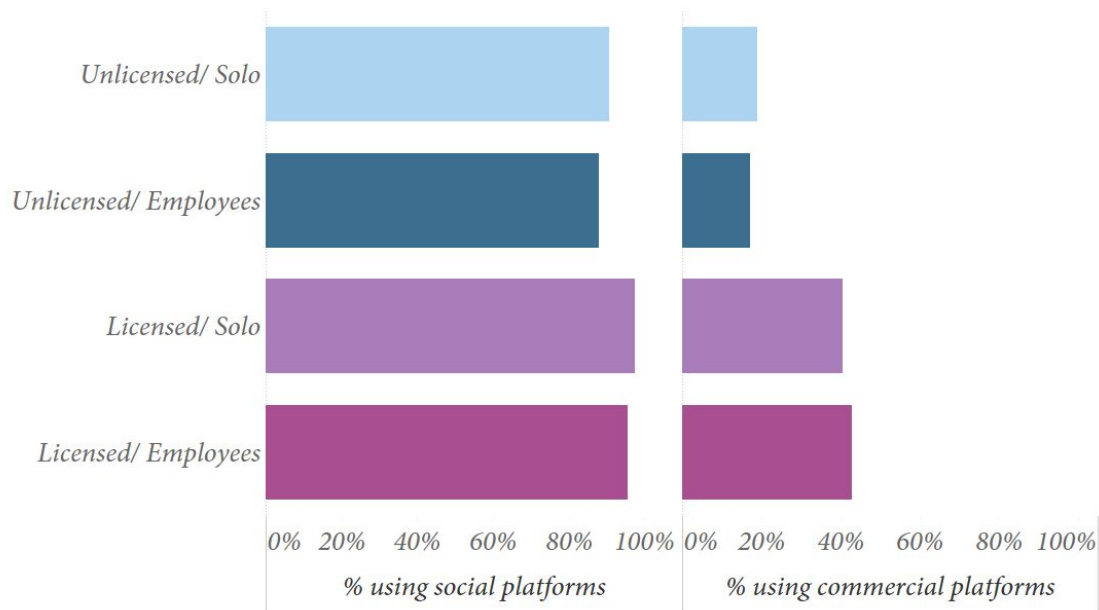
Use of the social apps WhatsApp, Facebook, Instagram, and YouTube is ubiquitous across all business segments, with overall 92% of the panel engaging in social commerce.

But only 27% of the panel reported using formal commercial platforms such as Jumia or Upwork. In this category, licensed MSEs were twice as likely (40%) as unlicensed MSEs (19%) to use dedicated commercial platforms.

This is likely primarily due to the increased formality of these platforms—i.e., most commercial platforms require that suppliers have a bank account, which in turn requires certain formal documentation such as business registration.

Use of social vs. commercial platforms, by segment

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MSEs who report using more apps for business are more likely to rate business health positively

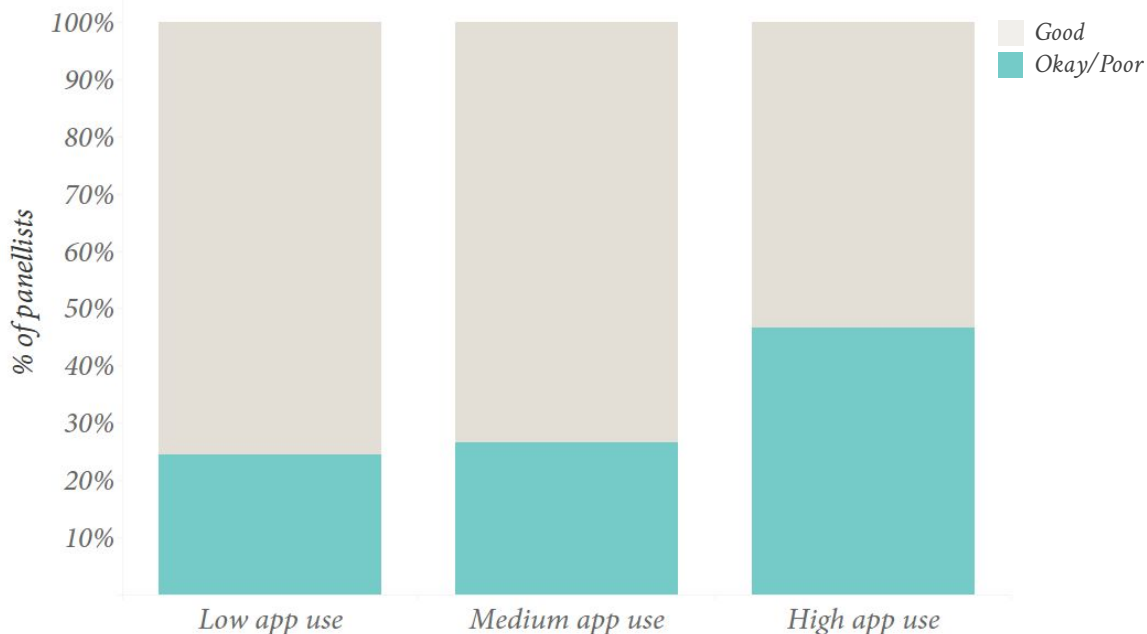
Categorizing MSEs' reported use of apps into three groups—low, medium, and high app use—shows a correlation with the overall perceived health of the business.

Among those businesses that reported low levels of app use across all apps and all business functions, 24% rated their business health as “good.”

For those businesses that reported high levels of app use, 47% rated their business health positively. While we cannot attribute a causal link in either direction, the numbers suggest that successful MSEs are using apps in helpful ways to improve their chances of success.

App use, by reported health of business

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▣ Digital financial activity

In this section

We take a deeper look specifically at financial activity of micro-entrepreneurs, showing patterns in behavior that correlate business characteristics and platform use to transactions



Most MSEs reported taking a loan, with digital apps, savings groups, and family/friends the most popular sources

The mature and diverse lending market in Kenya has led to high number of borrowers, with an estimated 64% of the adult population taking a loan of any kind in 2017.¹

Our panel of MSEs unsurprisingly showed a higher rate, with 77% reporting taking a loan. Panellists were not asked to disclose loan amounts.

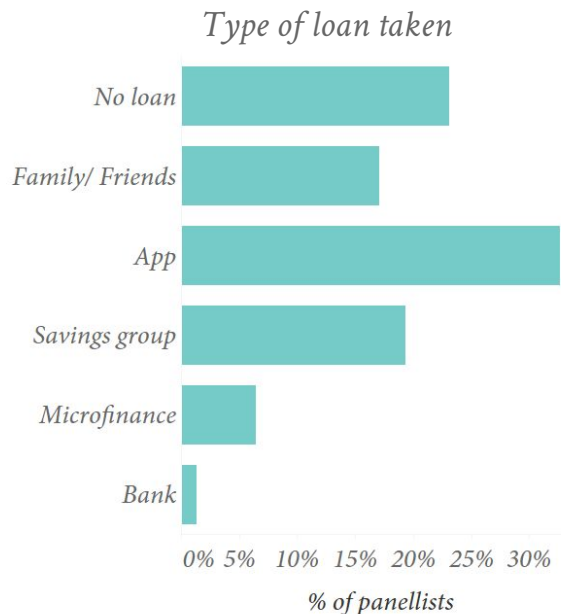
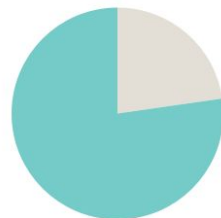
The most popular source for loans was digital apps, such as Branch or Tala, with 33% of the panel receiving such a loan. This was followed by informal sources, namely family/friends and savings groups/chamas.

Traditional bank loans were rare—only 1% of panellists reported borrowing from a bank.

Reported loan activity

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77% of MSEs have taken a loan





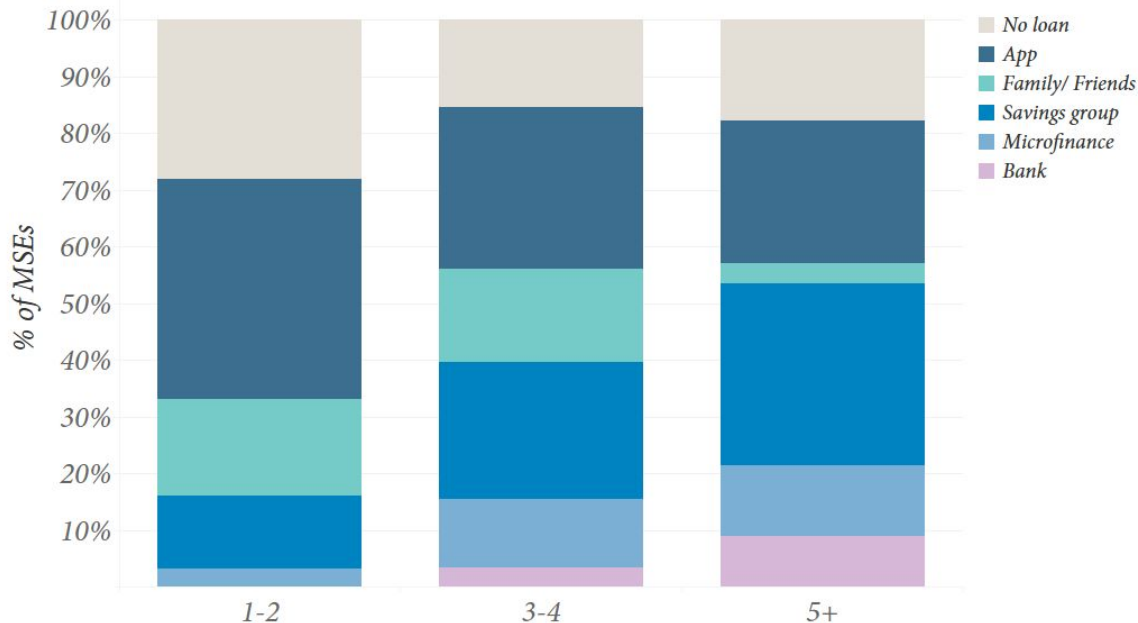
Digital credit apps are popular across all stages of MSE maturity, while older MSEs are much more likely to borrow from formal sources

Older businesses, especially those with 5+ years of history, were much more likely to have bank loans or microfinance loans. However even among this group, only 7% of the panel reported taking a traditional bank loan. Compare this to savings groups/chamas, where 31% of businesses with 5+ years took a loan.

Digital apps were a consistent source across all stages of MSE maturity. They were an especially useful source for young businesses, with 36% of businesses <2 years old taking advantage. But they were still utilized by older businesses, perhaps reflecting the convenience and speed of this lending source.

Type of loans taken, by age of business

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Online, food/lodging, and transportation sectors reported the highest share of payments coming via mobile money

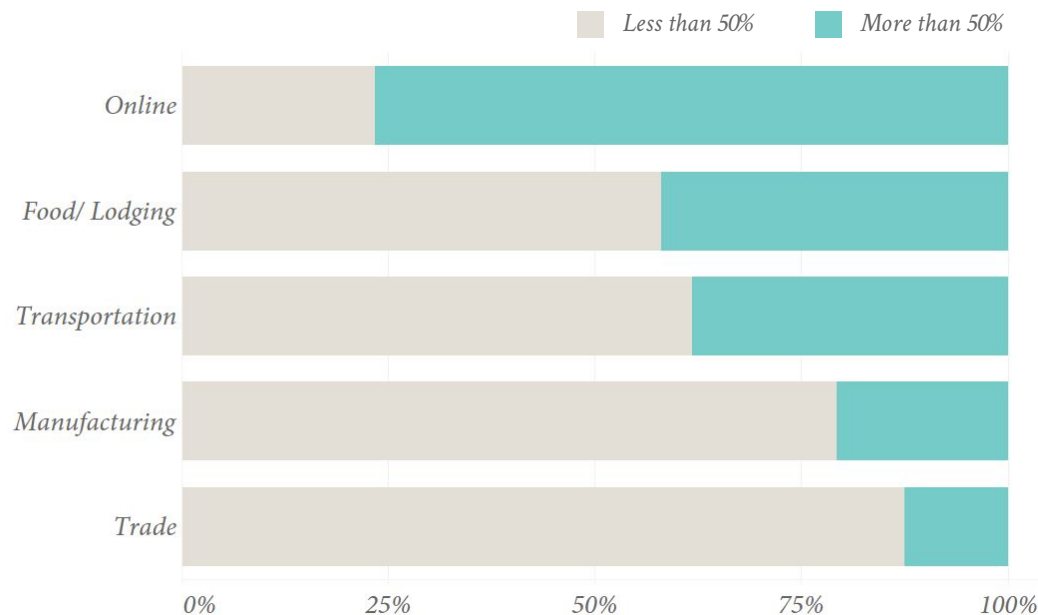
The share of customer payments made via mobile money varied widely by sector. The vast majority of MSEs doing online work reported that more than 50% of their customers paid via mobile money, which was actually lower than expected given the fully digital nature of their work.

Among retail/wholesale traders, only 12% of MSEs reported having 50% more of customer payments come via mobile money, suggesting there remains a strong reliance on cash.

Licensing status was also strongly correlated with acceptance of mobile money, with licensed MSEs being twice as likely as unlicensed to have more than 50% of payments via mobile money.

MSEs with a majority of payments via mobile money

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About 25% of MSEs overall use an M-Pesa PayBill to accept merchant payments, but the rate varies by sector

Almost a quarter of our panel reported using a PayBill/till number to accept payments for their business, which is similar to the national average reported by the KNBS.¹

For the consumer, PayBill accounts are convenient and mean the merchant, instead of the consumer, pays the transaction fees. For merchants, the PayBill is linked to their bank account and thus offers a dedicated and transparent accounting of the business revenue, especially important for larger businesses where the owner might not be involved with all orders.

But in order to get a PayBill account, businesses need to have a formal bank account, business registration, business license, and tax registration with the Kenya Revenue Authority.

MSEs reporting using a PayBill, by sector

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MSEs that accept mobile money payments had more frequent and higher value received payments

The deep penetration of M-Pesa in Kenya has led to high levels of adoption of mobile money with businesses, and the vast majority of MSEs (84%) in our panel reported accepting mobile money payments.

Actual transactional activity for those MSEs who accept mobile money was significantly higher, especially in terms of average value of payments received.

And these numbers under-represent the actual activity, because 1) many MSEs will use a separate, dedicated device for handling payments that wouldn't appear in the data, and 2) payments using PayBill pass directly to the business bank account and thus also aren't visible in our data..

Payments received, by mobile money acceptance

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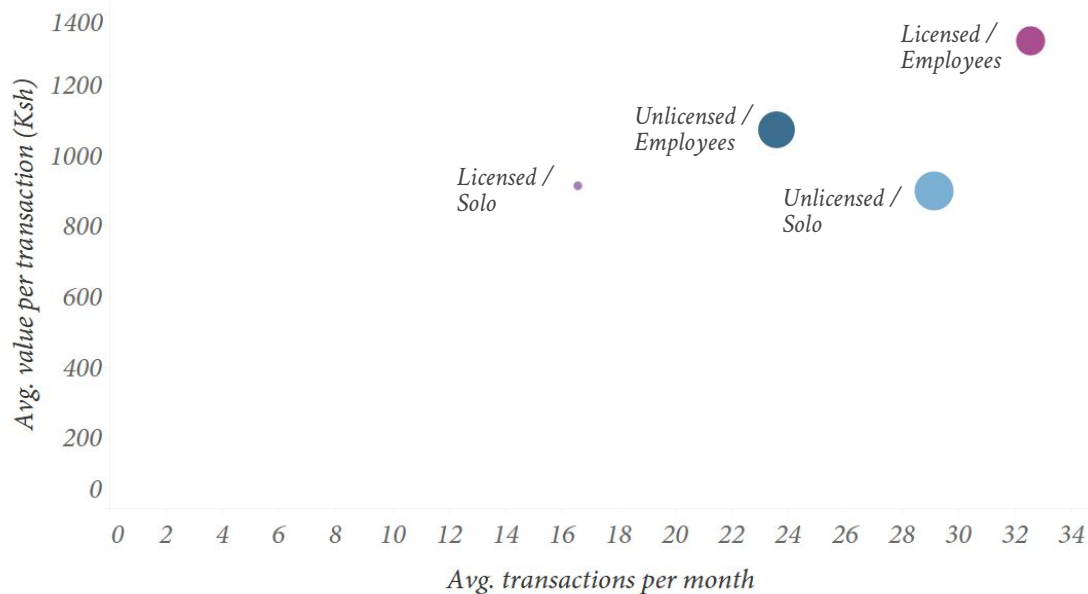
Owners of larger and more formal businesses tended to make higher-value transactions overall

The actual financial activity of MSEs across segments shows that owners of larger, more formal businesses tend to make more frequent transactions. These figures include all non-airtime transactions, e.g. P2P, cash in/cash out, loans, etc.

Because we can't determine what transaction activity is specifically for the business vs. personal in nature, we assume a mixture in all cases. However, for the more formal businesses, we know that much of the activity in terms of received payments occurs via paybill and is thus not visible in the data; therefore for these segments the figures shown would be under-representations of actual activity.

Value and frequency of transactions, by segment

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■ Concluding remarks

In this section

We discuss implications for future research around “social commerce” and the digital practices of micro-entrepreneurs

While most MSEs are using social apps for business, that activity exists along a wide spectrum, with different degrees of formality

There isn't a single “social commerce” model

While definitions of “social commerce” vary, in this study we have limited the term to refer to businesses using social or messaging apps such as WhatsApp, Facebook, Instagram, and YouTube to enable at least one key business function, such as advertising or comms. But even with this limited definition, there exists a wide range of different practices and intensities that make it challenging to pin down a single view of a social commerce MSE.

For example, if a business uses WhatsApp to message customers, but no other platforms, is that “social commerce”? At some point the ubiquity of WhatsApp relegates it to utility status, and thus less useful as an independent variable to explain behaviors and outcomes.

Therefore we believe an important avenue for future work on this topic is to segment or characterize social commerce activity in ways that reflect the affordances and constraints of micro-entrepreneurs trying to digitize their businesses.

Commercial platforms require more formality

Because most commercial platforms, such as Jumia or Upwork, require a bank account to set up a supplier account, only those MSEs that have reached that level of formality may be eligible. As we see in our study, MSEs with a business license were twice as likely as unlicensed MSEs to use commercial platforms.

In this sense, the decision to use these platforms is similar to other decisions of formality—the cost/benefit calculation of increased opportunity weighed against increased costs, tax visibility, etc. And of course, these requirements will exclude many participants who simply don't have the ability to fulfill them.

What's interesting is that even those who use formal commercial platforms continue to use social commerce as well—every MSE who reported using Jumia also reported using social apps for their business, reflecting that the platforms may be additive and not direct substitutes.

vii Appendices

In this section

Details on panel design and research methods

Appendices

A Methodology

Panelists are recruited via face-to-face and online channels, and reflect the basic demographic splits of consumers who use the internet

Our sample population in each country we operate is based on 1,000+ adults 18+ with an Android smartphone who at least occasionally use mobile data.

We design our panels first with interlocking quotas for gender, age, and urban/rural locality, derived from the most recent population census or other official sources, and rebased for the 18+ adult population.

We then revise those quotas based on any available household survey data, for example from InterMedia, on smartphone ownership and use of the internet, which typically skews the sample more urban, male, and young. When necessary, we correct for these biases using standard sample weighting techniques.

Kenya demographics on age, gender, locality

Kenya, 2019 n=1,000  Caribou Data • insights built on privacy



Privacy principles and limitations of the data

Privacy

Our work is predicated on an absolute commitment to individual privacy, with a baseline of adherence to the GDPR,¹ regardless of whether local privacy law offers fewer protections.

Panelists are provided a clear explanation of how their data will be used, and the terms of the remuneration. Online explanations are in English only, but in-person recruiters are able to speak local languages as required.

We ensure effective anonymity of all panelists via processes taken at multiple layers: firstly, the data we collect is stripped of identifiable data before being recorded, and secondly,

we utilise *differential privacy* techniques such as obfuscation, non-linear noise, and subsampling into some data types (such as location data), that may otherwise be more likely to be correlated or de-anonymized. All data is encrypted at rest and in transit.

At the analysis level, we employ similar differential techniques, which means that our system reviews every query and the result it would produce, and only returns a result if it is accepted to be non-identifiable; e.g., if a query was very specific and resulted in a very small n , the system would return a null result to protect against de-anonymization.

Limitations

Like all social science studies, this research has limitations. Most importantly, the sample is composed of smartphone users, which by definition is not representative of all adult Kenyans.

Because we remunerate panelists (approximately \$3/month in airtime) to participate, there is possible selection bias toward individuals who find that incentive attractive. In addition, the remuneration could impact some panelists' behavior in how much they spend on airtime/data. However, if anything we would under capture metered-mindset behaviors.

Despite in-person recruiters speaking local languages, it's possible that prospective panelists with limited or no English language proficiency were uncomfortable or unable to participate, introducing bias in the sample.

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