

Digital economy and development: an empirical study on motorcycle driver jobs in Uganda

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Keywords: digital economy, gig worker, employability, Uganda, motorcycle taxi driver

JEL classification: O3, O35, O55, P31, Q01

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Abstract: This study investigates how the digital economy benefits motorcycle taxi drivers in Uganda. We focus on three motorcycle related businesses connected the digital economy and study the impact of the digital economy on drivers' gross profit. The results show that the digital economy directly enhances the financial capability of motorcycle drivers and their work efficiency. Likewise, it indirectly creates greater demand for motorcycle drivers in the market, including for motorcycle taxi drivers connected to motorcycle taxi app platforms and e-commerce motorcycle delivery drivers. Another crucial point for the motorcycle taxi drivers to benefit from the digital economy is the enhancement of their employability skills.

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1. Introduction

The development of information and communications technology (ICT) led to the development of the “the digital economy,” which created jobs in the ICT sector and across the supply chains of ICT-related services. The ICT boom, along with the fast growth of digital technology provides workers with easier

[#] We would like to thank Tugende, SafeBoda, Pink Tie, and their associates and employees.

access to jobs online. *The World Development Report 2016: Digital Dividends* (WDR 2016) states that the number of direct jobs created by digital technologies is fairly modest, but the number enabled by it can be large (World Bank, 2016).

The “digital economy” is defined broadly as all activities that use digitized data or digital technologies. Services and goods within the digital economy use online platforms and app-based platforms. The digital economy also includes the sharing economy, which provides peer-to-peer short term rental or labor services, such as Airbnb and Uber. The online gig economy enables people to participate through single projects or tasks called the “gig,” such as delivery services and cleaning services. The collaborative economy includes services such as lending finance in a broad sense. The flexible working conditions of the digital economy make it easier for previously underserved populations to find jobs compared to traditional methods, such as face-to-face interviews.

The digital economy, as an outcome of the development of digital technologies, provides poor people with opportunities to earn more income; however, it is conditional. The WDR (2016) states that digital technologies promote the inclusion of poor people in the digital economy if the self-employed adopt digital technologies that allow them to work through ICT-enabled outsourcing or entrepreneurship. Thus, the poor can contribute to development, and create opportunities for inclusion, efficiency, and innovation. However, the report concludes that those who benefit more from digital technologies are better educated or have stronger IT skills. Additionally, for digital technologies to benefit the poor, analog components, such as strengthened regulations, adapting workers’ skills to the

demands of the digital economy, and accountable institutions should be developed. Others also point out that the distribution of working opportunities in the digital economy do not benefit underserved populations mainly due to the lower employment protection for gig workers and skill premiums. The uneven power relations between workers and global platforms, uneven geographies of digital labor, and the frictions digital workers face remain to be solved (Graham, Hjorth, & Lehdonvirta, 2017).

How do the digital economy's benefits spread to poor workers in developing countries? The contribution of the digital economy to the poor is not substantial, though it has been contributing to the poor, particularly to workers, in developing countries. China for instance, sees new opportunities for entrepreneurship and self-employment growing rapidly in the digital economy (World Bank, 2016: 14). We use qualitative data collected from field interviews with about 20 respondents during a field visit in May 2018 in Uganda to examine the empirical connection between digital gig economy participation and the rise in earnings of the poor working as motorcycle drivers in Uganda.

Our results support other researchers' claim that although the digital economy benefits the poor, the impact is minimal due to workers' limited digital skills, poor regulations, and weak institutions. On the other hand, in terms of working opportunities, although there is an unfair distribution of working opportunities in the global digital economy (Graham et al., 2017), we find that workers are gaining more working opportunities locally thanks to the expansion of digital technologies and the digital economy.

Where can we see the benefits spreading to people at the bottom of the social scale in the

country? We focus on one notable example of digital workers who utilize digital technology in their business operations: motorcycle drivers, including motorcycle taxi drivers and motorcycle delivery drivers in Uganda. Our results suggest that the digital economy brought direct benefits to motorcycle drivers, and increased the demand for motorcycle drivers, providing motorcycle taxi driver jobs connected to application-based platform taxi services and e-commerce motorcycle delivery driver jobs. Another crucial point for the poor to benefit from the digital economy is enhanced employability. Put simply, both the direct benefit from the innovation brought about by the digital economy together with enhancing motorcycle drivers' employability skills are important for them to better their lives through direct or indirect engagement with the digital economy.

2. Definitions and examples of the digital economy and digital gig economy

2.1 Digital economy

The digital economy is founded in various types of digital technologies, although the digital economy has no concrete agreed definition as the digital sector, products, and services do not have one concrete definition. The IMF (2016), in, "Measuring the digital economy" describes the "digital economy" as sometimes defined narrowly as online platforms, platform-enabled services¹ and

¹ The IMF report presents Google, Facebook, and Alibaba as examples of online platforms and states, "their product is incomplete." It also introduces some definitions: "platform products covered by the CPC include searches, content and media, and e-commerce. But matching services and cloud computing are not covered." Additionally, the report states that, "we speak of ICT services as a separate category from online platforms. However, they overlap, as the web portals classification within ICT services contains several types of online platforms." Likewise, the report presents Airbnb as an example of platform-enabled services, but notes that they are not explicitly covered (IMF, 2016: 7).

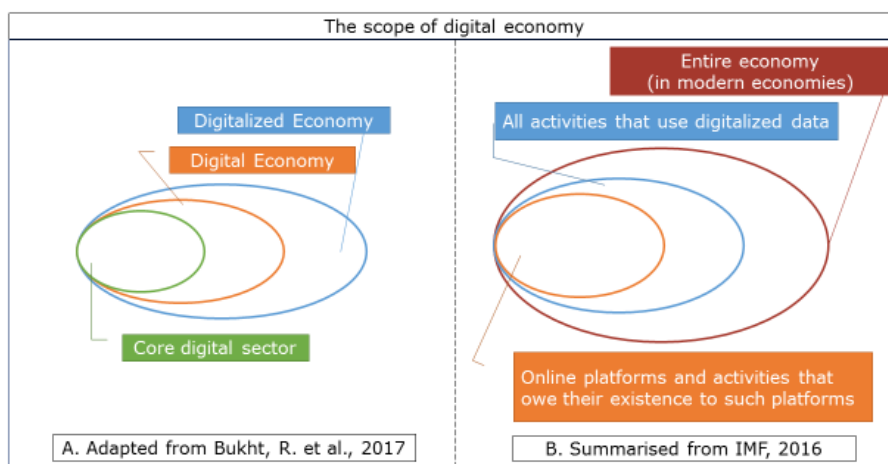
activities that owe their existence to such platforms. Yet, in a broad sense, all activities that use digitized data are part of the digital economy: in modern economies, the entire economy.

Bukht & Heeks (2017) describe the digital economy as, “that part of economic output derived solely or primarily from digital technologies with a business model based on digital goods or services” and identifies three scopes of the digital economy: the digital sector, digital economy, and digitalized economy. The digital sector deals with core IT or ICT products and services, and specific ICT-related manufacturing and services. The digital economy includes ICT-enabled businesses such as new digital business models such as platform-based firms, which have blurred the boundary. Within the extended digital economic activities by ICT-enabled businesses, many services and goods in the digital economy use online and app-based platforms. The digitalized economy has a much broader scope that covers all economic activities associated with digital technologies.

Although the digital economy can cover the broader sense, as Bukht et al., (2017) show in their three scopes, this study focuses on IMF’s “narrower scope of the digital economy,” which includes the digital gig economy, platform economy, and sharing economy associated with online platforms, platform-enabled services, and suppliers of ICT goods and services with which digital gig workers associate. Figure 1 below shows the scopes of the digital economy according to Bukht et al., (2017) and the IMF (2016). The narrower scope of the digital economy we refer to as the digital economy is “online platforms, and activities that owe their existence to such platform” according to the IMF (2016). In the conceptual figure below, the orange circle on the right indicates the scope of the digital economy.

Online platforms and platform-enabled services include the platform-based economy, such as the sharing economy, which provides peer-to-peer short term rental or labor services (e.g., Airbnb and Uber). The collaborative economy, including lending finance, is also a part of the sharing economy and digital economy in a broad sense.

Figure 1: The scope of the digital economy



A: Source: Adapted from Bukht et al., (2017) and simplified by the author.

B: Source: Author summary of IMF (2016).

Traditional businesses associated with technology platforms are also considered a part of the digital economy. On the other hand, although many of platforms are based around technology platforms, not all are so. That is to say, a company changing the staffing system for delivery operations to a digitized system that hires a piece-by piece basis delivery staff via an online platform is also associated with the digital economy.

2.2 Digital gig economy

The digital gig economy belongs within the narrower scope of the digital economy in which workers find single projects or tasks called “gig work” via online platforms and do work on a task-by-task contract basis. Gig works include freelancing work, delivery services, ride share services, and cleaning services. The digital gig economy enables the workforce to participate in the platform-based market through single projects using online platforms.

Some notable examples of workers in the digital gig economy are delivery passengers of Deliveroo, Uber drivers, or the taskers of TaskRabbits. The gig economy, in which gig workers find jobs and work via online platforms, spread widely because technology-based platforms allow users to find per-job contract work. The tech platform creates dependent contractors that provide a workforce on a contract basis. This type of work is called “digital gig work” or simply “gig work.” We use the term digital gig work in this paper. The workers of bike taxi service platforms, such as SafeBoda in Uganda, also count as digital gig workers.

3. Background

3.1 The danger and benefits for digital gig workers

Digital gig workers face problems such as the lack of job security and fair pay, discrimination in global transactions, and hard competition in a global market. Gig work is even called “the digital sweatshop” since it exploits workers and may cause adverse impacts on gig workers’ human rights. Essentially,

due to the lack of job security and fair pay, gig workers receive fewer benefits,² lower pay,³ and less flexibility.⁴ Additionally, gig workers are socially isolated.⁵ Another problem is the discrimination in global transactions. Workers at the global margins face discrimination due to their countries of origin.⁶ In addition, the oversupply of gig workers in global market lowers workers' pay and worsens their condition. The competition in the global market is growing tougher.

The employment status of gig workers is also problematic; gig works and zero-hour contracts have similarities (Kobie, 2018).⁷ Both have no grantees. Gig work is not provided under an employment contract, but on a contract per task. "The Taylor Review of Modern Working Practices, July 2017" describes that the gig workers are "not an employee, but neither are they genuinely self-employed." The report claims that "Ultimately, if it looks and feels like employment, it should have the status and protection of employment." Gig workers work as contractors without any guaranteed payment. They are paid per task, such as for per-piece delivery and do not count as company employees. In addition, sharing and supplying gig work such as short-term property rental services and providing a workforce for pay-per-task jobs may be informal, with an unregistered and untaxed status.

The impact of the gig economy on each country is becoming substantial, though the technique to measure the trade flows is not well developed. The difficulty of measuring transactions associated

² Gig workers have no employment benefits such as holidays, sick leave, or maternity pay rights.

³ Gig workers receive no decent wage, no guarantees, and no minimum wage.

⁴ Gig workers must work when the company needs them, and have no choice.

⁵ Gig workers do not have a labor union or worker association.

⁶ Gig workers in the global south tend to receive low scores in reputational feedback systems.

⁷ Nicole Kobie, What is the gig economy and why is it so controversial? (September 14, 2018), *WIRED*, (<https://www.wired.co.uk/article/what-is-the-gig-economy-meaning-definition-why-is-it-called-gig-economy>, September 18, 2018).

with gig work accurately is another concern among policy makers. Since transactions between service platforms and customers (users) in the digital economy occur online, they may also be cross-border transactions. Some experts point out that these transactions are in the digital trade. Moreover, the significant economic benefits of international flows of data and money should be measured (Fortanier & Gonzalez, 2017), and such transactions should be taxed.

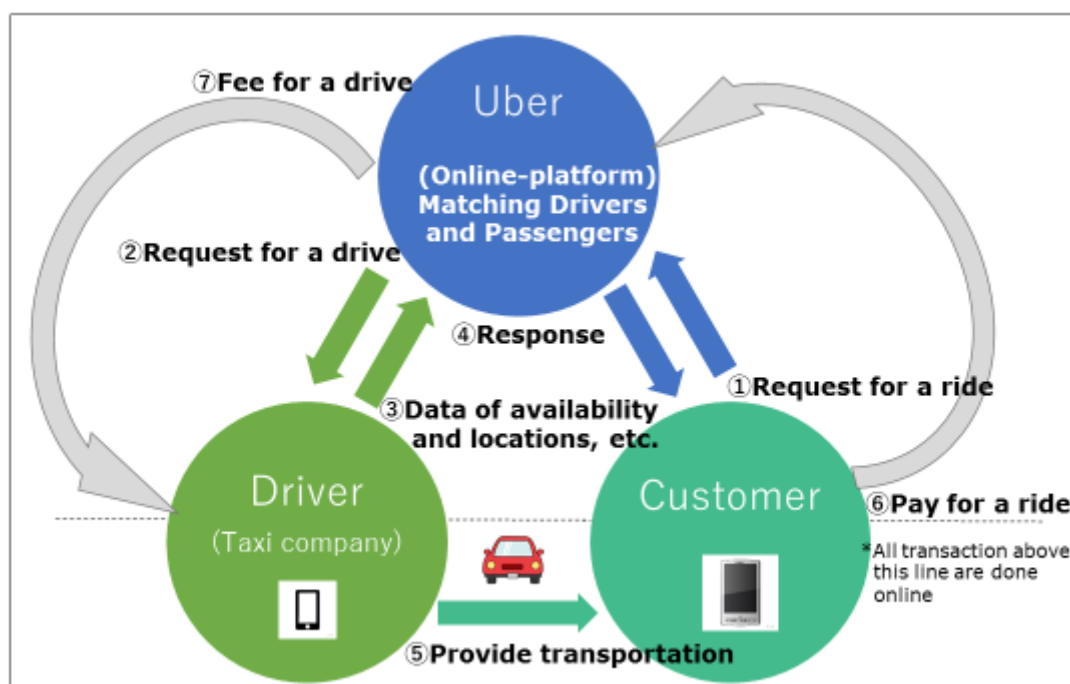
On the other hand, with the given flexible working conditions, it is easier for previously underserved populations in the digital economy to find jobs compared to traditional methods such as through face-to-face interviews. For instance, during a visit in May 2019 to Uganda, we met new engineering graduates who could not find contract work in the country previously can now find single-task type contracts; that is, gig work, with an EU based companies using an online platform.

3.2 Examples of digital gig work

A well-known example of digital gig work that uses an online platform as a marketplace where clients and customers meet is Uber. Uber dramatically changed how people find transportation. A decade ago, people found taxis at a taxi stand or by calling a taxi company to hire a taxi when they needed immediate transportation in the middle of a city or town. Now, with Uber on smartphones, people use an online application to find the most convenient car services. Uber provides digital services to enable customers to find a car to reach their destinations and enables customers to find the best driver that meets their requirements, hire transport services, and pay online. Uber itself does not own any cars,

but use drivers' property to provide transportation services in many countries worldwide. Figure 2 demonstrates a simplified illustration of the concept of matching services that Uber provides to drivers and customers. First, a customer using the Uber app requests a car ride from place A to place B. Then, the Uber platform automatically matches a driver and a customer. The driver picks the customer up at their location, and after arriving at the destination, the customer pays for the ride and provides a score for the driver. Then, the driver receives the fee from Uber rather than directly from the customer.

Figure 2: Example platform associated with digital gig workers: Uber, simplified model



Source: Developed by author with insight from the UberEATS web site⁸

We refer to Uber as one of example platform associated with digital gig workers. Many other platforms enable a workforce and customers to meet online. The transactions of the online matching

⁸ "Uber Engineerir" (<https://eng.uber.com/ubereats-react-native/>, accessed on 11 October, 2018).

services differ, but all occur through online platforms. The table below lists other examples of these platforms.

Table 1: Examples of the platforms associated with digital gig workers

Name	Service type	Developer	URL
Freelancer	Online marketplace for freelance services	Australia	https://www.freelancer.com/
Fiverr	Online marketplace for freelance services	Israel	https://www.fiverr.com/
TaskRabbit	Online marketplace for freelance services	USA	https://www.taskrabbit.com/
Upwork	Online marketplace for freelance services	USA	https://www.upwork.com/
Uber (Uber Pool)	Transport	USA	https://www.uber.com
lyft (Lift line)	Transport	USA	https://www.lyft.com/
Taxify	Transport	Estonia	https://taxify.eu/
Didi Chuxing	Transport	China	https://www.didiglobal.com/
Grab	Transport	Malaysia	https://www.grab.com
Relay Rides	Transport (Car rental)	USA	https://turo.com/
Turo (Relay Rides)	Transport (Car rental)	USA	https://turo.com/
Airbnb	Accommodation	USA	https://www.airbnb.com/
DogVacay	Pet parents and pet sitter matching	USA	https://dogvacay.com/
ProveTrust	Trust score provider	USA	https://provetrust.com.cutestat.com/

Source: By author

3.3 Research question

Our study aims to determine if the digital economy benefits poor workers in developing countries, though its contribution to the poor is minimal rather than substantial, by looking into how the digital economy's benefits spread in Africa. To answer this question, we focus on motorcycle taxi driver related services in Uganda and empirically compare four related services, including: 1) Boda Boda, a motorcycle taxi service provider that is popular among citizens in Uganda; 2) Tugende, a financing service company that allows motorcycle taxi drivers who do not have access to bank loans to own a motorcycle through lease-type installments; 3) SafeBoda, a web application-based motorcycle taxi service provider that uses digital technology in its operations; and 4) Pink Tie, a third-party logistics

and order fulfillment service provider for e-commerce.

4. Empirical case study on the motorcycle drivers sector

In this part, we first identify the problems that Boda Boda drivers face, and then analyze how the other three services overcome these problems, the innovations that changed motorcycle drivers' lives, and the remaining challenges. Below, we discuss what differentiates each services.

4.1 Overview of Boda Boda

Boda Boda is a motorcycle taxi service in Uganda. The origin of the word is not clearly defined, though people call motorcycle taxis "Boda Boda" since they can easily transfer people "from border to border" without any official paperwork. Thus, Boda Boda, a shortened form of "from border to border" became a common term for motorcycle taxis in Uganda. Boda Boda is popular because it is the easiest and fastest transportation mode in Uganda, especially in congested cities like Kampala. Therefore, the demand for Boda Boda is very high. The road conditions in Kampala are particularly bad and create heavy traffic jams. Boda Boda is the most convenient way to avoid traffic. Motorcycle taxis like Boda Boda are a common means of transportation for many among the low-income population, not only in Uganda, but also elsewhere in Africa. While it is called "Boda Boda" in East Africa, it is called "Okada" in West Africa.

The Boda Boda business could be Uganda's second largest employer after agriculture, with more

than 120,000 registered Boda Boda drivers according to the Kampala Boda Boda Riders Association as of 2015.⁹ Another source estimates that there are between 200,000 and 300,000 Boda Boda drivers as of 2017.¹⁰ In Kampala alone, there are an estimated 30,000 to 100,000 Boda Boda drivers, though the number varies depending on source and if the number includes unregistered Boda Boda drivers. The working age population in Kampala City in 2015 was 1,082,000, and among them 614,700 is currently working according to the Uganda Bureau of Statistics.¹¹ Assuming 100,000 Boda Boda drivers in Kampala, about 16% of the working population engages in the Boda Boda business. Although the economic impact of the Boda Boda business is small, since the business is the major contributor to employment for the poor in the country (Howe, J. & Davis, A., 2002), the impact on the population in the lower part of the economic pyramid is huge.

Boda Boda safety and security are a concern. For example, they are well-known for their high rate of road accidents, abuse of passengers, and for cheating money out of passengers. In addition, many unregistered Boda Boda drivers lack proper driving licenses or insurance. For customers, identifying a safe Boda Boda is a challenge. Motorcycles contribute 41% of all road traffic injuries (Tumwesigye, Atuyambe, & Kobusingye, 2016). From 2014 to 2016, at least 7,000 people lost their lives in Boda Boda accidents. In particular, “The biggest cause of boda boda accidents is their impatience,” as well

⁹ “The boda boda economy defining the streets of Kampala” *The Daily Monitor*, September 15, 2015, (<https://www.monitor.co.ug/Business/Prosper/boda-boda-economy-defining-streets-Kampala/-/688616/2869756/-/82s1jd/-/index.html>, accessed on November 18, 2018).

¹⁰ “Kampala: Moving on boda boda power” *The East African*, August 16, 2017 (<https://www.theeastafrican.co.ke/magazine/Kampala-moving-on-boda-boda-power/434746-4059576-94g5v3/index.html>, accessed on November 18, 2018).

¹¹ Working population is from 14 to 64 years old. Urban labor force survey 2015. (https://www.ubos.org/wp-content/uploads/publications/03_2018ULFS_2015_Fact_Sheet.pdf, accessed on February 5, 2019).

as untrained and reckless riders.¹²

Although the number of the Boda Bodas is huge, its impact on local economies is limited. However, if Boda Bodas can address the safety and security concerns above, they will help reduce road accidents and casualties among riders, passengers, and pedestrians, though this will require solving the various challenges that Boda Boda drivers face. We identified 9 problems and categorize them into three. The first challenge is financial capability. Boda Boda drivers lack financial discipline. Many Boda Boda drivers do not have education above secondary school. Due to their limited financial literacy, it is difficult for drivers to properly manage their earnings and expenses. Additionally, most drivers are poor at record keeping, do not have saving capacity, and tend to mix business capital and personal money. Likewise, without financial management skills and knowledge, Boda Boda drivers easily misuse business profits for themselves. Thus, drivers cannot save out of their very limited earnings.

The second challenge area is the model of the Boda Boda business. Drivers earn low gross profits because they do not own their motorcycle. Based on data collected in field interviews, we estimate that the typical driver's daily revenues are UGX 30,000. Since most of the drivers do not own their motorcycle, out of their earnings, a driver can pay back UGX 10,000 to the lender of the motorcycle, and spend UGX 8,000 on daily fuel expenses¹³. The gross profit after expenses is UGX 12,000, without

¹² "Boda bodas kill 7,000 in three years" *The Daily Monitor*, February 13, 2018, (<https://www.monitor.co.ug/News/National/Boda-bodas-kill-7000-three-years/688334-4302092-v1jwb4/index.html>, accessed on December 15, 2018).

¹³ We simplified a calculation formula of daily gross profit; revenues minus the motorcycle leasing fee minus fuel expense.

counting the maintenance fees that the motorcycle borrowers often cover. The driver needs to feed his family with UGX 12,000 (USD 3.2¹⁴). It is hard for Boda Boda drivers to support their family on such low earnings. The other problems that drivers face are low job security, lack of access to financial services, and low work efficiency. Boda Boda drivers have low job security since informal motorcycle lenders can always withdraw the motorcycle without notice, and most drivers do not have motorcycle insurance or health insurance. For these reasons, the job lacks stability and Boda Boda drivers are in an insecure position. Drivers also lack access to financial services and have low credit and low daily earnings, making it almost impossible for them to borrow to buy a motorcycle and leaving them with only the option to rent a motorcycle. Moreover, Boda Boda drivers suffer from low work efficiency. They usually spend a long time waiting until they carry a passenger and have fuel waste for a long trip to where they cannot find a passenger on the way back to their base.

The third challenge area is the human resource development of drivers. Boda Boda drivers do not have the opportunity to gain education and grow as professional drivers. Without proper training and education opportunities, they often have problems with safety, low reliability from customers, lack of IT skills and knowledge, and lack of basic employability skills. Regarding safety issues, Boda Boda are well-known for their high rate of road accidents due to drivers' poor attitude toward road safety and not well maintained motorcycle. They do not wear helmets properly; moreover, only 30.8% of drivers and 1% of passengers wear helmets (Roehler et al., 2013). Many drivers do not carry a helmet

¹⁴ The exchange rate used in this paper is 1 Ugandan Shilling (UGX) = 0.00027 United States Dollar (USD), as of 28 November 2018.

for their passengers nor themselves. Another problem is low reliability from their customers. Customers always face the risk of being ripped off, cannot judge if the driver is safe or not, and face the risk of being robbed. Drivers also lack IT skills and knowledge. Many of drivers are aware of SafeBoda and other motorcycle taxi services connected with web applications, though they cannot easily join the service platforms due to limited IT skills and knowledge. Finally, drivers lack basic employability skills; they have limited soft skills such as problem solving, communication skills, teamwork, self-management, time management, interpersonal skills, ability to learn proactively, emotional intelligence, leadership, and planning and organizing, among others, to work as professional motorcycle taxi drivers. The two columns on the left of Table 2 demonstrate the points mentioned above.

4.2 How each service tackles motorcycle drivers' problems

This section discusses how motorcycle taxi driver type jobs linked to the digital economy can help to solve drivers' problems and improve drivers' earnings. Motorcycle drivers connect to these companies as clients in Tugende's case or as the work force in the case of SafeBoda and Pink Tie. Moreover, all three companies are social enterprises that aim to solve social problems through their business operations.

4.2.1 Tugende

Tugende is a social enterprise that provides motorcycle financing packages to motorcycle taxi drivers¹⁵.

It helps motorcycle taxi drivers own motorcycles by providing a lease-to-own type of financing scheme and increase earnings. In a typical case, after 19 months of repayment¹⁶, a borrower can own the

motorcycle. The model allows motorcycle taxi drivers to use the motorcycle while they borrow funds.

The most prominent difference from the general Boda Boda system is the fact that motorcycle taxi

drivers do not need to be stuck renting a motorcycle forever. The money that motorcycle taxi drivers

pay to Tugende becomes a source of funds to invest in their own motorcycle taxi business. At the end

of the payback period, the borrowers become motorcycle owners and motorcycle taxi business owners.

We next discuss Tugende's innovations to solve the problems that Boda Bodas face.

Tugende's innovations deal with above mentioned three challenge areas that Boda Boda drivers

face. First, to address the issue of financial capability, Tugende provides a solution to the access to

finance. Tugende does not require formal collateral like land titles which are required by most banks

and microfinance institutions. Tugende's down payment is approximately 10% of the cost of the asset,

whereas many other lenders require 25-40% upfront. Therefore the barriers to entry for drivers to get

a path to ownership are lowest with Tugende. Likewise, to address financial discipline in the area of

financial capability, Tugende provides opportunities for basic financial education. This is a part of the

prerequisite training classes. Motorcycle taxi drivers also acquire financial discipline through On-the-

¹⁵ As of March 2019, Tugende provides other income generating assets, including refrigerators, sewing machines, commercial vehicles, and others.

¹⁶ The typical payment period as of March 2019 is between 20 to 24 months due to the repayment model changes.

job training (OJT) as they pay installments. They also receive continuous support from an account manager. By joining the system, after 19 months of the payback period, motorcycle taxi drivers improve their financial capacity and become financially independent. Thanks to the digital technology, PayWay¹⁷ and mobile money such as MTN and Airtel money, motorcycle taxi drivers can easily access financial services and make payments via digital payment channels. Additionally, it enables motorcycle taxi drivers to make savings since they can save money in their mobile money account. This is where the digital economy benefits drivers directly.

Regarding aforementioned Boda Boda drivers' second challenge area, the business model of Boda Boda, Tugende's unique leasing service model helps drivers not only become owners, but also enhance their job stability and economic security. Consequently, drivers can have bike ownership¹⁸ and increase their earnings after the installment payment period. The lease package includes life insurance, medical insurance, property damage liability insurance, and assistance in obtaining a riding permit, all of which improves drivers' job security and protects them and their family in case of accidents or other issues. Moreover, motorcycle drivers become more safety conscious with using own assets by driving his own motorcycle since drivers pay extra care on their own assets.

In terms of the Boda Boda's third challenge area, human resource development, motorcycle taxi drivers with Tugende learn driving safely after receiving driving safety trainings and a new motorcycle that does not require maintenance. Tugende also provides high quality safety equipment including

¹⁷ Pay Way is an internet-based payment service.

¹⁸ Tugende clients buy motorcycles such as TVS, Bajaja Boxer, and Yamaha.

helmets, reflector vests and upgrades to the motorcycle which reduce safety risks of motorcycle taxi drivers.

During the 19-month payback period, a motorcycle taxi driver needs to carry more passengers to reach the same daily gross profit of a typical Boda Boda; however, after payback period, the driver will earn more gross profit previously. Tugende requires a leaser to pay 15% more than what is paid to rent a motorcycle (UGX 10,000 per day). In an ordinary case, we estimate that the typical driver's daily revenues are UGX 30,000. A leaser pays back UGX 11,500 in the daily installment and spends UGX 8,000 on fuel. A driver's daily gross profit becomes UGX 10,500 (USD 2.8), which is slightly less than the earnings of a typical Boda Bodas¹⁹. However, after the 19-month payback period, the driver pays only the UGX 8,000 fuel expense out of the daily revenues and earns a daily gross profit of UGX 22,000 (USD 5.9), which is almost twice that of a typical Boda Boda. The biggest challenge for Boda Boda drivers to join Tugende's model is having the down payment of about USD 130 up front. Tables 2, 3, and 4 summarize the points mentioned above.

4.2.2 SafeBoda

SafeBoda is a web application-based motorcycle taxi service provider founded in 2014. It aims to reduce Boda Boda accidents. Boda Bodas in Uganda are well-known for their high rate of traffic accidents. Kampala's Mulago hospital reported that 41% of its trauma cases involved a motorcycle

¹⁹ Many Tugende clients increase their number of trips and drivers earn more than typical Boda Bodas do because they have new motorcycles that they own. As the asset owner, they increase safety and efficiency of their rides, and more motivated to carry more customers.

taxi (Kigera, Nguku, & Naddumba, 2010). SafeBoda aims to modernize informal transportation and ensure safe access to mobility through its safe ride, fair price, and convenient services. According to SafeBoda co-founder Rapa Thomson Ricky, it has more than 1,500 registered motorcycle taxi drivers as of May 2018. All SafeBoda motorcycle taxi drivers wear identifiable orange color reflecting vests and helmets and are equipped with smartphones and spare helmets. Passengers use the SafeBoda app on their smart phones to find the most convenient Boda Bodas.

SafeBoda's innovations deal with three challenge areas. In the area of financial capability, SafeBoda uses digital technology and mobile money, including MTN, Airtel Money, or SafeBoda Wallet, which enables customers to make easy and accurate payments online. Additionally, on-line bank technology lets drivers receive payments from customers and commissions from SafeBoda easily. SafeBoda Wallet is a service that enables customers to deposit funds in advance and use them when they use SafeBoda's service. Customers can get a 50% discount if they pay by SafeBoda Wallet, though the difference in revenues are covered by the company, and SafeBoda drivers do not lose revenues²⁰. While the said discount promotion reduces revenues for SafeBoda, this led customers to use SafeBoda more and to be loyal to SafeBoda's service with their own SafeBoda Wallet account actively used. Additionally, SafeBoda solved problems of price discrimination²¹ and improved price fairness and visibility of motorcycle taxis by providing an app-based fee.

²⁰ As of March 2019, the company promotes a 25% discount to customers who choose SafeBoda Wallet as a payment method.

²¹ When a customer uses a Boda Boda on the road, the customer does not have the power to decide price of the trip; the Boda Boda driver decides the price, even if it is too high for the actual trip.

In terms of the second challenge area business model, SafeBoda deals with problems associated with low job security, lack of access to financial services, and low work efficiency. SafeBoda requires member drivers to take out an insurance package that includes bodily injury and property damage liability insurance. It improves drivers' job security with their own additional payments. Likewise, an Uber-type web application makes it easy for drivers to find potential passengers, reduce wasted fuel, and increase the number of passengers that they can carry.

Another challenge area SafeBoda deals with is human resource development. Motorcycle taxi drivers receive training on road safety, first aid, basic motorcycle maintenance, and customer care. All SafeBoda drivers are required to carry hairnets and a spare helmet for a customer, which improves safety. In addition, the reflective jacket a SafeBoda driver wears has the driver's name on it and the trip history record in the customer's mobile app improves the reliability of SafeBoda drivers. SafeBoda also requires drivers to wear identifiable orange uniforms, which provides strong presence of the SafeBoda brand and improves customer trust in its drivers. This in turn helps drivers get more passengers. Moreover, they are all trackable through SafeBoda's online system. Average drivers after joining SafeBoda increase their passengers by at least 30 to 40% and the average is about 230%, according to SafeBoda. It is worth noting that some research results show that SafeBoda increased the safe riding behaviors of motorcycle taxi drivers (Muni et al., 2018). Regarding IT skills and knowledge, SafeBoda provides registered motorcycle taxi drivers basic IT skills training. It also provides drivers with opportunities to be office workers if they show high performance and the desire to do so.

SafeBoda is a typical digital gig working service in which the workers are self-employed and receive fees upon per ride. To join SafeBoda, a Boda Boda driver needs to pay UGX 200,000 (USD 54.0) as a part of a total principal fee of UGX 45,000 (USD 121.5). In addition, drivers need to pay 15% of the per-ride fee for app-based trips and UGX 7,000 (USD 7.9) of the installment of initial fee for the first 8 months. These are the three biggest hurdles for motorcycle taxi drivers to join SafeBoda. Based on the interviews with SafeBoda drivers, we estimate that the typical SafeBoda motorcycle taxi driver's daily revenues are UGX 70,000.²² Assuming that customers pay the fares by cash, the driver pays a 15% commission of UGX 10,500 and a UGX 7,000 installment of the initial fee to the company, pay UGX 10,000 to the owner of the motorcycle, and spend UGX 20,000 on fuel. The gross profit becomes UGX 22,500 (USD 6.1) for the first 8 month. After 8 months, the gross profit becomes UGX 29,500 (USD 8). If the motorcycle taxi driver owns the motorcycle, then the gross profit becomes UGX 32,500 (USD 8.8) for the first 8 months. Under the same assumption, after 8 months, the gross profit becomes UGX 39,500 (USD 9.7). Tables 2, 3, and 4 summarize the points mentioned above.

4.2.3 Pink Tie

This company was born of the necessity for efficient and reliable fulfillment services led by the growth of the digital economy; namely, on-demand e-commerce platforms. While e-commerce businesses have been expanding in Uganda, there is insufficient fulfillment capacity, nor could these companies,

²² The SafeBoda drivers we interviewed in Kampala indicated that the average daily revenues are between UGX 70,000 to UGX 100,000, depending on how many customers they carry.

such as Jumia²³, establish sufficient fulfillment operations themselves when they began operations. When Jumia established fulfillment capacity for on-demand delivery, it was difficult to operate due to bad road conditions, high traffic accident rates, and badly maintained motorcycles that often break down. Moreover, Jumia had difficulties in managing drivers; it faced high turnover, low commitment, absenteeism without due notice, and sometimes missing articles and misuse of collected money.

Pink Tie enhanced drivers' employability skills and successfully improved their lives. The company is a third party logistics and order fulfillment service provider to e-commerce companies founded in May 2016. The company aims to better the life of people at the bottom of the social scale by employing them and leading them to self-growth through engaging in its business. The company provides fulfillment to e-commerce platforms such as Jumia Fresh, Jumia Food, Jumia Party, and more. Pink Tie inventories product shipments and delivers products to the customer on behalf of an e-commerce store. The company hires about 100 motorcycle drivers. There are two types of drivers: partner drivers who receive only commissions based on the number of deliveries and use their own motorcycles, and company drivers who receive commissions and a monthly salary on the last Friday of the month and do not have their own motorcycles. Both types of drivers deliver goods upon a request sent to their smart phones, though partner drivers are equivalent to digital gig workers. Most drivers working at Pink Tie were Boda Boda drivers who earned about UXG 360,000 (USD 100.0) per month. Thanks to Pink Tie, drivers currently earn about UXG 500,000 (USD 135.0) on average and UXG

²³ Jumia is the largest e-commerce service in Africa, which was founded in Nigeria in 2012.

1,000,000 (USD 270.0) at most.²⁴ On average, drivers earn about 1.35 times their previous earnings.

The company offers on-demand order fulfillment services to Jumia Party, for example. Jumia Party is an on-demand e-commerce platform specialized in drinks and goods for a party use. Pink Tie operates one of Jumia Party's warehouses. When it receives an order, a staff member responsible for Jumia Party picks and packs the order in a box or a paper bag, and prepares a slip to dispatch the goods. While the office staff is preparing the shipment, the system assigns a motorcycle driver who delivers the order to the designated address. Once the motorcycle driver arrives at the warehouse, he picks up a package and makes the delivery immediately. At the same time, the system notifies the customer via email that the order is on its way. After the package arrives to the customer, the driver collects the fees in cash or a coupon, or the customer pays via mobile money. If the delivery staff receives the fee by cash, then the office staff member processes the payment and transfers the funds to Jumia Party. Jumia party limits delivery time to only one hour. The delivery fee is UXD 5,000 (USD 1.4) per order, regardless of the size of the order.

Pink Tie's innovations deal with all three challenge areas identified in the overview of Boda Boda drivers. The first challenge area is financial capability, specifically the lack of financial discipline. Pink Tie provides financial education and improves financial literacy through its payment scheme. Drivers receive commissions weekly and salary monthly on time, which enables them to gradually become capable of managing their funds. Pink Tie also uses mobile money as a payment method for

²⁴ These numbers are based on interviews with the founder of the company in May 2018.

both customers and drivers. This makes it easier for drivers who have less access to financial services to receive fees and manage their own funds online. Regarding the business model, the company helps drivers earn more without additional expenses for a motorcycle lease. It also introduced a program for drivers to own a motorcycle by linking drivers with its no interest payment system. The bodily injury and property damage liability insurance that the company buys for all drivers improves drivers' job security. Likewise, the Uber-type web application makes it easy for drivers to receive delivery orders, and thus to increase the number of deliveries and reduce fuel waste, which also enhances work efficiency.

In terms of the third challenge area, human resource development, the company works to assure driver safety. It offers driving training, in-house motorcycle engineers, and equipment including helmets, uniforms, and basic aid kits. To earn customer trust and increase the number of orders, the company makes a special effort to produce the best customer experiences by having strict rules and regulations that apply to all drivers. They can identify and track all drivers using apps and uses the brand image of companies such as Jumia, KFC, and Pizza Hut. Likewise, to provide basic IT capabilities, it provides drivers with free basic IT skills training and smartphones by installments. Finally, and most importantly, Pink Tie has been positively working on issues of employability, which is one of the biggest challenges that workers in most of Sub-Sahara African countries face. The company copes with this challenge through people development in a patient manner. It provides on-the-job daily training and helps drivers to change their mindsets. Moreover, it leads competency-based

skills trainings, including communication, teamwork, problem solving, self-management, learning and planning, and more. Through employment relationships as a team, the company builds relationships on trust, proper pride among drivers, and stable life and work. Although the company must be patient and provide continuous supports to drivers, the drivers gain employability and drive the team to a success. All of these skills are also applicable to other settings. For instance, a former Boda Boda driver who started as a delivery driver for Pink Tie became a field operations manager after improving his skills by working with the company.

To join Pink Tie, drivers require guarantees from good acquaintances who already work at the company. Essentially, the number of deliveries determines drivers' earnings. The company has a clear commission list depending on whether the driver is a partner driver or a company driver, and if the driver has a delivery box and the client for which the driver is working. The average driver delivers goods eight times a day. Based on this assumption, a company driver who works for Jumia food, for example, earns UGX 20,000 per day. After fuel expenses of UGX 8,000 and UGX 15,000 of monthly salary per day, the driver's gross profit per day is UGX 27,000 (USD 7.3). A partner driver under same assumption earns UGX 31,000 per day (USD 8.4). Tables 2, 3, and 4 summarize the points mentioned above.

Table 2: Summary of Boda Bodas' problems and the innovations of each service

Challenge areas	Problems that Boda Bodas face	Innovations (actions) provided to solve problems of Boda Bodas		
		Tugende*	SafeBoda*	Pink Tie*
		*A lease company that provides motorcycle financing packages to motorcycle taxi drivers	* A web application based motorcycle taxi service provider	*A third party logistics and order fulfillment service provider of ecommerce
Financial Capability	Lack of financial discipline	a. Basic financial education b. Learn through on-the-job training as they repay money c. Continuous supports from an account manager	a. App-base SafeBoda Wallet functions as a saving account which serves as drivers' financial instrument, and improve financial capability of drivers	a. Financial education through the payment scheme
	Lack of access to financial services	a. PayWay: an online payment service and mobile money services such as MTN and Airtel Money (<u>Digital Technology</u>)	a. MTN, Airtel Money, or SafeBoda Wallet. as payment methods for customers and drivers (<u>Digital Technology</u>)	a. Mobile money as one of the customers' payment methods (<u>Digital Technology</u>)
Business Model	Low profits and low gross earnings because they do not own their motorcycle	a. A lease service that provides motorcycle financing packages to those who have less accesses to financial services	n/a	a. Lease motorcycle without ownership charge b. A program to own motorcycle by linking with its payment system
	Low job security	a. The lease package includes insurance insurance, including life insurance, medical insurance, property damage liability insurance, and property damage liability insurance and assistance in obtaining a riding permit	a. Require drivers to take out an insurance package	a. The company provides insurance, including bodily injury and property damage liability insurance
	Low work efficiency	n/a	a. An Uber-type web application (<u>Digital Technology</u>)	a. An Uber-type web application (<u>Digital Technology</u>)
Human Resource Development	Low awareness of safety issues	a. Driving safety trainings b. New motorcycle that does not require maintenance	a. Driving safety trainings b. Drivers are provided hairnets, a helmet, reflection vest, and basic equipment kits	a. Driving safety trainings b. In house motorcycle engineer c. Helmet, uniform, and basic equipment kits
	Low reliability from customers	n/a	a. SafeBoda brand b. They are all trackable through SafeBoda's online system	a. Strict rules and regulations apply to all drivers b. They are all trackable by apps c. Brand image of companies such as Jumia, KFC, and Pizza Huts
	Lack of IT skills and knowledge	n/a	a. Basic IT skills trainings	a. Basic IT skills training b. Provide equipment by installments
	Lack of basic employability skills	n/a	a. Staff employment opportunity from SafeBoda drivers based on performance and desire of drivers	a. On-the-job trainings b. Change drivers' mindsets c. Competency-based skill education, including communication, teamwork, problem solving, self-management, learning, and planning

Source: By author

Table 3: Summary of Boda Bodas' problems and results of each innovation

Challenge areas	Problems that Boda Bodas face	Results of each innovation		
		Tugende*	SafeBoda*	Pink Tie*
		*A lease company that provides motorcycle financing packages to motorcycle taxi drivers	* A web application based motorcycle taxi service provider	*A third party logistics and order fulfillment service provider of ecommerce
Financial Capability	Lack of financial discipline	Improvement in financial capacity and to become financially independent	n/a	Improvement in financial literacy and become financially independent
	Lack of access to financial services	Have access to financial services and make easy payments via digital payment channels	Easy to receive payment from customers and commission from the company via digital payment channels. Enables drivers to have digital savings.	Easy to receive payment from customers and commission from the company via digital payment channels. Enables drivers to have digital savings.
Business Model	Low profits and low gross earnings because they do not own their motorcycle	Drivers can have bike ownership and increase in earnings after installments completed	n/a	Improvement in earnings without additional drivers' expenses
	Low job security	Improvement in drivers' job security	Improvement in drivers' job security with their own additional payment	Improvement in drivers' job security
	Low work efficiency	n/a	Increase in number of customers and reduce fuel waste	Increase in number of deliveries and enhance work efficiency
Human Resource Development	Low awareness of safety issues	Increased safety	Increase safety and 100% helmet adaptation	Increase safety
	Low reliability from customers	n/a	Improvement in customers' trust and have more rides	Create the greatest customer experiences, gain customers' trust, and have more orders
	Lack of IT skills and knowledge	n/a	Become capable of basic IT skills	Become capable of basic IT skills
	Lack of basic employability skills	n/a	n/a	Builds relationship through trust, pride among drivers, and stable lives and work. Drivers also gain higher employability skills and drive a team to success

Source: By author

Table 4: Summary of Boda Bodas’ problems and material challenges for Boda Bodas

Challenge areas	Problems that Boda Bodas face	Material challenges for Boda Bodas		
		Tugende *	SafeBoda*	Pink Tie *
		* A lease company that provides motorcycle financing packages to motorcycle taxi drivers	* A web application based motorcycle taxi service provider	* A third party logistics and order fulfillment service provider of ecommerce
Financial Capability	Lack of financial discipline	n/a	n/a	n/a
	Lack of access to financial services	n/a	The sales is discounted by 50% with SafeBoda Wallet credit and reduce the earnings of drivers	n/a
Business Model	Low profits and low gross earnings because they do not own their motorcycle	USD130 of down payment up front to join the system	USD54 up front (out of USD121.5 initial fee) to join SafeBoda, 15% of the per-ride; fee for app-based trips and UGX7000 of repayment of the rest of initial fee for the first 8 months	Guarantee from good acquaintances who already work at the company
	Low job security	n/a	n/a	n/a
	Low work efficiency	n/a	n/a	n/a
Human Resource Development	Low awareness of safety issues	n/a	n/a	n/a
	Low reliability from customers	n/a	n/a	n/a
	Lack of IT skills and knowledge	n/a	n/a	n/a
	Lack of basic employability skills	n/a	n/a	Must be patient and provide continuous support

Source: Author.

4.3 Discussion

Our research results suggest that the digital economy directly benefits motorcycle taxi drivers by

enhancing their financial capability and improving the efficiency of the business model. Indirectly, the growth of the digital economy expanded business opportunities for motorcycle drivers, as the SafeBoda and Pink Tie cases demonstrate. Both SafeBoda and Pink Tie would not exist without the emergence of the digital technology. Besides, mobile technology enabled Tugende clients to save fuel and time by using mobile payments rather than driving to the Tugende office to make installment payment in person. Tugende clients' Boda Boda businesses also benefited indirectly from the digital technology by increasing the efficiency of each ride since motorcycle taxi drivers are motivated to drive safely because they use their own motorcycles and carry more passengers. As such, the mobile payment methods Tugende and SafeBoda use increased the efficiency of the payment process. Additionally, Tugende creates motorcycle owners who associate with SafeBoda, which motivates motorcycle taxi drivers using their own assets provide more rides, thus increasing their earnings. All three businesses take great pains to improve the nine challenges that Boda Boda drivers face, including lack of financial discipline, lack of access to financial services, low gross profits due to the lack of motorcycle ownership, low job security, low work efficiency, lack of safety, low customer reliability, lack of IT skills and knowledge, and lack of basic employability skills. We categorized these challenges into three categories: drivers' financial capability, the Boda Boda business model, and human resource development. We then looked at how each service is leading innovations to overcome these issues in each category.

It was clear that the three motorcycle-related service providers are taking innovative actions to

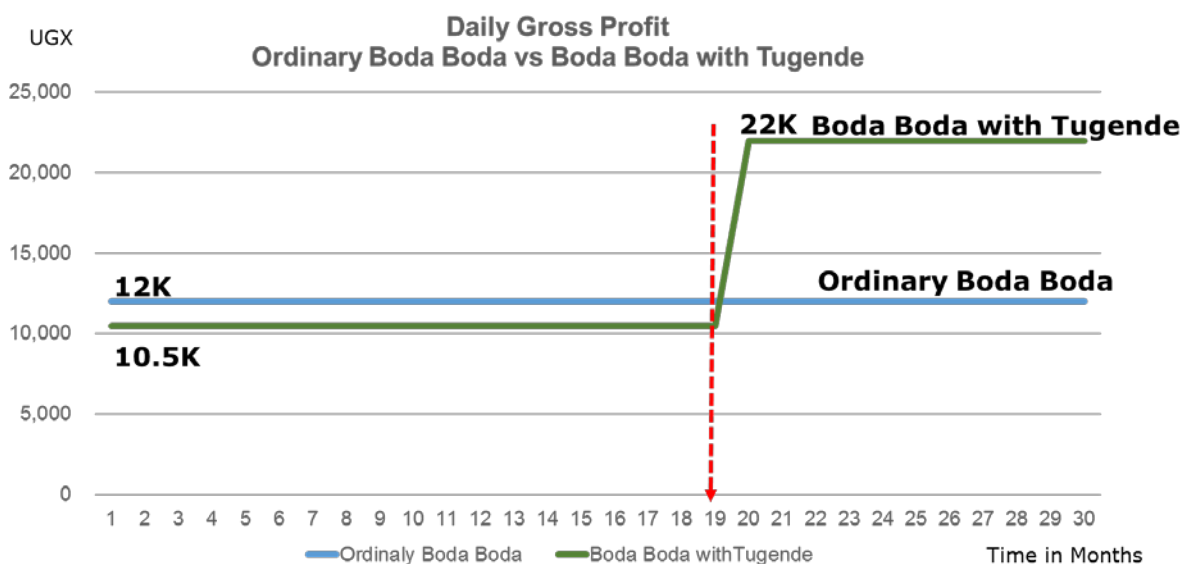
solve Boda Bodas' problems. Tugende mainly provides innovations to solve problems related to financial capability and the business model. SafeBoda typically focuses on the business model and human resource development. Pink tie provides innovations to all three areas, though they typically see great impacts on human resource development. In particular, Pink Tie exerts more effort to address the lack of basic employability skills, which is an indispensable condition for workers to compete in the job market because Pink Tie directly employs most of their drivers unlike Tugende and SafeBoda which contract with individual drivers. Before working with Pink Tie, Boda Boda taxi drivers were treated as an incompetent labor force and were not seen as candidates for human capital development. However, the company believed in drivers' personal potential and through employment, enhanced the lives of people at the bottom of the social scale. This did not happen without the development of the e-commerce, nor the digital economy. In this sense, the digital economy offered an enormous contribution, though alone, it would not better the employability skills of motorcycle taxi drivers. It consequently increased the drivers' sense of belonging to the company. Combined with the company's innovations, the digital economy helped to improve drivers' employability and stabilized the business operations.

Figures 3, 4, and 5 below illustrate how each company's service contributed to enhancing drivers' earnings compared to those of ordinary Boda Boda drivers.²⁵ This study finds that each service enhanced drivers' gross profit compared to those of a typical Boda Boda driver. In this comparison,

²⁵ A typical calculation of daily gross profit is revenues minus the motorcycle leasing fee minus fuel expense.

we estimated ordinary Boda Boda's earnings from the results of on-site interviews conducted in Uganda in May 2018, and use it as the earnings baseline. First, Figure 3 compares the case of Tugende to an ordinary Boda Boda's earnings. Although in the first 19 months, Boda Boda drivers using Tugende's leasing model earn slightly less on average, they earn UGX 22,000 after 19 months (Figure 3).²⁶

Figure 3: Daily Gross Profit, Tugende



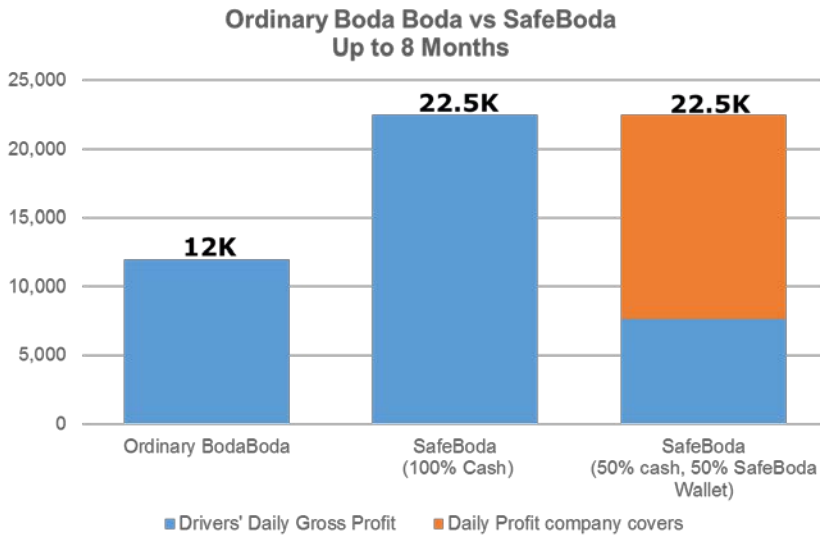
Source: Author (Note: Numbers are estimated based on interviews).

Figure 4 and Figure 5 show SafeBoda's case compared to a typical Boda Boda driver. During the first 8 months, a SafeBoda-associated driver has to pay UXG 7,000 per day to pay back the balance of the initial fee of 450,000. The gross profit become more than double that of the ordinary earnings. However, due to harsh market competition, SafeBoda has been promoting a 50% discount to customers who choose SafeBoda Wallet as a payment method and the company covers the cost of discounted

²⁶ However, most SafeBoda drivers carried more passengers than when they previously worked with Tugende.

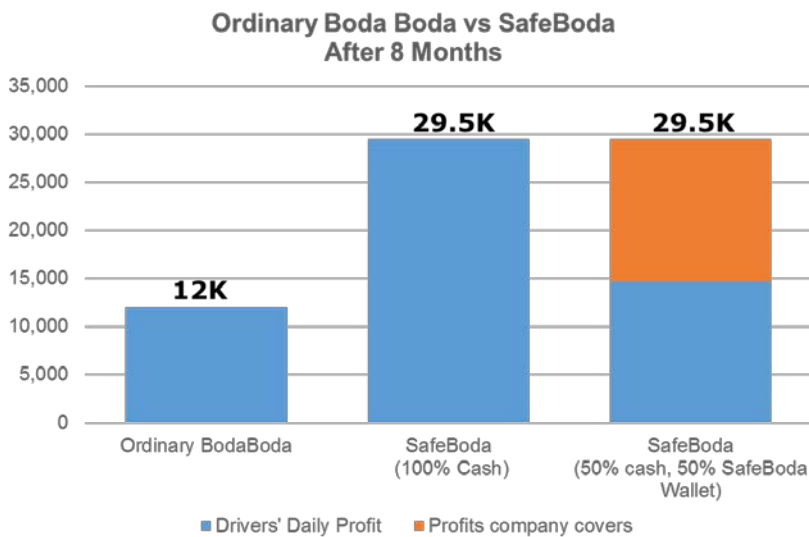
revenues to drivers. This promotion may reduce SafeBoda’s profits (Figure 4 and Figure 5).

Figure 4: Daily Gross Profit, SafeBoda (Up to 8 Months)



Source: Author (Note: Numbers are estimated based on interviews).

Figure 5: Daily Gross Profit, SafeBoda (After 8 Months)

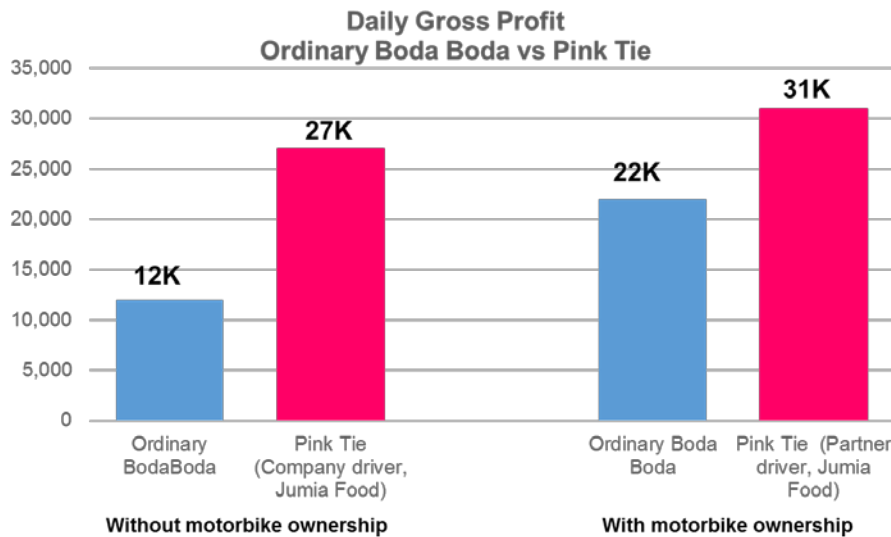


Source: Author (Note: Numbers are estimated based on interviews).

Next, Figure 6 shows Pink Tie’s case compared to that of an ordinary Boda Boda driver. The growth in earnings is moderate, though more sustainable, with their persistent efforts on human

resource development (Figure 6).

Figure 6: Daily Gross Profit, Pink Tie



Source: Author (Note: Numbers are estimated based on interviews).

5. Conclusion

Our research aimed to discover whether the digital economy benefits poor workers in Uganda by looking into how it benefits motorcycle taxi drivers. Our results suggest that both the direct and indirect benefits of the digital economy helped motorcycle drivers improve their lives by engaging with the digital economy. In particular, employability skills enhancement increased job stability.

The results show that motorcycle drivers benefit directly from the digital economy in three aspects. First, they gain easy access to financial instruments brought about by digital payment services, such as Payway and mobile money in the case of Tugende. Such online-payment methods enable borrowers to pay installments easily and on time. Second, they gain higher work efficiency by using

an Uber-type web application and mobile money, such as MTN and Airtel money in the cases of both SafeBoda and Pink Tie. Third, drivers gain more job opportunities with higher earnings by using mobile application-associated services like SafeBoda. The results also demonstrate an indirect benefit of digital technology through the enhancement of employability skills. Both SafeBoda and Pink Tie, enhanced the employability skills of motorcycle drivers with their efforts.

All three businesses take great efforts to improve the challenges that Boda Boda drivers face. Tugende has the most impact on issues of financial capacity, SafeBoda has a significant impact on issues of the business model, and Pink Tie has the greatest impact on issues of human resource development.

To conclude, we identified that while the digital economy brought direct benefits such as access to financial services and higher work efficiency, the relationship between the digital economy and the rise in motorcycle drivers' earnings is conditional on more fundamental issues, such as employability skills and the mindset of drivers which brings about responsible behavior and safe rides as a result. Therefore, both the direct and indirect benefits of the digital economy are substantial for Boda Boda drivers, and helps provide them with a better and sustainable life of motorcycle taxi drivers.

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