



MEASURING
CROSS-BORDER ECONOMIC
and **FINANCIAL LINKAGES**
in a Dynamic World

#StatsForum



Harnessing Card Data to Measure Namibia's Cross-Border Digital Services Imports

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Outline

- **ICT at a glance**
- **Motivation**
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ICT sector at a glance

Indicator	2013	2023
Population (million)	2.1	3.0
Mobile operators	2	4
Fixed line operators	1	1
Mobile subscribers	2,456,034	2,597,926
Fixed line subscribers	183,532	85,802
Fastest mobile internet access	Fibre	Fibre
Internet users per 100 inhabitants	31.6	66.0
Internet users	849,079	1,723,818

Source: CRAN

- **Enhancing digital trade** - Namibia has invested heavily in the modernization and expansion of its (ICT) sector
 - Internet usage has increased over the years, reflecting Namibia's steady progress in digital connectivity
- **Enabling regulatory environment** for international online ecommerce platforms and payment service providers
 - The Bank of Namibia does not have any regulatory restrictions for Namibian businesses and consumers to access, sell and receive payments on international online e-commerce platforms

Motivation

- Digital trade has grown rapidly, creating new markets for domestic consumers
- Payment gateways globally has been the core enabler of digital trade by connecting businesses operating online with consumers from all over the world
- Meanwhile, these cross-border transactions are not reflected in the official External Sector Statistics due to lack of data sources.
- This paper explored the use of credit and debit card data for Namibia to derive estimates of cross-border digital purchases of services by Namibian residents
 - ◆ to improve coverage and data quality in line with the ongoing updates of BPM6

Related literature

- In terms of balance of payment statistics, more visibility on digital trade has been lacking and will be addressed in the upcoming (BPM7)
- However, the **Handbook on Measuring Digital Trade** by the IMF, OECD, WTO and UNCTAD...
 - ...which is defined as “all international trade transactions that are digitally ordered and/or digitally delivered”
- **Meinusch and Hessel (2017)** estimated cross-border digital purchases of private households using freely available internet data following a bottom-up approach.
- **Yezekyan (2018)** estimated international e-commerce using administrative data from payment and settlement organization and Customs Service, supplemented with data obtained from Armenian processing center (ArCa) database
- The **Central Reserve Bank of El Salvador (2023)** measured digital trade using domestic issued card data for online purchases abroad, as well as purchases made domestically using foreign issued cards.

The data source and estimation approach

Data source

1. The Bank of Namibia Balance of Payments Customer Reporting System (BOPCUS), equivalent to ITRS

- The data is based on three payment transfer modules: BOPCUS (SWIFT transactions), **Bobcard Resident**, Bopcard Nonresident (card transactions)
- The BOPCUS system is inline with BPM6 while card transactions are not categorized.
- Granular dataset on credit/debit cards, including merchant names and codes at an individual transaction level

2. Aggregate cross border card data obtained from the National Payment Systems Department (NPS)

Estimation approach

▶ Data collection

Big data sets of approximately 1.4 million rows of records per month was imported into Python

▶ Data cleaning

Foreign currency conversions, missing values, outliers

▶ Data transformation

Fuzzy-matching model was then applied to match and standardise merchant names

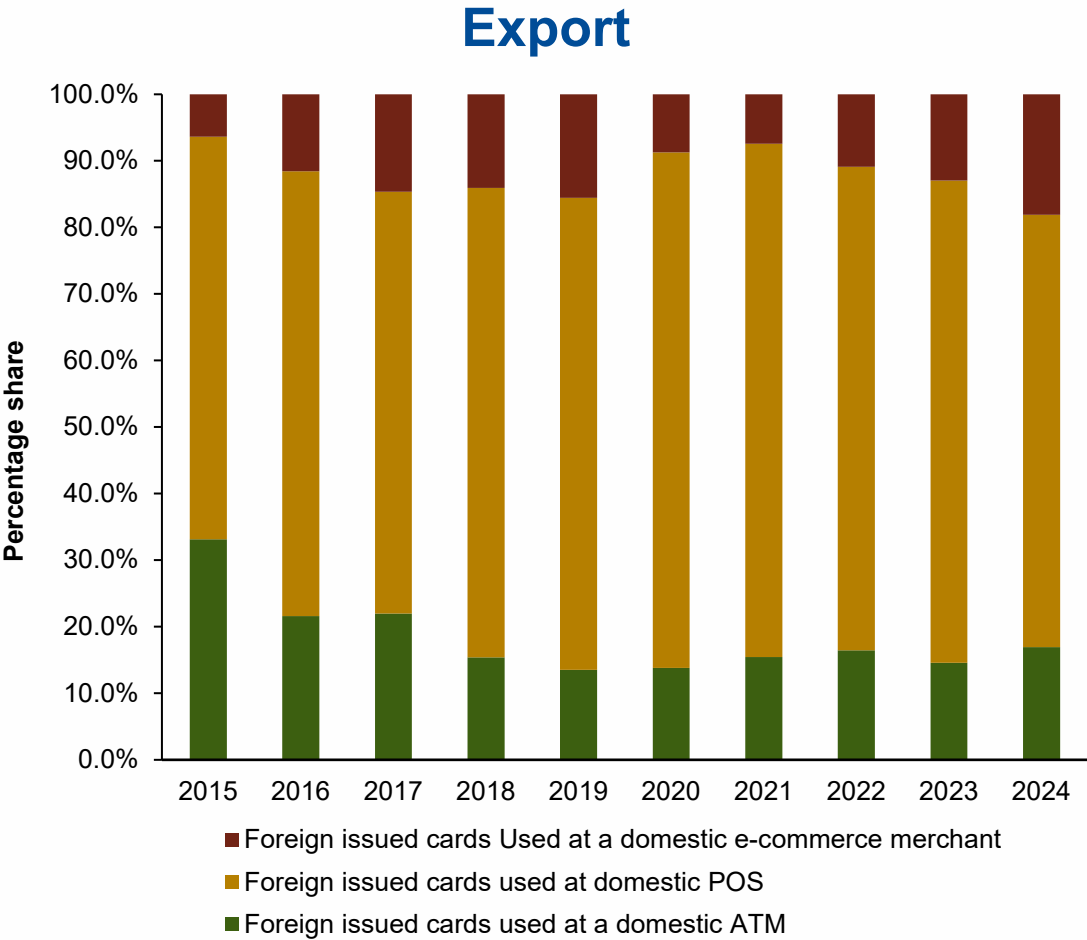
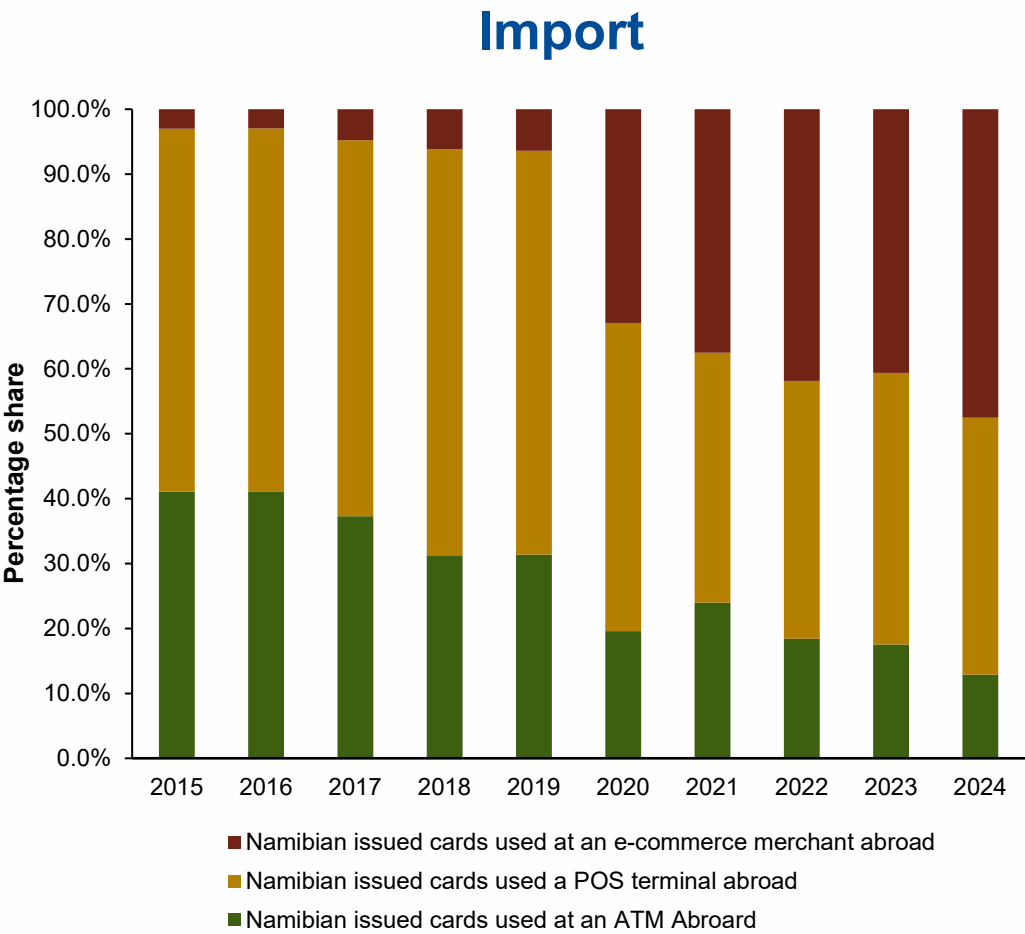
▶ Data categorization and classification

Assign transactions to market segments based on MCC codes in accordance with the Handbook and BPM6

▶ Data analysis

Aggregation into market segments, analyzing and estimating digitally trade

Card payment transactions developments



Source: Bank of Namibia, National Payment Systems and Financial Surveillance Department

Digital services imports

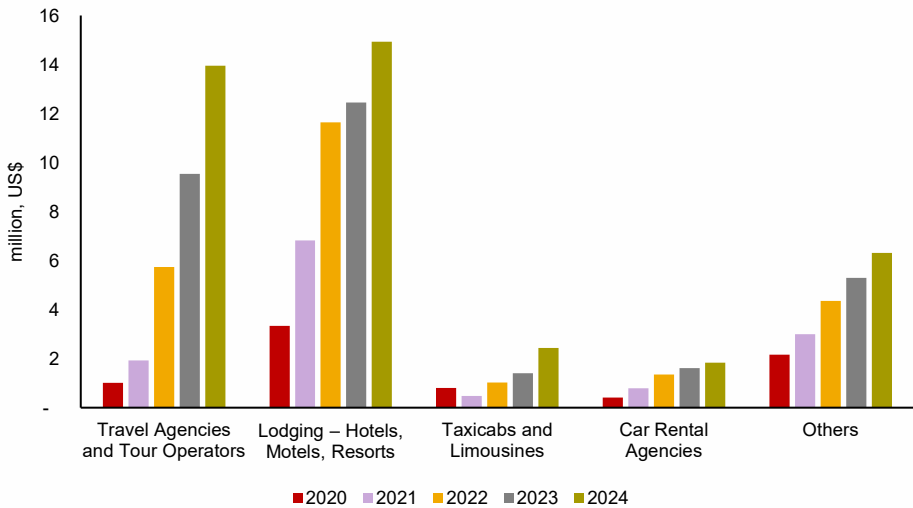
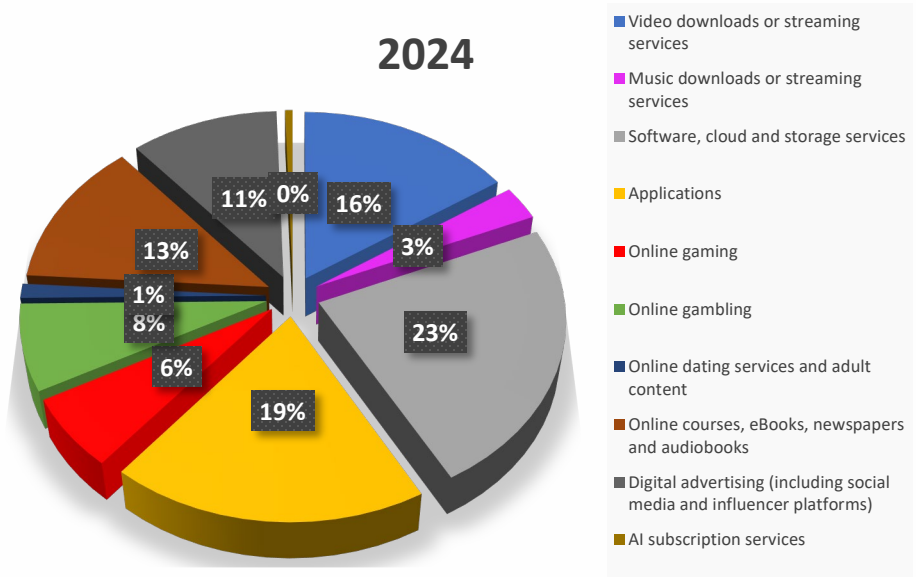
US\$ million	2020	2021	2022	2023	2024
Digitally delivered services	19.0	26.2	30.8	34.0	42.1
Digitally ordered services, but not digitally delivered ¹	15.4	29.3	52.2	52.9	69.0
Total Digital services	34.4	55.6	83.0	86.9	111.2

¹ This category caters to the fact that some digital purchases of services, such as travel and transport services, can be ordered online but not delivered digitally.

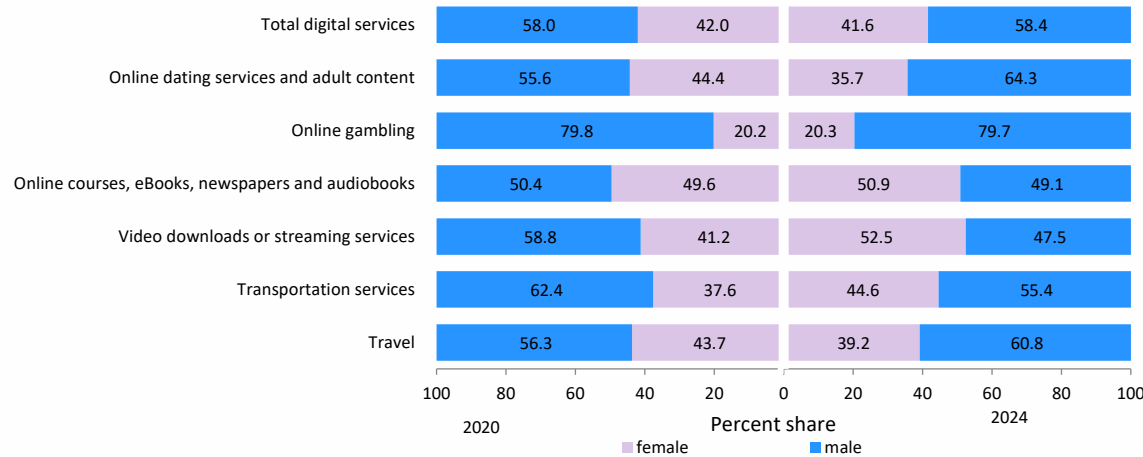
Sources: Authors' computation

US\$ million	2020	2021	2022	2023	2024
Total Digital Services	34.4	55.6	83.0	86.9	111.2
Video downloads or streaming services	3.3	4.2	4.5	4.8	6.6
Music downloads or streaming services	0.3	0.4	0.5	0.9	1.2
Software, cloud and storage services	4.7	6.1	6.7	7.8	9.8
Applications	3.2	3.9	6.8	5.8	8.0
Online gaming	1.5	1.7	1.7	2.5	2.6
Online gambling	1.3	1.7	0.9	2.9	3.2
Online dating services and adult content	0.5	0.4	0.5	0.7	0.5
Online courses, eBooks, newspapers and audiobooks	3.5	5.6	6.7	7.8	9.1
Digital advertising (including social media and influencer platforms)	2.0	4.4	5.1	3.6	4.5
AI subscription services	0.0	0.1	0.1	0.2	0.2
Transportation services	3.5	10.4	21.5	16.2	19.2
Travel	7.7	13.0	24.1	30.3	39.5
Other services	2.6	3.6	3.9	3.3	6.6
Off which DIPs	3.4	6.4	7.1	7.6	9.0

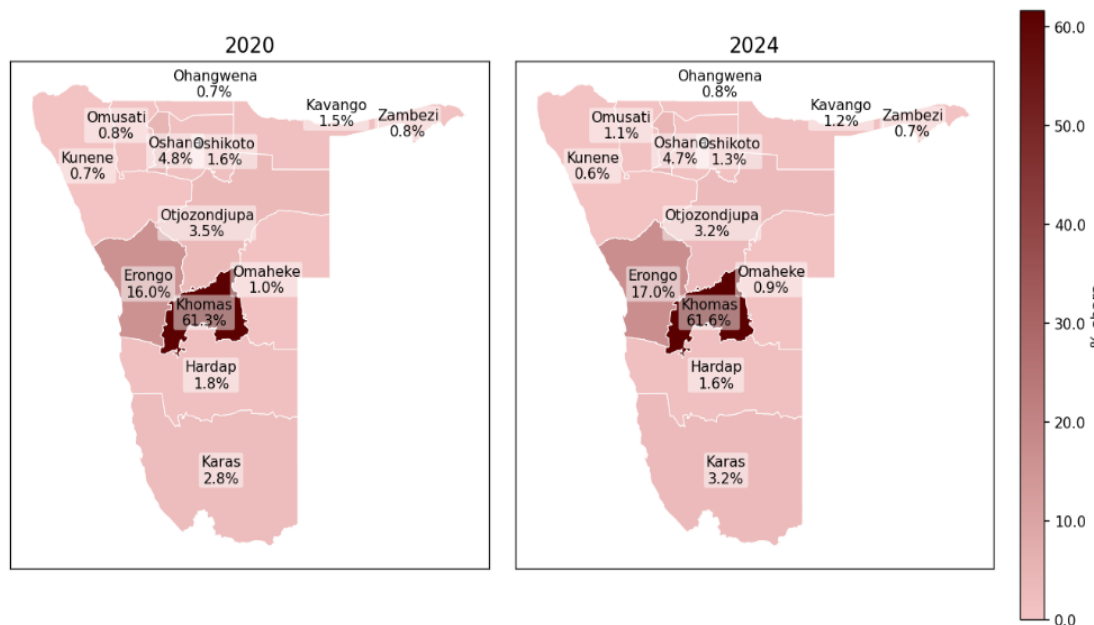
Source: Author's compilation



Digital services imports cont.



- The **gender distribution** of digital service purchases was predominately male across most categories
- At category level, online gambling and online dating and adult content services remain heavily male-driven
- Whereas female participation remains relatively strong in online courses and video downloads and streaming
- Digital trade remains **highly concentrated in urban areas** relative to rural areas, where limited internet access continues to constrain participation in digital trade
- The working age population, particularly the youth remains the largest participant group, while elderly consumers are rapidly catching up.



Some key challenges

Residency criteria

1



Categorization of multi-service merchants

2



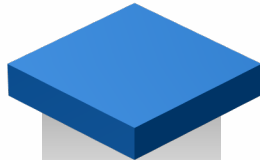
Difficulties in separation between goods and services for online transactions, e.g Apple store website sells both goods and services

3



Classification challenge from transactions involving travel agents and tour operators
(all-inclusive travel packages)

4



Complex structures of digital intermediation platforms and payment gateways

5



The treatment of purchases of goods or services via online chat platforms (e.g. WeChat).

6



Which are becoming prominent in Namibia.

Conclusion

- Cross-border digital trade has increased rapidly, indicating great interest in digital trade by Namibians
- Card payment data is a good proxy to measure cross-border digital trade given its timely, high granularity, and policy-relevant insights to enhance external sector statistics and strengthen alignment with forthcoming BPM7 standards.
- However, there is still room to supplement card transaction data with other sources.
- Challenges need to be addressed before the incorporation of these data in official BOP Statistics
- Strengthened collaboration among statistical agencies, payment system teams, card processing entities, at a national, regional and international level for robust and comparable digital trade statistics.



Thank you