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Linking the SBR with registers of companies in the web to measure the Internet Economy of Mexico

Abstract

Mexico participated together with Brazil, Colombia and Chile in a project financed by the Economic Commission for Latin America and the Caribbean (ECLAC) with the purpose of measuring the impact of the Internet economy in each of the countries. The project was based on the methodology developed by the Dutch Statistical Office, linking the SBR with registers obtained from Internet regarding enterprises´ activities in the web. As a result of this linkage the companies are classified according to the use, they make of Internet to develop their activities in the country. The categories used were defined according to the use and presence of the companies in the web and are the following: Category A, no website; Category B1, with web page, but inactive presence, only for advertising purposes and without carrying out commercial transactions; Category B2, with an active presence, carrying out commercial transactions but its main activity is carried out in person; Category C, electronic commerce; Category D, online services; Category E, online services related to information and communication technologies.

Through ECLAC, a database was obtained with Uniform Resource Locator (URL) addresses that correspond to companies that carry out activities through Internet in Mexico, this information was compared to the data contained in the Statistical Business Register of Mexico, with the purpose of identifying companies´ characteristics for categories B1, B2, C, D and E. These characteristics were captured during the 2019 Economic Census and refer, among other things, to the type of company (enterprise with more than one establishment or only one), economic activity, number of employees, revenue and gross value added. In addition to companies´ characteristics, other indicators were also obtained, which relate to the activity of the web pages.

The paper will describe the procedure and relevant results regarding the described categories, taking advantage of the main characteristics of Mexican establishments provided by the Economic Census.

I. Introduction

The use of internet has changed the lives of people and companies around the world. More and more applications are used for the development of daily activities.

The use of Internet has been increasing in recent years and this trend is expected to continue the rise in the coming years. From the point of view of producing economic statistics, it is very important to try to understand the behavior and characteristics of the companies that use the Internet for the development of economic activities.

Although there is no globally accepted definition of the Internet economy or digital economy, different National Statistical Offices are making efforts to understand this phenomenon.

In INEGI´s case, the economy of the Internet has been studied in recent years from different perspectives, for example: the Economic Census asked for variables related to the use of the Internet, if they have a website, as well as the percentage of sales and expenses through the Internet; likewise estimates of the share of electronic commerce in the Gross Domestic Product are obtained by National Accounts; and on the other hand the Survey for the Measurement of the COVID-19 Impact captured information on the percentage of companies that implemented Internet sales as a measure to alleviate the effects of the pandemic caused by the SARS-Cov_2 virus.

In the same vein INEGI participated in a project with the Economic Commission for Latin America and the Caribbean (ECLAC) with the purpose of continuing efforts to measure the impact of the Internet economy. This project allowed the collection of information through web scraping to get the webpages with Mexican domain on the enterprises and that have carried out economic activity in our country. The results of this study will be published as experimental statistics at the end of 2022.

II. Results of studies using traditional sources

a) 2019 Economic Census

A question was included in the 2019 Economic Census questionnaires to find out the percentage of income that companies obtained in 2018 through a website, their own or that of a third party.

As seen in graph 1, at a general level, the percentage of income obtained through a web page was 5.01% with respect to the total income, with mature companies (25 years and older) being the segment with the highest percentage of income obtained through this medium.
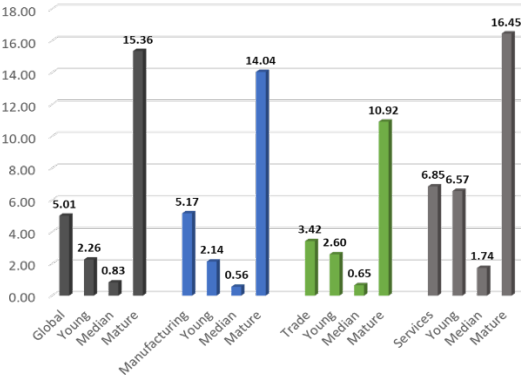

Graph 1. Percentage of income obtained through web pages by age group

b) National Accounts

Through the National Accounts, calculations have been made to approximate the share of Electronic Commerce in the GDP. Understanding Electronic Commerce as the process of buying, selling or exchanging goods, services and information through computer networks.

In sales of goods and services, the buyer places an order, and the price and terms of the sale are negotiated over the Internet, email, or website. Payment may or may not be made online. Graph 2 shows the growth that electronic commerce has had in the GDP.
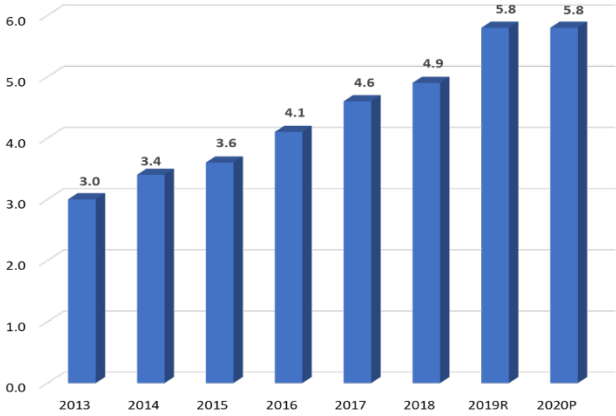

Graph 2. Share of Electronic Commerce in the GDP

c) Business Surveys

During 2020, INEGI carried out three information collections for probabilistic sampling surveys with the aim of measuring the economic impact during the COVID-19 pandemic, as well as knowing the measures implemented by companies to mitigate its effects. The surveys incorporated World Bank recommendations. One of the questions refers to the implementation of Internet Sales as a measure to face the contingency.

Graph 3 shows that, nationwide, out of every 100 companies, 29.6 implemented internet sales during the pandemic. The graph also shows the percentages according to the size of the company.
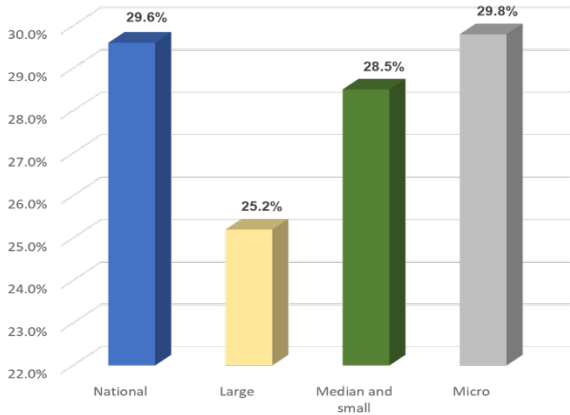
Graph 3. Share of businesses that implemented internet sales during the COVID-19 pandemic

III. Measurement of the Internet Economy using Big Data techniques

In September 2020, the company Dataprovider provided INEGI with information on around 975,000 web pages with Mexican domain, this information contained data on the frequency in which each page performs updates over the course of a year, this indicator is associated with the activity of the page. Graph 4 shows the percentage distribution of the web pages according to their heartbeat. As can be seen, 23.4% of the web pages with Mexican domain had a high or superior frequency, 15.36% had an average heartbeat.
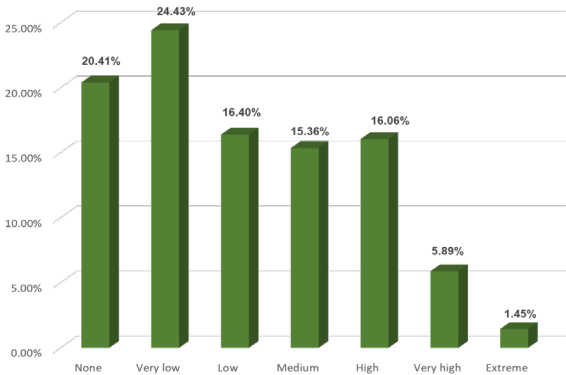
Graph 4: Percentage distribution of the Web Pages according to the updating frequency of their web pages

Another variable provided by Dataprovider is the main means of payment used. Graph 5 shows the main means of payment used by web pages that carry out transactions in Mexico. The main means of payment are electronic payment platforms (45.7%), followed by bank cards with 30.7% and checks with 3.7%.
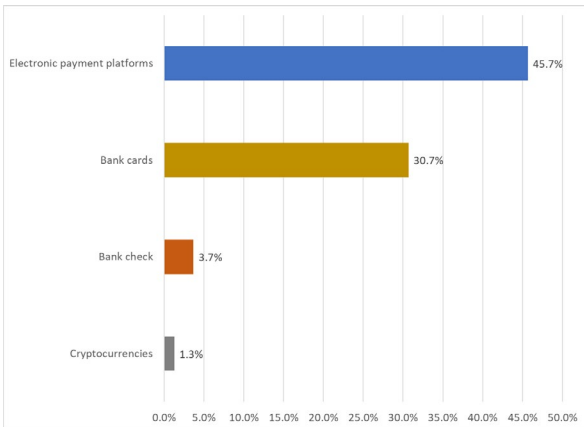
Graph 5: Main means of payment according to the total number of transactions carried out

Linking data from Dataprovider and the Statistical Business Register of Mexico

With information of the web pages with Mexican domain, a link was made with the Statistical Business Register of Mexico (RENEM) with the purpose of identifying the web pages that correspond to companies, managing to link 73,597 companies. Using the methodology developed by the Statistical Office of the Netherlands, the companies were classified according to the use they make of the Internet for the development of their activities, this categorization is as follows:

a) Category B1: Companies with a passive presence are those that have a website, however, they do not generate income directly from the Internet. The website is for informational purposes only and is not transactional.

b) Category B2. Companies with an active presence that generate indirect income through the web. The website is transactional, but the main activity of the company is carried out in person.

c) Category C. Companies that generate revenue directly from the Internet by selling goods. The website is transactional, and the company's activity could not exist without the Internet.

d) Category D. Companies that generate income directly from the Internet by selling services. The website is transactional, and the company's activity could not exist without the Internet.

e) Category E. Companies that generate income directly from the Internet by selling services. The website is transactional, and the company's activity could not exist without the Internet. The company's activity belongs to the information and communications technology (ICT) sector.

Main results

Graph 6 shows the percentage distribution of the companies according to the category and the use they make of the Internet for the development of their activities.
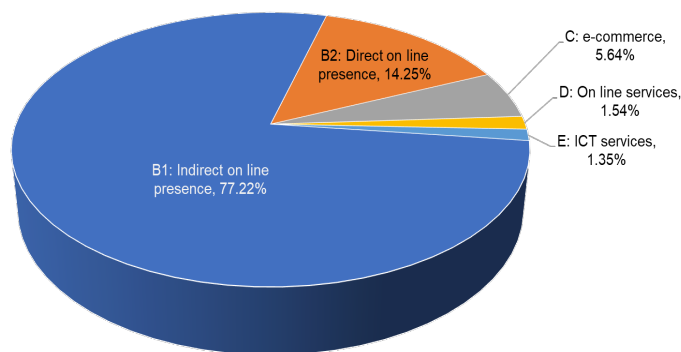

Graph 6: Distribution of companies according to the category of Internet use

As observed in Graph 3, 77.22% of companies only have an inactive presence on the Internet, 14.25% have an active presence and generate indirect income through the Internet, although their

activity is carried out mainly in person. Electronic commerce (category C), online services (category D) and ICT services (category E), represent 5.64%, 1.54% and 1.35%, respectively.

Graph 7 shows the number of multi-establishment and single-establishment companies with a website, which were linked to RENEM. Multi-establishment companies are those that are made up of two or more establishments that share the same business name, in this case, the 11,779 multi-establishment companies are made up of 283,573 establishments.
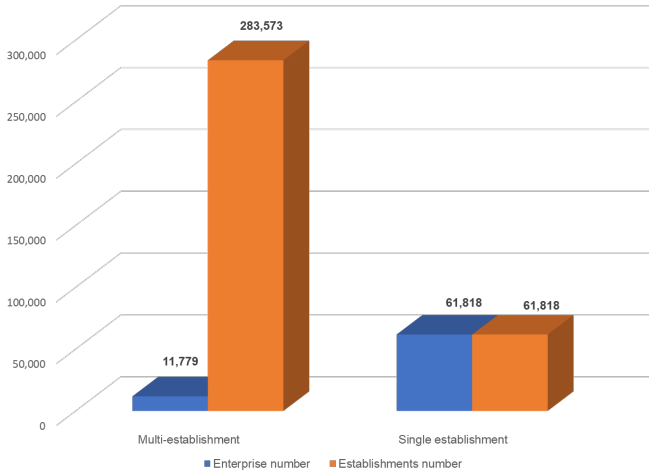
Graph 7: Multi-establishment and single-establishment companies with web page

Graph 8 shows that the economic sectors with the highest percentage of companies are: Retail Trade (18.42%), Manufacturing (13.52%) and Wholesale Trade (11.78%). Professional, Scientific and Technical Services and Temporary Accommodation and Food and Beverage Preparation Services occupy a relevant position, since 8.91% and 8.22% of the companies linked to RENEM, respectively, carry out activities in these sectors.
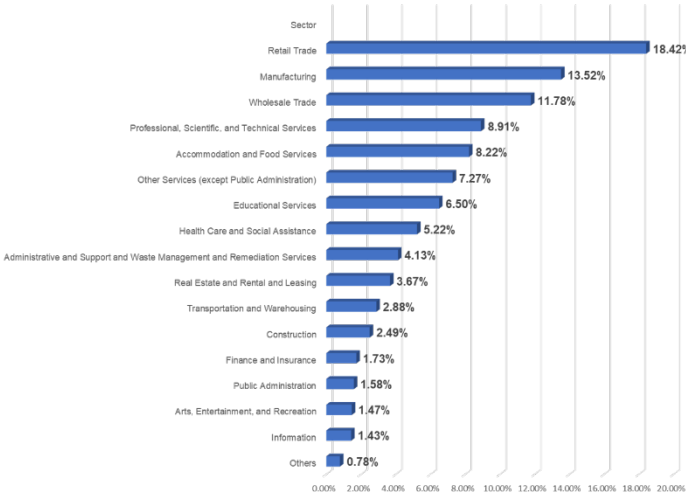
Graph 8: Percentage distribution of related companies by economic activity

Graph 9 shows that the companies that have a presence on the Internet represented 56.43% of the income and around 57% of the Gross Census Added Value, with only 7.23% of the establishments and 39.68% of the Employed Personnel, based on the 2019 Economic Census.
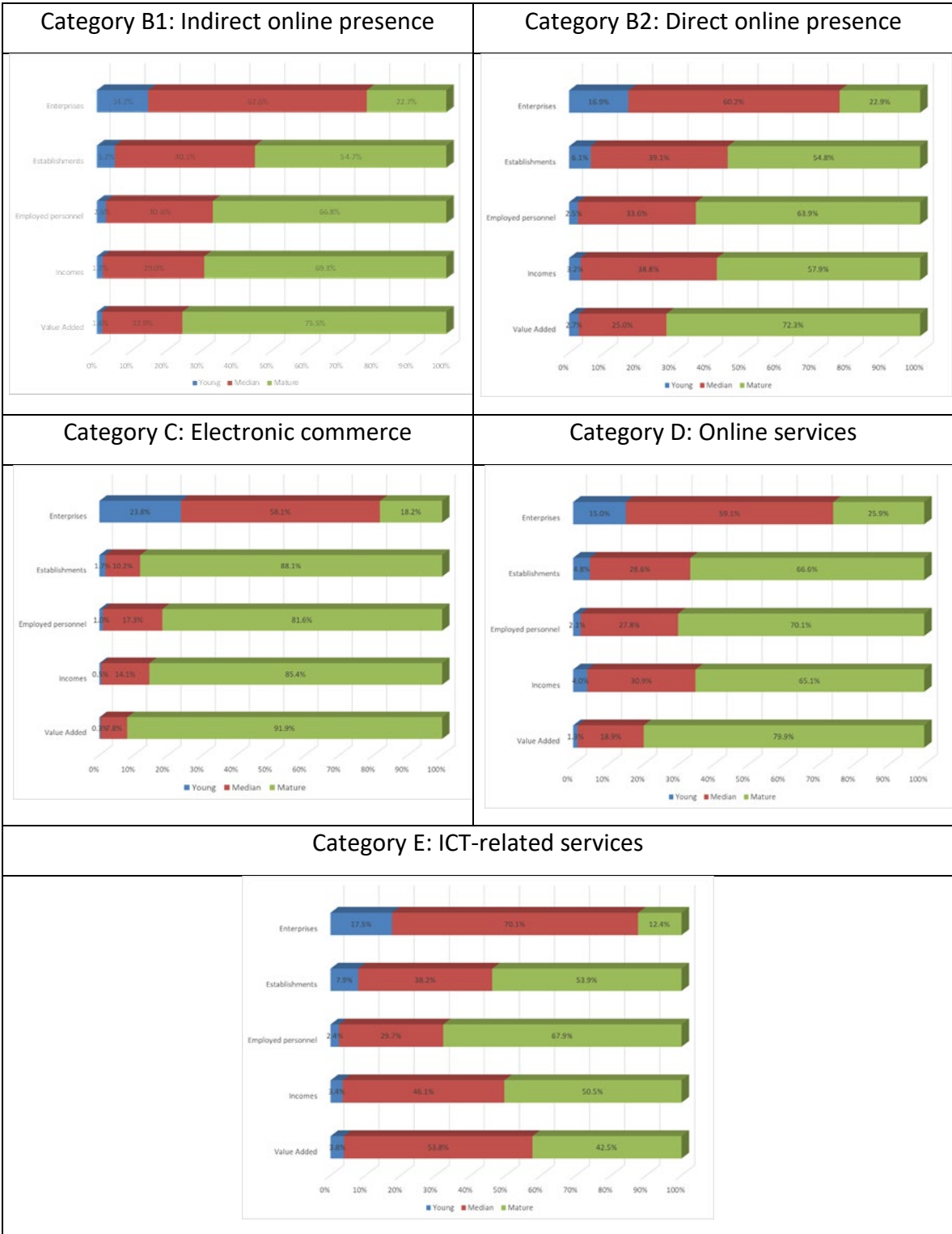
Although the companies classified in category B1 (indirect online presence) represent the highest share for the main economic variables, categories B2 (direct online presence) and C (electronic commerce) have a significant share in Employed personnel (4.52 % and 3.14%, respectively), Income (4.20% and 4.66%, respectively) and Gross Census Added Value (5.34% and 5.38%, respectively), according to the 2019 Economic Census.

Category	Establishments	Personnel Employed
B1: Indirect on line presence	5.03%	30.97%
B2: Direct on line presence	0.71%	4.52%
C: e-commerce	1.36%	3.14%
D: On line services	0.08%	0.67%
E: ICT services	0.05%	0.37%
Total	7.23%	39.68%

Category	Incomes	Added Value
B1: Indirect on line presence	46.86%	45.28%
B2: Direct on line presence	4.20%	5.34%
C: e-commerce	4.66%	5.38%
D: On line services	0.53%	0.78%
E: ICT services	0.18%	0.19%
Total	56.43%	56.96%

Graph 9: Percentage coverage of related companies for the main economic variables

Graph 10 presents comparisons within each Internet category on the behavior by age group for the main economic variables, considering young companies from 0 to 4 years old, median companies from 6 to 24 years old, and mature companies from 25 years old and over.

The companies with the greatest presence on the Internet are medium sized in all categories, while mature companies are the ones with the greatest participation in categories B1 (indirect online presence), B2 (direct online presence), C (electronic commerce) and D (online services) for the number of establishments, employed personnel, income and the Gross Census Added Value, according to the information from the 2019 Economic Census. In the case of Services related to ICTs, medium-sized companies represent 46.1% of income and 53.8% of the Gross Census Added Value with respect to the totals corresponding to companies with an Internet presence, according to the 2019 Economic Census.

Category B1: Indirect online presence	Category B2: Direct online presence

Category C: Electronic commerce	Category D: Online services

Category E: ICT-related services

Graph 10: Share by Age Group for the different economic variables according to category for related companies

IV. Conclusions and next steps

Undoubtedly, digital economy follows a growing trend worldwide and Mexico is no exception. In this sense, it is important to continue measuring the impact it has on the national economy, for which INEGI will continue to carry out studies that use traditional sources, but will also carry out the necessary actions for measurement through alternative sources, for which the following lines of action are in place:

a) Measure the impact of the Internet economy on an annual basis.

b) Establish alliances with private companies that can supply network information related to pages through which economic transactions are carried out in Mexico.

c) Strengthen collaboration ties with ECLAC and CBS of the Netherlands to participate in monitoring the methodology for classifying companies according to the use of the Internet.

d) Publish the results as official statistics