E-Commerce Overview in the European Union

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Abstract

This paper investigates the landscape of the e-commerce in the European Union (EU), from several angles, bringing into discussion issues related to the concept of electronic commerce, trends and new legislative framework of this domain adopted at the EU level. At the same time, based on Eurostat data, a statistical analysis of the evolution of the e-commerce sector during the 2012-2021 interval with a focus on current period was carried out in terms of the number of companies and the turnover in this, both on aggregate levels of the EU region and of its member states in trying to achieve a deeper understanding of the trends and dynamics of this field. The paper below also drags into discussion aspects related to online sales' platforms and marketplaces as alternatives to the sales made by the firm through its own website and its own online applications. Last but not least, the prevailing business models in EU electronic commerce (business-to-business, business-to-consumer and business-to-government) are specified.

Key words: e-commerce, web sales, marketplace online, e-business models, European Union
J.E.L. classification : L81, M20, M21

1. Introduction

This paper seeks to provide a comprehensive perspective on recent e-commerce market trends within the EU region, aiming for a better understanding of the relationship between online sales growth, consumer preferences, and technological development. Another paper objective is to highlight the differences in the current stage of the e-commerce development between the various EU member states, through analysing indicators such as: the number of enterprises, turnover and online sales channels. Of a special attention, in context, will benefit the EU's influential regulations and policies in this sector area – e.g. we focus on new EU-wide rules aimed at creating a safer and more open digital space (Digital Services Act package).

The *electronic commerce* – here onwards it also will be called *e-commerce* – is the sale of goods and services through the internet. The e-commerce is an important part of the e-business – a larger notion regarding digital technologies used to information and communication for the help/ optimization of business. In other words, commercial transactions are carried out on the Internet, from purchasing products in online stores to making payments and delivering products or services to buyers.

Several influential factors made Europe witness a remarkable evolving of the electronic trade along the last decades: the Internet, together with its social impact, the same for the use of diverse afferent devices, the consumers' behaviour changing etc. (EGN, 2023). Actually, it is since the early 90^{ies} that the roots of the electronic trade were emerging, i.e. together with the first ever on-line platforms made public for consumers to start acquiring goods and services in their absence from the classic stores. See the example of "Amazon", at least one of such platforms – web-sites – starting in 1995 as a simple on-line bookstore and then becoming the greatest universal retailer world-wide.

Despite that, the e-commerce's early development was rather slow and to these the consumers' lack of confidence in the security of online transactions. Studies show that the individual user's propensity to on-line transactions sees itself influenced by at least two critical factors: the easiness

perceived by the user of the use of technology and his/her direct confidence in the online trade (Peiris, 2015). Ensuring the security and reliability of payment systems is the most important challenge in international e-commerce. One of the essential advantages of a robust payment system is its ability to process transactions quickly and securely (Basara,2023). Or, the new on-line payment systems and specific security measures taken do strengthen confidence in online transactions and enlarge the specific e-commerce's related market area.

In context, the exceptional Covid-19 pandemic year 2020 was the one of a significant rise in the on-line sales, despite the converse evolving on tourism and services' side all so contributing to the general growth slowing (Ecommerce Europe 2021). Then, in next 2021 the on-line sales were coming to be stabilized and "normalized" – i.e. back to the previous trend. In 2022, 68% of consumers of age groups between 16 and 74 years old in the EU area were observed to have bought more goods and/or to have ordered more services by 1.0 %, as compared to the previous 2021(EGN, 2023). An "economic turning point" was encountered by numerous advanced economies in 2023 (ibidem). But then the global consumer confidence has fallen back due to factors like inflation, geopolitical tensions and interest rates. Contrary to this, the e-commerce performed a notable resilience – i.e. just a minor dropping, then a constant recovery for the e-tourism, events and tickets.

2. Literature review

There is no single definition of *e-commerce*, but several ones offered by the literature (Rahayu and Day, 2016). According to Coppel (2000) the e-commerce refers to trade activities conducted on the Internet for physical goods and services traded both the traditional and on-line ways – i.e. here including non-traditional goods that are tradable only on-line, e.g. computers software and other digital materials. The author here equally emphasizes the role of the Internet in offering to firms, individuals and governments the electronic infrastructure able to create specific and unprecedented virtual markets here needed. This is the way of seeing e-commerce as *"the pillar of the firm's competitiveness in the information era"* in the sense of new market areas offering, speeding up business flows and commercial policies 'flexibility added (Dinu,2007), all associated to costs reduction for supply, distribution and promotion of products, as well as with all types of afferent procedures simplified.

Ansari, Mela & Neslin (2008) see the e-commerce as a *„new shopping model"* offering a different experience, as compared to the example of *"traditional brick-and-mortar stores"* -- i.e. especially regarding the shopping location which can be worldwide and used anytime, as compared to nearby store when shopping offline.

A comprehensive definition of the electronic commerce concept is to be found in Turban et al. (2015), as *a business framework* where transactions occur over electronic networks, predominantly the Internet. This consists in electronic exchange of buying and selling goods, services and information. Their study emphasizes that electronic commerce extends beyond simple transactions of buying and selling, to electronic communication, collaboration and information discovery. Joseph (2019) considers the e-commerce *a methodology of modern business* that helps businesses and customers save money, improve the quality of products and services, and make deliveries faster. Finally, according to Jain et. al. (2016), *any transaction that is completed solely through electronic measures* can be considered e-commerce belonging.

Internationally accepted definitions of *e-commerce* were set out by the OECD (2011, p.72): "a*n e-commerce transaction is the sale/purchase of goods / services, conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders*". A broader definition is provided more recently by Eurostat (2023): *"E-commerce can be defined generally as the sale or purchase of goods or services between businesses, households, individuals or private organizations, through electronic transactions conducted via the Internet or other computer-mediated (on-line communication) networks. The term covers the ordering of goods and services which are sent over computer networks, but the payment and the ultimate delivery of the goods or service may be conducted either on- or off-line".* A new and brief definition is provided by Statista (2024): "*E-Commerce refers to the sale of physical goods via a digital channel to a private end consumer (B2C)".* E-Commerce is not just technology itself, but *doing business using*

the technology (Shaji & Jose, 2015). E-commerce is also named an *"alternative marketplace"* for buying and selling distinctly from traditional offline shopping centers (Haryanti and Subriadi ,2020, p87). But as compared to traditional offline retailers' story, the e-commerce still encounters challenges like customers that cannot physically touch and try products, potentially leading to selections of items they may not desire (Nisar & Prabhakar, 2017).

E-commerce *has generated another revolution*, changing the way businesses buy and sell products and services (Waghmare,2012). *E-commerce* includes all types of business activities, such as retail shopping, banking, investing and rentals (Niranjanamurthy et al. ,2013). Pauwels et al. (2011) see the e-commerce as *a new strategy* in the help of the firms' competitiveness – these authors do insist on an essential question expecting its answer: *could the firms really increase their revenues basing on on-line sales and especially through on-line encouraging acquisitions from physical shops?* – i.e. the concept of *web-to-store shopping.*

Last, but not least, *e-commerce* – could be seen from at least two perspectives (i) the buyer, who orders for goods and services, and (ii) the firm, that makes them through the electronic system here in debate. Our below paper will examine these on-line sales in the EU member countries through the firm perspective, by recent Eurostat (2021, 2022) statistics.

3. Research methodology

This paper utilizes data, and statistics related to e-business and e-commerce topics based on the 2021 Eurostat survey on *"ICT usage and e-commerce in enterprises"* (Eurostat,2023). Eurostat surveyed 148,000 out of 1.5 million enterprises in the EU through National Statistical Authorities. The sample studied by this survey contains about 83% small size enterprises (10-49 employees and self-employed persons), 14% medium size enterprises (50-249 employees and corresponding self-employed persons), and 3% large enterprises (250 or more employees and self-employed persons). The survey extends to enterprises with minimum 10 employed people and self-employed persons from the total of activities, except for the financial sector.

Based on these data, our methodology consists in a brief statistical analysis of the data regarding the e-commerce trend in the 2012-2021 interval at the EU aggregate level, followed by a more detailed analysis of the latest Eurostat data considered to be relevant regarding the current state of this sector. Thus, for the year 2021 the methodology assumed the analysis of the following indicators: number of EU businesses that carry out e-sales according to their size (micro, small, medium and large enterprises); number of enterprises and their turnover generated from e-commerce activity, as depending on the online sales channels used (sales through their own websites/applications or through marketplaces), at the level of the EU member states for which data were available; and propensity of businesses in the EU and member states to move towards a certain e-business model (B2C, B2B or B2G), depending on market requirements.

Basic concepts, definitions, types of e-commerce business models, names of platforms or marketplaces acting online, and legislation in digital sector were extracted from literature and recent EU legislation. This information provided from the paper help to a comprehensive understanding of e-commerce sector evolution in the EU at aggregate level but also in member countries.

4. Findings

4.1. The EU businesses participation in e-commerce

Selling goods and services over the Internet has allowed businesses to gain a significant number of customers – i.e. on-line ones – so enriching the old traditional channels system (Eurostat, 2018). This was while businesses making the on-line trade were using their on-line websites and/or applications on existing platforms – i.e. marketplace.

In context, the European Commission suggests a definition for the on-line platform: *a firm acting in two- or multi-sided markets by using the Internet in making corresponding interactions between two or more distinct groups able to build-up value for at least one of these* – i.e. the online platforms are known as "double-sided" or "multi-sided" markets which's users are brought together

by a platform operator this-way responsible and skilled (Competition Council 2018, p. 16). The web-sales – i.e. that are supposed to be made on-line – see the sales of goods and services made through the own website or through a corresponding application. It is concomitantly supposed that the enterprise keeps under control both the sales process and consumers' experience. But another aspect is that the same web-sales are assumed for a larger market, in which sellers and buyers do get in contact between, despite a potential loss in such a control this way on the marketplace-platform side.

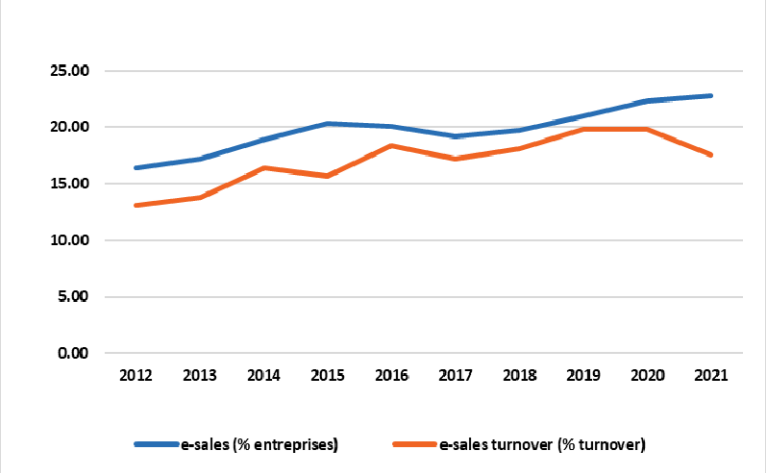
Marketplace examples that can be here offered might be the Amazon's eBay and/or Etsy trade centres that offer various marks of products (Arimetrics, 2022). Amazon is one of the largest and most popular on-line markets world-wide, so for a vast range of goods-products, including electronics, wearing and books. The eBay – i.e. global degree 110 -- can't naturally be as large as the Amazon – i.e. global degree 12 – (Supdrop, 2024), but its obvious difference against competitors consists in flexibility allowed to platform sellers to list items with fixed prices or auction them. The other Etsy example is the case of an on-line marketplace for artisans, crafters, and vintage sellers where buyers can find unique, handmade, and personalized products such as jewellery, art, home decor, etc.

As for the EU, enterprises use besides web-sales through own website or applications, traditional selling channels and physical shops, events and fairs participation and not less alternative digital channels like social media or platforms for advertising. The example of social media – e.g. Facebook, Instagram, LinkedIn – is the substantial one for those following a specific company or brand, so here adding some individual and so human completion to enterprises.

4.2. Online sales trends in the EU

Between 2012 and 2021, the weight of EU enterprises engaged in online sales in the total of enterprises saw a modest increase of 6.4 percentage points and the corresponding turnover from these online sales rose by 4.5 percentage points, according to Eurostat (2023). Their turnover experienced a decline of 2.2 percentage points in 2021, as compared to the figures recorded in the previous 2020 (fig. 1). In 2021 only 22.8% of total enterprises with 10 or more employees and/ or corresponding legal entities in the EU region have made electronic sales – i.e. e-sales. 44.1% of the large enterprises were among these, followed by 30% of the middle-size enterprises. As for the small ones – i.e. those of 10-49 employees – only 20.8% of them made e-sales, which, of course, comes below the whole average as such, to be seen in fig. 1.

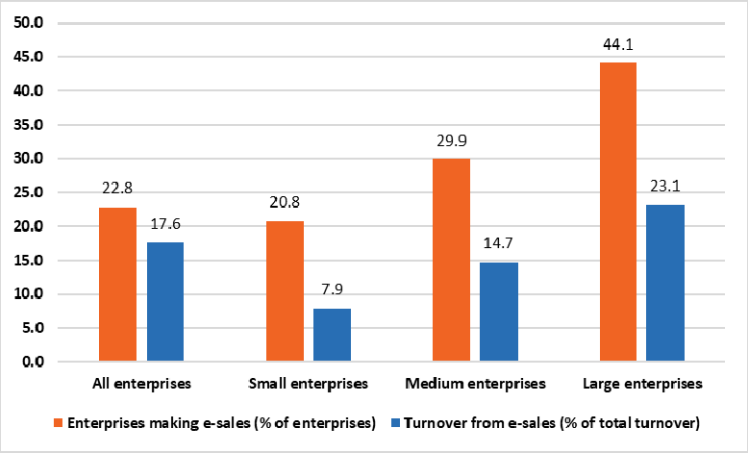
Figure no. 1. Businesses and turnover of the e-commerce in the EU region during the 2012-2021 interval (i.e. percentages of enterprises and of total turnover in corresponding totals)



Source: Calculations based on Eurostat (2023) data

As for the e-sales' *turnover* in the EU, the same 2021 year, it made 17.6% of the total turnover of all enterprises with 10 or more employees. 23% of the largest size enterprises was here included in the same year. The middle-size businesses have got the same e-sales done at as high as 14.7% of their specific turnover, to which the small size ones add 7.9% of their turnover (fig. 2).

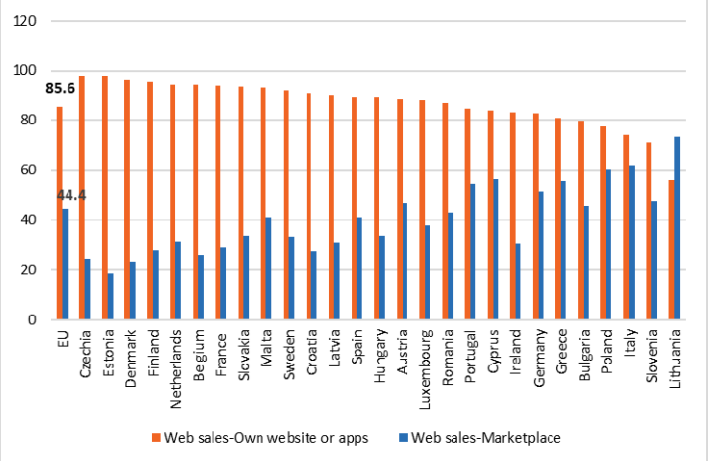
Figure no. 2. The EU e-commerce enterprises' turnover and e-sales by size class in 2021



Source: Calculations based on Eurostat (2023) data

The number of enterprises using their own websites and/or applications was nearly double, as compared to marketplaces for conducting web sales, according to Eurostat. The number of the EU region enterprises making web-sales through their own website or their own apps was representing 85% from total enterprises with web sales. Only 44% of enterprises with web sales made their sales through e-commerce marketplaces in 2021. And those percents are not totalizing 100 %, due to that some enterprises used both sales channels: own sites /apps or marketplaces channels. 17 EU member countries recorded more than the whole region's average sales through own websites, here mentioning the countries with highest selling through their own websites or own apps: Czech Republic (97.5 %), Estonia (97.4 %), Denmark (96.2 %) and Finland (95.1 %). In this order, the lowest share of sales through own websites or own apps was registered in Lithuania (56.0 %), where enterprises preferred more to sell via online marketplaces (73.4 % /fig. 3).

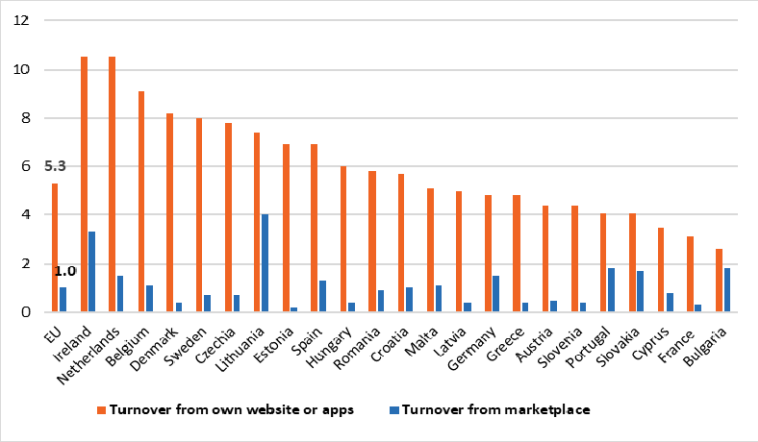
Figure no. 3. Enterprises' web sales by sales type in 2021 (% of enterprises)



Source: Calculations based on Eurostat (2023) data

The average EU enterprises turnover obtained from web-sales through own websites or own apps was 5.3% of total turnover and turnover from on-line marketplace sales just 1% of the same total turnover in 2021 -- i.e. 6.3 % of total turnover done through the on-line procedures. 13 EU member countries recorded more than the EU region average turnover obtained from sales through own websites/apps. We mention here the countries with highest turnover from own websites/apps sales: Ireland (10.5 %), Netherlands (10.5 %), Belgium (9.1 %) and Denmark (8.2 %). The lowest turnover obtained from own website/apps sales was registered in Bulgaria (2.6%), followed by France (3.1%). As for turnover obtained from online sales through marketplaces, 10 countries were above the EU average (1%). The highest such turnover was registered in Lithuania, 4% from its total turnover obtained from marketplace sales and the lowest in Estonia with just 0.2% of turnover obtained from marketplace (fig.4).

Figure no. 4. Turnover from online sales segmented by own websites/apps and marketplace platforms, 2021



Source : Calculations based on Eurostat (2023) data ; (Eurostat data not available for : Poland, Italy, Luxembourg and Finland)

More revenue was generated from e-sales to other businesses (B2B) and public authorities (B2G) than to final consumers (B2C). Business-to-consumer (B2C) transactions refer to sales conducted between a company and individual consumers, constituting one of the most popular and widely known sales models. The concept of B2C was pioneered by Michael Aldrich in 1979, with television serving as the primary channel to engage with consumers (Kenton, 2024). Business-to-business refers to business that is conducted between companies, rather than between a company and individual consumer; and a Business-to-government B2G is a business e-commerce model that markets and sells products to government organizations or public administrations (Kenton, 2024).

Table no. 1 Main e-commerce business types

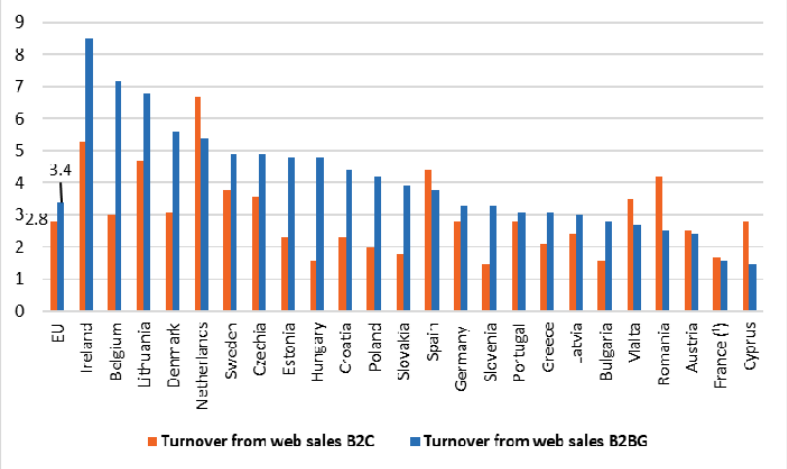
B2C e-commerce model	**B2B e-commerce model**	**Business-to-Government (B2G) e-commerce model**
Direct transactions with end-users with no intermediate person.	Selling products or services to other businesses	Sale and marketing of goods and services to state, or local institutions
Short sale cycles	Longer sale cycles and more complex	Long sale cycles. Government entities typically require more time than private companies to approve and initiate projects (Investopedia, 021)
High transaction volume	Higher transaction values	High transaction values
Low average transaction value	More recurring purchases (that repeat automatically on a set schedule)	Strict compliance requirements

Source: Kenton, 2021.

Other e-commerce models include various types of business relationships, such as consumer to consumer (C2C), where transactions occur directly between consumers through online platforms (where individuals can buy and sell goods to each other), consumer to business (C2B), involving individual sellers offering services to larger businesses (such as freelancers providing services to corporations), government to business (G2B), facilitating government sales to private enterprises (like government contracts awarded to private companies) and government to citizen (G2C), enabling government transactions directly with individuals (access to public health services and medical insurance, social assistance, education, legal assistance and access to the justice system, financial assistance programs and access to public infrastructure).

As already mentioned above (fig.4), the average EU enterprises' turnover obtained from web-sales was 6.3 % during 2021 (online sales through own website 5.3% plus online sales through marketplace 1%). This total can be divided according to newest Eurostat data, function or type of customer: 3.4 % of total turnover came from web sales via a website/apps to other businesses and government (B2B, B2G), while 2.8 % of total turnover came from business to consumer web sales (B2C /fig. 5).

Figure no. 5. Turnover from web-sales, broken down by types of customers B2B, B2G and B2C, 2021 (% total turnover)



Source: Calculations based on Eurostat (2023) data

Netherlands, Spain, Romania, Malta, Cyprus, Austria, and France revealed that a significant portion of their web sales turnovers in 2021 originated from transactions with final consumers (B2C). As for B2B and B2G online sales turnover, Ireland was first in 2021 with 8.5% from its online total turnover, followed by Belgium (7.2%) and Lithuania (6.8%). For Hungary, B2B and B2G online sales are 3 times higher than B2C sales. B2B and B2G online sales are 2 times higher than B2C sales in Belgium, Slovenia, Slovakia, Poland and Estonia (Eurostat, 2023). Detailed information could be seen in table 2.

Table no. 2. Total turnover from web sales, divided by places of sale or by types of customers, 2021(%)

Country	**Turnover from own website or apps (%)**	**Turnover from marketplace (%)**	**Total turnover from web sales (%) ***	**Turnover from web sales B2C (%)**	**Turnover from web sales B2B, B2G (%)**	**Total turnover from web sales by main e-commerce business types (%) ***
Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7
EU	**5.3**	**1.0**	**6.3**	**2.8**	**3.4**	**6.2**
Ireland	10.5	3.3	13.8	5.3	8.5	13.8
Netherlands	10.5	1.5	12	6.7	5.4	12.1
Belgium	9.1	1.1	10.2	3.0	7.2	10.2

Denmark	8.2	0.4	8.6	3.1	5.6	8.7
Sweden	8.0	0.7	8.7	3.8	4.9	8.7
Czechia	7.8	0.7	8.5	3.6	4.9	8.5
Lithuania	7.4	4.0	11.4	4.7	6.8	11.5
Estonia	6.9	0.2	7.1	2.3	4.8	7.1
Spain	6.9	1.3	8.2	4.4	3.8	8.2
Hungary	6.0	0.4	6.4	1.6	4.8	6.4
Romania	5.8	0.9	6.7	4.2	2.5	6.7
Croatia	5.7	1.0	6.7	2.3	4.4	6.7
Malta	5.1	1.1	6.2	3.5	2.7	6.2
Latvia	5.0	0.4	5.4	2.4	3.0	5.4
Germany	4.8	1.5	6.3	2.8	3.3	6.1
Greece	4.8	0.4	5.2	2.1	3.1	5.2
Austria	4.4	0.5	4.9	2.5	2.4	4.9
Slovenia	4.4	0.4	4.8	1.5	3.3	4.8
Portugal	4.1	1.8	5.9	2.8	3.1	5.9
Slovakia	4.1	1.7	5.8	1.8	3.9	5.7
Cyprus	3.5	0.8	4.3	2.8	1.5	4.3
France	3.1	0.3	3.4	1.7	1.6	3.3
Bulgaria	2.6	1.8	4.4	1.6	2.8	4.4

Source: Eurostat ,2023

*There are slight differences between totals (col 4 and col 7) caused by mixed channels types used by the same enterprises

4.3. New regulations applicable in the field of electronic commerce (Competition Council,2018).

Directive 2000/31/EC was the EU's initial legal framework for electronic commerce, regulating elements such as transparency requirements in the responsibility of on-line services' suppliers and of commercial type communications, on the one hand, and on the other on the responsibility limits for intermediary services suppliers (Competition Council, 2018).

Then, in 2022 the European Commission (EC) adopted two ruling projects for the digital services, the so-called *Digital Services Act (DSA)* and the *Digital Markets Act (DMA)*. They form the *Digital Services Act* package of new rules applicable across the whole EU to create a safer and more open digital space (EC, 2022). The DSA and DMA have two main goals: a safer digital space able to protect basic users' rights and fair competition conditions for businesses (EC, 2022).

Digital Services Act (DSA) under the *Regulation (EU) 2022/2065* actually came to review and update the terms of the previous Directive 2000/31/EC. Being published in the EU Official Journal on 27 October 2022, it came into force on 16 November 2022 and got applicable across the EU since 1 January 2024 – this current year, after just 15 months from enacting. The DSA's provisions regard especially the intermediaries and the on-line platforms – e.g. online markets, social networks, content sharing platforms and on-line travel plus accommodation platforms and application shops (EC,2022).

Digital Markets Act (DMA) was published and came into force on 1 November 2022. It focuses on digital markets and competition/non-competition practices proper to *large online platforms* -- actually on the power of some digital companies against the fair competition and, on the contrary, on opportunities of small and medium size enterprises on the same digital market(s). Finally, DMA offers some behavioural rules to the so-called „gatekeepers" of digital markets.

5. Conclusions

The text above focuses on the evolutions and trends of e-commerce in the 2012-2021 interval for individual businesses in the EU area, along with their specific turnover, with a particular emphasis on the current state of this sector.

Between 2012 and 2021 the percentage of EU enterprises selling online just slightly increased by 6.4 percentage points from 16.4% of all companies in the EU area with 10 or more employees in 2012 to 22.8% in 2021(excluding financial sector). The turnover of the same companies achieved from online sales increased by 4.5 percentage points from 13.1% of all companies in the EU with 10 or more employees in 2012 to 17.6% in 2021 (fig.1).

In 2021, the large companies (250 employees or more) contributed by 44.1% of their number to the total number of enterprises doing e-commerce, the middle-size ones by 30% of their number and the small size ones by just 20.8% (of them). About the total turnover of the EU companies with 10 employees or more, in the same year, the large companies contributed with 23% of their turnover, the middle-size companies with 14.7% of their turnover and the small size companies with only 7.9% of their turnover.

For the e-commerce run in the (same) EU region during the above given year it was mostly by (on) web-sites or applications – i.e. 85% of businesses doing it – while 44% of all companies preferred the on-line platforms and marketplaces. The companies' own web-site or applications concomitantly made 5.3% of the total turnover of companies working within the EU area and the on-line platforms and markets just 1%, as correspondingly, in 2021.

To the e-commerce development, legislative *regulations* prove crucially important and here, besides the ones directly regarding this domain. The business models – e.g. business-to-business, business-to-consumer, business-to-government – and their analysis here prove of equal importance with the one of regulations – i.e. by concluding on the diversity and adaptability of the on-line business environment and by here providing various opportunities to entities and actors of this business area.

Future directions of research and development on the e-commerce within the EU region might try on some econometrics of factors presumed for the e-commerce development in the EU member countries.

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