



State and Perspectives of Electronic Invoicing in Croatian Companies

Marko Veldić¹
Mario Jadrić²
Maja Čukušić³

Received: November 14, 2022
Accepted: January 27, 2023
Published: June 12, 2023

Keywords:

Electronic invoicing;
Digital transformation;
Croatian companies



Creative Commons Non Commercial CC BY-NC. This article is distributed under the terms of the Creative Commons Attribution-Non-Commercial 4.0 License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits non-commercial use, reproduction and distribution of the work without further permission.

Abstract: *The paper analyzes the current state and perspectives of electronic invoicing in Croatian companies. The digital transition or more specifically, the digital transformation processes affect all companies and are crucial for increasing efficiency, innovation, and the overall growth of the economies. Electronic invoicing, as one of the manifestations of digital transformation, brings about numerous economic benefits based on process automation and integration from order to payment between business parties. In the paper, the reasons and characteristics of Croatian companies that have introduced electronic invoicing and those that have not are presented in detail. The empirical study reveals that a company's adoption of electronic invoicing increases with the company's size. Also, the government's critical role in implementing electronic invoicing in Croatian companies is highlighted.*

1. INTRODUCTION

One of the most critical documents used in business processes and operations is the invoice (Haag et al., 2013). It represents payment information related to commercial transactions, and in addition to its vital role between trading partners, the invoice is also essential for tax administration, as VAT collection procedures rely on the integrity and credibility of invoices (Arendsen & Wijngaert, 2011). The process of traditional paper invoicing takes place in five steps: data entry, invoice printing, enveloping, mailing, and archiving, whereby the whole process requires time and money (Boshkoska et al., 2019). Further to that, other problems may arise such as incorrect data filling, issues with sending, and loss of documents, which can harm relations between business partners. There could also be difficulties associated with secure archiving, whether technical or methodological leading to the possibility of non-compliance with legal requirements (Veselá & Radiměřský, 2014). The idea of e-invoicing is not new. Electronic invoices have existed for approximately 40 years and were used with the support of EDI and XML formats. The broader availability of the Internet has led to greater adoption of electronic invoicing, with the public sector recently driving the adoption and implementation processes.

On a more specific note, and in the context relevant to the study presented herein, the Republic of Croatia issued the Law on Electronic Invoicing in Public Procurement (Official Gazette of the Republic of Croatia, 2018), which introduced the obligation to receive electronic invoices in public procurement procedures from December 2018 and the obligation to issue electronic invoices in public procurement procedures from July 2019 (MINGOR, 2022). Since then, public purchasers/contracting authorities have received electronic invoices via the central electronic invoicing platform “Servis eRačun za državu”. In Europe, several legislations have been developed to promote the more comprehensive application of electronic invoicing in the EU. Also,

¹ University of Split Faculty of Economics, Business and Tourism, Cvite Fiskovića 5, Split, Croatia
² University of Split Faculty of Economics, Business and Tourism, Cvite Fiskovića 5, Split, Croatia
³ University of Split Faculty of Economics, Business and Tourism, Cvite Fiskovića 5, Split, Croatia

many public sector organizations in Europe, including Sweden, Norway, Spain, and Denmark have announced mandatory programs/plans for e-invoicing. Italy has gone a step further, introducing a mandatory e-invoicing network for all business entities. In the first phase, the European market was mainly developed by the private sector, an advanced and high-volume industry. Today, the main driver is the growing number of governments requiring organizations to exchange invoices electronically. It is foreseen that the third phase will be the result of rapid technological development and the transfer of “the ball” to the B2C sector which will lead to further growth of the market for the implementation of electronic invoices. The global market’s value for implementing electronic invoices in 2019 was estimated at EUR 4.3 billion, growing to EUR 18 billion in 2025 (Koch, 2019).

Most of the economic benefits of electronic invoice adoption do not come from savings in printing and postage costs but from the process automation and integration of activities from order to payment, increasing the transparency of business transactions and bridging accounting systems between suppliers and customers in real-time (Horák et al., 2020). Despite the clear benefits, there is still some reluctance to the implementation of electronic invoicing. Namely, the willingness of smaller organizations to invest in related digital solutions is still relatively low (CEF Digital, 2021a). It is also important to note the role of the private sector in raising the level of adoption of electronic invoicing as this is one of the tasks of information intermediaries who also provide issuing, receiving, and archiving electronic invoices and equip the business entities with ready-made solutions for using electronic invoicing (CEF Digital, 2021b). In Croatia, appointed by the Law on Electronic Invoicing in Public Procurement, the Financial Agency (FINA) represents a central information intermediary that receives and sends electronic invoices and supporting documents. This is in accordance with European norms, whereby other information intermediaries are required to connect to FINA’s central platform for the exchange of electronic invoices.

The objectives of this paper are to empirically investigate the current situation and the perspectives of electronic invoicing adoption in the Croatian business sector. The level of adoption of electronic invoicing is analyzed with regard to the size of the company. Further to this, the role of the government in the adoption of electronic invoicing will be determined.

2. METHODOLOGY

To achieve the objectives and collect relevant data for this study, a survey was sent to the e-mail addresses of over 300 companies operating in the Republic of Croatia. The survey was divided into three sections. The first section collected information about the company’s size, business sector, whether the company is subject to the law on public procurement, and if the company has introduced electronic invoicing. Depending on the answers, the second or third section is opened, collecting information about the use of electronic invoices. The second section is completed by companies that have not introduced electronic invoicing, while the third by those that have. The survey was distributed in August 2022 to a sample of micro, small, medium, and large companies operating in Croatia. Of the 59 companies that responded, 41 have introduced electronic invoicing, which is 69.49% of all surveyed companies, while 18 companies (30.51%) have not yet introduced electronic invoicing.

3. RESULTS

3.1. Sample Statistics

According to the category of company size, of all the companies that completed the survey, the largest number are micro companies (37; 62.71%), followed by small (14; 23.73%) and medium companies (5; 8.47%), and the smallest number are large companies (3; 5.08%). Most are providing services in the social and personal activities sector (13), followed by those operating in the processing industry (9), wholesale and retail trade; repair of motor vehicles and motorcycles and items for personal use and household, financial intermediation (6), construction, agriculture/hunting/forestry (4), real estate business, rental and business services, public administration/defense/compulsory social insurance (3), hotels and restaurants, fisheries, health care/social care, transport/storage/communications, education (2) and a single mining and quarrying company. To the question “Is your company subject to the Law on Public Procurement?”, the vast majority of respondents, i.e. 46 (78%) answered negatively, 8 respondents (14%) answered affirmatively, and 5 respondents (8%) did not know whether they were subject to of the Law on Public Procurement. When companies were asked about their business cooperation, respondents could choose to what extent they agree with the answers provided using a scale from 1 to 5, where 5 means “I completely agree” and 1 means “I completely disagree”. The results (Table 1) showed that the highest level of cooperation of the observed companies is with private companies (the real sector) where the mean level of cooperation on a scale from 1 to 5 is 4.15 (SD=1.23). Private companies (real sector) are followed by citizens (where the average level of cooperation is 2.97 (SD=1.67)). The lowest level of cooperation of the observed companies is achieved with the state (the public sector) with a mean level of cooperation of 2.53 (SD=1.37).

Table 1. Cooperation of companies with the government, businesses, and citizens

	5		4		3		2		1		Mean	SD
	N	%	N	%	N	%	N	%	N	%		
Government	18	30.15	13	22.03	15	25.42	5	8.47	8	13.56	2.53	1.37
Businesses	4	6.78	3	5.08	7	11.86	11	18.64	34	57.63	4.15	1.23
Citizens	17	28.81	12	20.34	5	8.47	6	10.17	19	32.20	2.97	1.67

Source: Author’s research

3.2. Analysis of the Companies That Have Not Introduced Electronic Invoicing

As the most important reason for not introducing electronic invoicing, the respondents answered using the statement “Electronic invoicing is not legally mandatory for my company”, with a mean level of agreement of 4.78 (SD=0.43), followed by the statement “Insufficient financial and time savings in business” with a mean level of agreement of 3.56 (SD=0.98), “High costs and complexity of implementing electronic invoicing...” with a mean level of agreement of 2.94 (SD=1.06), “Working with electronic invoices is complicated” with a mean level of agreement of 2.11 (SD=1.13), “Security risks...” with a mean level of agreement of 2.06 (SD=1.00). The lowest level of agreement for not introducing electronic invoicing was on the statement “Employees’ resistance to changes” where the mean level of agreement was determined to be 1.78 (SD=0.88). Of the 18 companies that have not yet introduced electronic invoicing, 5 (28%) respondents answered that they do not know if they will introduce electronic invoicing, and 3 (17%) respondents are certain that they will not. Out of 10 respondents whose companies intend to introduce electronic invoicing, 4 (22%) will do so within a year, 3 (16%) within three

years, and 3 (17%) in more than three years. Among the 10 respondents who have not introduced electronic invoicing, but intend to introduce it, the highest level of agreement with the reasons for introducing it was found with the statement “On my own initiative to improve business, increase efficiency and reduce costs”, for which a mean level is 4.60 (SD=0.66), followed by the statement “In order to harmonize with the accounting practices of other business entities” where the average level was determined to be 4.00 (SD=0.77), while the lowest level was for the statement “For the purpose of mandatory application of electronic invoicing in public procurement and harmonization with the legislation of the Republic of Croatia”, where the mean level was determined to be 2.60 (SD=1.28).

Respondents whose companies have not introduced electronic invoicing are evenly divided (9 to 9) regarding the question “Do you think that the government decision on the mandatory exchange of electronic invoices between companies (Business-to-Business) would have a positive effect on your business?”. On the other hand, to the question “Do you think that the state decision on the mandatory exchange of electronic invoices towards citizens/consumers (Business-to-Consumer) would have a positive effect on your business?”, 8 respondents were of the opinion that such a decision would positively affect the company, and 10 respondents disagreed.

3.3. Analysis of the Companies That Have Introduced Electronic Invoicing

Those companies falling under the requirements of the Law on Public Procurement are obliged to receive electronic invoices from December 1st, 2018, while invoice issuers are obliged to issue and send electronic invoices from July 1st, 2019. Results showed that out of the 41 companies that introduced electronic invoicing, 20 of them decided to introduce electronic invoicing before July 1, 2019, which is 49% of the surveyed companies, and 18 surveyed companies (44%) did that after the specified date. Three respondents could not give a definitive answer related to the timing of when they introduced electronic invoicing. When asked about the reasons for the introduction of electronic invoicing, the respondents mostly agree with the statement “In order to harmonize with the accounting practice of other business entities”, to which a mean level of agreement of 3.85 (SD=1.42) was determined, followed by the statement “For the mandatory application of electronic invoicing in public procurement and harmonization with the legislation of the Republic of Croatia” with a mean level of agreement of 3.78 (SD=1.67), while the lowest level was determined for the statement “On its own initiative to improve business, increase efficiency and reduce costs” with a mean level of agreement of 3.68 (SD=1.56). For the survey question asking from which sector companies mostly use electronic invoice transactions, the respondents selected the statement “Government (public sector)”, with a mean level of 4.10 (SD=1.48), followed by the statement “Businesses (real sector)” with a mean level of agreement of 3.88 (SD=1.23), while the lowest level was for the statement “Citizens (B2C, G2C)” with the mean level of agreement of 2.34 (SD=1.57). The highest level of agreement with the benefits from the implementation of electronic invoicing was found with the statement “Electronic invoicing has accelerated the exchange and processing of invoices”, where the mean level of agreement was 4.12 (SD=1.25), followed by the statement “Electronic invoicing has led to a significant reduction of administrative costs of preparing, printing and enveloping invoices” with a mean level of agreement of 3.85 (SD=1.39). The mean level of agreement for the statement “Electronic invoicing led to improved documentation management” is 3.61 (SD=1.46), while the lowest level of agreement was determined with the statement “Electronic invoicing led to faster payment and collection of receivables” where the average level of agreement was determined

to be 3.10 (SD=1.32). For the statement “Implementation of electronic invoicing in the business was expensive and complex”, the mean level of agreement was 2.90 (SD=1.14) while for the statement “Employees had resistance to change during the implementation of electronic invoicing”, this value was 2.44 (SD=1.21).

For the exchange of electronic invoices companies most often use the services of private information intermediaries. There are 21 such companies among the respondents (51%), while 15 companies (37%) use the services of the state information intermediary. There were 5 (12%) that do not use the services of an information intermediary. Among companies that have introduced electronic invoicing, invoices are most often exchanged directly from the company’s accounting program (23; 56.10%). 9 companies (22%) exchange electronic invoices through the web interface of the selected information intermediary, and 9 companies (22%) also exchange electronic invoices through FINA’s web application called e-Račun. Companies of all sizes for the exchange of electronic invoices most often use their own accounting (and/or ERP) programs (ranging from 80% for medium-sized companies to 47.62% for micro-companies). FINA’s web application e-Račun is used only by micro and small companies. More precisely, 33.33% of micro-enterprises and 16.67% of small enterprises use FINA’s web application e-Račun. Companies that have introduced electronic invoicing have mostly positive attitudes towards the statement that the government decision on the mandatory exchange of electronic invoices between companies (Business-to-Business) would have a positive effect on the companies’ operations, so 24 respondents agree with this statement, while 17 respondents do not agree with this statement. The majority of surveyed companies (26) do not agree with the statement that the government decision on the mandatory exchange of electronic invoices for citizens/consumers would have a positive impact on business operations.

3.4. The Relationship between Company Size and Electronic Invoicing Adoption

The assumption that there will be a difference in the adoption of electronic invoicing among companies of different sizes was tested with a Chi-square test between two characteristics of analyzed companies based on the questions: “Into which category does your company belong?” and “Has your company introduced electronic invoicing?”.

Table 2. Crosstabulation analysis of companies by size and use of electronic invoicing

		Has your company introduced electronic invoicing?		Total	
		Yes	No		
Category	Micro	N	21	16	37
		%	56.8%	43.2%	100.0%
	Small	N	12	2	14
		%	85.7%	14.3%	100.0%
	Medium and large	n	8	0	8
		%	100.0%	0.0%	100.0%
Total		N	41	18	59
		%	69.5%	30.5%	100.0%

Source: Author’s research

The empirical Chi-square value was 7.59, with an empirical level of significance of 0.006, therefore it can be concluded that a statistically significant correlation between the size of the company and the use of electronic invoicing exists.

3.5. The Role of the Government in the Adoption of Electronic Invoicing in Companies

To test the assumption that the government has a significant role in the adoption of electronic invoicing in companies, two claims were put into relation: the use of electronic invoicing, and the level of business cooperation between companies and the government (public sector). The average level of importance of doing business with the government was 1.32 points higher among companies that introduced electronic invoicing compared to companies that did not introduce electronic invoicing. Specifically, the average level of importance of doing business with the state (public sector) among companies that have introduced electronic invoicing is 2.93, while the average level of importance of doing business with the state among companies that have not introduced electronic invoicing is 1.61.

Table 3. The relationship between the use of electronic invoicing and business cooperation between companies and the government

The use of electronic invoicing		N	Mean	Std. Deviation
Doing business with the government (public sector)	Yes	41	2.93	1.40
	No	18	1.61	.70

Source: Author's research

By conducting the Independent Samples Test (t-test for Equality of Means), with the empirical t-ratio of 4.80, it can be concluded that there is a statistically significant difference in the importance of doing business with the government (public sector) among companies that introduced and did not introduce electronic invoicing. The conclusion was reached with an empirical significance level of <0.001.

Finally, there is a question related to the perspectives of introducing electronic invoicing in order to find out if the companies that have not introduced electronic invoicing intend to do that soon. For the intention of introducing electronic invoicing, "soon" is considered the period of up to three years, i.e. the sum of the answers "Yes, within a year" and "Yes, within three years". Of the 18 companies that have not introduced electronic invoicing, 5 have not declared an opinion on this matter, while 3 companies declared they certainly will not introduce electronic invoicing. Among the respondents who expressed the intention to introduce electronic invoicing, 4 respondents intend to introduce it within one year, and 3 respondents within three years, which gives result of 7 respondents who have the intention of introducing electronic invoicing soon. Also, 3 respondents intend to introduce electronic invoicing, but beyond the framework of three years. Although 56% of companies intend to introduce electronic invoicing, only 39% of companies intend to do so within three years.

4. DISCUSSION AND CONCLUSION

Electronic invoicing brings various benefits compared to traditional invoicing as presented in the introductory part of the paper and verified in the empirical study. The European Union recognized electronic invoicing as a tool for increasing the productivity of the public sector, as did the legislator in the Republic of Croatia, which introduced a law according to which all companies participating in the public procurement process must exchange invoices electronically. This paper aimed to analyze the state and perspectives of electronic invoicing in Croatia, to determine the adoption with regard to the size of the company, and to determine the role of the government in the adoption of electronic invoicing. The limitations of this research are certainly the sample size. To generalize the results to all companies in the Republic of Croatia, further research on a larger sample is definitely needed.

In this pilot study, the analysis showed that there is a relationship between the size of the company and the use of electronic invoicing. Little over half of the micro-enterprises use electronic invoicing, while the percentage of adoption of electronic invoicing is growing drastically among small companies, while medium and large companies use electronic invoicing 100%. Regarding the role of the government in the adoption of electronic invoicing, a significant difference was observed between companies concerning the extent of business cooperation with the government and the use of electronic invoicing, leading to the conclusion that the government plays a significant role in the adoption of electronic invoicing in companies. Although the research found that less than half of the companies that have not yet introduced electronic invoicing have the intention of introducing electronic invoicing soon, in terms of the expected adoption of electronic invoicing the perspective is positive, because, with a longer period of time, most companies do intend to introduce electronic invoicing.

ACKNOWLEDGEMENT

This research was supported by the Croatian Science Foundation [grant number IRP-2017-05-7625].

References

- Arendsen, R., & Wijngaert L. (2011). *Government as a Launching Customer for eInvoicing*, Centre for e-Government Studies, University of Twente, The Netherlands, 122–133.
- Boshkoska, M., Mancheski, G., Jovanovska, D., & Midovska, Petkoska, M., (2019). Challenges and Benefits of e-Invoice Exchange System Implementation, *11th International Conference: Digital Transformation of the Economy and Society: Shaping the Future*, 452- 465.
- CEF Digital. (2021a). *SMEs and private sector onboarding-electronic invoices*, available at: <https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/SMEs+and+Private+Sector+onboarding+-+electronic+invoices>. Accessed: Nov 2022.
- CEF Digital. (2021b). *Transmitting electronic invoices*, available at: <https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Transmitting+electronic+invoices>. Accessed: Nov 2022.
- Haag, S., Born, F., Kreuzer, S., & Bernius S. (2013). *Organizational Resistance to E-Invoicing – Results from an Empirical Investigation among SMEs*, Institute of Information Systems, Goethe University Frankfurt, Germany, 286–297.
- Horák, J., Bokšová J., & Jiří Strouhal, J. (2020). *Electronic Invoicing Adoption within the European Union*, *International Atlantic Economic Society 2020.*, 449–450.
- Koch, B. (2019). *The e-invoicing journey 2019-2025*; Billentis, available at: https://billentis.com/The_einvoicing_journey_2019-2025.pdf. Accessed: Nov 2022.
- MINGOR (Ministarstvo gospodarstva i održivog razvoja Republike Hrvatske). (2022). *Uvod u e-račun*, available at: <https://mingor.gov.hr/djelokrug/uprava-za-trgovinu-i-politiku-javne-nabave/digitalno-gospodarstvo/e-racun-7014/uvod-u-e-racun/7015>. Accessed: Nov 2022.
- Official Gazette of the Republic of Croatia (“Narodne novine”). (2018). *Zakon o elektroničkom izdavanju računa u javnoj nabavi*, NN 94/2018, available at: https://narodne-novine.nn.hr/clanci/sluzbeni/2018_10_94_1817.html. Accessed: Nov 2022.
- Veselá, L., & Radiměřský, M. (2014). The development of electronic document exchange, *Enterprise and the Competitive Environment 2014 conference*, ECE 2014, 6–7 March 2014, Brno, Czech Republic, 743 – 751.

