

Digital and Sustainable Trade Facilitation in Western Balkans Countries

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Abstract

After the Covid-19 Pandemic crisis in international economic relations it became evident that climate-smart aspects should be considered when re-establishing a new international trade order. International organizations have proclaimed that this momentum should be used to include climate-smart trade and investment provisions to enable sustainable development. It has been acknowledged that trade has an important role to play in the global response to climate change, providing economies with tools to draw on in their efforts to mitigate climate change and to adapt to its consequences.

In this paper we focus the analysis on investigating the digital and sustainable component of trade facilitation measures applied in Western Balkans countries. To evaluate the importance of trade facilitation measures and their digital and sustainable components we apply standard gravity model with the data from UN Global Survey on digital and sustainable trade facilitation. The results show that trade facilitation measures are important for improving and increasing trade among the Western Balkans countries. Especially, measures connected to improving transparency procedures in

trade and measures for alleviating trade formalities are most significant for increasing bilateral trade among Western Balkans countries. With a lower level of importance are the measures for improving cross-border paperless trade between these countries.

Keywords: Digital and sustainable trade facilitation, UN Global Survey on Digital and Sustainable Trade Facilitation, gravity model, Western Balkans countries

Introduction

Trade facilitation is an important concept for increasing international trade liberalization. This concept understands the reduction of informal and administrative barriers that have negative effects over international trade in goods. The losses and costs that companies have because of border waiting, insufficient transparency and predictability of trade procedures, massive documentation and application of old and lengthy customs procedures are slowing down international trade flows.

The multilateral legal framework on trade facilitation became binding for WTO members in February 2017 with the entering into force of the Trade Facilitation Agreement (TFA) following its' ratification by two-thirds of WTO membership. A study conducted by the WTO in 2015 has estimated that if the Trade Facilitation Agreement is fully implemented the trade costs could decrease on average of 14.3%, world export could grow up to 2.7% per year, and it could add up to half percent of world GDP (WTO, 2015). OECD estimated that full implementation of the TFA had the potential to increase world trade by 0.6% and the overall output by up to 0.5% across all country groups. This could lead to a better allocation of resources, an increase in incomes, and in the general welfare (OECD, 2021).

In June 2022, at the WTO's 12 Ministerial Conference, the entire WTO membership recognized the environmental challenges that all economies in the world are facing and the importance of the multilateral trading system to contribute to the realization of the UN 2030 Agenda and Sustainable Development Goals. At the United Nation Conference on Climate Change held in Abu Dabi (COP28) trade gained momentum as essential tool to mitigate climate change and enable sustainable development. WTO has released a document Trade Policy Tools for Climate Action pointing out 10 sets of trade measures to support COP28 objectives. In this regard it is worth mentioning that the first set of trade tools to promote climate mitigation and adaptation is trade facilitation. Implementing trade facilitation measures, such as the use of electronic documentation, can help to reduce border control delays and related energy consumption, leading to reductions of up to 85 per cent of emissions at certain land border crossings.

The digitalization of paper-based trade processes could also reduce waste and lower associated emissions by as much as 63 per cent per invoice (WTO, 2023).

These major outcomes and expectations have been considered for the motivation and conducting of the research presented in this paper. The purpose of this paper is to investigate the state and importance of trade facilitation measures related to climate change and environmental sustainability for improving trade and trade integration among the countries from the region of Western Balkan. Western Balkans countries have been analyzed because of their continuous strive to become members of the European Union and their continuous efforts to apply different trade tools, measures, and agreements to integrated and strengthen their position on the international trade scene. To measure the importance of digital and sustainable trade facilitation measures we have used the data from the UN Global Survey on digital and sustainable trade facilitation and we have applied standard gravity which has been mostly used as a tool to investigate international trade flows and especially bilateral trade.

The structure of the paper is as follows. After the introduction part, in the second part of the paper we provide literature review to point out the importance of applying trade facilitation measures to promote trade integration and increase of bilateral trade. In the third section of the paper the empirical model and the data used for the research are explained in detail. In the next, fourth section, we provide the results from the research along with a short discussion of the results and their meaning. In the last, fifth section of the paper we provide conclusions and some recommendations for the future trade policy creators in these countries.

Literature Review

Trade facilitation involves a range of policy actions aimed at lowering the costs associated with international trade transactions, extending well beyond conventional market access strategies. Empirical data highlights the primary advantages of trade facilitation, notably the reduction in trade costs and the subsequent increase in exports and imports. While most studies focus on trade facilitation's impact on these factors, additional benefits, such as enhanced export diversification, productivity growth, job creation, and increased foreign direct investment, are also recognized. This section provides an overview of pertinent studies and their key conclusions about the effects of trade facilitation initiatives.

Initial research focuses broadly on trade facilitation measures and their effects on trade flows and costs. A pivotal study examining the WTO Trade Facilitation Agreement, utilizing both a gravity model and a general equilibrium model, revealed significant economic benefits (WTO, 2015).

The gravity model, under a conservative estimate, forecasts at least a 9.1% rise in exports under the intensive trade margin. It also suggests that developing and lower-income countries might see the greatest gains, including increased FDI, higher government revenues, and reduced customs fraud and corruption. Beverelli et al. (2015) found that trade facilitation could increase export diversification by at least 0.23%. While all countries are expected to benefit from reduced trade costs, developing and least-developed countries might gain the most. Another line of study delves into specific types of trade facilitation measures and their contributions to boosting trade flows and reducing costs. Extensive work by Moisé et al. (2013) integrates OECD trade facilitation indicators into a gravity model, highlighting the importance of border formalities and documentation in lowering trade costs and boosting trade in developing countries. They also found that information availability significantly impacts exports in middle and low-income nations. Additional studies, including those by Fernandes et al. (2015, 2016), Volpe Martincus et al. (2015), and Persson (2013), demonstrate that streamlining border procedures positively influences trade flows by reducing costs. For example, Fernandes et al. (2015) studied the effects of lower physical inspection rates in Albania, noting a decline in import clearing times and a subsequent increase in imports. Their empirical research also sheds light on the importance of enhancing information availability, harmonization, and integration in trade facilitation. Fontagné et al. (2016) used French firm-level data to show that accessible information and advance rulings positively affect small firms' exports. Fernandes et al. (2016) found that product standards significantly influence market access, with stricter standards potentially hindering exports. Limited studies evaluate the effects of modernizing border operations through application of automation and ICT tools. Studies by Hillberry et al. (2015) and Moisé et al. (2013) provide evidence of automation's role in reducing border times and trade costs, especially for developing countries.

The papers that deal with trade facilitation within the Western Balkan countries or the broader South-East European region are few but with a growing tendency in the last decade. This research specifically builds upon earlier estimations by Toshevska-Trpchevska and Tevdovski (2016) that have assessed the relative economic and trade impact of specific trade facilitation measures for the countries of Southeast European countries, focusing on CEFTA-2006 signatories excluding Moldova. They used trade facilitation indicators of the countries in the sample in a gravity model. Later, in 2022 Toshevska-Trpchevska et al. (2022) have found that undertaking measures to decrease and simplify the documents, the trading procedures and the fees and charges should have the biggest positive effect for increasing trade between the countries in Southeast Europe. Additionally, research by

Bjelić (2018) shows the data on the significance of these barriers and points to trade facilitation as a tool to eliminate administrative barriers to trade. Marković, Popović-Petrović and Bjelić (2021) found that CEFTA 2006 regional trade integration is not an exception with more than 100 NTBs introduced during its existence.

To provide additional insights to our present study we present the ASEAN's experiences in sustainable trade facilitation. The ten ASEAN countries - Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam - share comparable levels of development and faces similar challenges in achieving regional economic integration as the Balkan countries. The former relies on trade with the rest of Asia, while the latter seeks to integrate with the European Union.

The Framework Agreement on Facilitation of Cross-Border Paperless Trade in Asia and the Pacific presented opportunities for ASEAN countries to advance their own initiatives and solutions to ensure interoperability with other paperless trade systems (United Nations ESCAP, 2023). One concrete action taken was the construction of the ASEAN Single Window, which was a single portal protocol to harmonize digital trading throughout the process from origin to destination (Jones, 2021). While actions like this are a work-in-progress, studies found that ASEAN still had room for improvement in sustainable trade facilitation. A survey conducted by the United Nations ESCAP (2023) assessed the implementation of 31 trade facilitation measures across ASEAN. They found a high implementation rate of 81%, surpassing the Asia-Pacific region's average of 67%. However, full adoption of paperless trade and cross-border paperless trade could further reduce trade costs by over 3% (United Nations ESCAP, 2023). Full implementation of digital trade facilitation measures, enabling seamless electronic exchange of trade data and documents across borders, could reduce trade costs by more than 9% (United Nations ESCAP, 2023). Duval et al. (2019) also highlighted the significant progress made by ASEAN in implementing trade facilitation measures between 2015 and 2017, but they found that ASEAN's progress in implementing next-generation digital trade facilitation measures, such as cross-border paperless trade measures, were still limited. Their simulation results suggested that full implementation of the measures could double trade cost reductions (Duval et al., 2019). Although, the Asia Pacific region has regressed in the pursuit of Sustainable Development Goal 13 connected to climate change, the region has advanced in trade facilitation and although much remains to be done sustainable trade facilitation practices have become common in the Asia Pacific region. The Framework Agreement on Facilitation of Cross-Border Paperless Trade in Asia and the Pacific is pointed out as an example on how countries can strengthen cooperation on trade digitalization to ensure electronic data and documents in national

paperless trade systems to be effectively exchanged and afterwards legally recognized by their trade partners (UN, 2023).

According to Jones (2021), reducing trade costs to achieve Asian regional economic integration was essential for ASEAN countries. Jones (2021) emphasized the need for uniform, harmonized customs and clearance protocol system across trading partners as the ASEAN countries dealt with an increasing adoption of multilateral and regional trade agreements and a paperless and digital landscape in Asia. In terms of regional economic integration, Tian (2023) looked into the growing significance of cross-border e-commerce in both ASEAN and China, which was one of ASEAN's top trading partners. Since the Guangdong-Hong Kong-Macao Greater Bay Area was a key global digital trade pilot area, it was well-positioned to provide a framework for cross-border e-commerce development between China and ASEAN countries (Tian, 2023). Tian (2023) proposed innovative development paths, such as cross-border logistics system building, cross-border e-commerce talent team building, and cross-border e-commerce intellectual property protection. These strategies could activate the commodity trade market between ASEAN countries and China.

The Empirical Model and Data

The paper employs a model to conduct a qualitative analysis concerning the bilateral trade relations among Western Balkans countries. Additionally, it examines the impact of the results from the UN Global Survey on Digital and Sustainable Trade Facilitation on their mutual trade. The countries covered in the analysis are the following five countries. These are: Albania, Bosnia and Herzegovina, Macedonia, Montenegro, and Serbia. Kosovo is not considered due to insufficient data.

The dataset contains annual data ranging for 2017, 2019, and 2021 because for those years the UN Global Survey has available data for these countries, describing the bilateral trade between the countries in each of the 21 HS Sections (for sector definitions, see here: <https://oec.world/en/product-landing/hs>). In total, we have 1,092 observations. The study employs the standard gravity model estimation within a panel framework. Originally proposed by Linder (1961) and Linnemann (1966), this model draws inspiration from Newton's theory of gravitation. It is widely utilized in research papers focusing on international trade (Deardorff, 1995; Anderson and van Wincoop, 2003). The estimates are generated using the OLS (Ordinary Least Squares) model in STATA, without incorporating any effects. The gravity model is specified as follows:

$$\begin{aligned}
 \ln EXPI_{ijp,t} = & \beta_0 + \beta_1 \ln DISTANCE_{ij} + \beta_2 \ln GDP_{i,t} + \beta_3 \ln GDP_{j,t} + \\
 & + \beta_4 \ln BORD_{ij} + \beta_5 \ln LANG_{ij} + \beta_5 SMCTRY_{ij} + \beta_6 (TFX_{Xij} *) + \\
 & \varepsilon_{ij,t} \qquad (1)
 \end{aligned}$$

The dependent variable $\ln EXPI_{ijp,t}$ represents the log of exports from country i to country j in product p in year t , expressed in USD. The source for exports data is the Observatory of Economic Complexity (oec.world).

In terms of independent variables, we are relating trade flows to distance ($\ln DISTANCE_{ij}$) measured with the geographical distance between the biggest cities of countries i and j in kilometers (this data is taken from CEPII's gravity dataset:

http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=8).

Exporters with larger size also export more to other countries. Similarly, importers with larger sizes import more. The economic size is measured with the total GDP of a country (in PPP constant 2017 USD), with data taken from the World Development Indicators

(<https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.KD>).

We also relate trade flows to the economic size of exporter ($\ln GDP_{i,t}$) and importer ($\ln GDP_{j,t}$). We also add three binary variables accounting for a common border ($BORD_{ij}$), common official language ($LANG_{ij}$), and a variable indicating whether the exporter and importer were part of a same country in the past ($SMCTRY_{ij}$). These data were also taken from CEPII's gravity dataset.

We run separate regressions of the model to see the importance of each trade facilitation measure for trade because of high correlation among them. This is necessary to obtain more correct and stable results (Wilson, 2010). First, we run a regression for the overall TF score of the countries, and then five separate regressions to measure the importance of five (5) groups of trade facilitation measures: transparency, formalities, institutional arrangements and cooperation, paperless trade, and cross-border paperless trade. In separate regressions, we estimate the linear relationship with each TFX_{Xij} measure. These measures represent the natural logarithm of the product of the specific group of trade facilitation measures of both trading partners.

Data for the Trade Facilitation measures are taken from <https://www.untfsurvey.org/>. For the set of analyzed countries the measures were available for the years: 2017, 2019 and 2021 for the above-mentioned five groups of trade facilitation measures. The measures are expressed in percentages but for the purpose of this model, the values are rescaled to range from 0 to 10. The variable TFX_X^* is then calculated as the natural

logarithm of the product of a specific TFX measures for both the importer and the exporter.

$$TFX^* = TFX_{Xj} * TFX_{Xi}$$

By using this variable, the model aims to examine how changes in specific groups of trade facilitation measures jointly affect both exporters and importers in bilateral trade relationships.

Results

The results of the seven regressions are presented in Table 1. The first regression is “empty”, not containing any trade facilitation data. In the second regression we measure the influence and importance of the overall trade facilitation and paperless data measures employed by the countries. And in the following five regressions we measure separately the influence and importance of each set of trade facilitation measures: transparency, formalities, institutional arrangements and cooperation, paperless trade, and cross-border paperless trade. The 7 regressions also confirm the robustness of the model as can be seen that the results of the variables: GDP home, GDP trading partner, distance, language, border, and being previously part of the same country are stable in all regressions.

The results from the variables GDP home and GDP trading partner are positive and highly statistically significant. This means that the higher GDP of the countries has a positive influence on their mutual trade. Increasing the GDP of the countries positively impacts the trade between them.

The results for the variable distance are also statistically important and with a negative sign. It means that increasing the distance between the countries has a negative influence on increasing their bilateral trade. This fact is very common and expected in gravity models and it is the foundation of the whole gravity model theory.

The variables accounting for a common border and common official language have shown to be not important for increasing the trade between these countries. However, the results for the variable indicating whether the exporter and importer were part of a same country in the past in most of the cases are important indicating that this fact has positive influence for increasing the trade between the countries which previously were part of the same country.

Table 1. Results of UN Trade Facilitation and Paperless Trade data on WB countries trade, 2021

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
No of observations	1,092	1,092	1,092	1,092	1,092	1,092	1,092
C	271.598	813.177***	645.215***	689.783***	-243.435	688.813**	534.236**
log(dist)	-2.724***	-1.703***	-1.822***	-1.259**	-2.789***	-2.041***	-2.387***
log(gdp_iso_o)	2.423***	2.523***	2.535***	2.485***	2.344***	2.500***	2.471***
log(gdp_iso_d)	1.059***	1.159***	1.171***	1.121***	0.980***	1.136***	1.106***
border	0.141	-0.725	-0.431	-0.944*	-0.085	-0.672	-0.149
language	-0.260	1.755*	1.309*	2.449**	-0.359	1.302	0.409
Same country	1.635***	0.623	0.848**	0.121	2.356***	1.174**	1.270***
log(TFScore)		8.859**					
log(Transparency)			8.791***				
log(Formalities)				7.647***			
log(InstArrangements)					-7.087***		
log(PaperlessTrade)						5.509	
log(CrossborderPaperless)							6.451*
R ²	0.194	0.198	0.202	0.202	0.202	0.195	0.196
Adjusted R ²	0.189	0.192	0.196	0.196	0.196	0.189	0.190
Residual Std. Error	4.479 (df = 1084)	4.469 (df = 1083)	4.458 (df = 1083)	4.459 (df = 1083)	4.459 (df = 1083)	4.477 (df = 1083)	4.475 (df = 1083)

Author's calculations

Note:

* ** *** p<0.01

The regressions that measure the importance of different trade facilitation and paperless data on trade show that in five cases they are significant and only in one case the group of trade facilitation measures appears to be insignificant for increasing Western Balkans mutual trade. The regression that measures the overall importance of UN trade facilitation and paperless data on trade shows that these measures are highly statistically significant, and the coefficient is with the highest value. This means that 1% improvement in the overall set of sixty trade facilitation and paperless measures could lead to 8.86% increase of bilateral trade between the Western Balkans countries. This result is very important as it explicitly denotes that trade facilitation and paperless trade measures are very important measures for increasing countries' mutual trade and improving their international trade position.

When we look at the results that measure the importance of the separate five sets of trade facilitation measures, we can see that measures connected to transparency and formalities are also important and have a positive influence over trade. A 1% improvement in the measure of

transparency could lead to an 8.79% increase in the trade. And 1% improvement of the measures for formalities could lead to 7.65% increase of trade between the Western Balkans countries. The results that measure the importance of institutional arrangements and cooperation show that these measures are important for the trade of Western Balkans countries, but the coefficient is with negative sign. This means that improving the measures in this field could lead to decreasing the trade between Western Balkans countries.

The result that measures the influence of measures applied for paperless trade are not important for increasing the trade between these countries and the result measuring the importance of applied cross-border paperless measures is significant but with lower level of significance (90% level). This means that improving cross-border paperless measures could lead to a 6.45% increase in mutual trade.

Additionally, to these seven regressions we wanted to check the sensitivity of the trade facilitation and paperless trade measures on different groups of products. To check this, we used the 22 sections of the Harmonized Systems of products, and we grouped them into 6 groups (available at <https://oec.world/en/product-landing/hs>). Group 1 consisted of first, second, third and fourth section: animal products, vegetable products, animal and vegetable bi-products and foodstuff. Group 2 comprised the products from the fifth, thirteen, fourteen and fifteen sections of the HS: mineral products, stone and glass, precious metals, and metals. In group 3 we put sections eight, nine, ten, eleven and twelve: animal hides, wood products, paper goods, textiles, and footwear and headwear. Group 4 consisted of sixteen, seventeen, eighteen and nineteen sections of the HS: machines, transportation, instruments, and weapons. In the fifth group we put sections twenty, twenty-one and twenty-two: miscellaneous products, arts and antiques and unspecified products. And, lastly, the sixth group of products consisted of sixth and seventh sections: chemical products and plastics and rubber. The results from the separate specifications of the gravity model for each product group are available on request.

The results for products in group 1 indicate that there is a small statistical importance of the overall trade facilitation and paperless data measures for increasing trade between the Western Balkan countries. When we investigate the importance of a specific set of trade facilitation measures it appears that again transparency and formalities are significant for this group of products. Also, again the set of measures for institutional arrangements and cooperation are important but with negative sign.

Quite like the results for the products in group 1 but with lower coefficients are the results obtained for the products grouped in the third group. A little bit higher significance but with the same pattern is

acknowledged for the products grouped in group four. The importance of the overall set of trade facilitation and paperless data is significant and specifically the sets of measures measuring transparency and formalities. Again, the importance of the set of measures measuring institutional arrangements and cooperation is significant but with negative sign.

For the products grouped in the sixth group, chemical and plastic products, the importance of trade facilitation measures is visible for the sets of measures for formalities and transparency but with lower levels.

The results show that for the products grouped in the second and fifth groups of products, the analyzed trade facilitation and paperless data measures aren't important for increasing trade between the Western Balkans countries.

As an overall conclusion of the analysis of the importance of trade facilitation and paperless data on different groups of products it is visible that these measures are important for increasing trade in animal and vegetable products and food, textiles and footwear products, machines and transportation equipment, and chemical and plastic products. And the pattern of significance of the trade facilitation and paperless measures is similar between the different groups of countries: highest significance is acknowledged for the set of measures for improving formalities, a little bit less importance of the set of measures for increasing transparency and significant and negative importance of institutional arrangements and cooperation.

Conclusion

The importance of reducing trade costs is widely acknowledged, as it serves as a fundamental enabler for economies to actively participate in regional and global value chains. Reducing trade costs and barriers to trade is crucial for realizing the benefits of trade. A growing literature has also noted trade's potential to enhance growth and sustainable development through climate-smart trade facilitation.

The aim of this paper is to assess the level and importance of trade facilitation measures related to enabling a climate-safe and sustainable environment for the trade between the Western Balkans countries. For the analysis we have applied standard gravity model in a panel framework for the five Western Balkans countries for which data were available: Albania, Bosnia and Herzegovina, Macedonia, Montenegro, and Serbia. Kosovo, although part of Western Balkans countries, was not included in the analysis because of lack of data. For evaluating the climate-smart component of trade facilitation measures in the paper we have applied the UN Global Survey on Digital and Sustainable Trade Facilitation as a compact study pertaining around 60 trade facilitation measures of more than 160 economies in the

world. The available data for bilateral trade and the UN Global Survey were for 2017, 2019 and 2021 and those years were included in the analysis.

The results from the research have shown that these measures are highly statistically significant, the coefficient is with the highest value meaning that if there is 1% improvement in the overall set of sixty trade facilitation and paperless measures it could lead to 8.86% increase of bilateral trade between the Western Balkans countries. This result explicitly denotes that digital and sustainable trade facilitation measures are very important measures for increasing countries' mutual trade and improving their international trade position.

A more detailed analysis shows that of all trade facilitation measures complied in the UN survey the measures connected to transparency and formalities are mostly important and significant for increasing countries' mutual trade. A 1% improvement in the set of measures of transparency could lead to an 8.79% increase in the trade and 1% improvement of the set of measures for formalities could lead to 7.65% increase of trade between the Western Balkans countries. Also, it is worth mentioning that the measures for improving cross-border paperless trade between these countries have a lower level of significance and their improvement could lead to a 6.45% increase in mutual trade. This is very important data as it directly links to the climate-smart component of trade facilitation. The other climate-smart component of trade facilitation measures which is part of this analysis: paperless trade has shown to be not important for increasing trade between the countries. This result is very important as it directly shows that something is wrong in the application of paperless trade measures in these countries which might be the low level of application of these measures in the separate countries which then leads to the insignificance of these measures in the analysis.

To avoid high correlation between the results we have run 7 separate regressions and by that we have checked the robustness of the model and the results. The results of the other independent variables: GDP home, GDP trading partner, distance, language, border, and being previously part of the same country are stable in all regressions. Additionally, we made a check of the sensitivity of the digital and sustainable trade facilitation measures by dividing the products into 6 groups from the 22 sections of the Harmonized Systems of products. The results that we have obtained with the detailed analysis of trade facilitation measures by groups of products have confirmed our previous result. The pattern of significance of the digital and sustainable trade facilitation measures is similar between the different groups of countries and highest significance is acknowledged for the set of measures for improving formalities and transparency. The digital and sustainable trade facilitation measures were important for increasing mutual trade in animal

and vegetable products and food, textiles and footwear products, machines and transportation equipment, and chemical and plastic products.

The results that we have obtained with this analysis confirm our previous studies that there are still additional administrative trade barriers and costs in the trade between the Western Balkans countries. These barriers and costs have a negative impact for the trade and economic integration of these countries in the region. So, the goal of this research would be completed if the results from this research are given due attention by the responsible authorities in the creation of future trade policies and applying trade facilitation measures that will be climate-smart and environment sustainable. Very often, the international trade community points out the Framework Agreement on Facilitation of Cross-Border Paperless Trade in Asia and the Pacific as an example on how countries can strengthen cooperation on trade digitalization and enable effective exchange of electronic data and documents in national paperless trade systems and afterwards enable legal recognition by their trade partners (UN, 2023).

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