



**ASSESSING THE IMPACT OF THE E-TAX SYSTEMS ON SMALL AND MEDIUM TAXPAYERS' TAX COMPLIANCE
IN DEVELOPING COUNTRIES. A CASE STUDY IN RWANDA**

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IN DEVELOPING COUNTRIES. A CASE STUDY IN RWANDA

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ABSTRACT

There is underutilization of electronic tax filing systems in tax agencies despite the presence of electronic tax administration systems. Basically the general objective of this study was to assess the impact of e-tax systems to the tax compliance for Small and Medium Taxpayers in Rwanda. The study employed a descriptive analytical design that combines qualitative and quantitative methods. The study population consisted of SMT reports from both Kigali and upcountry location/business location/tax centers in Rwanda which totaling to 231,088 taxpayers. Census approach was employed by the study. The study only used secondary data from the RRA database. Analysis of data was done through SPSS Version 20 and Excel. The study concluded that electronic filing system actually influences tax compliance. The study revealed that holding electronic tax filing and Electronic Tax payment at zero constant, tax compliance would stand at .469. A unit increase in Electronic tax filing would result in an increase in tax compliance among small and medium taxpayer within Rwanda by a factor of .512 and similarly a unit increase in Electronic Tax payment would result in an increase in tax compliance by a factor of .099. Electronic tax filing system offers an option to the clients to file taxes like VAT, PAYE, income taxes electronically on RRAs website without having to visit a RRA premise especially if there is tax education, compliance aspect is guaranteed. The system managed to raise tax collection drastically in 2012 and 2013 by 48.1% and 42.9% respectively though still they were unable to meet the target. The study recommended that the government should improve the infrastructure that supports internet coverage across the country for electronic filing to be a success. It is Government that should ensure Internet connectivity for all.

Keywords: e-tax systems, tax compliance, Small and Medium Taxpayers, Rwanda

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INTRODUCTION

Most government in the world are turning into technology to ease service delivery and provide quality services provided by any tax administration as per Anisina and Pavlova, (2021). The modernization process has introduced different electronic tax systems for the purpose of improving tax compliance, managing tax revenue and bringing the reliability of service delivery through extensive use e-tax system that support the provision of timely information for decision making and provision of convenient services to taxpayers.

Electronic filing (e-filing) of tax returns is the modern way for tax authorities to interact with taxpayers. Bird and Zolt (2008), stating the usage of e-tax systems like e-filing system, e-tax assessment system, the revenue gateway system, integrated tax administration system, Taxpayer Identification Number (TIN) and computerized systems. Harrison and Nahashon (2015), the tax environment is changing rapidly where e-filing is the modern way of tax authorities interacting with taxpayers. It has emphasized by Muita (2011), paper returns are tedious to file on the part of the taxpayer and in the same magnitude to reconcile on the part of tax administration. The paper returns are time-consuming to file on the part of the taxpayer and difficult to reconcile.

According to Muita (2011), the term "e-tax filing" was coined in the United States, where the Internal Revenue Service (IRS) began offering tax return, e-filing for tax refund only. Australia, Canada, Italy, the United Kingdom, China, Ireland, Germany, France, the Netherlands, Finland, Sweden, Switzerland, Norway, Singapore, Brazil, Mexico, India, China, Thailand, Malaysia, and Turkey have all adopted e-filing on a global scale. Ramayah, *et al.* (2008). Furthermore, as previously discussed, the use of an e-tax system influences tax compliance. Harrison and Nahashon (2015) demonstrated that e-tax has grown to the point where approximately one out of every five individual taxpayers now fill out their tax returns electronically, and that the online tax system has a positive impact on tax

compliance among small taxpayers in Meru Country.

In the context of technological advancement in the field of taxation, the need for innovation necessitates the modernization of tax administration. The factors influencing tax compliance and/or noncompliance vary by country and also by individual, according to Kirchler (2007). Taxpayers' attitudes toward compliance may be influenced by a variety of factors, which in turn affect taxpayer behavior. Nicoleta's (2011). Muita (2011) began by stating that developing countries have also embraced e-filing of tax returns, and some African countries that have embraced e-filing include Uganda, Nigeria, Kenya, and Rwanda. The use of e-tax filing is intended to ensure the accuracy and timeliness of the data contained.

The e-tax system replaces manual records, which lack control over the accuracy of some key data provided by taxpayers. E-tax, as a customer service provider, has contributed to avoiding physical appearance during return submission, tax payment filing, and compliance with other tax obligations and receiving services. To make it easier for taxpayers to e-file their tax returns and remit taxes as they become due, an e-tax with improved qualities and features was introduced. According to Huyen *et al.*, 2020, the problem stems from a lack of public awareness, an effort to improve information technology systems in tax declaration and payment, as well as unexpected costs incurred by businesses.

The aim of tax reform in many countries is therefore, to achieve higher voluntary tax compliance and one way to do this is by introducing electronic filing system (Khadijah, 2013). In Rwanda all collected taxes are filed and remitted by due dates as prescribed by tax laws, which are mandatory dates for both tax return and corresponding payment. A taxpayer can use this system to register a business, file tax returns, make payments (e-payment), and apply for and obtain various documents or services needed for business operations. Thereon, taxpayers have tax obligations

to do, failure to do that leads to non-compliance and attract penalties as per law no 02/6/2019 of 18/9/2019 on Rwanda tax procedure law.

The taxpayers adopted an online platform that allows them to access tax services via the internet, thereby improving their existing level of tax compliance, as well as engage in other activities such as learning how to use e-tax systems wisely, thereby improving their tax compliance, and having access to the possible activities made by the e-tax system. The e-tax system has taken the place of manual records, and there is no way to validate the accuracy of some key data provided by taxpayers. E-tax, as a customer service provider, has assisted in avoiding physical appearance during return submission, payment tax filing, and compliance with other tax obligations, as well as receiving other services provided by tax administration.

Kamana (2011) demonstrated that Rwanda's e-tax system has been in place since 2012, and a number of studies have been conducted to demonstrate the e-tax system's significant value to tax compliance. An improved e-tax was implemented to make it easier for taxpayers to e-file their tax returns and pay their taxes when they become due. Small and Medium Taxpayers (SMT) have a lot of potential, according to the RRA reports (2011), but their scale and mode of operation are still fragmented. E-tax systems or online systems have an impact on tax compliance. Self-assessment is a system in which the taxpayers are responsible for determining taxable income and calculating tax liabilities.

The impact of the e-tax system on SMT tax compliance could significantly contribute to the development of solutions to improve e-tax compliance in Rwanda. The study, like a supplement, focuses on the impact of the e-system by comparing the performance of highlighted variables before and after the implementation of e-tax. In order to assess how e-tax influences tax compliance, the researcher only considered a limited number of variables related to the e-tax system. Finally, recommendations for additional research were made to assess other factors or

variables that may impact tax compliance for all business sizes, including large taxpayers that the study did not consider.

E-tax systems were created to encourage taxpayers to receive timely and high-quality service in order to meet their tax obligations. The e-tax system was implemented in response to the mission of mobilizing revenue for economic development through efficient and equitable services that promote business growth by encouraging taxpayers to easily comply with tax obligations so that they can access good services provided by tax administration, to engage in productive activities for development, and to meet the mission of mobilizing revenue for economic development through efficient and equitable services that promote business growth.

In order to achieve tax compliance, Rwanda implemented an e-tax system to replace manual form filling returns, voluntary tax registration, and timely payment of taxes due. It was implemented as part of a series of steps to increase government revenue by making self-assessment easier for taxpayers via online tax compliance services. There are a number of variables such as non-filers, late filers, non-payers, late payers, nil filers, as well as on time filers and payers for assessing noncompliance, according to RRA reports (2021). These are some of the indicators indicating how tax compliance remains a critical issue for Rwandan SMT. However, the researcher would like to assess the impact of e-tax on tax compliance for SMT before and after its implementation.

The e-tax system is simple to use, and taxpayers' obligations are simple to fulfill; however, in order to achieve the desired results, each tax administration must maximize tax compliance. The problem is trying to get feedback on the main question that a researcher has at the start of the research, which is to determine whether there is a statistically significant impact on each of the above-mentioned variables by comparing SMT compliance during three consecutive fiscal years before and five fiscal years after e-tax implementation. Throughout the

study, we looked to see if non-filers decreased, on-time filers or payers increased, and vice versa. Furthermore, not only will such variables be assessed for tax compliance measurement, but so will others related to registration.

Research Hypotheses

Considering questions formulated in the statement of the problem, the following null hypothesis and hypothesis were tested:

- **H₀:** The e-tax filling / payment system has no significant impact on the tax compliance of Small and Medium Taxpayers.
- **H₁:** The e-tax filling/payment system has a significant impact on the tax compliance of Small and Medium Taxpayers.

LITERATURE REVIEW

Self-assessment theory

According to Kasipillai (2010), a self-assessment system is an assessment procedure that assumes all information provided by the taxpayer is correct and does not need to be verified by revenue officers. The self-assessment system is heavily reliant on the taxpayer's attitude. It faces a greater risk of taxpayer noncompliance. Taxpayer attitudes toward taxation as reflected in the self-assessment system, as well as their contribution to the tax gap. This is the opinion of experts Newman et al. (2018), who demonstrated that it correlates with tax compliance and their perception of reporting the true liability due. Taxpayers must be constantly educated because there are always new laws emerging and tax legislation being revised. Taxpayers who seek professional assistance are more likely to comply with the law.

E-tax systems that are backed up by a self-assessment system may be able to achieve appropriate tax compliance. When all applicable tax policies, regulations, processes, and procedures are considered in e-tax systems, the systems become more user-friendly for taxpayers, allowing them to meet their tax obligations more easily. According to Richardson (2016), it is critical for people to

understand tax law because it influences their willingness to comply. He explained that, in general, the laws are viewed as complex, which leads to taxpayers becoming unwilling to try and comprehend the messages contained in the tax laws; their better level of comprehensiveness is dependent on the knowledge that a person possesses in the area of tax knowledge (Saad, 2012).

According to this study, the e-tax system adheres to the self-assessment theory, which states that any taxpayer subject to a specific tax type is required to prepare the tax return, submit it before the due date, and pay accordingly. There is tax compliance, which occurs when tax obligations are met in accordance with tax laws, and tax non-compliance occurs when they are not. Masarirambi (2013), continues to face the challenges of tax evasion and non-compliance in the informal sector that Zimbabwe has faced as a developing country. Rwanda embarked on tax reforms for this reason.

Empirical Review

The empirical studies on the impact of E-tax systems (in this study, the terms "e-filing" and "payment" are used interchangeably) on tax compliance, as well as the challenges that e-tax system management faces. The research fills a gap and demonstrates how SMTs' tax compliance appears in Rwanda's tax registry as a result of the implementation of e-tax systems. A number of studies, both locally and internationally conducted, have been reviewed in order to assess the impact of e-tax systems on tax compliance. Following the study's specific objectives, the following empirical review was carried out.

Still in developing countries, Sifile, *et al.*, (2018) conducts a research study with the main objective to find out how e-filing influenced tax compliance in Harara, Zimbabwe. The study found that e-filing influences tax compliance, where other measures have required to analyze in which class of taxpayers complying more and how to mitigate the risk from attitude of taxpayers that is diluted by a number of factors that make e-filing difficult or not easy to

use. In Rwanda, a number of studies done on the same field, impact of e-tax system to the tax compliance.

Kamana, (2016) in her MBA Thesis has done a study on the effects of e-filing and e-payment on revenue collection by RRA. She stated that with the introduction of e-filing in 2012, there is an intention to improve tax revenue and bridge the gap in the budget but still there are challenges associates with e-tax management system in realizing the targets of planned budget. Coming back to this study, it has the main purpose of looking into the impact of tax compliance among income taxpayers, with a focus on those who have adopted in filing.

The study discovered that the e-tax management system has improved tax collection in Rwanda, and there is an added value to examine the skills required by taxpayers or other users of e-filing, as well as the tax authority's preparedness in enhancing the adoption of tax compliance, which is directly influencing positively the tax collected by RRA. The tax administration encourages clients to file electronically due to a variety of advantages. E-filing, according to Anderson *et al.*, (2005), is more efficient than paper filing because it reduces paperwork and errors while also being less expensive. Even if e-filing has significant advantages, users of e-filing, both taxpayers and RRA officers, may face challenges.

In Malaysia, Ling and Nawawi (2010) carried out a survey on Integrating ICT Skills and tax software in tax education. The respondents were the tax practitioners and the study aimed at establishing the necessary skills required by taxpayers to fully utilize a tax online system. The study found that three skills are needed by a taxpayer to interact well with technology based tax system namely, spread sheet software, word-processing software and e-mail. The findings of this study has got implications on the current study in that in analyzing the effectiveness of electronic filing system, one must not ignore the mandatory skills that would be users of the system need to have. Failure to consider such skills may make the

intention of the system not to be realized as confirmed by Maede (2002). He confirmed that despite the heavy investment that the Malaysian tax authority put in new online system, only 20% of the targeted taxpayers were able to use it after three years of implementation. This was mainly attributed to lack of necessary user skills like computer literacy; however, taxpayer's behaviour also played a role.

According to Becker and Lacktoring-Revier (2008), tax compliance is the accuracy with which a taxpayer files, reports, and pays income taxes. This is why the study looked at the impact of e-filing on tax compliance. It also provided an excellent opportunity to identify the challenges that the filing system faces and how to overcome them in order to reduce risk. Harrison (2015) conducted a study on the effect of an online tax system on tax compliance among small taxpayers in Kenya; this study evaluated the impact of e-tax systems in Rwanda on tax compliance among SMT. The study discovered that the online tax system has an effect on tax compliance among small taxpayers in Meru country (Kenya), where other factors can be identified and assessed as to how the e-tax system may affect tax compliance among all active taxpayers in that country.

Existing studies identify those users of electronic tax filing system are resistant to the use of e-tax filing system in remitting their income tax to the tax authority (Bojuwon and Siti, (2014); Boonyarat *et al.*, 2015; Sanz-Sanz *et al.*, 2015). Although the e-tax filing system may have offered potential benefits in terms of improving tax administration compliance, it also reduces administrative cost, compliance cost and it is time saving, but the unwillingness to accept and use the system since it is not mandatory has led to some emerging issues from the users' perspectives. Hence, the change from the manual tax filing system to the adoption of the e-tax filing system is not well accepted by all the taxpayers and the tax agent in some developing countries such as South Africa. Klun, (2009) and Mararia, (2014).

METHODOLOGY

The study was carried out from Rwanda Revenue Authority, charged with the collection of taxes but also undertake the administration and accountability of taxes. The research employed a descriptive analytical design that combines qualitative and quantitative methods. Since e-tax has been made available to SMT, an incentive design for e-tax has been implemented, beginning with the registration process, e-filing, and payment (reporting) at the appropriate time and with the appropriate tax amount, which is tax compliance. The study population consists of SMT from both Kigali and upcountry (tax centers) in Rwanda which is totaling 231,088 taxpayers as at the end of June 2021 referred to RRA report, (2021) clearly shows that SMT, as opposed to large taxpayers, be appropriated for the study due to their unique characteristics, such as their large number and lower contribution to tax collection.

This taxpayer category (business size/scale) contributes less than 40% of total tax collection in each of the last five fiscal years. The stratified random sampling was used, and then SMT was divided into strata based on business size. Further analysis of the impact of technology on all population was carried out based on tax returns filed (non-filers, debit filers, nil filers, and later filers), which expected to project compliance status tax, and major challenges encountered with interaction with electronic services (e-tax system) and taxation. The study only used secondary data from the RRA database. TIN (Taxpayer Identification Number), registration date (before and after e-tax implementation), business scale (small or medium), location (Kigali and up-country tax center), enterprise type, main tax types registered for (income tax, pay as you earn (PAYE), and Value Added Tax (VAT), etc. The validity of data with maximum confidentiality, where regression analysis was used to confirm how the data fit the model. This includes item analysis, which was done with the help of the supervisor and research

professionals who are familiar with the study's themes.

The procedure entails going over and evaluating each item in each instrument to see if it performs as expected. Before processing the findings, the validity of data was verified. This was accomplished by pre-testing the information obtained from the RRA data set, which aids in determining the dependability of data collection tools. A set of data generated from RRA reporting system to assess tax compliance basing on e-tax systems (e-filing, e-payment status). The availability of data were related to non-filers, later filers, registered taxpayers by selected tax type, business size, and other related variables that aid in assessing tax compliance. The study relied solely on secondary data from 2009 to 2020, where only TINs registered for sampled tax type targeted. The three and nine period of years before and after the e-tax implementation generated and analyzed, respectively.

All data generated by the RRA database was used to determine how the use of e-tax contributes to the monitoring of tax compliance among SMT? As previously stated, the use of the e-tax system as an independent variable is justified by active taxpayers registered on various dates during the highlighted period, classified in the three main tax types based on data collection. Secondary data was collected, sorted, edited for accuracy and clarity, classified, coded into a coding sheet, and analyzed using a statistical software package (SPSS Version 21). The study's findings were presented in order to determine whether or not the study's objectives and hypotheses were met. During data analysis, the linear regression analysis model was used to assess how well available data fit the model. To present the relationships between the study variables, which are the use of e-tax systems and the efficacy of SMT tax compliance in Rwanda, the mean, standard deviation, and frequency tabulations were used.

RESULTS AND DISCUSSIONS

The first objective of the study was to examine the impact of the e-tax payment system on SMT tax compliance in Rwanda. The descriptive results of

the variable in Table 1 gave measures such as Means, Standard Deviations, Variance, Skewness and Kurtosis.

Table 1: Descriptive statistics on e-tax filing system for SMT tax compliance in Rwanda

	Mean Statistic	Std. Deviation Statistic	Variance Statistic	Skewness Statistic	Std. Error	Kurtosis Statistic	Std. Error
Tax Compliance Electronic Tax payments	.7658	.234565	.043	-3.543	.314	10.565	.618
Valid N (listwise)	.6243	.120898	.012	-.256	.314	-.547	.618

Electronic E-Tax payment had a mean of .6243 (SD = .12). Tax compliance had a mean of .765 (SD = .23). The statistical values were measured by Skewness and Kurtosis to determine the normality of distribution of the variables. This agrees with Dwilson (2014) who found out that that many tax authorities that have leveraged on e-filing have experienced a reduction in handling costs of returns, shorter turnaround for processing and assessment of tax returns, and improved tax compliance. The growth in the number of tax compliant taxpayers means there is a decrease in the tax evasion and eventually in the tax gap. In this study, the majority of respondents acknowledge the e-filing benefits such as paying of tax refunds quicker, ease of submission of tax returns, ease of payment of tax liability.

Regression analysis

H0: *The e-tax payment has no significant impact on the tax compliance of Small and Medium Taxpayers.*

A further regression analysis was carried out to determine the significant relationship between e-tax payment and tax compliance of Small and Medium Taxpayers. Table 2 indicates results that explains the regression between e-tax payment and tax compliance of Small and Medium Taxpayers whereby 14.9% of variation in the tax compliance of Small and Medium Taxpayers is explained by a unit change in e-tax payment. In other words, the deficit of 85.1% of tax compliance of Small and Medium Taxpayers is explained by other factors apart from e-tax payment. The results are satisfactory through the indication of goodness of fit by the linear regression.

Table 2: Model Fitness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.386 ^a	.149	.141	.65724

a. Predictors: (Constant), e-tax payment

Table 3 provides the results on the analysis of the variance (ANOVA). The results indicate that the overall model was statistically significant as supported by a p value of 0.000 which is less than

the critical p value of 0.05. This implying that e-tax payment system has a significant impact on the tax compliance of Small and Medium Taxpayers.

Table 3: Analysis of Variance

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	12.14	1	12.14	18.059	.000 ^a
Residual	28.684	118	.476		
Total	40.824	119			

Regression of coefficients results in Table 4 shows that there is a positive significant relationship between e-tax payment system and tax compliance of Small and Medium Taxpayers as shown by a p value of 0.003 which is less than the critical p value of 0.05. This was supported by the t values

whereby $t_{cal}=4.850 > t_{critical} =1.96$ at a 95 percent confidence level which depicts that we reject the null hypothesis and accept the alternative hypothesis. This implies that e-tax filling has a significant impact on the tax compliance of Small and Medium Taxpayers.

Table 4: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	3.076	.282		9.869	.000
e-tax filing system	.285	.037	.386	4.850	.000

Beta coefficient ($\beta = 0.285$) from the obtained model in Table 5 is less than 0.05 and constant $\alpha = 3.076$ more than 0. This implies that there is a significant relationship between e-tax payment and tax compliance of Small and Medium Taxpayers therefore rejecting the null hypothesis. This is a clear indication that the model obtained is significantly fit.

The second objective of the study was to evaluate the impact of the e-tax filing system for SMT tax compliance in Rwanda. From the findings it's very clear that the e-tax filing system influences positively SMT tax compliance in Rwanda. This is in line with the study by Gupta (2000) which found that the adoption e-payment was found to considerably affect the tax revenue compliance of SMT. In addition the study is in agreement to a study by Ndunda *et al.*, (2015) revealed that level of tax payment (compliance) affected optimal revenue collection. The study by Ndunda *et al.*, (2015) established a marginal relationship between tax compliance and revenue collection, which was true in the present study. The findings in the current study which also agreed to those in Nyongesa (2014) which recommended for decentralized ICT based tax collection systems and offices in the sub-counties in adoption of differentiation strategies in revenue collection role.

The study by Kinyanjui and Kahonge (2013) revealed that the use of e-payment by mobile phone based technology in mobile parking increase

parking fees collection as that by Muema *et al.* (2014) indicated that Nairobi county and the parking industry were generally ready to adopt the mobile parking management system. The findings were confirmed by the present study, which showed considerable increase in revenue collection performance after introduction on e-payment system.

Also the Otieno *et al.* (2013) study found that there exists a relationship between Information Systems (IS) and both efficiency and effectiveness in revenue collection, there is a strong positive relationship between Internal Control Systems and revenue collection. In the case of the present study it was established that e-payment significantly increase the revenue collection performance, a confirmation of the findings in the study by Otieno *et al.*, (2013). Perlman (2001) study established that the use of third party vendors has allowed counties without large IT resources to implement an online ticket-paying system. This shows that small and Medium Taxpayers can experience success through use of vendors and cooperative efforts of pooling resources.

CONCLUSION AND RECOMMENDATIONS

The research objectives were tested to establish the impacts of electronic tax filing system on tax compliance of Small and Medium Taxpayers. The findings confirm that electronic tax filing significantly improves tax compliance. From the findings, that e-filing is a positive step towards tax

compliance. The findings indicate that e-filing on its own does not lead to tax compliance; however, it is a positive step towards tax compliance and is only one of the three components of compliance. E-filing improves tax submission, but however, it does not ensure payment compliance.

Electronic tax filing system offers an option to the clients to file taxes like VAT, PAYE, and income taxes electronically on RRAs website without having to visit a RRA premise especially if there is tax education, compliance aspect is guaranteed. The system managed to raise tax collection drastically in 2012 and 2013 by 48.1% and 42.9% respectively though still they were unable to meet the target. This was believed to be due to lack of awareness among the tax payers about electronic tax management system in place and lack of skills especially among the tax payers on how to use the system. In 2014 tax collection was increased to 888.2 against the budget which was 773.9. This implies that the RRA managed to collect revenue above the budget line by 12.6%. Consequently in 2015 revenue collection was about the budget by 98.1%. This implies that like stated in the hypothesis especially EBM and mobile payment system has relationship with revenue collection although internet system small relationship. Therefore it can

be summarized that electronic tax management system has improved tax compliance of SMT in Rwanda.

The researcher came up with the following recommendations in order to support electronic tax system and Tax compliance:

- RRA should organize training workshops for its taxpayers so that adoption rate of e-tax filing increases. Training workshops should be done across the country.
- The government should improve the infrastructure that supports internet coverage across the country for electronic filing to be a success. It is Government that should ensure Internet connectivity for all. This is because taxpayers are found all over; even those in the rural areas can pay tax thus internet access should be guaranteed.
- System availability should be ensured by RRA who should have its servers upgraded to be able to absorb pressure on e-traffic. This is because the current servers are encountering pressure during the due dates which are the peak periods for return submission.
- RRA should benchmark their electronic filing services with those developed.

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