An Analysis of the Web Visibility of Non-Tertiary Educational Institution in Romania

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Abstract

This paper analyzes the web visibility of non-tertiary educational units in Romania, considering the factors that influence their online presence, especially in light of the COVID-19 pandemic, which underscored the importance of digital connectivity in education. The data used were retrieved from data.gov.ro, selecting characteristics such as property type and area of residency. The results obtained reveal a higher prevalence of websites in urban educational units and among the public ones. The Mann-Whitney U-test indicates newer websites in rural areas, highlighting recent digital advancements. These differences in digital presence reveal a potential gap in resource allocation and technological support between urban and rural educational units. These findings could provide a foundation for policymakers to support digital access among Romanian educational units.

Key words: non-tertiary education, school websites, web visibility, digital presence, educational units
J.E.L. classification: I29

1. Introduction

Schools are no different today compared to 1600, teaching students to provide a model answer rather than innovate (Seldon et al, 2020 p.10, 33). Technologies developed since 1960 such as photocopiers, computers and smartboards improved students' experience in accumulating knowledge (Seldon et al, 2020 p. 25), yet, in the advent of the AI, education should focus on developing all human intelligences, foster curiosity and create learning opportunities from anywhere (Seldon et al, 2020 p. 209). A school website, might be used as a tool in this respect, yet the website must incorporate engaging communication tools and must focus on the individual (Istifadah et al 2019, p. 411). Moreover, a school website communicates the school's mission its approach on learning and its vision on academic achievement (Wilson and Carlsen, 2016, p. 24). Also, it functions "as a support structure for policies and diversity (where diversity refers to the specialisation and division of educational provision)" (Wilkins, 2012 p. 83).

Regarding contents, a school website must provide relevant information on a regular basis (Tubin and Klein, 2007 p. 203). Elements such as teachers' e-mail address, class information, office hours, lecture notes, student work samples and administration news must be included (Unal, 2008 p.47). Also, school website may be used to improve communication with the parents via calendar updates, recruit volunteer parents for various school activities and enhance participation in school life via forum (Piper, 2012 p.36-38). Furthermore, if carefully designed, a school website might serve as a marketing tool to attract prospective students (Álvarez-Álvarez and Ines-Garcia, 2016 p.10) and can be combined with other social media platforms such as YouTube into a management information system (Marpaung and Sazali, 2022 p. 164).

Given the importance of a school website, the present paper aims to assess the web visibility of schools in Romania. More specifically, the following questions will be addressed:

- Q1. What are the main characteristics of the educational units that have a website in Romania?
- Q2. Is there a difference in the number of days a website of an educational unit has been running by type of property of the educational unit?
- Q3. Is there a difference in the number of days a website of an educational unit has been running by area of residency of the educational unit?

2. Literature review

During the COVID-19 pandemic, the "digital divide that parallels the educational divide" among students could be observed all over the globe (Darling-Hammond et al 2020 p. VI). In this context, it became imperative that schools connect with families via web-based platforms on a regular basis and ensure an interactive and authentic online learning experience (Darling-Hammond et al 2020 p. 52,11).

School websites became more than an informative tool during the pandemic. For example, many schools offered information about mental health issues related to COVID-19, remote counselling and directions for students experiencing a crisis via their website (Seidel et al 2020, p.1261). Moreover, beyond school websites, many teachers developed online classrooms, more specifically a website that "is intended as a special space between teacher and student so that features in it are adjusted based on the limitations of students and subject matter" (Halent et al. 2020 p. 48). Also, educational websites aimed at offering support in learning via interactive exercises and pedagogical guidance were extremely useful during the lockdowns (Rhazal et al. 2022, p.16) and they often became an alternative to direct instruction (Yildirim and Guleroglu 2022, p.1).

In vocational learning, the COVID-19 pandemic highlighted the need to implement digital solutions (Nurfitria et al. 2021 p.194). In this respect, a website-based green school combining distance learning and instruction practices oriented towards care for the environment can be adopted (Nurfitria et al. 2021 p.196).

3. Research methodology

For the purpose of this paper data for each non-tertiary educational unit was retrieved from data.gov.ro on June 12th 2024. The reference school year is 2022-2023. The following variables were defined: area of residency – states whether the facility is located in an urban or a rural territorial unit; property type – states whether the facility is public or private; level of education – states the level of education for which a facility is authorised to function (an educational unit may operate multiple levels: ante-pre-scholar, pre-scholar, primary, lower secondary, upper secondary, upper secondary and non-tertiary, professional); a dummy variable stating whether the school has a website (value = 1) or not (value = 0); age of website in days (number of days between June 12th 2024 and the day the website was launched).

In order to answer the first research question, a graphical analysis was performed. For the second and third questions the Mann-Whitney U Test was used. Based on Iuliano and Franzese (2019 p.666), the null hypothesis of the test was formulated as follows:

$$For\ Q2\text{: } Median\ of\ Age\ of\ website\ (days)_{private\ units} = Median\ of\ Age\ of\ website\ (days)_{public\ units}$$

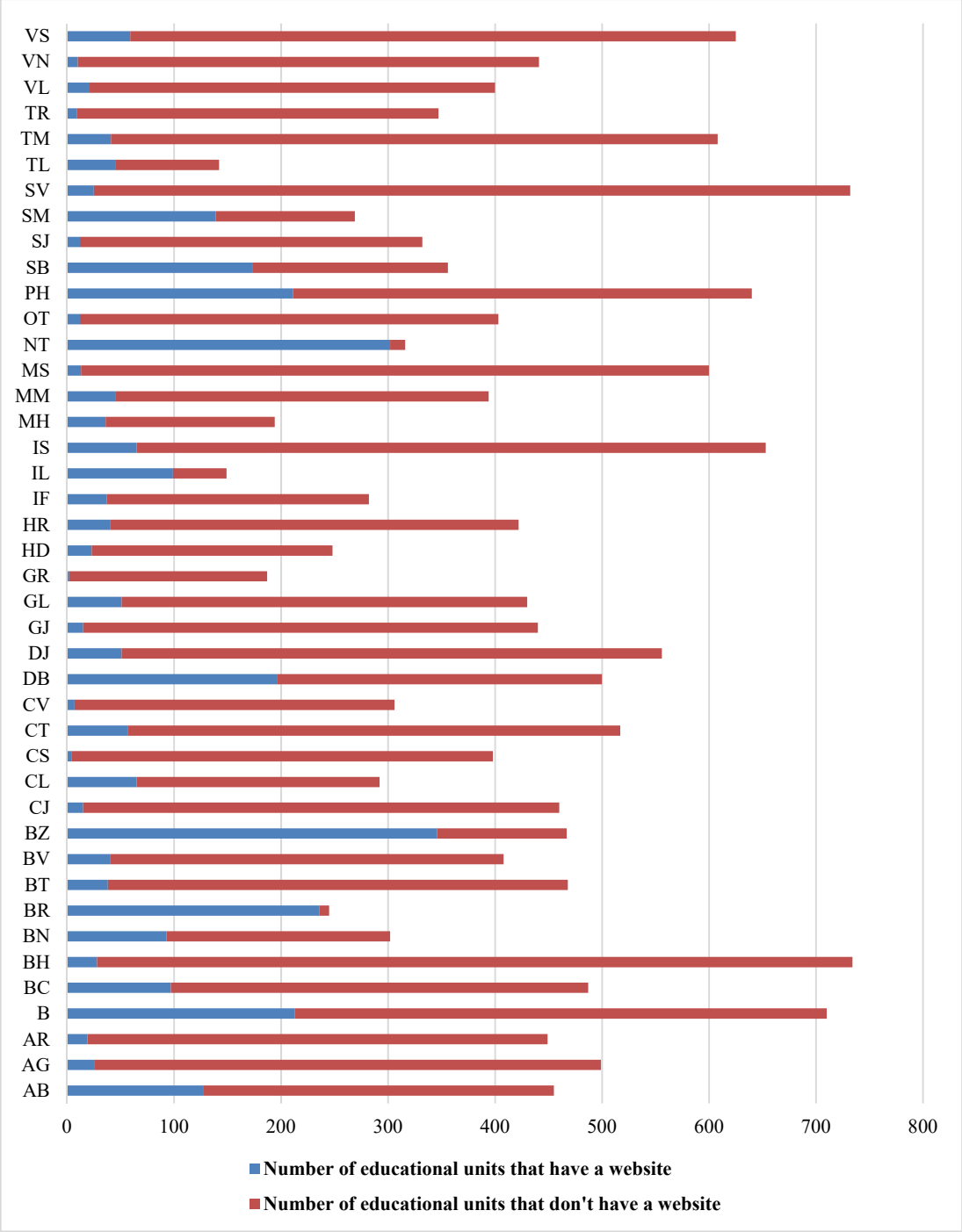
$$For\ Q3\text{: } Median\ of\ Age\ of\ website\ (days)_{urban} = Median\ of\ Age\ of\ website\ (days)_{rural}$$

The observations can be considered independent, as each educational unit is free to decide whether to have a website or not. Moreover, the boxplots are presented together with the test results, as this is useful to observe the spread as well median itself (McIntosh et al., 2010 p.181). The computations were performed using the R-Shiny web application developed by Mizumoto, A. (2015). The significance level was 5%.

4. Findings

Figure 1 shows the share of schools in the total number of schools that have a website by county. Braila has the highest share of schools with a website (96.3%), Caras-Severin has the lowest share (1%).

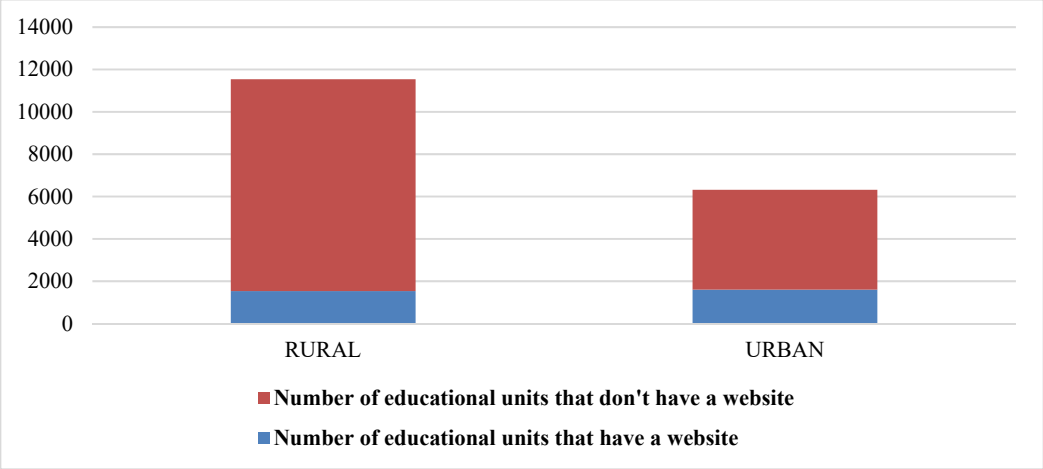
Figure no. 1 Share of schools that have a website in the total number of schools by county



Source: designed by the authors based on data from data.gov.ro

Figure 2 displays the share of schools that have a website in the total number of schools by area of residency. In urban areas there are more schools with a website both in terms of absolute and relative numbers.

Figure no. 1 Share of educational units that have a website in the total number of educational units by area of residency



Source: designed by the authors based on data from data.gov.ro

Considering the educational level and authorisation status, the highest number of educational units that have a website offer lower secondary educational services (table 1). Moreover, most of the educational units that have a website function based on full authorisation.

Table no. 1 Number of educational units that have a website and the total number of educational units by level of education and authorisation

	Number of Educational Units that Have a Website	**Total Number of Educational Units**
Ante pre-scholar		
Full authorisation	44	245
Authorisation	13	85
Pre-scholar		
Full authorisation	1401	4998
Authorisation	46	329
Primary		
Full authorisation	1510	4758
Authorisation	20	107
Lower secondary		
Full authorisation	1591	4962
Authorisation	29	88
Upper secondary		
Full authorisation	681	1482
Authorisation	16	75
Upper secondary non-tertiary		
Full authorisation	273	704
Authorisation	41	105
Professional		
Full authorisation	405	950
Authorisation	19	40

Source: designed by the authors based on data from data.gov.ro

Table 2 displays the number of educational units that have a website and the number of educational units that don't have a website by property type. Approximately 20% of the private educational units and 17% of the public ones have a website. Additionally, most of the educational units that have a website are public ones.

Table no. 2 Number of educational units that have a website and number of educational units that don't have a website by property type

	Number of school that have a website	**Number of school that don't have a website**
Private	209	813
Public	2934	13907

Source: designed by the authors based on data from data.gov.ro

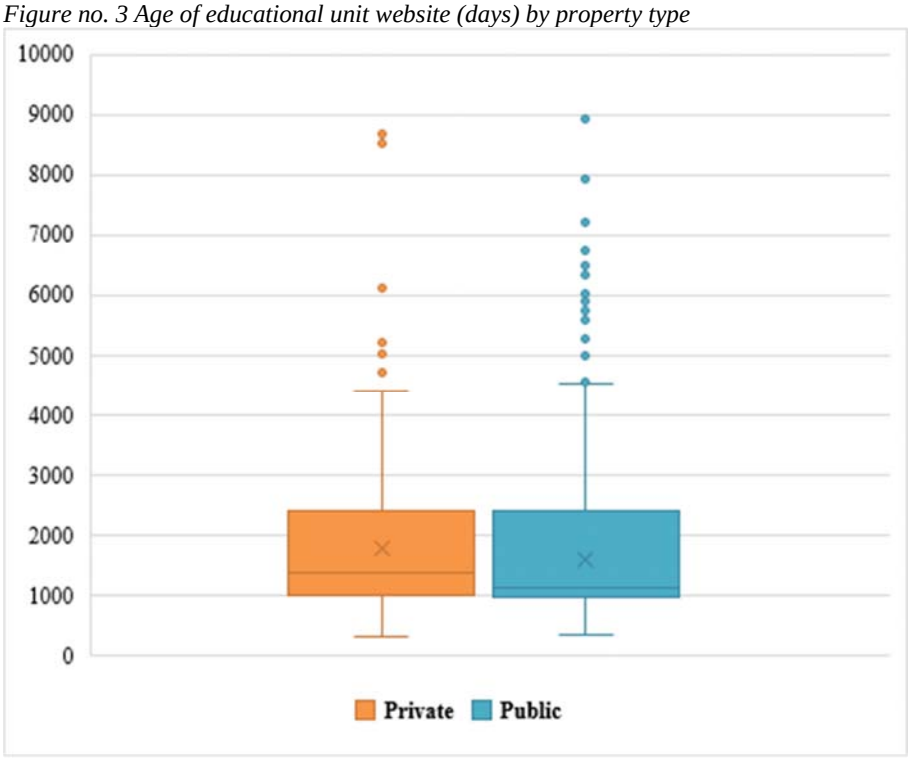
Next, the results of the Mann-Whitney U-test together with boxplots are presented. Table 3 displays the rank results and p-value for the test conducted on the Age of website variable by property type (private/public) and figure 3 represents the boxplot for the same variable by these categories. At 5% significance level, it can be concluded that there is no significant difference in the age of website by property type. Indeed, based on the boxplots, the two distributions are similar.

Table no. 3 Mann-Whitney U-test results – Age of educational unit website (days) by property type

Rank Results		
Property type	n	Rank Mean
Private	209	1677.28
Public	2933	1563.96
p-value=0.08076726		

Source: designed by the authors based on data from data.gov.ro using Mizumoto, A. (2015). Langtest (Version 1.0) [Web application]. Retrieved from http://langtest.jp

Figure no. 3 Age of educational unit website (days) by property type



Source: designed by the authors based on data from data.gov.ro

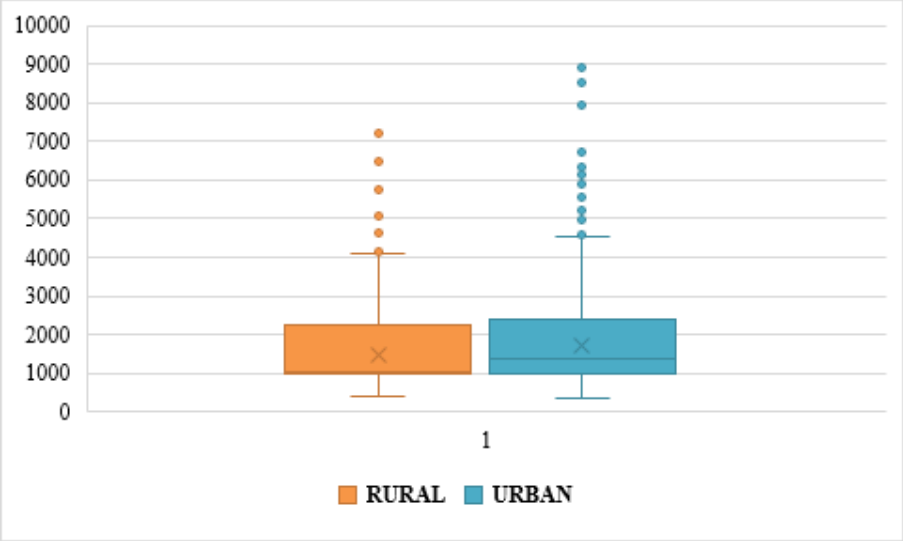
Table 4 displays the rank results and p-value for the test conducted on the Age of website variable by area of residency (urban/rural) and figure 4 represents the boxplot for the same variable by these categories. At 5% significance level, the null hypothesis is reject, thus there is a significant difference in the age of website by area of residency. The rank mean is lower for educational units in rural area. This means that schools is rural areas have newer websites. This result is confirmed by the medians of this variable by the two categories.

Table no. 4 Mann-Whitney U-test results – Age of educational unit website (days) by area of residency

Rank Results		
Area of residency	n	Rank Mean
Private	1535	1500.61
Public	1607	1639.21
p-value = 1.831585e-05		

Source: designed by the authors based on data from data.gov.ro designed by the authors based on data from data.gov.ro using Mizumoto, A. (2015). Langtest (Version 1.0) [Web application]. Retrieved from http://langtest.jp

Figure no. 4 Age of educational unit website (days) by area of residency



Source: designed by the authors based on data from data.gov.ro

5. Conclusions

The findings on the web visibility of Romanian non-tertiary educational institutions shows that urban and public institutions are more likely to have established websites, with rural ones exhibting newer digital infrastructure. Although no notable differences were found in website longevity based on the type of ownership, rural institutions typically have newer websites, reflecting recent advancements in digital inclusion efforts and with 20% of private educational units maintaining a website compared to 17% of public ones. In Brăila County, 96.3% of schools have a website, while in Caraș-Severin, only 1% of schools have an online presence.

The COVID-19 pandemic has affected educational systems worldwide, including Romania. The sudden shift to remote learning forced educational institutions to adopt fastly a digital solutions to maintain communication between teachers and students. This situation reveald the importance of web visibility for non-tertiary educational units, as many faced significant challenges in staying connected with students and parents.

6. References

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