

DIGITAL COMPETENCES OF JOURNALISTS

Research Report

Digital Competences of Journalists

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Research Approach and Method

The digital era has brought revolutionary changes to social communication and the private lives of people across the world. The world of media, the central infrastructure of which today comprises digital platforms, is on the frontline of this civilizational breakthrough. Technological innovations have changed the production, distribution and reception of media content. The journalistic profession has been changing structurally together with the media audience and its preferences.

Communicology research is preoccupied with questions about the impact of technological changes on societal and personal life, and how individuals and specific social groups are keeping pace with the digital revolution. Some studies explore the requisite changes, capacity for change and the results of the changes in media professions and organizations, both those that have retained the traditional forms and roles, and those that are combining online and offline activities or have completely transformed into online entities.

The impact of digital transformation on communication and the functioning of the media has been researched in Serbia as well. However, national digitization policies do not attach the same priority to public information as they do to education and the professional empowerment of educators for using information and communication technologies in public interest. Domestic research in this area mostly focuses on the technical changes in public communication, the impact of media digitization on the offer of media content and on the audience, its behavior and preferences, the law and respect for the rights of communication actors. With the exception of several initial surveys¹, no research has over the past few years been conducted into the media professionals' needs for building their capacity for work in the digital world.

The need to conduct such a research was identified in the 2020-2025 Strategy for the Development of the Public Information System in the Republic of Serbia. In its description of the state of play in the field of public information, the Strategy singles out the lack of digital competences and profes-

1 Valić Nedeljko, Dubravka and Karlo Bala, 2012, *Koliko o digitalizaciji TV emitovanja znaju oni koji bi trebalo da je u javnosti promovisu*, <https://docplayer.net/64475779-Koliko-o-digitalizaciji-tv-emitovanja-znaju-oni-koji-bi-trebalo-da-je-u-javnosti-promovisu-dubravka-valic-nedeljkovic-i-karlo-bala.html> Belgrade College of Political Sciences, *Profesija na raskršću*, CM No. 24, 2012.

sional knowledge among media professionals as a distinct group of problems and notes the need to take measures that will result, inter alia, in the improvement of the digital media competences of journalists and media workers.

In order to achieve headway in this area, the Strategy provides for “the implementation of a gender-sensitive baseline analysis of the digital competences of journalists and other media professionals, with recommendations for future activities” (Measure 5.2).²

Re.KreAKTa’s research “Digital Competences of Journalists” is an activity aimed at achieving the above goal of the Strategy for the Development of the Public Information System, which is within the remit of the Ministry of Culture and Information. It endeavored to provide analytical insight in the journalists’ current proficiency in digital competences, how they have been acquiring digital skills and knowledge, and their motivation for professional development, especially in terms of any gender differences, to formulate the main problems in the area, and provide recommendations for improving the digital competences of this group of professionals.

The analysis of the journalists’ digital competences will also be useful in implementing other activities envisaged in the Strategy, such as the introduction of new content in the formal education of journalists and the design of informal training in digital media competences for media and journalists, as well as in the elaboration of a media policy geared at raising the level of journalistic professionalism in a rapidly evolving technological environment.

The results of the research will also contribute to the implementation of the national 2020-2024 Digital Skills Development Strategy,³ the goals of which include, inter alia, improvement of the digital skills of all citizens and the development of digital skills responding to labor market needs.

Main Features of the Research

This is the first research that focused on the digital skills of journalists as a distinct professional group.

It is therefore necessarily explorative or “reconnoitering” in character. Such research aims to collect baseline information about the phenomenon under observation, in order to subsequently define, as precisely as possible, the research problems and hypotheses for future research.

2 The Strategy is available in Serbian at: <https://www.pravno-informacioni-sistem.rs/SlGlasnikPortal/eli/rep/sgrs/vlada/strategija/2020/11/1>.

3 The Strategy is available in Serbian at: <http://www.pravno-informacioni-sistem.rs/SlGlasnikPortal/eli/rep/sgrs/vlada/strategija/2020/21/2/reg/>.

The research is primarily applied in character, designed to improve practices through the formulation of recommendations for enhancing the digital competences of journalists. Given the broad scope of the subject of the research and the diversity of the research participants, the research also has basic descriptive pretensions.

The research focuses on media staff, primarily on journalists, the main professional group creating media content, rather than on media as individual or collective organizations or on their needs.

Furthermore, the research does not address the social context in which the media and journalists are performing their social roles, or the outlets' editorial policies, since they presumably have merely indirect impact on the journalists' digital competences.

The research uses the term 'digital competences' although it denotes a concept concerning the use of digital technologies that is still evolving. The term 'digital skills and knowledge' is used synonymously, although academic literature indicates that competence is a broader notion and also consists of attitudes ("social and emotional aspects for using and understanding digital device"⁴).

The applied methodology enabled findings on how the respondents rated their own digital competences rather than on their actual proficiency. The latter, which could be checked in practice, is beyond the scope of this research.

The terms 'journalists' and 'online media managers' refer to both male and female journalists and online media managers unless the Report specifically refers to female or male journalists or online media managers.

Research Goals

The research aimed to achieve the following goals:

1. Collect credible data on the digital competences of journalists in Serbia and their digital proficiency at the moment;
2. Identify any gender gaps in the scope and quality of digital competences among journalists;
3. Screen the journalists' basic motivation for mastering digital skills and knowledge;

⁴ Ilomäki, L., Kantosalo, A., & Lakkala, M. (2011). What is digital competence? In Linked portal. Brussels: European Schoolnet. <http://linked.eun.org/web/guest/in-depth3>.

4. Identify relationships between the current scope and quality of the journalists' digital competences and the needs of online media for professional skills and knowledge requisite for improving their functioning in the near future.

Research Questions

The following research questions were formulated based on the research goals:

- How do journalists perceive their overall digital competences?
- Which of their digital competences do journalists rate as excellent, good or underdeveloped?
- Are there any gender gaps in self-assessments of digital competences? What are they reflected in?
- What links exist between the journalists' demographic and professional characteristics and their proficiency in digital competences?
- How important are the journalists' digital competences for their current jobs?
- How often do journalists use their digital competences at work?
- How have journalists acquired their digital skills and knowledge?
- Which digital skills do journalists feel they lack the most and want to improve through professional training?
- What do journalists think of netiquette as a digital competence?
- How interested are journalists in professional development?
- What are the journalists' main motives for improving their digital competences?
- What are the main obstacles to the journalists' improvement of their digital competences?
- Who do journalists perceive as the most adequate organizers of trainings in the digital competences they lack?
- How important are digital competences for building professional capacity in the media?
- What are the online newsrooms' needs in the immediate future and how are they related to the staff's digital competence proficiency levels?

Survey Techniques

The research included surveys of two groups of respondents: journalists and managers of online media or online newsrooms in hybrid media.

The main set for the first group of respondents comprised all journalists in Serbia working in all kinds of media and media at various levels of digital transformation (predominantly traditional, hybrid, online-only).

The main set for the second group of respondents comprised managers of all media that have separate Internet newsrooms, be they online-only, hybrid or integrated media.

Given that the lack of relevant data precluded the construction of a representative sample of both groups of respondents, the researchers opted for convenience non-probability sampling. In order to ensure the validity of the results, they endeavored to ensure during recruitment a broad representation of journalists and managers of Internet newsrooms in national and regional/local media and their even geographic dispersion.

The researchers selected the research techniques in accordance with the research goals and character: an online survey for the first group of respondents and an e-mail survey for the second group, based on specially designed questionnaires (Questionnaire for Journalists and Questionnaire for Online Newsroom Managers respectively), which included some common batteries of questions.

The clarity, relevance and applicability of the questions in the Questionnaires were tested on 10 journalists in the first group and five managers in the second group, working in various kinds of media.

The final content of the Questionnaire for Journalists was formatted through SurveyMonkey and posted on the Internet, along with a public invitation to journalists to participate in the survey. The Questionnaire for Online Newsroom Managers was e-mailed in electronic format to the media, their chief editors or directors. Anonymity of participation in the research was guaranteed to both groups of respondents.

The Questionnaires included questions about the socio-demographic characteristics of the respondents, the features of the media they work in, how they assessed their digital skills and knowledge, their motivation for professional development, preferred training organizers, professional training priorities, etc.

Survey Course

The survey of the journalists was conducted online. The respondents included journalists who decided to respond to the public invitation and participate in it. The Questionnaire was available online from 28 June to 19 September 2021.

The organizer's invitations to journalists to take part in the survey were published on the websites of the Journalists' Association of Serbia (JAS)⁵ and Cenzolovka,⁶ with the help of the Independent Journalists Association of Serbia (IJAS) and the associations of local media outlets, Local Press and Online Media Association, which disseminated it to their members, media or journalists. Re.KreAKTa published the official invitation also on its Facebook page and distributed it via its Facebook account and those of its members and friends. While the Questionnaire was available online, the Re.KreAKTa research team also sent invitations to the official e-mails of the outlets and individual journalists in the databases of national and regional/local media that were innovated for the purpose of this research.

A total of 294 respondents took part in the survey of journalists. Although the instructions at the very top of the Questionnaires clearly presented the goal of the survey, 44 respondents replied only to questions about their demographic and professional characteristics, but then gave up, failing to respond to the most important part of the Questionnaire, the questions asking them to assess their digital skills, or to a large number of other questions. The respondents who replied to at least 90% of the questions, a total of 250 of them, were included in the sample.

Online newsroom managers were contacted by e-mail. In the letter they received, the organizer explained the research goals and content and asked them to participate in it. Such letters were sent to 80 addresses. A total of 38 online newsroom managers and editors filled the Questionnaire. Two of the respondents sent back incomplete questionnaires and were excluded from the sample, which ultimately comprised 36 respondents.

5 <https://uns.org.rs/sr/desk/vesti-iz-medija/118840/istrazivanje-o-digitalnim-kompetencijama-novinara-u-srbiji.html>.

6 <https://www.cenzolovka.rs/mediologija/istrazivanje-o-digitalnim-kompetencijama-novinara/>.

Research Team

The research team was comprised of the following Re.KreAKTa members and associates: Dr. Jovanka Matić, media researcher with extensive, decades long experience in communication and media research; Dr. Snežana Milin Perković, culture, media, and media and information literacy researcher; MA Ilija Milosavljević, media and digital communications researcher and journalist; Dr. Dragana Novaković, international communication and globalization researcher.

I Research Results: Journalists

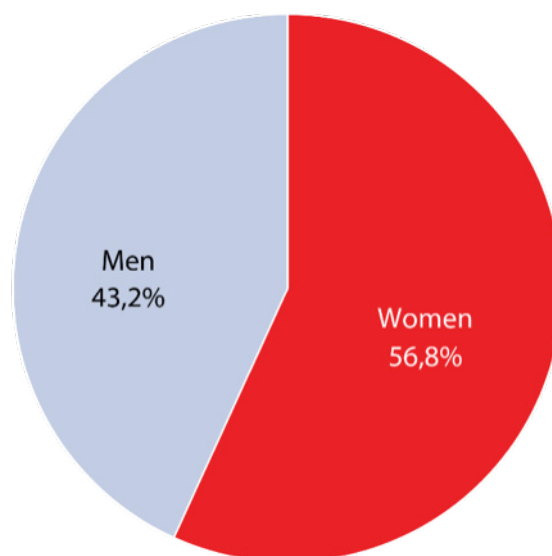
Given the explorative character of the research and absence of a precise and reliable statistical framework on the population of journalists and online newsrooms, an available and convenience sample comprising respondents, who had voluntarily accessed the Questionnaires posted on the Internet or received by e-mail, was used in both parts of the research.

Although, strictly methodologically speaking, the respondents are not representative of all journalists in Serbia or all online newsrooms and their managers, the coverage of respondents in both cases allows relevant conclusions to be drawn about the subject of the research because it includes substantial diversities of the surveyed population.

Sample

More female than male journalists took part in the survey, which corresponds to the gender breakdown of this group of media professionals. The sample comprised 108 (43%) male and 142 (57%) female journalists.

Sample: Gender Breakdown



The respondents were of various ages. They were 44 years old on average. In the three largest age groups, between 26 and 55, the older the respondents, the bigger the groups. Most respondents (29%) were between 46 and 55 years old.

The number of respondents over 55 was much higher than the number of respondents under 25 (15% v. 6%), which corresponds to current insights in the real human resource situation in journalism.

The youngest respondent was a 21-year-old female college student working for an online portal based in Vojvodina. The oldest respondent was 77. He belonged to the group of 10 journalists of pensionable age, all of them male; this group included five editors and one chief editor.

Sample: Age Breakdown

	No of Respondents	%
Under 25	14	5.6
26-35	53	21.2
36-45	64	25.6
46-55	72	28.8
56-65	37	14.8
Over 65	10	4
	250	100%

The education breakdown of the respondents is also diverse. They completed secondary, higher and high education, and some even held master and doctoral degrees.

Seventy percent of the respondents had high and 30% had secondary or higher education. Although there are no recent data on the education levels of all journalists in Serbia, available data indicate that they are overrepresented in the sample of populations with high education.

This can be attributed, at least partly, to the greater interest of journalists with university degrees in the title of the research, the first thing that drew them to the research. Interest in the research topic may also explain the relatively large share of respondents with degrees in natural or technical sciences (6%).

Sample: Education Breakdown

	No of Respondents	%
High - journalism, communication	72	28,8
High - humanities	81	32,4
High – natural and technical sciences	14	5,6
Master's Degree, PhD	7	2,8
Secondary	53	21,2
Higher	22	8,8
No reply	1	0,4
	250	100%

The respondents worked in or for various media in terms of level of digitization:

- 25% (62 respondents) worked in online-only media;
- 32% (81 respondents) worked in integrated media combining a number of traditional and digital platforms, such as the national or provincial public service broadcasters or companies which, in addition to various portals, were publishing dailies or weeklies, or running also a TV station;
- 38% (95 respondents) worked in traditional media outlets that had at least one digital platform.⁷

The sample also covered a broad scope of different categories of journalists in terms of their primary professional responsibilities. The respondents said that they worked for various kinds of portals (general news, thematically specialized, investigative, educational/activist) or primarily in traditional outlets, such as dailies, weeklies, radio or TV stations.

⁷ The remaining 5% respondents either did not specify which kind of outlets they worked in (four respondents); were not working in media outlets (two were working in independent production companies and two were working in municipal information departments); or were working on a TV station (four respondents), but failed to specify whether their employers had digital platforms and, if they did, which ones, although these respondents have digital skills and use them on occasion.

Most of the respondents worked on TV stations (32%), in online-only media⁸ (25%), and on radio stations (15%). The fewest respondents (11%) worked in dailies, all of which (save one) were based in Belgrade, while 14% worked in weeklies, including Belgrade weeklies, as well as a number of local weeklies.

Sample: Kinds of Media

	No of Respondents	%
Online-only	62	24,8
TV station	80	32
Radio station	37	14,8
RTV station	2	0,8
Daily	27	10,8
Weekly	34	13,6
Other	4	1,6
No reply	4	1,6
	250	100%

As per their geographic distribution, most of the respondents (43%) worked in Belgrade-based media. The breakdown reflects the high concentration of various outlets in the nation's capital. Although the sample included journalists from diverse local communities, their regional distribution was uneven. The share of respondents working in Vojvodina media (27%) was nearly the same as the share of respondents (28%) working in media in all other four parts of Serbia (East, Central, West and South).

⁸ In addition to portals, this category also includes news agencies, as online-only media.

Sample: Media Headquarters

	No of Respondents	%
Belgrade	108	43,2
Vojvodina	67	26,8
Central Serbia	25	10
West Serbia	22	8,8
South Serbia	17	6,8
East Serbia	6	2,4
Other	5	2
	250	100%

Most (178 or 71%) of the respondents held traditional job titles: 41% were journalists (reporters, junior reporters, correspondents, hosts); 30% were editors (executive, column, show, complex project editors). In addition, 23 of the respondents were chief/ responsible editors (including deputy and assistant editors) and 10 were directors.

Among the new occupations, two of the respondents were digital marketing managers, discounting PR and corporate communications managers and project coordinators. The new technical/engineering position was that of graphic engineer.

Men accounted for most owners, directors, chief/responsible editors and respondents holding technical positions. Women accounted for most editors, managers, coordinators and journalists. The occupational gender gap reflects the inequalities in reality.

Sample: Job Titles

	No of Respondents	%	Men	%	Women	%
Owner	2	0,8	2	1,85	0	0
Director	10	4	6	5,56	4	2,82
Chief/Responsible/Deputy/Assistant Editor	23	9,2	12	11,11	11	7,75
Editor	75	30	30	27,78	45	31,69
Journalist	103	41,2	41	37,96	62	43,66
Show author/Complex project editor	8	3,2	5	4,63	3	2,11
Coordinator	4	1,6	0	0	4	2,82
Manager	7	2,8	1	0,93	6	4,22
Photo reporter	2	0,8	2	1,85	0	0
Caricaturist	1	0,4	1	0,93	0	0
Technician/Engineer	4	1,6	4	3,70	0	0
Other	7	2,8	2	1,85	5	3,52
No reply	4	1,6	2	1,85	2	1,41
	250	100	108	100	142	100

Most of the journalists who responded to the invitation to take part in the survey (68%) had stable employment – they were employed for an indefinite period of time. They were overrepresented in the sample compared with other types of employment statuses.

However, the sample also included journalists who have signed other kinds of employment contracts with the media: 12% were employed for a fixed period of time and 5% were working under service contracts. Unemployed and self-employed journalists, retired journalists, and journalists with temporary work contracts also took part in the survey, as did several independent consultants, independent artists and freelancers.

Sample – Types of Employment Contracts

	No of Respondents	%
Indefinite term employment	170	68
Fixed-term employment	29	11,6
Service contract	12	4,8
Unemployed	12	4,8
Pensioner	7	2,8
Self-employed	5	2
Temporary employment	5	2
Other	5	2
No reply	5	2
	250	100%

Despite the differences among the respondents in terms of the scope of their digital skills and knowledge and level of proficiency, journalists with generally positive attitudes towards the technological innovation of media prevailed in the sample. The title of the research apparently attracted primarily journalists, who did not have negative feelings when digital competences were mentioned or negative views about the journalists’ need to adapt to the new technological requirements at work. They felt sufficiently self-confident to testify, even anonymously, how they themselves accepted the new challenges the digital era has posed to their profession. Journalists holding opposite views were underrepresented in the sample.

Journalists in the Digital Environment

Although Serbia is lagging behind other European countries in various aspects of digital transformation and still has slower and more expensive Internet, journalists amply use digital technologies in their work. The number of online-only media has been growing constantly. There are barely any traditional outlets that do not have at least one digital channel, while the number of so-called integrated media, which combine several traditional and digital platforms, has been steadily increasing.

A quarter (25%) of the 250 respondents works in online-only media offering only digital content. Around 70% of the respondents work in hybrid media.

As per the dominant type of media content they produce, the respondents can be categorized in three groups that are more or less of the same size. The first group (36%) comprises journalists mostly dealing with traditional media content. The second group (33%) produces either only online content or more online than traditional content. The third group (28%) includes journalists equally creating traditional and digital content.

Nearly two-thirds (63%) of the respondents said that they produced digital media content frequently. Forty percent of them reported they created it on a daily basis.

Twelve (5%) of the 250 journalists do not create online content. Most of them produce traditional TV products. However, they also perform some tasks typically performed by web journalists – they post content on social media, search digital archives, analyze web statistics, and work with digital photographs or video content.

Half (50%) of the respondents qualified their digital competences as extremely important for the job they were doing. Only three of the 250 respondents said that most of their digital skills were totally irrelevant for their job.

The surveyed journalists felt competent in the new technological environment. They rated their overall digital skills and knowledge with a mean score of 4.

However, the overall picture of the journalists' professional competences and activities in the digital space is complex and, in some aspects, contradictory.

The respondents rated their journalistic skills in the area lying at the heart of their profession – digital content creation – more poorly than their overall digital competences – with a mean score of 3.

The journalists rated their video production skill – in the “golden era of video” as the current stage of media digitization is qualified – with a score under 3.

Although women account for most staff working in the media, their digital proficiency lags behind that of men. Judging by the mean scores, the female journalists' proficiency in eight digital skills is statistically substantially lower than that of male journalists.

Of the eight options for building the professional capacity of the media they are working in, two-thirds (64%) of the respondents gave priority to building the journalists' digital skills and knowledge. Only a third or even fewer respondents ticked the other options.

Measurement of Digital Competences

The research of the journalists' digital competences relied on the European Commission's concept of digital literacy, developed in the Digital Competence Framework for Citizens (DigComp).⁹ Its classification of domains (areas, dimensions) of digital literacy provided an adequate basis for covering a broad range of skills and knowledge used in the modern media industry.

Based on perusal of the relevant literature and conducted surveys of digital competences of media professionals,¹⁰ a set of 41 skills and knowledge relevant to the successful functioning of media in the digital environment was originally constructed for the purposes of this research.

The explored digital competences correspond to the five areas of digital literacy in the DigComp model: operating with information (i.e. information and data literacy), communication and collaboration, digital content creation; safety and (technical) problem solving.

⁹ The DigComp 2.0 was used in the research, <https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework>.

¹⁰ The International Center for Journalists: The State of Technology in Global Newsrooms, <https://www.icfj.org/sites/default/files/2018-04/ICFJTechSurveyFINAL.pdf>.

The respondents' proficiency was measured in two ways: quantitatively and qualitatively, in both cases indirectly, based on the respondents' self-assessments.

Thirty competences that can tentatively be considered technical skills were selected for quantitative assessment. Qualitative assessment was applied to 11 competences requiring some knowledge or understanding of the matter, prerequisite for applying the technical skills. The respondents self-rated the extent to which they had mastered each of the listed competences.

The scale for the quantitative assessment of the skills relied on the DigComp model, but used five rather than its eight proficiency levels. They were presented descriptively to the respondents as the following levels of proficiency: (1) I can't, (2) I can on my own, but with guidance, (3) I can on my own, but only simple, routine tasks, (4) I can on my own, even non-routine tasks, (5) I can on my own, even complex tasks and I can explain it to/help others.

The used five-point scale resembles grades given in Serbian schools (1 being the lowest and 5 being the highest), which the respondents are familiar with.

Most (17) of the 30 selected digital competences concerned digital content creation, given that it is the essence of journalistic work. The data and information literacy group comprised six digital competences, the communication and collaboration group comprised five digital skills, while the technology and problem solving group comprised two digital skills.

Quantitatively Measured Digital Competences

Operating with information (6)	Communication (5)	Digital content creation (17)	Technical problem-solving (2)
Web browsing, retrieval and organization of found information	Digital communication with others	Producing stories for multiple platforms	Adapting software and applications to own needs
		Multimedia content creation	
Critical evaluation of the reliability and validity of Internet sources and information	Posting content on social media	Use of mobile technology for reporting	Solving problems when technical devices or digital tools do not work
		Live reporting from a distant place on the move (mobile or "backpack" reporting)	

Operating with information (6)	Communication (5)	Digital content creation (17)	Technical problem-solving (2)
Database search	Engaging audiences on social media	Working with audio content	
		Working with video content	
Fact-checking and photo authentication	Monitoring audience engagement analytics	Working with digital photography	
		Working with graphics	
Cloud data storage	Using analytics and web statistics to drive the news agenda	Podcast production	
		Blogging	
Use of social media for research and fact-checking, and to find new ideas		Live video production	
		Working with a 360 camera	
		Search engine optimization (SEO)	
		CMS use -management and coding	
		Webpage creation	
		Data visualization (production of Infographics)	
		Real-time reporting by live-tweeting or blogging	

Qualitative assessment¹¹ was applied to competences primarily concerning the area of safety in the DigComp model, which includes the protection of devices, personal data and privacy, and health and the environment¹². The competence concerning copyright and licenses, which is part of the digital content creation area, and the competence concerning netiquette, which is treated as part of the communication area, were also included in this group. They sufficiently differ from the other competences in the DigComp model areas to justify their measurement in another way.

11 One of the major reasons for this methodological solution lay in the overly long list of digital skills in the test stage of the Questionnaire for Journalists, which was qualified as a factor deterring participation in the survey.

12 web-digcomp2.1.pdf_%28online%29.pdf.

Given that the primary research population comprised journalists as a specific professional group, the digital competences also included their familiarity with the changes digitization brought to the functioning of the media and their effects on the journalistic profession. Comprehension of these changes – the development of social media and their impact on public communication, disruption of the old media business models, new audience preferences concerning news and other media content – is an integral part of the journalists’ ability to do their jobs better.

The proficiency in competences in this group was measured through the scale of agreement (fully or mostly agree, mostly or fully disagree) with statements referring to the respondents’ knowledge (awareness, understanding) as well as their behavior. The respondents projected their knowledge and behaviors through the awareness and actions of their co-workers.

Qualitatively Measured Digital Competences

Communication (3)	Digital Content Creation (3)	Safety (5)
Netiquette	Copyright and licenses	Awareness of cyber threats
Understanding the importance and impact of social media	Familiarity with changes in online news content and style	Protection of digital devices from cyber threats
Familiarity with the changes in the behavior of the digital media audience	Understanding changes in media business models	Protection of business communication
		Personal data and privacy protection
		Health and environment protection

1. Quantitative Assessments of Digital Skill Proficiency

The surveyed journalists¹³ had good opinions of their digital competences. Before assessing each of them individually, they rated their overall digital skills and knowledge with a mean score of 4 (more precisely – 4.067).

¹³ The number of respondents who rated their competences varied from one question to another, ranging from 242 to 250.

The respondents' assessments of their individual skills were somewhat stricter - the average mean score for the 30 skills was below 3.5 (3.409).

A total of nine digital skills were rated with a mean score exceeding 4.

The journalists rated 10 competences with a mean score between 3 and 4 and another 10 competences with a mean score between 2 and 3. Only one skill – working with a 360 degree camera – had a mean score below 2.

According to the respondents' self-assessments, communication with others via e-mail, instant messaging applications (texting, Viber, WhatsApp, et al) and other digital formats (Skype, Zoom, et al) was the digital skill they were the most proficient in – it had a mean score of 4.8.

The second best rated skill was web browsing, retrieval and organization of found information, while the critical evaluation of the reliability and validity of Internet sources and information ranked third. Both skills were rated with a mean score above 4.5.

Most of the nine skills rated over 4 on average are the ones other Internet and cell phone users are proficient in as well. They include the digital skills many people, especially younger generations, have been using extremely frequently – and for a long time now – both for their personal and their professional needs.¹⁴

The first two digital skills of relevance to specific activities at the core of journalism – digital content creation – producing stories for multiple platforms and use of mobile technology for reporting - rank only 7th and 8th on the list of the most developed skills.

The table below shows the levels of proficiency in digital skills based on the respondents' mean scores. The digital skills are listed on backgrounds in different colors denoting the groups they belong to in the DigComp model: yellow – operating with information (data and information literacy) competences; green – communication and collaboration competences; orange – digital content creation; and grey – (technical) problem-solving.

¹⁴ <http://www.cesid.rs/wp-content/uploads/2020/09/Gra%C4%91ani-i-mediji-konzumacija-navike-i-medijska-pismenost-I-ciklus.pdf>.

Scale of Proficiency in Digital Skills

	Digital Competence	Mean Score
1.	Digital communication with others	4,795
2.	Web browsing, retrieval and organization of found information	4,711
3.	Critical evaluation of the reliability and validity of Internet sources and information	4,510
4.	Use of social media for research and fact-checking, and to find new ideas	4,407
5.	Database search	4,279
6.	Posting content on social media	4,225
7.	Producing stories for multiple platforms	4,133
8.	Use of mobile technology for reporting	4,060
9.	Cloud data storage	4,021
10.	Fact-checking and photo authentication	3,883
11.	Engaging audiences on social media	3,724
12.	Working with digital photography (taking and editing photographs, collage making)	3,492
13.	Real-time reporting by live-tweeting or blogging	3,415
14.	Live video production	3,393
15.	CMS use -management and coding	3,389
16.	Working with audio content (recording, editing)	3,349
17.	Live reporting from a distant place (mobile or “backpack“ reporting)	3,329
18.	Search engine optimization	3,186
19.	Multimedia content creation	3,184
20.	Working with video content (recording, editing)	2,908
21.	Monitoring audience engagement analytics	2,890
22.	Working with graphics	2,833
23.	Using analytics and web statistics to drive the news agenda	2,813
24.	Blogging	2,734
25.	Data visualization (production of infographics)	2,624
26.	Solving problems when technical devices or digital tools do not work	2,614
27.	Adapting software and applications to own needs	2,557

	Digital Competence	Mean Score
28.	Webpage creation	2,508
29.	Podcast production	2,316
30.	Working with a 360 degree camera	1,988

Journalists are the most proficient in competences falling in the area of operating with information. The average mean score for the six skills in this area stands at 4.302.

Search for and evaluation and critical analysis of information, and its organization, are an essential element of the craft of journalism, regardless of the format of the information and the type of outlet the journalists are working in. Most journalists adjusted their routine information-related tasks to the digital changes, wherefore they feel comfortable in dealing with information both on the Internet, on cloud and in databases, and on social media. Five of six skills in this area received a mean score over 4.

All six digital skills related to operating with information made the list of the 10 best developed digital skills. The skill of searching, retrieving and organizing information found online was rated the best (4.711). It was followed by critical evaluation of the reliability and validity of the sources and content of the information (4.510).

Although rated relatively well (3.883), the skill of fact-checking in combination with photo authentication fared the worst in this group. Lower proficiency in this competence is at odds with its importance, which has been surging over the past years due to the expansion of the phenomenon of fake news. Major world media have endeavored to strengthen their credibility by relying on well-developed fact-checking procedures, wherefore a multitude of data verification tools have been developed. Their use remains a strong prerogative of journalists, although specialized organizations are being set up across the world to check the authenticity of information and suppress fake news. Domestic media do not pay enough attention to the development of this journalistic competence.

Thirty-six out of 250 (14%) respondents reported that they were incompetent for fact-checking (rating themselves with a 1 or a 2). Their common features are difficult to discern, except that an above average number of them create traditional media products broadcast on TV rather than online content.

Digital Skills Proficiency: Operating with Information (Data and Information Literacy)

	Mean Score
Web browsing, retrieval and organization of found information	4,711
Critical evaluation of the reliability and validity of Internet sources and information	4,510
Use of social media for research and fact-checking, and to find new ideas	4,407
Database search	4,279
Cloud data storage	4,021
Fact-checking and photo authentication	3,883

The communication area is also closely associated with the everyday work of journalists, irrespective of the kind of product they create. The surveyed journalists feel the most self-confident in one competence in this group – digital communication with others. Out of 250 respondents, 209 rated their own ability to communicate digitally as excellent, wherefore this skill had the highest mean score of all 30 researched skills – 4.795.

The journalists highly rated their ability to post content on social media as well, which ranked sixth on the proficiency scale. However, the group of competences in this field was on average rated more poorly than the group of information literacy skills. The mean scores averaged 3.689.

Poor proficiency in two competences related to audience engagement statistics and analytics contributed to the lower ranking of this group of competences. The first competence concerns monitoring audience engagement analytics and the second regards using analytics and web statistics to drive the news agenda. Both skills had a mean score below 3.

These two competences are increasingly used in the media and positioning themselves as a new field of professional expertise. Larger media are in the process of professionalizing these skills in the job of analytic editor.

Poor proficiency in the first competence (where use of Google analytics was listed as an example) was reported by 101 (40%) of the respondents, while poor proficiency in the second competence was reported by 107 (43%) of the respondents. Women predominated among them. Most of them were TV and radio journalists, because data on the traditional offline audience and its engagement are more important for them than data on the online audience.

Digital Skills Proficiency: Communication and Collaboration

	Mean Score
Digital communication with others	4,795
Posting content on social media	4,225
Engaging audiences on social media	3,724
Monitoring audience engagement analytics (e.g. Google analytics)	2,890
Using analytics and web statistics to drive the news agenda	2,813

Most of the explored digital competences (17) fall in the area of digital content creation. The competences in this area are extremely diverse and many of them concern specific types of media products, such as digital photography, infographics, podcasts, et al, or skills, such as webpage creation, working with graphics, working with a 360 degree camera, et al, the professionalization of which is under way or has been completed to the extent that they are considered elements of other occupations. This diversity and irrelevance for many journalists has probably contributed to the lower average score of this group of competences (3.087).

Producing stories for multiple platforms, and use of mobile technology for reporting were rated the best – their average scores exceeded 4.

Skills used by a small number of journalists were rated the most poorly. They included working with a 360 degree camera (which ranked the lowest of all 30 skills), as well as production of podcasts, blogs, webpages and infographics. The latter, lowest-ranking skills, were rated with a mean score between 2 and 3.

Most skills in this group were rated between 3 and 3.5. Multimedia content creation was rated poorly (3.184), which came as a surprise given that digital content is increasingly a combination of different forms. Ninety out of 250 (36%) respondents rated their proficiency in this competence with a 1 or a 2. They include a wide variety of journalists, including those working in online-only media.

The low rating of the multimedia content creation competence may be associated with the respondents’ low ratings of their video production skill, where the mean score was below 3 (2.908), while media and audience demand for video content in integrated media is on the rise.

As many as 111 (44%) respondents rated their video production skills with a 1 or 2. That was the case of many more female than male, and a greater number of older than younger journalists. Low profi-

ciency in video production was registered among journalists working in all kinds of media outlets – online, TV, press and the radio.

Digital Skills Proficiency: Digital Content Production

	Mean Score
Producing stories for multiple platforms	4,133
Use of mobile technology for reporting	4,060
Real-time reporting by live-tweeting or blogging	3,415
Live video production	3,393
Live reporting from a distant place (mobile or “backpack“ reporting)	3,329
Digital photography ((taking and editing photographs, collage making)	3,492
CMS use -management and coding	3,389
Audio production (recording, editing)	3,349
Search engine optimization	3,186
Multimedia content creation	3,184
Video production (recording, editing)	2,908
Working with graphics	2,833
Blogging	2,734
Data visualization (production of infographics)	2,624
Webpage creation	2,508
Podcast production	2,316
Working with a 360 degree camera	1,988

The group of competences required for problem solving was rated the most poorly. Only two competences concerning technical problem-solving were singled out in this research – troubleshooting (solving problems when technical devices or digital tools do not work) and adapting software and applications to own needs. In both cases, the mean score was slightly higher than 2.5, indicating that

journalists are mostly unwilling to engage in addressing these technical problems themselves and usually leave their resolution to others.

Digital Skills Proficiency: (Technological) Problem-Solving

	Median Mean Score
Adapting software and applications to own needs	2,557
Solving problems when technical devices or digital tools do not work	2,614

Gender Differences in Digital Proficiency

Surveys of gender differences in self-assessments of proficiency in digital competences often differ in the main conclusion: some claim that they exist and that that they are large, while others claim that they are non-existent or minor.

Previous studies suggested that the higher level of use of a variety of websites by men increased their knowledge of the web, which in turn caused them to use this new technology more often than women. The gender gap was explained by the women's generally lesser competences both in ICTs, and in access and use of the Internet. Subsequent studies ascertained that the actual differences were small, i.e. that women were more proficient in some and men in other competences, but that the conclusions of these studies were problematic primarily because women's self-rated ability is significantly lower than that of men.¹⁵

A domestic pioneer study in this area, conducted in 2017,¹⁶ which used the early definition of digital competences divided into four areas,¹⁷ copying the EUROSTAT model, concluded that 53% of working men and 37% of working women in Serbia had basic and above basic digital skills.¹⁸

15 Mario Grande-de-Prado, Ruth Cañón, Sheila García-Martín and Isabel Cantón, Digital Competence and Gender: Teachers in Training. A Case Study, *Future Internet* 2020, 12, 204; doi:10.3390/fi12110204.

16 Aleksandra Bradić-Martinović and Jelena Banović. "Assessment of Digital Skills in Serbia with Focus on Gender Gap." *Journal of Women's Entrepreneurship and Education*, 2018, No. 1-2, pp. 54-67, <http://ebooks.iien.bg.ac.rs/1209/1/bradicmartinovic%2C%20banovic.pdf>.

17 Digital skills included information skills, communication skills, problem solving skills and software skills for content manipulation.

18 Low or no digital skills were reported by 47% men and 63% women.

The differences between women and men who took part in the online Digital Competences of Journalists survey manifested themselves in their self-assessments of all 30 digital skills.

Comparison of the mean scores demonstrates that men rated their competences better than women in 24 digital skills, while women’s self-ratings were better than the men’s in six skills.

Given that differences in mean (average) scores may be a reflection of extremely diverse variations within the two groups, the Student’s t-test was performed to arrive at valid results, that is, to establish statistically important differences between the score averages for male and female journalists.

The test result is the p value, the quotient of the difference between the mean scores for women and men and variations within the two groups calculated on the basis of the standard deviation value. According to standard practice, the limit of statistical value is a p value of 0.05, i.e. p values under 0.05 were statistically important. In those cases, the two groups (men and women) differ more amongst themselves by the mean scores than the members of the same group differ amongst themselves.

Mean Scores and Standard Deviations by Gender

	Mean Score Men	Mean Score Women	Difference between Mean Scores	Standard Deviation Difference	T-test Value (p)
Adapting software and applications to own needs	2,935	2,266	0,668	0,154	0,000
Podcast production	2,619	2,086	0,533	0,037	0,004
Solving problems when technical devices or digital tools do not work	2,888	2,403	0,485	0,197	0,005
Data visualization (production of infographics)	2,876	2,436	0,440	0,009	0,013
Video production (recording, editing)	3,150	2,725	0,424	0,094	0,024
Multimedia content creation	3,417	3,007	0,410	0,165	0,026
Monitoring audience engagement analytics	3,121	2,712	0,409	0,088	0,027
Working with a 360 camera	2,219	1,816	0,403	0,284	0,011
Webpage creation	2,710	2,355	0,356	0,068	0,055
Blogging	2,933	2,586	0,347	0,135	0,069

	Mean Score Men	Mean Score Women	Difference between Mean Scores	Standard Deviation Difference	T-test Value (p)
Live reporting from a distant place (mobile or “backpack“ reporting)	3,524	3,184	0,339	0,079	0,062
Using analytics and web statistics to drive the news agenda	2,991	2,679	0,312	0,019	0,089
Working with graphics	2,972	2,727	0,245	0,005	0,168
Digital photography (taking and editing photographs, collage making)	3,626	3,388	0,238	0,032	0,164
Use of social media in research, to find new ideas and for fact-checking	4,292	4,493	0,200	0,058	0,058
Audio production (recording, editing)	3,458	3,268	0,190	0,015	0,339
Cloud data storage	4,124	3,942	0,182	0,061	0,230
Search engine optimization	3,283	3,113	0,170	0,079	0,353
CMS use -management and coding	3,477	3,321	0,155	0,073	0,420
Database search	4,206	4,336	0,130	0,154	0,275
Real-time reporting by live-tweeting or blogging	3,481	3,364	0,117	0,132	0,497
Use of mobile technology for reporting	4,120	4,014	0,106	0,157	0,441
Producing stories for multiple platforms	4,074	4,177	0,103	0,079	0,395
Live video production	3,433	3,364	0,068	0,021	0,706
Critical evaluation of the credibility of Internet sources and validity of information	4,542	4,486	0,056	0,111	0,530
Digital communication with others	4,778	4,809	0,031	0,021	0,639
Fact-checking and photo authentication	3,897	3,872	0,025	0,010	0,867
Engaging audiences on social media	3,736	3,714	0,022	0,135	0,894

	Mean Score Men	Mean Score Women	Difference between Mean Scores	Standard Deviation Difference	T-test Value (p)
Web browsing, retrieval and organization of found information	4,704	4,716	0,013	0,051	0,865
Posting content on social media	4,224	4,225	0,001	0,053	0,994

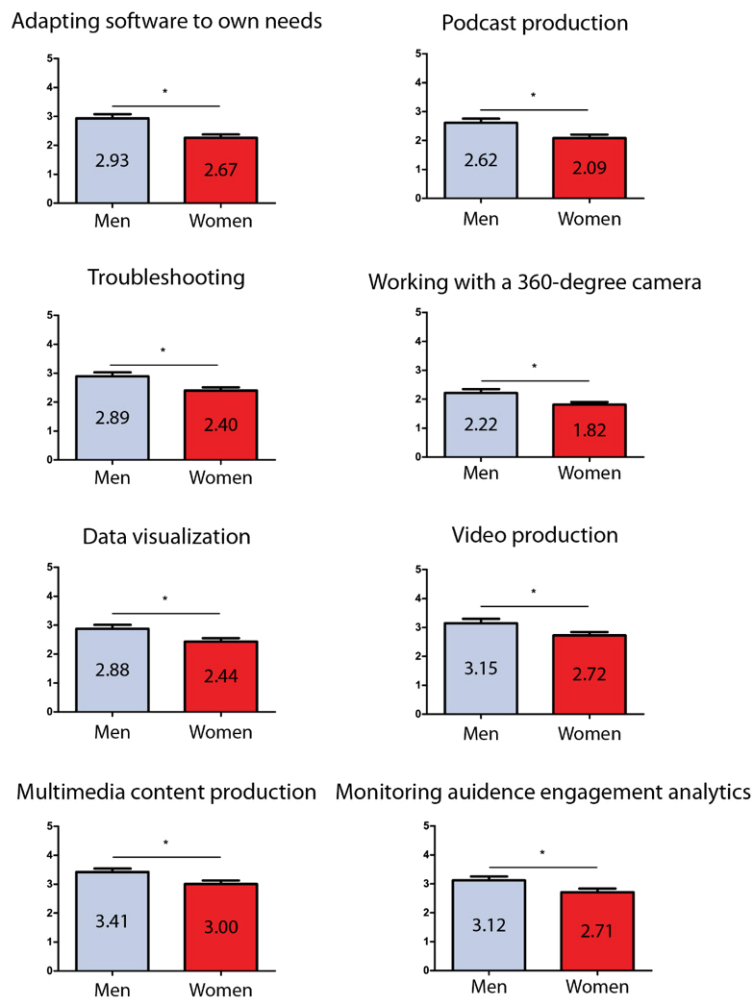
Statistical calculations showed a substantial difference in the female and male journalists' proficiency in eight digital skills.

Herewith their order based on statistical importance values: adapting software to own needs, podcast production, troubleshooting, working with a 360 camera, data visualization, video production, multimedia content creation, and monitoring audience engagement analytics.

The greatest gender differences were found in digital skills which both male and female journalists qualified as relatively weak. Most of them belonged to the group of skills at the bottom of the proficiency list, ranking from 19th to 30th (19, 20, 21, 25, 26, 27, 29 and 30). Their mean scores ranged mostly between 2 and 3 (the mean score was higher than 3 in only one case and, in one case, it was lower than 2)

Therefore, women journalists were the least proficient in digital competences male journalists were less proficient in as well.

The six skills where women rated themselves better than men belonged to the group of the most developed skills, including the two skills where the average scores exceeded 4. They included: use of social media in research, database search, producing stories for different platforms, digital communication with others, web browsing and posting content on social media. In all of them, the differences in the average scores (to the women's advantage) was not a big one, e.g. 0.001 for the skill of posting content on social media.



Individual Personal Competences

The greatest share of respondents – 43% – rated their overall competences with a mean score between 3 and 4.

A quarter (25%) thought that they were better than that, while another quarter (27%) thought that their personal skills were worse.

Four of the 250 surveyed journalists rated their overall digital skills with the highest score – 5. They do not have much in common; rather, they appear to reflect the diversity of the media scene in Serbia. Two of the journalists are men and two are women. Two are in their mid-thirties, two in their early fifties. The younger male journalist has a degree in natural or technical sciences and the younger female journalist has a master’s degree in humanities. The older male journalist has higher

education and the older female journalist has a university degree in journalism. Both of the younger respondents are editors, while the two older respondents are journalists. The older respondents work as journalists in online media. The two younger respondents work as editors in TV and radio outlets and equally create online and traditional media products.

Fourteen respondents, four of them men and 10 of them women, rated their digital skills with the lowest grades – mean scores between 1 and 2. They belong to the older age group. Most of them work on TV stations, in large outlets with around 100 or more employees, in Belgrade and Novi Sad. They mostly produce traditional content (although two of them work in online media).

The analysis of all the individual mean scores of the respondents shows that there is a high correlation between their ratings of their personal competences and their sex and age, indicating the existence of a gender and a generation gap in the journalists’ proficiency in digital competences.

Women generally rated their personal competences more poorly than men.

Thirty-nine percent of the women and 24% of the men rated their competences with a mean score below 3, while 76% of the men and 61% of the women rated their competences with scores higher than 3.

Personal Competence Ratings by the Sex of the Respondents (in %)

Mean Score	All Respondents	Men	Women
1-2	5,6	3,70	7,04
2-3	26,8	20,37	31,69
3-4	42,8	50	37,33
4-5	24,8	25,93	23,94

The lower scores are also in correlation with the journalists’ age. Younger respondents rated their digital competences higher than the older ones. The older the respondents, the lower their ratings of their personal competences, indicating the existence of a generation gap.

In 93% of the cases, journalists under 25 rated their digital skills with scores over 3. That was also the case of 74% respondents in the 26-35 age group, 70% of respondents in the 36-45 age group, 64% of the respondents in the 46-55 age group, and 54% of the respondents in the 56-65 age group.

Ratings of Personal Competences by the Age of the Respondents (in %)

Mean Score	All	< 25	25-35	36-45	46-55	56-65	65+
1-2	5,6	7,14	1,89	3,13	9,72	2,70	20
2-3	26,8	0	24,53	26,56	26,39	43,24	20
3-4	42,8	50	39,62	43,75	45,83	37,84	40
4-5	24,8	42,86	33,96	26,56	18,06	16,22	20

Most respondents, irrespective of whether the media they work for are based in Belgrade, Vojvodina or other parts of Serbia, assessed their digital skills as relatively well-developed, with mean scores ranging between 3 and 4. Respondents working in local outlets feel as competent as their colleagues in Belgrade and Vojvodina, if not even more competent, because only a rare few gave themselves the lowest scores and they accounted for most of the respondents who rated themselves with a score between 3 and 4.

Of the local journalists, the ones in South Serbia who took part in the survey had the best opinion of themselves – they never rated their competences with any score below a 3.

Ratings of Personal Competences by the Respondents' Geographic Location (in %)

Mean Score	Belgrade	Vojvodina	Other Regions
1-2	8,33	4,48	2,86
2-3	31,48	28,36	20
3-4	38,89	38,80	50
4-5	21,30	28,36	27,14

2. Qualitative Assessments of Proficiency in Digital Competences

The research explored a total of 11 competences requiring some digital knowledge and understanding relevant to the craft of journalism rather than of technical skills. Of the areas in the DigComp model, it included safety competences, as well as some other competences in areas in which most competences were assessed quantitatively.

In the field of cybersecurity, the surveyed journalists highly rated their own and their colleagues' competences in the explored areas. At least half of the respondents reported that they had the requisite knowledge about the individual aspects of safety – the number of those who thought so went up to 70 and 80 percent.

The more general and important the competence, i.e. the less it is related to the nature of the journalistic profession, the higher the respondents' ratings of their cybersecurity competences. Although the sources of such knowledge were not explored, it is apparently part of the respondents' general personal knowledge rather than their professional knowledge.

The opinion that journalists are highly familiar with the links between digital technologies and personal health and the environment is also widespread: 74% of them claimed that they and their colleagues were (fully or mostly) aware of the impact the use of such technologies had on the environment and their personal health; 14% of the respondents disagreed with this statement.

Many surveyed journalists (72%) also believe that they are capable of protecting their own and other people's personal data and privacy on the Internet; 16% disagree.

However a much lesser share of respondents - 60% - claim that journalists are capable of taking the requisite measures when the security of their digital device is under threat. The number of respondents fully agreeing with this statement (26%) is smaller than the number of those who mostly agree with it (34%), which is not the case with the above-mentioned aspects of cybersecurity. The share of respondents who disagree with the statement is substantial as well (18%).

Similar results were obtained with respect to the protection of business communication. As opposed to 80% of the respondents, who claim that journalists use protection of digital devices and content, only 57% say they know how to use tools for protecting business communication, a type of digital content also requiring protection against security risks. A quarter (26%) of the respondents think that this statement is totally or mostly inapplicable to journalists in their newsrooms.

Proficiency in Digital Competences: Safety (in %)

	Fully agree	Mostly agree	Mostly disagree	Fully disagree	Don't know/No reply
We are aware of the impact digital technologies and their use have on the environment and our personal health	63,60	26,40	11,60	2,80	11,60
We protect our own and other people's personal data and privacy on the Internet	43,20	28,80	12,40	3,60	12,00
We are aware of Internet security risks and use tools to protect digital devices and content	53,20	26,40	7,60	2,40	10,40
We are capable of taking the requisite measures when the security of a digital device is at risk	26,40	33,60	15,20	7,20	17,60
We know how to use tools for protecting business communication	23,20	34,00	16,00	10,00	16,80

The respondents' answers indicate that they are aware of the changes in the digital environment in which the media are operating: 73% of them agree that journalists understand changes in media business models and the changes in audience behavior in the digital world. However, the share of those who fully agree with this statement does not prevail (29% understand the changes in audience behavior). Although these beliefs are widespread, they are apparently not firmly established – 15% or 16% of the respondents disagree with them.

Agreement with the statement that journalists are familiar with the changes in online news content and style brought on by digital technologies is widespread (75%) albeit relatively tepid – fewer than 30% of the respondents fully agree with it.

The most firmly established and quite widespread opinion is that journalists understand the importance of social media and their impact on their job: 83% of the respondents agree with this statement, 50% of them fully.

Proficiency in Digital Competences: Other Areas (in %)

	Fully agree	Mostly agree	Mostly disagree	Fully disagree	Don't know/No reply
We understand changes in media business models in the digital era	37,60	35,60	12,00	4,00	10,80
We are familiar with the changes in media audience behavior in the digital environment	29,20	44,00	9,60	5,60	11,60
We are familiar with the changes in online news content and style brought on by digital technologies	29,60	45,20	8,00	6,00	11,20
We understand the importance of social media and their impact on our job	50,40	32,00	5,60	2,00	10,00
We respect copyright and licenses when using existing content	63,60	20,40	4,00	2,40	9,60
We comply with netiquette	54,00	27,20	3,60	4,00	11,20

The respondents positively rated their own and their colleagues' knowledge enabling them to respect copyright and licenses when using existing content (e.g. picking up other outlets' texts or using someone else's photographs). As many as 84% of the respondents said that their newsrooms fully or mostly respected these rules; 6% disagreed.

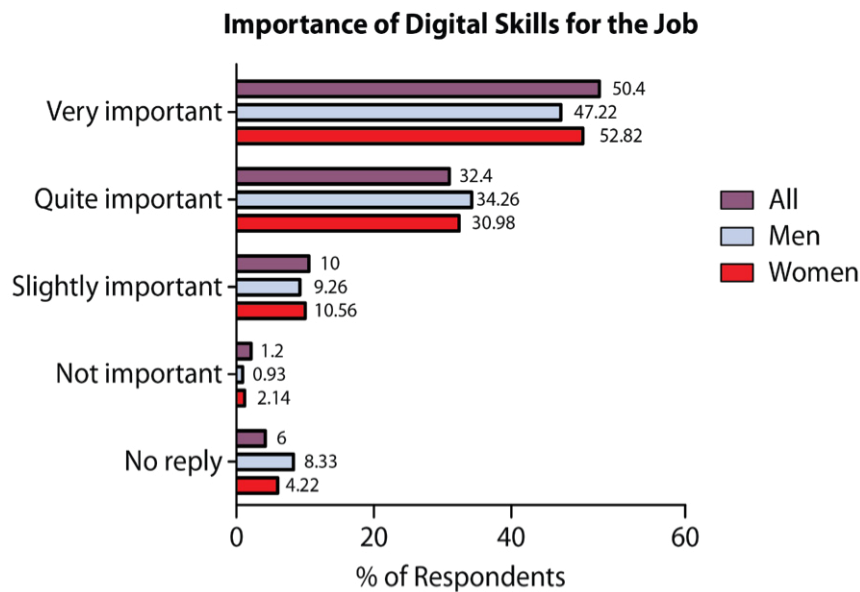
Similarly, 81% of the respondents said that their newsrooms complied with netiquette; 8% disagreed.

Importance of Digital Skills for the Job

Exactly one half of the respondents - 50% - think that their digital competences are extremely important for the job they are doing. This view is shared by more female than male journalists (53% v. 47%).

One-third of the respondents – 32% – consider them quite important. More male than female journalists think so (34% v. 31%).

Ten percent of the respondents do not attach much importance to digital skills. Of them, 76% create mostly traditional content and 16% create traditional and online content equally. They work in various kinds of traditional outlets (daily and periodic press, TV, radio), and outside the media (an independent production company, a municipal information department). These respondents are 46.4 years old on average and the number of women and men is even.



A total of 3 out of 250 surveyed journalists said that most of their digital competences were not in the least important for their current jobs.

The first is a retired journalist freelancing for a portal based in a neighboring country, the second is a 31-year-old female journalist writing mostly about tourism in a daily, and the third is a 40-year-old female journalist working on a TV station that runs social media profiles but not a website. The retired journalist rated his digital skills with a mean score of 4.7, while the female journalists rated theirs with mean scores of 3.8 and 3.4.

Use of Digital Skills

Although they say that they possess numerous digital skills and rate them as good or very good, and report that they create digital content relatively frequently, journalists use a small number of their digital skills in their work.

Most journalists use only three of the 14 researched skills: fact checking (76%), posting content on social media (50%) and producing stories for multiple platforms (50%).

These three skills are among the 10 the respondents are the most proficient in, judging by the mean scores of all respondents. While only 4% of the respondents rarely or never do any fact-checking, the shares of journalists rarely using the latter two skills stand at 21% and 24% respectively.

Around 40% of the journalists frequently use two other digital skills: digital photography and use of digital archives. The number of regular users of the other skills is lower – one out of three, out of four, out of five, and even less. The number of non-users – journalists who use a skill rarely or not at all – rises to 40% and 50% and even higher.

Use of multimedia reporting, one of the basic advantages of digital technologies, provides important insight in how well journalists and the outlets they are working in have adapted to the digital environment. This skill is applied frequently by 34% of the respondents (13% of them on a daily basis) and rarely by 34% (never by 16%). Out of every 10 respondents, 3.5 are regular users, 3.5 are non-users and two (24%) use it occasionally (no information was available about the tenth). In the total score, the number of users is nevertheless greater than the number of non-users.

In five out of the 14 digital skills, the number of journalists using them rarely or not at all exceeds the number of those using them frequently and occasionally.

This discrepancy is the greatest in working with graphics (36% regular and occasional users v. 56% non-users) and production of infographics, a form of the more general data visualization skill (41% users v. 52% non-users). This comes as no surprise as graphics-related tasks are professionalized in other professions, not journalism.

The discrepancy is also prominent with respect to the video production skill, which is increasingly becoming part of journalistic expertise (42% users v. 51% non-users).

These three skills are among the 10 skills at the bottom of the proficiency scale – their mean scores were below 3.

Non-users exceed the number of users of the mobile reporting skill (44% users v. 48% non-users) while the smallest difference is registered between the number of CMS users and non-users (less than 1%).

Use of Digital Skills (in %)

	Daily/ Frequently	Occasionally	Seldom/ Never	No reply
Fact-checking	75,60	13,20	4,00	7,20
Posting on social media	50,40	22	20,80	6,80
Producing stories for multiple platforms	50,40	17,60	24,40	7,60
Working with digital photography	42,00	17,60	33,20	7,20
Use of digital archives	39,60	26,40	24,80	9,20
Multimedia reporting	34,40	24,00	34,40	7,20
Audio production	33,60	17,20	42,40	6,80
Use of web statistics	29,20	24,00	40,00	6,80
CMS use - management and coding	28,00	18,00	46,40	7,60
Video production	28,80	13,20	51,20	6,80
Audience engagement	26,00	26,40	40,00	7,60
Production of infographics	22,40	18,80	52,00	6,80
Working with graphics	20,40	15,20	56,00	8,40
Mobile reporting	16,00	28,40	48,40	7,20

Training in Digital Competences

The respondents expressed major interest in improving their digital competences through professional, organized training. They provided 481 answers to the question asking them which three skills they lacked the most and would like to improve through professional training. Only two respondents showed lack of interest in professional development. “I don’t care about any of them,” said the retired respondent freelancing for a Belgrade-based radio station, while the other, a 34-year-old journalist working for a national news portal said: “I don’t think I need too many skills”.

The survey results show a major discrepancy between the respondents’ interests and possibilities of achieving them.

The journalists’ current digital skill proficiency levels are generally more the result of the journalists’ personal initiative and independent efforts or informal activities than of organized practices of the media they work in or other external actors.

According to the respondents’ testimonies, extrinsic motivation for upskilling barely exists. Due to lack of funding, some media do not have modern equipment, others are so direly understaffed that the journalists working in them have no time for training, while some media are doing nothing to enable their staff to attend organized training.

Fewer than half of the surveyed journalists (45%) had the opportunity to attend any professional training on digital journalism.

Nevertheless, a quarter of the respondents (24%) think that nothing is preventing them from improving their digital skills and knowledge.

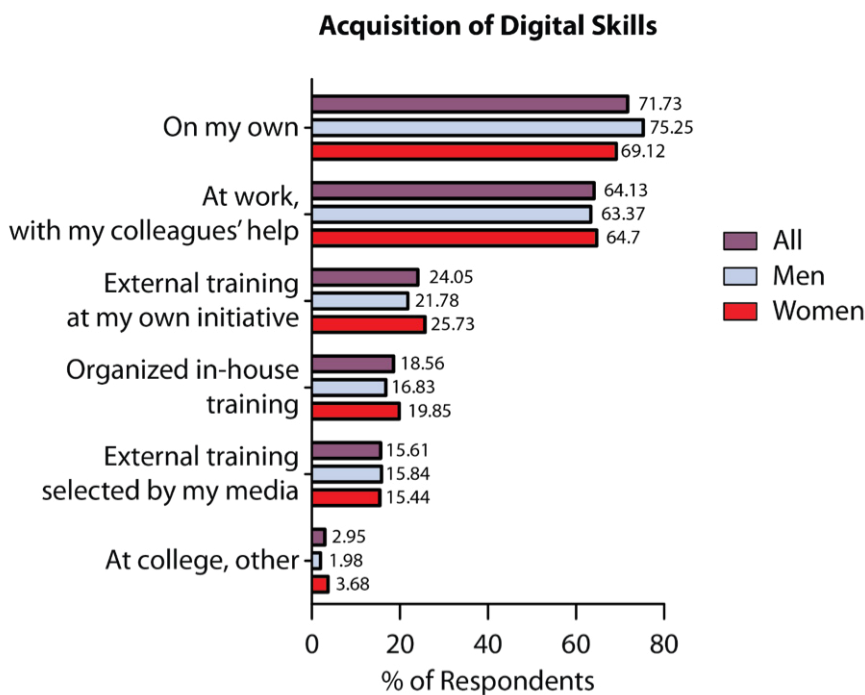
Acquisition of Digital Competences

The journalists acquired their digital skills and knowledge in various ways and at various places.¹⁹

Most of them, nearly three quarters - 72% - acquired new skills and knowledge on their own, through personal initiative and effort.

The second most frequent way the journalists acquired new competences is also individual and informal– at work, with the (voluntary, collegiate) help of their co-workers. This answer was ticked by nearly two-thirds of the respondents – 64% of them.

Digital competences were acquired through organized group training to a lesser extent. Less than half of the respondents – 45% of them – attended some form of professional training in this area, some of them several kinds.



Most journalists – 24% of them – attended external training at their own initiative.

¹⁹ This was a multiple-answer question. The data regard the multiple answers of 237 respondents; 13 respondents did not tick any of the answers.

Around 18% attended group training organized by the media they are working for. Media practice of sending their employees to external training is the least widespread – 16% of the respondents had such an experience.

Around 3% of the respondents acquired specific skills in college, which indicates the low importance of educational institutions in equipping the students with practical skills and knowledge. Only one of the respondents, who had acquired digital skills in college, was under 30 years old (he attended a journalism college). The other three are older and had attended an art academy (TV editing) or a technical college.

There are no drastic gender differences in the way the journalists acquired digital skills.

There are no gender differences with respect to on the job training or external group training.

More women than men (20% v. 17%) attended training organized by the media they work for.

The most visible difference was identified in self-initiated upskilling. More male than female journalists (75% v. 69%) invested personal efforts in acquiring new skills and knowledge.

More women than men (26% v. 22%) attended external group trainings at their own initiative.

Missing Digital Skills and Knowledge

After they quantitatively and qualitatively rated their own digital skills and knowledge, the respondents were asked to list the three competences they themselves lacked the most and would like to improve through professional training.

The respondents gave 481 answers about the missing competences that were quantitatively rated. Two skills can be singled out since they were mentioned by over 30% of the respondents. Another three skills were mentioned by at least 10% of the respondents. Fewer than 25 of the 250 respondents considered all the other skills as important.

Two of the five skills the respondents would prefer to develop go beyond the traditional role of journalists as media content creators: web design and management of a portal or Internet radio (Internet TV was also mentioned).

Nearly 100 of the 250 (39%) respondents wanted to acquire or improve their web design skills and knowledge. Some respondents elaborated by explaining that they wanted to learn “website creation”, “work on the website”, “website forming” “website editing”, “webpage creation” and “webpage management”. Due to their use of all these terms, it is unclear whether they perceive web design as a programming-technical job of website creation, layout and graphic design, website content creation and editing, or a combination of these tasks. Performance of a combination of these tasks is not commonplace in developed online media but it is in small, new media in Serbia, the number of which has soared over the past few years and where one individual has to perform a number of tasks.

Web design was not offered on the list of digital competences in the Questionnaire for Journalists. The respondents were offered webpage creation, which rated among the three (of the 30) skills journalists were the least proficient in (mean score of 2.508), just ahead of podcast production and working with a 360 degree camera. The respondents’ selection of web design as the competence they were most keen on developing confirmed their massive lack of skills and knowledge concerning website and webpage design and editing. Not only that: the respondents demonstrated not only their belief in the growing importance of websites as digital platforms, but also their preference for another, different professional future.

The desire to develop web design skills was much more present among journalists in hybrid than in online-only media (43% v. 27%).

In addition to web design, the respondents expressed the greatest desire to improve their video production skills (32%). Whereas their desire to master web design was unexpected, their wish to improve their video production skill came as no surprise, in light of the fact that this stage of development of the digital world of communication is called the golden age of video. The respondents rated their current proficiency in this skill quite poorly: it ranked 20th on the list of 30 skills, with a mean score below 3.

Skills Respondents Want to Improve

	No of Respondents	%
Web design	98	39,2
Video production	80	32
Portal, Internet radio or Internet TV management	30	12
Podcast production	27	10,8

	No of Respondents	%
Audio production	25	10
Working with graphics and animation programs	23	9,2
Monitoring and understanding web statistics and analytics	21	8,4
SEO	20	8
Social media management	20	8
Working with digital photography	18	7,2
Camera work	15	6%
Data visualization (production of infographics)	15	6
Multimedia content production	14	5,6
Adapting software and applications to own needs, programing	12	4,8
Mobile journalism (MoJo) and backpack reporting	9	3,6
Fact-checking	8	3,2
Blogging, vlogging	8	3,2
Livestream	6	2,4
Database use	3	1,2
Audience engagement	3	1,2

Portal, Internet radio and Internet TV management and podcast production were the next two skills the greatest number of respondents (12 and 11 percent respectively) wanted to improve.

The respondents' major interest in podcast production and Internet radio management may be associated with the current situation non-digital radio is facing, i.e. the expected advantages podcasts and Internet radio will have when that digitization occurs. At the same time, their interest may be interpreted as their hope for a new future journalistic role combining journalistic and technological or managerial skills and knowledge, similarly as in the case of web design.

Although working with video materials often includes audio production, a substantial number of respondents (10%) is interested in improving their audio production skill (their number exceeds, e.g., the number of those interested in improving their digital photography skill – 7%).

Comprehension of web analytics, SEO and social media management are also areas in which (slightly more female than male and a greater number of younger than older) respondents would like to be trained. Interest in developing these competences, alongside video production, can be explained by the fact that most of the new occupations opening in online media are associated with the creation, editing and montage of video content, social media and search engine optimization.

Analogously with web design, a quantitatively assessed competence listed by a surprisingly large number of respondents - digital marketing - stood out among the qualitatively assessed competences the respondents want to develop. It was listed by 95 (38%) of them.

Half of them (50 out of 98) also singled out web design as the skill they wanted to improve. Given that neither web design nor digital marketing are part of traditional journalistic tasks, these preferences should be taken as indicators either of the respondents' desire to abandon journalism and move on to a new occupation, which is more creative, lucrative, respected or easier, or to move on to a new profession in which they will combine their journalistic and complex technological or marketing knowledge.

The next largest share of respondents – 28% of them – listed cybersecurity as a competence they did not have. Some of them underlined that, for them, cybersecurity denoted various aspects of safety they faced in their work. Several respondents showed particular interest in individual aspects of safety, specifically in protection of business communication (5%) and in increasing their knowledge of the impact of digital technologies on health and the environment (4%).

As per their knowledge of structural changes in the media sphere, a substantial number of respondents (18%) expressed the wish to improve only their knowledge of changes in audience behavior and preferences.

Protection of privacy and familiarity with copyright and licenses sparked the interest of only 6% of the respondents, while netiquette was listed by a mere 3% of the respondents.

Knowledge Respondents Want to Improve

	No of Respondents	%
Digital marketing	95	38
Cybersecurity	69	27,6
Audience – preferences and behavior	45	18%
Privacy protection	15	6
Copyright and licenses	14	5,6
Business communication protection	13	5,2
Changes in media business models	10	4
Impact of digital technologies on health and the environment	9	3,6
Netiquette	7	2,8

Gender and Other Differences in Digital Competences Journalists Want to Develop

Substantial differences appeared between the digital skills female and male respondents listed as those they wanted to develop.

Both groups singled out web design and video production as the most important skills they wanted to master. Several other skills were also listed by at least 10% of the respondents, whilst there was a major dispersion of answers with respect to other skills.

Web design was preferred by nearly (relatively) the same number of male and female respondents (40% and 39% respectively). Women were, however, almost twice as interested as men in improving their work with video content (39% vs. 23%). This is in keeping with their self-ratings of their proficiency in this skill. Women rated their proficiency in this skill much more poorly than men did (mean score 2.725 v. 3.150).

Women also expressed greater interest than men in developing their skills concerning web statistics and analytics (10% v. 6%), SEO (11% v. 5%), social media management (10% v. 5%), multimedia content creation (8% v. 3%) and camera work²⁰ (8% v. 4%).

More men than women listed among their development priorities work with graphics and animation programs (11% v. 8%), digital photography (10% v. 6%) and adapting software to their needs and programming (6% v. 3%). The differences in the other cases were minor or the number of respondents was too small for a reliable conclusion.

Skills Respondents Want to Improve - by Sex (in %)

	Men	Women
Web design	39,81	38,73
Video production	23,25	38,73
Portal, Internet radio or Internet TV management	11,11	12,67
Podcast production	11,11	10,56
Audio production	9,26	10,56
Work with graphics and animation programs	11,11	7,75
Web statistics and analytics monitoring and comprehension	6,48	9,85
SEO	4,62	10,56
Social media management	5,56	9,86
Working with digital photography	9,96	5,63
Camera work	3,7	7,75
Data visualization (production of infographics)	7,4	4,92
Multimedia content production	2,78	7,86
Adapting software and applications to own needs, programming	6,48	3,52

²⁰ The Questionnaire listed 360-degree camera, but some respondents just wrote down “camera work”.

	Men	Women
Mobile journalism (MoJo) and backpack reporting	3,7	3,52
Fact-checking	4,63	2,11
Blogging, vlogging	1,85	4,23
Livestreaming	3,7	1,41
Database use	1,85	0,7
Audience engagement	0,93	1,41

The age of the respondents also influenced their choice of skills they wanted to improve. The respondents' interest in developing a number of skills decreased with their age; it was the highest among younger respondents (under 35) and the lowest among the oldest ones (over 55). These skills include web design, video production, social media management, SEO, work with graphics and animation programs, understanding and following web statistics, use of databases and increasing audience engagement.

The intermediate (36-55) age group showed above average interest in podcast production and digital photography and no interest at all in using databases and livestreaming.

The eldest age group (55+) is the most interested in portal management and blogging/vlogging. It is not in the least interested in digital photography, SEO, use of databases or increasing audience engagement.

Substantial differences were identified between respondents creating more traditional and those producing more online content at the time of the survey. More journalists predominantly creating online content specified that they would like to develop the following digital skills: video production, podcast production, production of infographics, mobile reporting and fact-checking.

Slightly more respondents producing mostly traditional content than others specified that they wanted to hone their skills in SEO, working with graphics and animation programs, monitoring and understanding web statistics and analytics, camera work and blogging.

Journalists producing equal amounts of traditional and online content were much more interested than other respondents in web design, portal management and adapting software and applications to their own needs. They showed less interest than the other respondents in video production, digi-

tal photography, audio and multimedia content production.

Some differences in the respondents’ preferences for developing digital competences closer to knowledge than technical skills were also identified depending on the respondents’ sex and age.

A much higher share of women than men (45% v. 29%) reported that they wanted to improve their knowledge of digital marketing.

Women were also more interested than men (21% v. 14%) in understanding the changes in audience behavior and preferences.

An almost equal number of female and male respondents were interested in improving their cybersecurity competences. Such a wish was expressed by slightly over a quarter of the respondents (26% men and 29% women).

Knowledge Respondents Want to Improve - by Sex (in %)

	Men	Women
Digital marketing	28,70	45,07
Cybersecurity	25,92	28,87
Audience – preferences and behavior	13,88	21,13
Copyright and licenses	7,04	6,34
Privacy protection	5,55	6,34

The same applies to all three age groups (younger, intermediate, older) – they are equally and substantially interested in cybersecurity (from 27% to 29%).

The youngest respondents (under 35) are the most interested in improving their knowledge of digital marketing (46% as opposed to 37% in the intermediate group and 29% in the older group). Younger journalists are also more interested in familiarizing themselves with copyright and licenses, changes in audience behavior and preferences, as well as in privacy protection. They are not in the least interested in changes in the media business models, because they are living them.

The intermediate group of journalists is interested in all new digital knowledge, and, to a greater extent than the other age groups, in the impact of digital technologies on health and the environment.

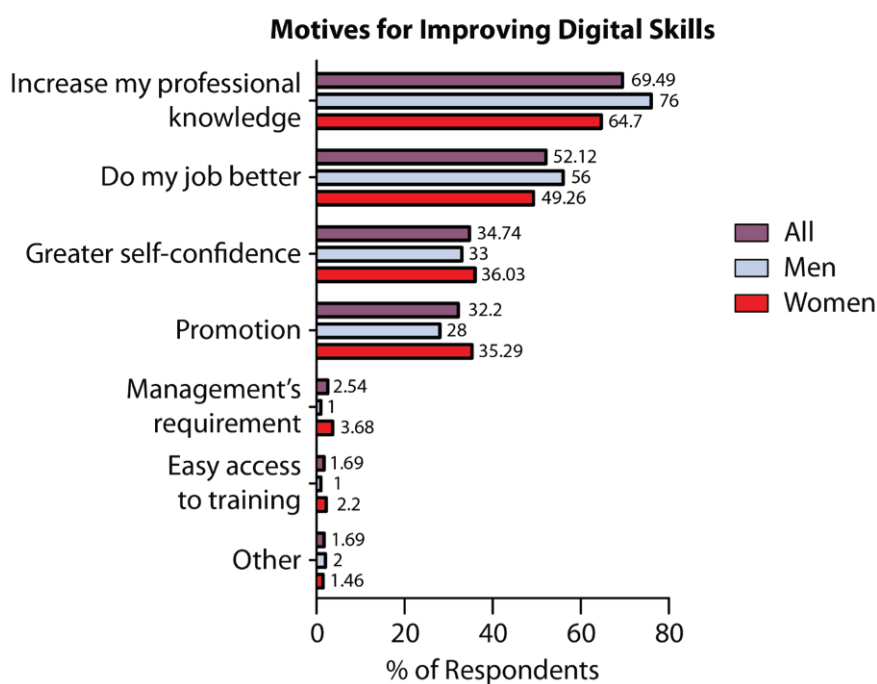
The oldest respondents are less interested in the topics listed by the younger ones. They are the most interested in netiquette and changes in media business models. They are not interested in learning more about copyright and licenses or about the impact of digital technologies on health and the environment.

Motivation for Professional Development

In the rapidly evolving digital environment of communication, the journalists’ high motivation for honing their digital skills and knowledge almost goes without saying. The respondents’ replies to questions about their motives for professional development confirm that.

The respondents’ motivation is based much more on intrinsic than on extrinsic incentives.²¹

Around 70% of the respondents listed the cognitive motive - the wish to acquire the knowledge they need to perform their jobs - as the primary incentive for improving their digital competences. Perception of digital knowledge as an integral part of the journalistic professionalism was more of a driving force for men than for women (76% v. 65%).



21 This was a multiple-answer question. The data reflect the multiple answers of 236 respondents; 14 respondents did not give any answers.

The next important motive, ticked by more than half (52%) of the respondents, is also intrinsic. It concerns the respondents' feeling that digital skills enable them to do their job better. This motive was also selected by more men than women (56% v. 49%).

In the opinion of one-third (35%) of the respondents, greater digital competences result in greater personal and professional self-confidence. Self-confidence was singled out as an important motive by 36% of the women and 33% of the men.

Extrinsic motives are much less important. The only extrinsic motive the respondents consider relevant is the opportunity to further their career. This motive was ticked by 32% of the respondents. As opposed to the leading intrinsic motives, this motive was singled out by more women than men (35% v. 28%).

Other extrinsic motives are almost non-existent. The management's requirement that they attend training, which was presumed to be an efficient extrinsic motive, proved irrelevant. Only six of all respondents (2%) mentioned it as important. This either indicates that the respondents' managers are not requiring of their staff to improve their digital competences or that, even when they are, their requests do not yield the adequate results.

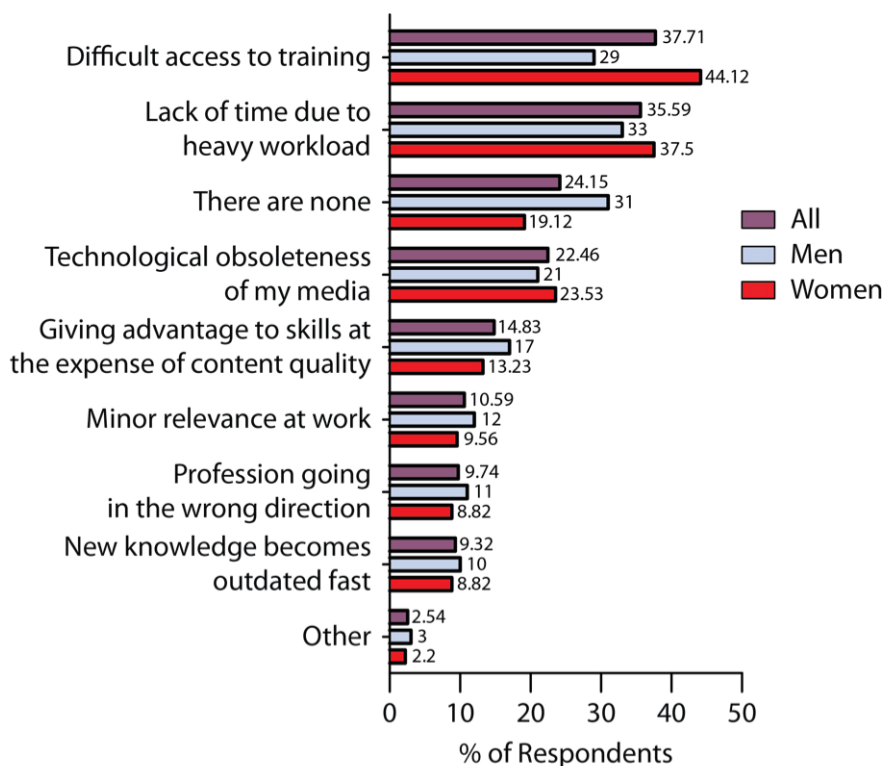
The motive formulated as "easy access to training" was even more inefficient. This option was included in the offered answers, in addition to other reasons, because of the existence of various DIY guides on digital skills, thanks to which many people have succeeded in acquiring new knowledge through individual effort. However, only four of all respondents considered this motive important.

Obstacles to Improving Digital Skills

One quarter (24%) of the respondents²² reported that there were no relevant obstacles to their improvement of their digital skills and knowledge. The rest listed several deterring factors.

²² This was a multiple-answer question. The data concern the multiple answers of 236 respondents; 14 respondents did not tick any of the answers.

Obstacles to Professional Development



Difficult access to training, in terms of costliness, duration or location, was the main obstacle identified by most respondents (38%).

This indicates the absence of organized in-house training, i.e. lack of incentives within the media for building their staff’s professional capacity. The other most often mentioned deterring factors are also related to the working conditions in the media, i.e. their economic strength and investments in technological and HR development.

For instance, 36% of the respondents ticked lack of time for professional development due to heavy workload. The media they work for usually have a small number of journalists overwhelmed with tasks. Most of these respondents work in local media employing up to 20 people (up to 30 people in two cases).

Obsolete technology due to lack of development investment was ticked by 22% of the respondents. The media they work for simply do not have the technical equipment supporting advanced technological programs or applications, wherefore they are not motivated to learn something new that they cannot apply. Most of the respondents who ticked this answer work in local media, and, in Belgrade, in dailies.

Around 11% of the respondents reported that their current job did not require advanced digital competences, wherefore they perceived the small importance of digital skills as a demotivating factor.

The journalists' attitudes to technological changes in the media and their profession are also a limiting factor in their acquisition of new knowledge. For instance, 9% of the respondents think that the technology is changing much too rapidly and that anything new they learn soon becomes outdated. Their feeling that they are always lagging behind technological innovations impedes them from learning new and honing existing skills.

Two negative attitudes about the impact of digital technologies on journalistic products or the future of journalism on the whole stand out. Fifteen percent of the journalists think that improvement of digital skills boils down to boosting merely technical skills at the expense of the journalists' capacity to improve the quality of media content, the improvement they would prefer.

The problem is much greater in the opinion of 10% of the respondents: they view the entire media digitization process in a negative light, because it has substantially changed the journalistic profession, in a way they dislike. There is some overlap between these two groups of respondents. Although they belong to various categories of the sample, most of them are aged between 45 and 55 and work in weeklies.

Substantial gender differences were identified in the respondents' views on obstacles to learning new skills: many more men than women (31% v. 19%) said that nothing was preventing them from acquiring them.

Difficult access to training was mentioned as the main barrier by a lot more female than male journalists (44% v. 29%).

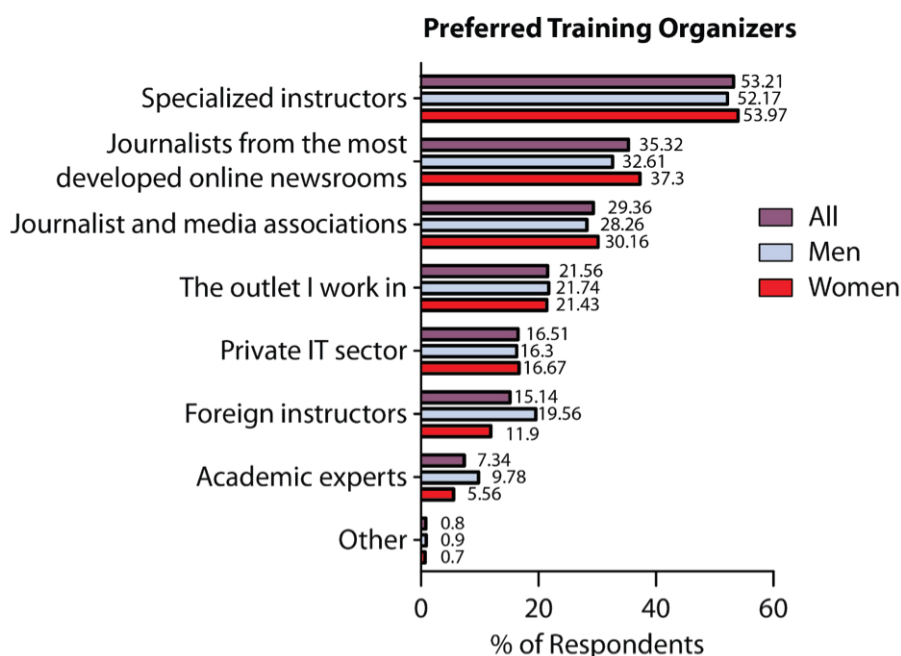
Lack of time due to heavy workload was reported as an obstacle by more women than men (37% v. 33%).

As a rule, more male than female journalists expressed negative views about the impact of technology on the profession and the expediency of acquiring new skills.

Best Organizer of Training in Digital Skills and Knowledge

Among the offered organizers of training in the digital skills they would like to improve, most respondents²³ opted for specialized instructors holding their own courses and lectures. They were given preference by slightly over half (53%) of the respondents.

One out of three respondents (35%) think that group training in digital skills should be held by eminent journalists in the most developed domestic online newsrooms, presumably because of the experience they have and familiarity with the journalists' working conditions.



Slightly over a quarter of the journalists (29%) had the greatest confidence in professional journalists and media associations, which have been organizing group trainings for media professionals for decades now.

One out of five respondents (22%) would prefer that the training in digital skills and knowledge be organized by the outlet they work in.

Only 16% of the respondents opted for training organized by the private IT sector, although it is a pioneer in extending professional trainings of this kind. Training delivered by eminent foreign instruc-

²³ This was a multiple-answer question. The data concern the multiple answers of 234 respondents; 16 respondents did not tick any of the answers.

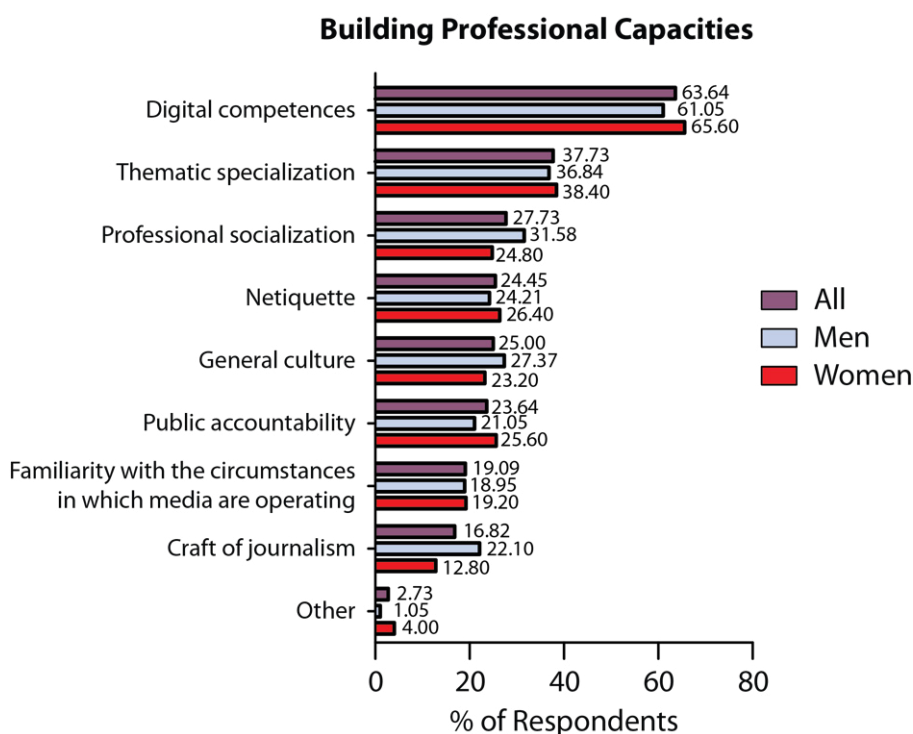
tors was ticked by 15% respondents. The fewest respondents (7%) opted for training provided by academic experts.

Gender-based differences in preferred training organizers are minor. The only important difference in opinion manifested itself in the men’s and women’s attitudes towards training organized by foreign instructors. Men had a much more positive opinion about it than women (20% v. 12%).

In addition, more women than men opted for eminent journalists working in the most developed online newsrooms (37% v. 33%). On the other hand, male journalists were less reserved than female journalists about training organized by academic experts (10% v. 6%).

Digital Competences and the Professional Capacity of the Media

Although, judging by their high self-ratings of their overall digital competences, the respondents appear satisfied with their achievements so far, they still think that their further improvement of their digital skills and knowledge is of primary importance. Two-thirds (64%) of them ticked improvement of digital competences among the eight offered options of primary changes that will result in the improvement of the professional capacity of the media they are working in. More female than male journalists attached importance to professional development (66% v. 61%).



Other forms of professional empowerment were selected by only a third or even fewer respondents.

For instance, 38% of the respondents thought that greater specialization in covering specific fields or topics was important for improving the work of journalists, while 29% opted for a higher degree of professional socialization, including professional commitment, collegial solidarity and correctness, willingness to engage in teamwork, learning from role models, etc.

A quarter gave preference to stronger acceptance of professional standards and the code of conduct (25%), raising the general culture (25%) and public accountability (24%).

In addition to emphasizing the importance of digital skills and knowledge, more women than men (26% v. 21%) insisted on the journalists' greater public accountability.

More men than women attached importance to professional socialization (32% v. 25%), and especially to better mastery of the craft of journalism. They ranked journalistic skills as a more problematic aspect of professional capacity than public accountability, while women convincingly listed them as the least important (22% v. 13%).

Netiquette

Netiquette was included in the list of digital competences in this research for two reasons: the digital space is overwhelmed by non-ethical communication, and ethics is an inseparable part of the journalistic profession. Journalists can establish their profession as a public good in the new working conditions and new relationships among digital communicators if they comply with the professional code of conduct. That is why the research aimed to ascertain whether journalists perceive netiquette as an important digital competence.

The survey results were contradictory. A quarter of the respondents were of the view that the media they were working for needed to commit to a greater extent to professional standards and the ethical code of conduct, although the survey question did not view the issue beyond the scope of digital competences. At the same time, only 7 out of the 250 respondents singled out netiquette as a digital competence they would like to improve.

The latter finding is in accordance with the opinion of most respondents: that they and other journalists in their newsroom complied with netiquette. Such a view was supported by 81% of the respondents; 54% of them agreed fully and 27% mostly with it. Of the 8% who disagreed, only 3% reported that they lacked this competence.

The above majority view, however, is not in accordance with another finding of the survey, on the respondents' familiarity with the publication Ethical Recommendations for Professional Journalists in the Online Sphere. The Recommendations were published by professional journalists associations back in 2014, with a view to tailoring the press code of conduct applicable to traditional media to digital journalism.²⁴ Only a third (36%) of the respondents had seen the publication. The others had either merely heard that it existed (35%), or were totally unaware of the existence of this tool for journalists in the online sphere (24%).

The situation was somewhat better in the ranks of online journalists. Around half (48%) of the 62 respondents working in online-only media had seen the Recommendations, 29% had only heard of it, while 18% had not even been aware the publication existed.

Familiarity with the Netiquette Publication (in %)

	Seen it	Heard it exists	Unaware it exists	No reply
All Respondents	35,6	34,8	24,4	5,2
Respondents working in online media	48,39	29,03	17,74	4,84

The identified contradictions point to the need to explore this issue further. A partial explanation for the respondents' different answers might be found in their failure to distinguish between the traditionally understood press code of conduct and netiquette, i.e. that they do not treat the latter as a separate digital competence.

²⁴ Most of the recommendations are included in the document Guidelines on the Application of the Serbian Press Code of Conduct in the Digital Environment, which was published by the Press Council in 2016, available in Serbian at: <https://savetzastampu.rs/wp-content/uploads/2020/11/smernice-za-primenu-kodeksa-novinara-srbije-u-onlajn-okruzenju-1.pdf>.

II Research Results: Online Newsroom Managers

This part of the research of the digital competences of journalists aimed to provide better insight in the state of play, usual practices and training needs from the perspective of managers of online newsrooms i.e. online-only media or online newsrooms of hybrid/integrated media.

Sample

The sample comprised 36 online media i.e. their managers.

These media correspond well with the diversity of online newsrooms in Serbia by type, size, geographic location and target audience.

Around half (19) of the managers covered by the sample work in online-only media, while the rest (17) work in integrated/hybrid media. The latter comprise various combinations of portals and one or more traditional media – agencies, dailies and weeklies, radio and/or TV stations.

Sample: Types of Media

	No of Respondents
Online-only media	19
Portal and print media	8
Portal and TV	3
Portal, radio and TV	2
Portal and radio	1
Portal and agency	1

	No of Respondents
Portal, print and radio	1
Portal, print and TV	1
Total	36

The basic orientation of the online-only media was also diverse. In addition to the eight general news portals, the sample included five thematic, four educational and activist portals run by civil society, one investigative portal and one fact-checking portal.

The size of online media varied from those employing 80 to those employing less than five journalists. All eight large newsrooms with over 15 staff members (some with 40, 50 or 60 staff members) were based in Belgrade and had a large national and regional audience. Around a third (11) of the online newsrooms were medium in size, employing between 5 and 15 people. Nearly half (17) of the newsrooms were small in size. Most of them were portals employing up to five people (full-time or fixed-term); four did not have any employees and two had one employee and hired volunteers or freelancers if necessary.

The geographic distribution of the surveyed media is relatively even given the large concentration of media in Serbia's capital. Thirteen outlets in the sample were based in Belgrade, seven in Vojvodina, five in West Serbia, five in South Serbia, four in Central Serbia and two in East Serbia.

Online newsroom managers were diverse in terms of sex, age and education level.

Men prevailed over women (58% v. 42%), which is in conformity with the findings of other studies:²⁵ although women account for the majority of media staff, most of the managerial positions are held by men. In online newsrooms, more women manage small portals than large online newsrooms. Of 15 women in managerial positions, only three were managing portals in hybrid/integrated media.

Two-thirds (24) of online newsroom managers were between 35 and 55 years old. Of the remaining 12, seven were under 35 and five were over 55. Only one respondent, the chief editor of a specialized informative educational portal in Belgrade, was over 65 years old.

Most online media managers have a university degree. Six respondents have a master's and 19 a

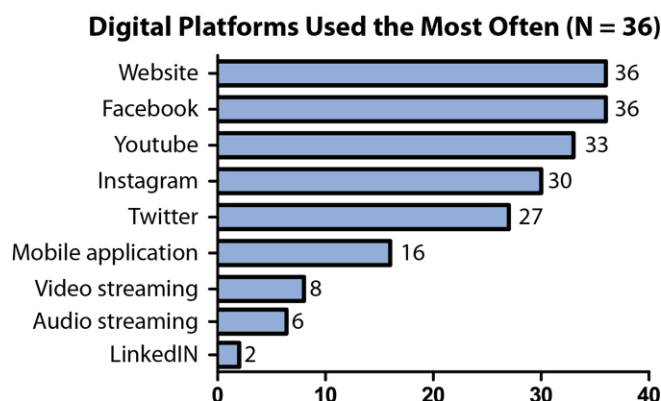
25 Miliwojević, Snježana, 2021, *Rodna struktura direktorskih i uredničkih funkcija u informativnim medijima*, Belgrade, <https://www.osce.org/files/f/documents/0/c/491866.pdf>.

bachelor’s degree. Five managers have secondary education and six have higher education. Nearly a third (11) of the managers have a bachelor’s or master’s degree in communicology and journalism. The education level of the women in the sample was higher than that of men – all of them had high or higher education (six had a bachelor’s degree in journalism and only one was in her senior year in college).

Digital Platforms and New Occupations

The researched media use a multitude of digital platforms to reach their audience.

Websites and Facebook profiles reign supreme. All 36 surveyed media have them. Thirty-three media have YouTube channels, 30 have Instagram accounts, while 27 media have Twitter accounts.



Mobile applications are used by 16 media. Most of them are general news portals and portals of dailies, which have been using them to reach their target audience following news on their mobile devices.

Eight media have video streaming. Audio streaming is used by six media, mostly integrated media (RTV) or thematic or investigative portals. Two respondents listed LinkedIn among their outlets’ platforms.

Of the additional audience engagement tools, the online media mostly used SEO (25 newsrooms), e-mail (18) and video live (16), digital archives (11) and podcasts (10). The tools used the most rarely include blogs (3), instant messaging (3) and discussion forum (1).

Technological developments prompted the emergence of new occupations in online teams of journalists. The respondents’ answers show that two-thirds of the media have opened new jobs. The remaining third either had not opened them or failed to respond to the question.

The survey showed that the media, regardless of how many people they employ or where they are headquartered, are in greatest need of video and audio production experts. Sixteen media opened jobs in these new occupations. Twelve of them employ video or photo producers and editors and three employ video operators/editors, while one media also a video and photo forensic analyst on its payroll.

The second most often mentioned group of occupations is related to social media and the media’s online presence (12). They include social media editors or managers, which some media call community managers or social media team members.



Seven media have staff performing jobs involving website maintenance and design – web masters and web or graphic designers. Three media have SEO teams or specialists or plan on hiring them.

One respondent listed mobile journalist as a new occupation, while two respondents reported that they had two staff members with new job titles – a portal editor and an online news editor.

Assessment of the Staff’s Digital Competences

As opposed to the journalists, who rated their own digital competences, the online newsroom managers had a threefold task: to rate their own digital skills and knowledge on a scale of 1 to 5, to qualify the level of competences of the journalists in their newsroom as “low” (unsatisfactory) or “good” (satisfactory) and to specify which competences they needed to improve in the future, no matter how well-developed they are at the moment.²⁶

²⁶ Not all respondents replied to all of these questions. The Report presents only the answers they gave – ranging from 25 to 34 – depending on the question.

The respondents' replies testify that the level of online newsroom managers' proficiency in digital competences is similar to that of their staff and of journalists working in other media in the main sample.

Like journalists working for various media, online media managers are the most self-confident about their web browsing and critical evaluation of the reliability of sources and information skills. These two competences were rated the highest – the mean scores stood at 4.56 and 4.53. The cloud data storage, database search and fact-checking skills had the lowest median scores in this area (similarly as in the sample of journalists) – all of them were rated slightly below 4.

The managers' skills in the area of communication regarding social media (posting content and understanding the importance of social media for the journalistic job) and netiquette also had high mean scores. The online newsroom managers' ratings of their skills and knowledge in the area of Internet safety and privacy protection were slightly lower (3.60).

Digital content creation was rated more poorly (the median value was only 3.21). Use of mobile technologies for reporting and multimedia reporting were rated the best (3.92 and 3.72 respectively). The online managers' low ratings of their operational system work (3.11) are surprising, given that work in most online media involves everyday CMS use. Blogging, podcast production and working with a 360 camera were among the least developed skills, as expected (working with a 360 camera was the most poorly rated of all competences). Like journalists, online managers have also poorly rated their data visualization and working with graphics skills (2.61 and 2.89 respectively)

Problem-solving skills were rated more poorly than the other areas – 2.58. They were also among the five most poorly rated competences on the list – technical problem-solving was rated slightly higher, 2.77, while adapting software to own needs was rated 2.39.

At least half of the online managers rated 19 competences of their journalists as well-developed.

Most of these competences fall in the area of data and information literacy (web browsing, retrieval and organization of found information, critical evaluation of the reliability of Internet sources and the validity of their information, database search, cloud data storage, fact-checking and photo authentication) and in the communication area that covers social media operations and netiquette, including respect of copyright.

Among digital content creation skills, most of the respondents qualified as well-developed the following skills of their journalists: use of mobile technology for reporting, multimedia reporting, digital photography, audio and video production, and search engine optimization.

The respondents also positively rated their staff's specific knowledge about the impact of digital technologies on the environment and personal health, protection of their own and other people's personal data and privacy on the Internet and changes in media business models in the digital world.

At least half of the media managers poorly rated eight digital skills of journalists working in their newsrooms, the same ones the general population of journalists qualified as undeveloped. These skills include: adapting applications to own needs, troubleshooting, "backpack" reporting, data visualization, webpage creation, podcast production, using analytics and web statistics to drive the news agenda and working with a 360 camera.

The remaining 10 digital competences were rated as developed in some and as undeveloped in other media.

Skills Required for the Future

The surveyed online managers singled out some digital competences they think will be important in the future, i.e. the skills and knowledge that need to be improved for the better functioning of the media, irrespective of how well-developed these competences are at the moment.

The surveyed online managers by and large agree on the need to improve nine competences concerning various aspects of their journalistic work. With the exception of one of them (multimedia reporting), none of them are well-developed.

Five competences related to media content creation were singled out. They include producing stories for multiple platforms and multimedia reporting, the two skills most journalists working in hybrid media already recognize as basic digital competences and list among those they need to improve. Online managers are of the view that their journalists' proficiency in these skills is merely intermediate. For instance, 14 respondents qualified their journalists' skill of producing stories for multiple platforms as satisfactory and as many qualified it as unsatisfactory.

Skills to be Improved 1 (by Number of Respondents)

Competence	Good Level	Low level	Needs to be improved
Data visualization (production of infographics) (N=27)	8	19	26
Using analytics and web statistics to drive the news agenda (N=29)	11	18	23
Understanding changes in media audience behavior (N=28)	12	16	22
Live reporting from a distant place (mobile or “backpack“ reporting) (N=26)	6	20	21
Multimedia reporting (N=31)	18	13	21
Troubleshooting (N=29)	10	19	20
Monitoring and understanding audience engagement analytics (N=30)	14	16	20
Real-time reporting by live-tweeting or blogging (N=28)	13	15	20
Producing stories for multiple platforms (N=28)	14	14	20

A novelty in the online media managers’ replies is the importance they attach to so-called backpack reporting, currently used by a very small number of media in Serbia, and to live-tweeting and blogging, which probably reflects the huge popularity of Twitter as the fastest source of news. Another novelty is their insistence on the need to improve the data visualization skill – this need was specified by the largest number of online managers (26 respondents) and it can probably be attributed to the audience’s increasing preference for image over text.

The editors’ views that media will be increasingly in need of journalists proficient in audience engagement analytics, especially in using it to drive the news agenda, in combination with awareness of the changes in the behavior of the media audience in the digital space, does not come as a surprise either. These skills are underdeveloped among journalists in online newsrooms, just as they are among journalists in various kinds of media.

Finally, online newsroom managers think that the journalists’ troubleshooting skill will be very important in the future.

In addition, a substantial number of surveyed online media managers agree that another eight digital skills need to be developed. Most of these skills - such as cloud data storage, understanding changes in media business models in the digital world, video production, fact-checking and photo authentication, and SEO - are already well-developed in a large number of online media.

The respondents think that working with live video, podcast production and increasing audience engagement on social media, skills that are underdeveloped at the moment, will be important in the future.

Skills to be Improved 2 (by Number of Respondents)

Competence	Good level	Low level	Needs to be improved
Search engine optimization (N=30)	18	12	19
Live video production (N=25)	14	11	19
Fact-checking and photo authentication (N=29)	20	9	19
Podcast production (N=28)	10	18	18
Engaging audiences on social media (N=29)	14	15	18
Video production (recording, editing) (N=31)	19	12	18
Understanding changes in media business models in the digital world (N=29)	18	11	18
Cloud data storage (N=29)	21	8	18

Motivation for Improving Digital Skills

The online newsroom managers’ responses about how their journalists acquired digital skills, and their motivation for and obstacles to improving their digital competences largely coincide with those of journalists working in various kinds of media.

According to online editors, the main motives of their newsroom staff include: awareness that they must possess these skills to do their job (28 respondents agreed), awareness that they will do their

job better if they possess them (25) and promotion prospects (16). The surveyed journalists also singled out boosting their personal and professional self-confidence, a motive online media managers do not consider very important.

Views on obstacles to professional development coincide. The two main obstacles are lack of time due to heavy workload (18) and difficult access to training, in terms of costliness, duration or location (11). The respondents also registered other deterring factors arising from the journalists' attitudes – that emphasis is on building technical skills rather than on improving content quality (7), that new knowledge becomes outdated very soon because of the constant development of technology (4) and that media digitization is changing the journalistic profession in an unacceptable way (1). The respondents also noted that some journalists were deterred by the technological obsolescence of the media (3) or the small importance of digital skills for their job (2).

Trainings – Experiences and Preferences

The online media managers' responses confirm the findings of the survey of journalists - that most journalists acquire digital competences on their own, rather than at organized trainings. Most of the small number of trainings organized over the past three years were held in Belgrade. Media outside the capital rarely organized training in their offices; rather, they sent their staff to attend available trainings held elsewhere.

Like the journalists in the main survey, online managers mastered their digital competences on their own and at their own initiative (28) or at work and with the help of their co-workers (20). An equal number of managers attended trainings at their own initiative (11) and trainings they were referred to by the media employing them (11).

Although the data on trainings in digital competences journalists had access to over the past three years are neither complete nor absolutely precise, they nevertheless provide some insight in the available forms of education for the digital age.

Only 20 (55%) of the 36 surveyed media organized in-house training. The remaining 16 media have not done that or data are unavailable. All media that did not organize in-house trainings are regional or local, i.e. are headquartered outside Belgrade.

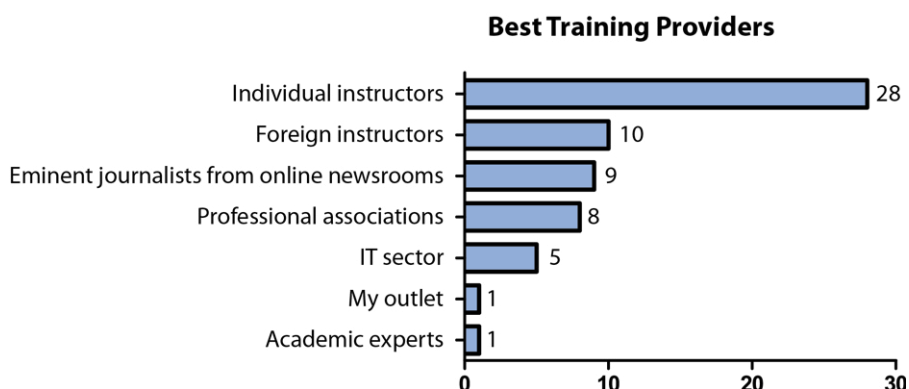
In-house trainings building digital competences covered the following areas: SEO (8), social media (4), work with multimedia content (3), digital marketing (2), photo authentication and digital foren-

sics (2). Individual trainings on online journalism, video production, safety, fact-checking, personal data protection, advanced analytics, advanced Internet search, CMS use, MoJo and crowdfunding were also held.

Nine media did not sent their staff to trainings organized by someone else – six of them are head-quartered outside Belgrade and five them did not hold in-house trainings either.

The following topics were the subject of the attended external trainings: MoJo (4), fact-checking and deconstruction of fake news (4), security in the digital environment (3), social media (2), SEO (2), digital marketing (2), multimedia reporting (2), data journalism (2), analytics (1), podcasts (1), blogging (1), radio journalism (1), video recording (1).

Twenty-eight online newsroom managers would prefer to have the journalists in their newsrooms trained in the competences they lack by individual specialists (instructors) holding their own courses and lectures. Next come foreign instructors (10 respondents opted for them), eminent journalists working in the most developed domestic online newsrooms (9), journalists and media associations (8) and the private IT sector (5). Only one respondent would entrust the task to their own media.



Journalistic or Digital Competences

Asked whether they would give advantage to the journalistic or digital skills and knowledge of a job-seeker without experience they were interviewing, half (18) of the online media managers opted for journalistic skills.

Only three managers would give advantage to candidates with digital skills and knowledge, while the remaining 14 would equally value both kinds of competences (one respondent was indecisive).

However, online managers clearly attached greater priority to building digital skills and knowledge when asked to prioritize the capacity building needs of the journalists in their newsrooms. Twenty-eight of them ticked that option, whereas each of the other aspects of building the journalists' professional capacity received only several albeit not more than 12 votes.

In the view of online managers, journalists still lack: specialization in covering specific areas (12), general culture (7), professional socialization – professional commitment, collegial solidarity and correctness, teamwork skills, learning from role models, etc. (7), need to adopt professional standards and netiquette (5), are unfamiliar with the legal, economic and political circumstances in which the media are operating (3), are not accountable to the public (2), and have not mastered the craft of journalism (1).

Although online managers qualify digital competences as the priority of the journalists' professional development, their other answers, suggesting that other, equally important aspects of the journalistic profession also need to be improved, should not be disregarded. Digital competences are undoubtedly important, because they, inter alia, serve to facilitate and improve the quality of job performance (in terms of production and content), content marketing and communication with the audience, but they do not suffice for accountable and highly professional work of journalists.

Conclusions

The journalists' digital competences were researched with the help of two surveys. Two hundred and fifty journalists from various media across Serbia took part in the first survey and 36 managers of extremely diverse online newsrooms took part in the second one. The available convenience sample was used in both cases. Given that they do not represent the entire population of professional journalists or all online newsrooms, the used samples do not allow for the generalization of the research findings, but they do allow for the adoption of specific conclusions on the research subject, because they correspond well with the characteristics of the professional group of journalists by sex, age, job title, the type of media they work in and their headquarters, as well as by the type, size, geographic location and target audience of the online newsrooms.

The research findings paint a complex picture of the journalists' professional competences and activities in the digital space, which is contradictory in some aspects. For instance, most respondents are aware of the importance and impact of digitization on the functioning of media, accept the new professional standards and are actively acquiring the new skills and knowledge they need to perform their jobs better and more easily. However, professional training for the new professional roles is slow, sporadic and unorganized. It is individually motivated and insufficient, although the journalists are generally satisfied with their achievements. New professional practices are the consequence of combining the traditional perceptions of professional roles and use of select digital tools and techniques rather than of acceptance of a new mindset the concept of digital journalism involves. Precisely those journalistic competences that are crucial for restoring trust in the media, for using the advantages of technological innovations in public interest, and for building the foundations for stimulating the audience's economic support to the media they trust, are the ones that are underdeveloped.

The identified contradictions are the consequence of diverse degrees of digital transformation of the media the surveyed journalists are working in, the diverse financial possibilities and investment decisions of those media, the journalists' motivation for professional development, and the availability of organized professional training, as well as the other features of Serbia's media system that are beyond the reference framework of this research.

Developed and Undeveloped Competences

Around two-thirds of the 250 surveyed journalists create digital content often, 40% of them on a daily basis. Exactly one half of them say that digital competences are extremely important for their work, while only three individuals say that they are of no professional relevance. However, most of them often use only three digital skills: fact-checking (76%), posting content on social media (50%) and producing stories for multiple platforms (50%). Around 20% of the journalists work in media that have obsolete equipment, which limits the development of their digital competences, while 15% have no desire to improve them because they think that they give advantage to technical skills at the expense of improving content quality.

The journalists used school grades, ranking from 1 to 5, to rate their digital skills. They rated their total digital skills with a mean score of 4. However, their ratings of their individual skills indicate that many of them are underdeveloped. This particularly holds true for skills concerning digital content creation (average score 3), which are the essence of the journalistic profession.

The three skills journalists are the most proficient in include digital communication with others, web browsing, retrieval and organization of found information, and critical evaluation of the reliability of Internet sources and information (mean scores above 4.5). These skills are also important not just for journalists but for various other Internet or cell phone users as well; most of them, especially younger ones, are highly proficient in them.

Digital skills specific to journalistic work – producing stories for multiple platforms and use of mobile technologies for reporting - rank only 7th or 8th on the list of the most developed skills.

Of the five digital competence areas in the European DigComp model, journalists are the most proficient in operating with information (data and information literacy) (mean score 4.3). However, their fact-checking and photo authentication skill, which is crucial for combatting fake news, is the least developed competence in this group. Experiences of major world media show that building the journalists' fact-check capacity is a successful way to improve media credibility; however, domestic media are not devoting enough attention to this issue.

In the area of communication, the journalists are proficient in competences related to social media, which contributes to the better placement of journalistic products. The competences related to use of audience engagement analytics, which facilitate better comprehension of their audience and the development of a relationship of trust, are undeveloped. This weakens the foundations for consolidating credibility, as well as for recruiting the audience's economic support to the media it trusts, which is expected to be an increasingly important source of media revenue.

In the area of digital content creation, the journalists are the most proficient in producing stories for multiple platforms (mean score 4.1), which has been considered a basic new skill for a long time now. Multi-media content creation (combination of text, sound and image), another skill which is considered basic, was rated more poorly (3.2). So was video production (2.9), precisely at a time qualified as the golden age of video. Webpage creation, podcast production and working with a 360 camera were rated the most poorly (the only score under 2).

The journalists are unable to solve technical problems themselves, e.g. to troubleshoot or to adapt the software or applications to their own needs.

The journalists demonstrate a relatively high degree of self-confidence in the area of cybersecurity and personal data and privacy protection on the Internet. Their self-confidence is slightly lower when it comes to the protection of business communication and devices under a security threat. One-third of the respondents single out cybersecurity as the area in which they lack the competences they need and which they want to improve.

Although women account for most media staff, their digital proficiency is inferior to that of their male colleagues. According to the calculation of statistical importance, the women's proficiency in 8 of the 30 explored digital skills is visibly lower than that of men. These eight competences include, notably: video production, multi-media content creation, monitoring audience engagement analytics, data visualization, adapting software to own needs, podcast production, troubleshooting, and working with a 360 degree camera.

Male journalists are less proficient in all the competences on which the female journalists rated themselves poorly. They belong to the group of 10 least developed skills in the entire sample of the respondents. On the other hand, male journalists rated relatively highly their competences where women had higher scores on average.

The existence of the gender digital divide is confirmed also by the overall self-ratings of personal competences. Women rated themselves more poorly (between 1 and 3) on individual skills in 39% of the cases, whereas men did so in 24% of the cases. Seventy-six percent of the men and 61% of the women rated their competences better (between 3 and 5).

Lower ratings are also in correlation with the journalists' age. The older the respondents, the lower their ratings of their personal competences, indicating the existence of a generation gap.

In 93% of the cases, young journalists, under 25 years of age, rated their digital skills with a score over 3. That is the case for 74% of the respondents in the 26-35 age group, 70% of the respondents

in the 36-45 age group, 64% of the respondents in the 46-55 age group and 54% of the respondents in the 56-65 age group.

The survey of 36 online newsroom managers confirmed most of the results of the survey of 250 journalists. It indicates that the level of the online media managers' proficiency in digital competences is similar to that of the journalists working in their newsrooms.

The most developed skills in both groups are those in the information literacy area (with fact-checking being the weak point), and in the area of communication, skills concerning social media. Digital content creation skills are less and technical problem-solving skills the least developed in both groups. Online media journalists rated better also on their digital photography, audio and video production and SEO skills vis-à-vis the journalists in the main sample.

In addition to rating their own skills and knowledge and those of the journalists working in their newsrooms, online media managers also singled out the competences that would gain in importance in the future, regardless of how well developed they are at the moment. At least a half of the online managers listed 17 competences that needed to be improved for the media to function better.

As per already developed skills, they propose the further improvement of multimedia reporting, video production, fact-checking, SEO, cloud data storage and understanding changes in media business models in the digital world.

As per undeveloped skills, they unsurprisingly suggest the improvement of skills concerning the understanding of audience preferences and monitoring audience engagement analytics, especially to drive the news agenda, and independent technical problem solving; in the area of reporting, they suggest improvement of producing stories for multiple platforms. Unexpectedly, the managers single out "backpack" reporting, live-tweeting and blogging and data visualization among the competences important for the future. They also suggest improvement of working with live video and podcast production and increasing audience engagement on social media.

Acquisition of Skills and Motivation for Training

Most of the surveyed journalists (64%) think that building digital competences is the best way to improve the professional capacity of their media. They give advantage to digital training over other measures, such as a higher degree of thematic specialization, professional socialization, acceptance of professional standards and netiquette, general culture, public accountability or mastery of the craft of journalism.

Most journalists have been acquiring their digital competences on their own (through personal effort or with the help of their colleagues, alongside their everyday work), while less than half (45%) attended some kind of professional training. A mere 3% acquired their digital competences in college, which demonstrates the educational institutions' minor role in equipping journalists for the technical aspect of their work.

The journalists' main motives for improving their digital competences include: to increase the professional knowledge they need to perform their job (70%), to do their job better (52%) and to build personal and professional self-confidence (35%).

As opposed to intrinsic incentives, extrinsic incentives are almost non-existent. Promotion prospects is the only option singled out as relevant by the journalists (32%). These prospects do not necessarily have to be related to the media they are working in since the media are not engaged in improving the staff's proficiency in digital competences in any visible or efficient way, e.g. through the provision of accessible training or management requirements that staff build their professional skills.

The absence of such extrinsic incentives is in reality perceived by the respondents as a barrier to their personal professional development. The main obstacles they single out include unavailability of training (38%) and lack of time due to heavy workload (36%), which are associated with the outlets' small economic strength and lack of investments in HR development. Twenty-two percent of the respondents also identified as problematic the lack of development investments and obsolete equipment not supporting advanced technological programs or applications.

Obstacles to professional development also arise from the respondents' negative attitudes towards the digital transformation of the media. Around 15% of the journalists think that digital competences improve journalistic techniques at the expense of the journalists' capacity to improve media content quality, while 10% are also critical of the entire media digitization process and how it is changing the journalistic profession.

The respondents demonstrated substantial motivation to improve specific skills. The top five (singled out by at least 10% of the respondents) include: web design, portal or Internet radio management, podcast production and video and audio production. Furthermore, they are interested in improving their knowledge of digital marketing and various aspects of cybersecurity.

Interest in improving web design and digital marketing competences, which are not closely linked to traditional journalistic tasks, may indicate that the journalists want to abandon journalism or move on to another profession that has greater financial and career prospects, or to master the entire process of media content production and marketing, i.e. to engage in a new profession combining journalistic and complex technological or marketing skills and knowledge.

Social media management, analytics and SEO are also areas in which the journalists would like to be trained; such a wish was expressed more by female than male respondents, and by a greater number of younger than older respondents. The need to develop video production, SEO and analytics skills may be associated also with the finding obtained from the editors' replies, that the greatest number of new jobs opening in (online) media involve the creation, editing and production of video content, social media and search engine optimization.

The respondents are interested in practical, organized trainings, mostly in those held by specialized instructors (53%), eminent journalists working in the most developed domestic online newsrooms (35%) or those organized by journalists and media associations (29%). One out of five respondents would prefer training organized by the media they are working for.

The findings of the survey of online media managers are very similar to the ones described above. Like in other media, lack of time and the unavailability of training are the main obstacles to the acquisition of digital competences in online newsrooms, while the main motives include awareness that digital skills are prerequisite for everyday work and better job performance.

Nearly half of the 36 surveyed online media have not organized any trainings for their staff over the past three years. All of these outlets are headquartered outside Belgrade. Nine media had not sent their staff to trainings organized by someone else – six of them are regional or local media headquartered outside Belgrade.

Online newsroom managers also consider that qualified individual specialists (instructors), eminent journalists from the most developed online newsrooms and journalists and media associations are the best providers of trainings in the competences their journalists lack. As opposed to journalists, they also single out foreign instructors, but are not keen on their media organizing the training. Only one of the 36 managers would entrust the task to the outlet they are working in.

During their recruitment of new journalists, most online newsroom managers would give advantage to candidates with journalistic rather than digital competences, while a substantial number of respondents consider these two types of competences equally important. Most managers think that, in addition to developing their digital skills, it is just as important that the journalists work on their netiquette and socialization, i.e. that the link between these two types of competences needs to be additionally emphasized and elaborated.

The research did not provide a definitive answer to the following research question: whether netiquette is a separate and important digital competence. The vast majority of the surveyed journalists (81%) held that their media complied with netiquette, while only 8% of them disagreed with this

view. Twenty-four percent of all journalists and 18% of online journalists were not even aware that there were special ethical rules for journalists in the digital space. Nevertheless, 25% of the journalists opined that the media they were working for needed to commit to a greater extent to professional standards and the ethical code of conduct, although the survey question did not view the issue beyond the scope of digital competences

Recommendations

The following recommendations are offered based on the research findings and partial insight in the available digital competence education programs and trainings²⁷ in which journalists as a distinct professional group do not have an appropriate position. They have been formulated with a view to raising journalistic professionalism in a rapidly evolving technological environment:

Academic Education of Journalists

- The education of journalists should be based on a new, comprehensive concept of digital journalism that has developed in response to the revolutionary changes in public communication. Digital journalism is much more than use of new channels, techniques and tools for boosting the visibility of journalistic products. It is a new approach to the production and distribution of journalistic content, symbolic content competing for the attention of the audience. The goals of producing journalistic content remain the same, irrespective of technological developments: the provision of a reliable and balanced picture of the relevant developments, exchange of opinions on topics of public interest, and oversight and control of public institutions and public policies.
- Universities (high education institutions) should be the main institutions providing formal education in digital journalism. They should tailor their general education, professional and practical courses to the digital transformation of the media and new ways of media content creation and distribution.
- University (academic) journalism education programs, irrespective of their different responses to the old dilemmas surrounding the education of journalists (emphasis on general or professional courses, theoretical or practical courses, mandatory or elective courses, universal or specialized journalists) should equip their graduates for producing stories for multiple platforms and multimedia reporting and facilitate the development of new media occupations, such as digital platform managers, social media editors and analysts, video producers, etc. by combining the offer of skills and knowledge in various fields (content creation, management, marketing, programming, etc.).

²⁷ Marijana Matović, Digital competence programs in Serbia, Faculty of Social Sciences Belgrade, University of Business Academy in Novi Sad, Society for Creative Initiatives - RE.KreAKTa, Belgrade

- Universities should engage journalists with experience in professional work in the media to teach practical, professional subjects related to digital competences. Such journalists need not hold academic titles, but they should have notable pedagogical skills and be provided with career advancement prospects.

Non-Academic Journalistic/Media Education

- Like academic programs, non-academic (informal) journalism /media education programs focusing on the development of digital skills and knowledge should be based on the comprehensive concept of digital journalism. They have to treat increase in the visibility of journalistic content on the Internet and social media and audience engagement inseparably from the principle of accountable journalism and compliance with the ethical code of conduct for journalists.
- Non-academic (informal) journalistic/media education programs should be organized as part of specialized and planned lifelong education for media professions. They should offer diverse training content with a view to increasing digital competences in areas regular annual surveys of media and journalists identify as necessary but lacking or underdeveloped.
- Civil society, state and private sectors alike, i.e. competent organizations boasting the capacity to provide qualified lecturers, technical equipment, venues and the relevant literature for successful trainings, should be involved in the organization of non-academic journalistic training.
- Given that the media industry is not economically self-sustainable and that most media are unable to invest in technological and HR development, most of the digital competence trainings for journalists in the following few years should be organized by media or journalists organizations or their agencies,²⁸ with the support of domestic or foreign donors.
- Media and journalists associations should give thought to establishing a Center for the Education of Journalists, a joint agency the sole role of which would be to organize trainings for journalists, i.e. coordinate the implementation of educational activities that have been conducted by some of these organizations to date. The training curricula would be agreed on through an accreditation mechanism in which the representatives of the professional organizations would take part. The centralization of these activities in one center would facilitate

²⁸ The most successful organizers of non-academic journalistic/media education at its peak were journalists associations (IJAS, JAS, IJAV), media associations (ANEM, Media Association, Local Press) and their agencies (Belgrade Media Center, Niš Media Center, ANEM Training Center), as well as CSOs focusing on media and journalists (Novi Sad School of Journalism, the Center for the Professionalization of the Media), the Institute of Social Sciences, the Center for the Professionalization of the Media (2005), *Obrazovanje za medije: iskustva, iskušenja, perspektive*, Belgrade.

planning of trainings, avoidance of overlapping, the availability of trainings to all journalists, and tailoring the training content to the journalists' needs, improve the quality of the trainings, enable monitoring of the effects of the trainings, rally successful instructors, etc.

- Over the next few years, non-academic journalistic/media education programs should offer trainings building digital competences in multi-media production, video and audio production, including working with live video, data visualization, podcast production, “backpack” reporting, live-tweeting and blogging, fact-checking and photo authentication, analysis of audience engagement statistics and analytics, increasing audience engagement, search engine optimization, web design, digital marketing, cybersecurity and privacy protection.
- The offered informal journalism trainings should be well-timed and decentralized to ensure that they are constantly available to all interested attendees across Serbia, i.e. journalists working in local media.
- Trainings should be sufficiently diversified to enable journalists to achieve several levels of specialization (basic, intermediate, advanced) and keep up with technological developments and the needs of the profession.
- Organizers of training programs aimed at increasing the journalists' digital competences, especially donor-supported ones, should ensure the greater presence of female attendees, in order to reduce the gender digital divide registered in the research. In particular, more women should attend trainings aimed at increasing proficiency in the digital competences all journalists are least proficient in.

Other measures for empowering women in this area should be undertaken as well, such as trainings of women trainers, increased engagement of female lecturers, greater visibility of women in promotional or educational materials, etc.

- The trainings should be designed so as to bridge the generation gap between younger and older journalists, whose competences are less developed. For instance, thought should be given to designing training programs linking the experience of the older journalists with the developed digital competences of their younger colleagues in an efficient manner and to their mutual benefit.
- According to the journalists' preferences, the main lecturers on digital skills and knowledge should be specialized instructors who have developed their own courses on individual skills or eminent journalists from the most developed digital newsrooms, as well as foreign instructors for online media.
- Non-academic journalistic/media education should strive for self-sustainability. The organizers of the training programs should focus on raising funds from domestic donors and inter-

ested beneficiaries (tuition and discounts). Thought should also be given to long-term cooperation agreements with the media that have long-term digital competence training plans for their staff.

- If formed, the Center for the Education of Journalists, a joint institution of media and journalists organizations, should establish cooperation with acknowledged private or public providers of trainings building the competences of the general population or other professional groups that are relevant to journalists or can be tailored to their needs, such as, e.g. competences concerning Internet safety and protection, troubleshooting and software adaptation, in order to enable journalists to attend such trainings under adequate and affordable conditions.
- The newly-formed Center for the Education of Journalists, as a joint institution of professional associations, should regularly publish - on one platform - information about all trainings of potential benefit to journalists that are on offer, either online or offline, across Serbia. The information should include details about the training topics, the competences they develop, the level of specialization (basic, intermediate, advanced), the duration and cost of training, the lecturers, any discounts for particular categories of journalists, etc.

State and Local Self-Government Support

- State institutions should involve themselves in planning lifelong education activities for media professions, in their capacity of program partners of civil sector organizations extending long-term support to the implementation of education programs, by providing training venues or equipment or by directly funding the programs.
- The relevant state institutions should enable journalists to attend digital competence training programs public institutions are organizing for education professionals or other public officials under favorable, primarily financial, as well as other conditions.
- Local self-governments should extend support to the technological modernization of local media, especially civil society media that are at the brink of survival. Local self-government calls for proposals for co-funding media content of public interest should stimulate media projects encouraging the technological modernization of the local media, because it is prerequisite for their survival. Local self-governments could use part of their budgets designated for public information to raise the technical capacity of local media or for the digital training of local journalists.

International Donors

- International donors should direct their support to the longer-term financial stability of local media. The goals of such support should include the technical modernization of the local media and the consolidation of their HR capacity in terms of the number and development of the digital competences of journalists.
- International donors should promote international cooperation among the community of media professionals in Serbia and journalists of other countries to encourage the development of digital skills and knowledge, e.g. by arranging lectures by foreign experts at universities or within informal training programs, sharing of foreign experience in the establishment of special centers for the development of digital competences, bridging the digital generation gap, training for trainers in digital skills, etc.