Online News and Gamification Habits in Late Adulthood

A Survey with Older Adults

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Abstract. Older adults are becoming to comprise a significant proportion of the global population. Simultaneously, the use of technologies by this age group is growing at a fast pace. However, technological products still lack attention to older adults' physiologic, psychologic, and social needs. Journalism is a significant part of one's lives, as it allows to be always up to date with the World's events, and which was not left behind in this World's *cyberization* process. In a reality where everything shouts for the users' attention, gamification – *i.e.* the use of game elements and its logics for contexts that go beyond entertainment purposes – presents itself as a way to capture users' motivations, possibly leading them to use products in a consistent and systematic way.

The aim of this paper is to describe a survey conducted from June of 2020 until the first week of July of 2020, to a total of 248 older adults aged 50 and over from sixteen different countries. During this study, researchers intended to assess older learners' context in terms of social media, online news, and games usage, as well as their familiarity with gamification strategies. The results suggest that the questionnaire's respondents are online news consumers, with a heavy usage of computers to access the Internet. Additionally, it was possible to report the main activities respondents like to be valued for – activity in groups; frequency with which they talk to other people; and debate, share and react to news – allowing the design of a gamification system.

Keywords: Ageing, Online News, Gamification, Survey, miOne.

1 Theoretical Background

1.1 An ageing population

It is a well-known fact that the world's population is getting older and progressively living longer [1]. As a matter of fact, European countries such as Italy, Germany, Belgium, Spain, Greece, United Kingdom, and France, and an Asian country – Japan, are on the top of the countries with more than 10 million habitants and with the highest percentage of people over the age of 60 years old [2]. It is also registered a tendency to increase these percentages between 2002 and 2025, according to the World Health Organization [2]. Many reasons could contribute to this demographic change – *e.g.* better health conditions, decrease of fertility rates, and longer lifespan [2]. In fact, this

fraction of the world's population is very heterogeneous [3], despite of the well-known changes that occur during ageing [1, 4–9]:

- Physiologic: the movement is 1.5 to 2 times slower than the young adult, there are hearing losses, several changes in the visual system occur, it is necessary more time to shift the attention focus, spatial cognition decreases, and the ability to understand written and spoken language is also affected;
- Psychologic: depressive symptoms increase, strongly motivated by physiological deficiencies;
- Social: social media has a great impact on older adults' longevity and health, since social isolation can accelerate the ageing process.

Therefore, it is important to develop technological solutions that consider the limitations, context of use, motivations, and needs of the older adults.

1.2 Older adults and Information Communication Technologies

Technology and its use have been growing at a fast pace, having major implications in the way people produce, distribute, access and consume information. The way technological products work, their aspect, performance, and the reaction to users' utilization have been suffering constant changes [1].

However, there is a fairly common and entrenched stereotype that older adults do not and will not use technology. Despite the barriers that its utilization can present [1, 5, 10] – (i) intrapersonal (*e.g.* believing to be too old to use technologies); (ii) structural (*e.g.* the cost of owning a personal computer); (iii) interpersonal – the non-existence of people to teach how to use; (iv) the age-related wage disparity; (v) the lack of perception to the need to use technological products; (vi) the difficulty to use the technological products; and (vii) the usability problems that can lead to distrust of the accessed information – the utilization of Internet has been gaining significant popularity among older adults, being this age group the one with the most accentuated growth [11]. Thus, Internet is a leisure activity to older adults in two distinct ways: a tool to learn, plan and buy leisure; and an activity *per se* [11].

Moreover, according to PORDATA [12], a data bank of certified statistics on Portugal, there is a growing trend of Internet use among older adults. Again, as suggested by PORDATA [12], the Portuguese population, among all age groups, has increasingly been using the computer. Thereby, both Internet and computer usage data suggest that older adults are using technology and understanding that the challenges and costs of change are outweighed by the benefits they bring - *e.g.* enhancing the sense of independence and empowerment; lower levels of depression; improvements on self-image and self-confidence; and decreasing feelings of loneliness while promoting social connectivity [11].

Since Information and Communication Technologies (ICT) are increasingly more used in the most diverse contexts, older adults must be prepared to adopt these technologies and take advantage of their capabilities [13].

Another factor that has embraced the evolution of technology and motivated it at the same time is the Web. In the next section, the evolution of the web as well as its impact on digital media will be explored.

1.3 The Evolution of Digital Media

In 1989, Tim Berners-Lee invented the World Wide Web – a space where information sharing is privileged, as well as, and above all, hypermedia and hypertext technologies are highly patent [14]. The first iteration of the Web – Web 1.0, was mainly characterized by a mono-directional sharing of information, being, therefore, a read-only technology [14].

The second iteration of the Web – Web 2.0, came a few years later in 2004, characterized for being more participative, people-centered and allowing the formation of online communities [14]. This way, users were empowered to interact with each other, and incentivized to be part of the process of making media, instead of just consuming it [15]. Thus, a new type of end-users was formed – the ones that create and diffuse information [16], hence becoming *prosumers* (simultaneously content producers and consumers) [17].

While this evolution of the Web happened and the online world became bigger, terms like ‘cyber’ started to be common in the most varied contexts. According to the Cambridge Dictionary [18], the prefix ‘cyber’ can be defined as “involving, using, or relating to computers, especially the Internet”. The industry of journalism, who didn’t want to be left behind, made use of the mentioned prefix, emerging with the term *cyberjournalism*, a new form of online journalism, while changing the paradigm of newspapers [19].

The urge to shift to this new digital world was felt more intensely by newspapers’ owners when compared to other media – it was a “digital gold rush” [19], and nobody wanted to be left behind [20]. At the beginning of this new era, newspapers adopted a strategy where the printed version was similar to the online one, making it difficult to see the economic value in having two forms of publishing [19]. As time progressed, newspapers’ sites adopted web’s features, such as multimedia, interactivity and hypertext [21].

Additionally, technologically-qualified young people want to choose their source of information, since they consider traditional media (*e.g.* radio, TV) to be controlled by an anonymous authority [20]. Therefore, the Internet is becoming progressively their primary source of information, not only because it receives faster updates, but also because they can control the information they get and are able to confront the different sources [20]. This trend of online news adoption is not only registered among the younger population, since, and according to Conill and Karlsson [22], “older generations have adopted digital media as a complementary source of news” (p. 14).

Journalism plays a major role in democracies, since it is “responsible for a free flow of information, criticism and control of the powerful, bringing transparency into society and its institutions” [23]. In fact, modern societies are, since their early stages, information societies [24]. The term ‘information society’ is used to characterize an attribute of societal formation, as information is highly present at all stages of

civilization society development [25]. In an information society, it is crucial the flow of information, and, as stated by Lenstra, “the information society is also an ageing society” [26].

Social media, a great product resulting from Web 2.0, can be defined as Internet-based applications that “allow the creation and exchange of user-generated content” [27]. Media, and more in specific social media, have also become a space where journalists and citizens come together, reinforcing the importance that the audience plays within the media, not only being news sources, but also news sensors [15]. A large number of names is used to describe this readers participation in news production, “such as citizen journalism, user-generated content, and participatory journalism” [15]. Being this new phase the point of contact between journalism and social media, it can be called *social journalism*, a more networked side of journalism [15].

Despite all of the previously mentioned, there are some reservations regarding the strengthening of the relationship between consumers and journalists through an online channel, since the institutional power of the latter can be questioned when it comes to decide what is newsworthy or credible [15]. According to Siapera and Veglis [21], newspapers websites were reticent to join social media, but recently every major and respectful newspaper has some type of presence in social media – whether it is Facebook, Twitter or a blog. Additionally, Allan [20] identified immediacy¹ as one of the characteristics of online journalism, as well as the introduction of more information about a given subject and the ability to benefit from the interactivity potential of the web. Notwithstanding with the previously mentioned reservations regarding the adoption of a close online relationship with consumers, a research from the Pew Research Center [28] states that the majority of adults from the studied countries uses at least one social media or messaging application, suggesting that their use is deep-rooted in the population.

In conclusion, and bearing in mind the mentioned reservations, social media can be a great ally to online journalism. The act of sharing news always happened in the most different social contexts, but social media only came to accelerate and extend the access and dissemination of information [15]. Moreover, it offers innovative means to promote content, increase the audience reached, and potentially bring loyal consumers [15].

1.4 Gamification in Journalism

Due to the increasing sources of distractions, highly motivated by the mobile technologies’ ubiquity, the current media landscape is characterized by a constant fight for audiences’ attention [22]. In order to grab readers’ attention, newspapers have adopted new strategies such as spawn an increasing number of notifications related to headlines and activities with a more fun and even playable side [29].

In fact, journalism has been using a different number of ways to potentially capture one’s attention: (i) *storytelling* - “telling a story which is exciting or dramatic enough to engage presumptive viewers” [30]; (ii) *immersive journalism* - “the production of news in a form in which people can gain first-person experiences of the events or

¹ An advantage that the site has over its press and television competitors.

situation described in news stories” [31], having a great help from Virtual Reality (VR) technologies, by allowing users to feel like they are experiencing what happened [32]; and (iii) *newsgames* – “a genre that is currently emerging: videogames based on news events.” [33].

Gamification, defined by Webach and Hunter [34] as “the use of game elements and game-design techniques in non-game contexts” (p. 26), is also a great way to increase users’ engagement, motivation and fidelity, leading them to spend more time on the system [35]. This is important not only to engage older adults with online newspapers, but also to motivate them to overcome their difficulties with technology. According to Conill and Karlsson [22], the reason behind gamifying news is related to the fact that it is a powerful tool to engage users to be informed, empowering them with information, and making them responsible for the information they choose to consume.

Moreover, there are two great advantages of gamifying news [22]: (i) benefits businesses’ logics by boosting users’ news’ consumption; and (ii) boosts users’ engagement to read news, increases their intrinsic motivation, and creates a desirable habit.

In order to successfully implement a gamified strategy in any system, it is necessary to track users’ behaviors [22]. To do so, there is a set of metrics that can be followed [22, 29, 36]: (i) page views, (ii) time on pages, (iii) shareability – in order to measure the audience’s interest; (iv) news accessed; (v) unique visits and (vi) users’ returns.

In conclusion, gamification can be a great addition to online news. Not only because it can engage the audience and boost the consumption of news, but also because it can promote the collaboration of readers with the process of news production, making the social journalism something that can appeal to readers’ motivations. In fact, and as pointed out by Salwen *et al.* [19], the newspaper industry has a great difficulty in making profits and, thus, it is important to establish a well bonded relationship with the audience - in which gamification can be a great help.

2 Method and Sample

The research on this study is sustained strictly on a quantitative method. This approach allowed a more direct analysis of data and an easier distribution of the questionnaire. The study was executed following the Ethics and Deontology Council of the University of Aveiro Ethical Approval for the SEDUCE 2.0 project - use of Communication and Information in the miOne online community by senior citizens (Project FCT POCI-01-0145-FEDER-031696).

2.1 Procedures

The mentioned questionnaire was distributed by email to a total of 2782 contacts from Universities of the Third Age located in sixteen different countries (Australia, Austria, Brazil, Canada, Czech Republic, France, Germany, Netherlands, New Zealand, Poland, Portugal, Slovakia, Spain, Sweden, United Kingdom and the United States of America). The questionnaire was applied and data was collected using an online survey hosted on

the FormsUA² platform. The mentioned instrument had an English and a Portuguese version due to the different distribution zones, and is constituted as being cross-sectional, *i.e.* was applied during a specific point in time – from June of 2020 to the first week of July of the same year.

2.2 Questionnaire Design

A survey method was used, applying a questionnaire as a data collection tool. The mentioned questionnaire was administered in order to assess older learners' context in terms of social media, online news, and games usage, as well as their familiarity with gamification strategies.

Demographic information included age, gender, level of education, and country of residence. After, a set of twelve questions was applied, described in Table 1, which summarizes the questions applied, divided by groups of goals for data analysis.

Table 1. Summary of the questions applied in the questionnaire. Retrieved from *Gamifying News for the miOne Online Community* [37].

Data collection questions	Goals for data analysis
1. Which devices do you usually use to access the internet?	Identify the main activities performed by older adults in the digital context and how they do it.
2. Regarding the frequency in which you access the Internet, Social Media, News Consumption, and other activities, please indicate the alternative that best fits within each activity.	
2.1. If you try to avoid the news... What is the reason?	
3. What is your interest in the following types of news?	Identify the motivations for news consumption.
4. What is/are the reason(s) for consuming news?	
5. Which means do you usually use to consume news?	Identify the means used to consume news.
6. Which activities do you usually do when you access the news?	
7. Do you use any points/card/coupon or discount mechanisms in your daily life?	Understand the familiarity with gamification mechanisms in daily life.
7.1. If yes, which one(s)?	
7.2. If yes, does the use of these mechanisms encourage you to use the service(s) more and more?	

² Available at: <http://forms.ua.pt/> (Date accessed: 06-01-2021). A service offered by the University of Aveiro using the LimeSurvey software – <https://www.limesurvey.org/pt/> (Date accessed: 06-01-2021).

Table 1. Summary of the questions applied in the questionnaire. Retrieved from *Gamifying News for the miOne Online Community* [37] (cont.).

8. In an online social network/community, please indicate the importance of the following activities you would like to be valued for.	Identify what adult learners like to be valued for online communities.
9. Do you use any mobile application in your everyday life that rewards you with challenges, badges, levels, points, or leaderboards? 9.1. If yes, which? 9.2. If yes, what motivates you to continue using the application?	Understand the familiarity with gamification mechanisms in mobile applications contexts.
10. Do you usually play games? 10.1. Who do you usually play with? 10.2. What motivates you to play games?	Identify the familiarity with games and the context in which they are played.
11. What is your motivation for using social networks?	Identify the motivations for using social media and the type of activities carried out in these contexts.
12. What activities do you usually do when you access social networks?	

On questions 1, 4, 5, 6, 10.1, and 10.2 multiple answers were allowed. SPSS³ was used to perform data analysis and data management.

2.3 Participants

Of the 279 responses obtained, 248 were considered valid since they fitted in the age criteria defined by Lee and their colleagues [38], *i.e.* youngest-old, aged between 65 and 74 years old; middle-old, aged between 75 and 84; and oldest-old, aged over 85 years. Moreover, an additional younger age group was added – *i.e.* pre-seniors, aged between 50 and 64 years.

2.3.1 Demographics

Table 2 provides an overview of the sample's demographic characterization. The majority of respondents (57%; N=140) identified as being male, whereas 43% (N=107) identified as being female and 1 person with other gender.

In order to standardize the age distribution, a readjustment and adaptation of the previously defined criteria was made, *i.e.* pre-senior, aged between 50 and 64 years old; young-old – aged between 65-74 years old; and old – aged over 75 years old). The average age of the sample was, approximately, 67 years old (SD = 8,369; minimum = 50; maximum = 91). The predominant respondents' age group is young-old (44%; N=110), follow by pre-seniors (38%; N=93), and old (18%; 45%). Countries of residence covered the America, Europe, and Oceania continents, with Portugal (60%;

³ Available at: <https://www.ibm.com/analytics/spss-statistics-software> (Date accessed: 06-01-2021)

N=146) and United Kingdom (29%; N=72) being the predominant ones. 5% (N=13) of respondents were from Australia, and the remaining 6% (N=14) were from other countries – *e.g.* United States of America, Canada, Sweden, and Slovakia. It is worth noting that there were three non-answer in this question.

Regarding the level of education, there were also three non-answers, and respondents showed a prevalence of higher academic degrees. 36% (N=89) of respondents gave a College/University degree, followed by the 35% (N=86) who have a Graduate University degree. High School degree also have a high percentage of respondents – 19% (N=46), as well as the Primary School degree – 9% (N=22).

Table 2. Demographic characterization of the sample.

Gender	N	%
Total	248	100
Male	140	57
Female	107	43
Other	1	0
Age	N	%
Total	248	100
Pre-senior	93	38
Young-old	110	44
Old	45	18
Country of residence	N	%
Total	245	100
Portugal	146	60
United Kingdom	72	29
Australia	13	5
Other	14	6
Education Level	N	%
Total	245	100
Primary School	22	9
High Scholl	46	19
College/University	89	36
Graduate University	86	35
Other	2	1

3 Results

Respondents' responses to the question concerning the devices to access the Internet revealed that the most preferred one is the PC/Notebook (80,20%; N=199), followed by the smartphone/iPhone (69%; N=171), and, lastly, the tablet/iPad, used by 46,80% (N=116) of the considered sample.

Table 3 shows the frequency, on a 5 item-scale (ranging from *never* to *always*), with which respondents performed a predetermined set of activities – *e.g.* send and read emails, access the internet, contact with online news, use social media, and online banking. Through the analysis, it is possible to conclude that 'Send and read emails' is the most performed activity (118 always and 93 often), followed by 'Access the internet' (111 always and 120 often), and 'Read online news' (60 always and 106 often). Moreover, respondents are also interested in activities such as 'Online search', 'Access social media', and 'Online banking or other financial products'.

Table 3. Respondents' most performed activities when accessing the Internet, Social Media and/or News' Consumption (N=248).

	Never		Rarely		Sometimes		Often		Always	
	N	%	N	%	N	%	N	%	N	%
Send and read emails	1	0,4	9	3,6	27	10,9	93	37,5	118	47,6
Access the internet	0	0	2	0,8	15	6	120	48,4	111	44,8
Read online news	7	2,8	19	7,7	56	22,6	106	42,7	60	24,2
Online search	2	0,8	10	4	46	18,5	139	56	51	20,6
Access social media	21	8,5	23	9,3	37	14,9	116	46,8	51	20,6
Online banking or other financial products	37	14,9	25	10,1	38	15,3	95	38,3	53	21,4

Regarding the means to consume news, respondents revealed to be still very traditional, since television (87,50%; N=217) and radio (53,63%; N=133) are the most preferred ones. Mobile devices with internet access are also on the top three, with 50,40% (N=125) of respondents using this medium. Immediately after, are search engines (47,58%; N=118) and websites/app of news in newspapers (39,92%; N=99).

Fig. 1 illustrates respondents' main reasons to consume news. As it possible to observe, keeping up with world's (85,77%; N=211), country's (83,33%; N=205), and region's (71,54%; N=176) news are the most important reasons among respondents. Nonetheless, they also value having different perspectives on different events (67,07%; N=165), having info about everyday life (58,13%; N=143), and consuming news as a part of their routines (36,59%; N=90).

Fig. 1. Respondents' main reasons to consume News (N=248).

Question 3, *i.e. What is your interest in the following types of news?*, allowed the assessment and identification of respondents' most preferred types of news. As it is possible to observe on Table 4, organized by a 5 item-scale of interest (ranging from *not at all interested* to *very interested*), and corroborating what was previously perceived, national (95 very interested and 92 somewhat interested), regional (65 very interested and 122 somewhat interested), and international (64 very interested and 86 somewhat interested) news are respondents' preferred types of news. Moreover, political news, breaking news, and science and technology news also arouse older adults' interest. Lastly on this list is health news, a topic that is so close to the target audience.

Table 4. Respondents' most preferred types of news (N=248).

	Not at all interested		Not very interested		Neutral		Somewhat interested		Very interested	
	N	%	N	%	N	%	N	%	N	%
National news	1	0,4	11	4,4	49	19,8	92	37,1	95	38,3
Regional news	2	0,8	13	5,2	46	18,5	122	49,2	65	26,2
International news	1	0,4	26	10,5	71	28,6	86	34,7	64	25,8
Political news	14	5,6	42	16,9	59	23,8	80	32,3	53	21,4
Highlights - Breaking News	3	1,2	35	14,1	66	26,6	93	37,5	51	20,6
Science and technology news	11	4,4	42	16,9	55	22,2	98	39,5	42	16,9
Health news	8	3,2	33	13,3	74	29,8	92	37,1	41	16,5

When the subjects were asked to indicate which activities they usually do when accessing the news, the majority elected ‘read news’ (89,11%; N=211), followed by ‘share news’ (34,68%; N=86), and ‘react to news’ (32,66%; N=81) with similar percentages. Lastly on the same question, commenting news is also an activity selected by respondents, as part of their self-expression.

Moreover, in response to the question that assessed the main activities that respondents like to be value for, through a 5 item-scale of importance (ranging from *not at all important* to *extremely important*), they demonstrated to give great importance to activity in groups (7 extremely important and 40 very important), followed by the frequency with they talk to other people in the community (6 extremely important and 33 very important), debate news (3 extremely important and 32 very important), share news (5 extremely important and 31 very important), and react to news (6 extremely important and 26 very important) – see Table 5.

Table 5. Main activities respondents like to be valued for (N=248).

	Not at all important		Slightly important		Moderately important		Very important		Extremely important	
	N	%	N	%	N	%	N	%	N	%
Activity in Groups	64	25,8	59	23,8	78	31,5	40	16,1	7	2,8
Frequency with which you talk to other people in the community	64	25,8	55	22,2	90	36,3	33	13,3	6	2,4
Debate news	85	34,3	61	24,6	67	27,0	32	12,9	3	1,2
Share news	71	28,6	71	28,6	70	28,2	31	12,5	5	2,0
React to news	74	29,8	66	26,6	76	30,6	26	10,5	6	2,4

After assessing respondents’ motivations and most performed activities when accessing news, a couple of questions related to gamification were posed. The first one, related to the use of points, cards, coupons, or discounts, in order to assess the use of gamification in the respondents’ daily life; whereas the second one intended to perceive the subjects’ perception of gamification in strategies in the various contexts. The results show that 65,32% (N=162) of respondents recognize the use of systems with points, cards, coupons, or discounts – see Fig. 2. However, only 10,89% (N=27) acknowledged using gamified mobile apps.

Fig. 2. Respondents’ contact with gamification systems (N=248).

Lastly, in order to assess a possible familiarity to game elements by games themselves, respondents were asked “Do you usually play games?”. 42,7% (N=106) stated playing games on a usual basis.

In order to characterize the act of game-playing, 79,25% (N=84) of the respondents who play games (N=106) affirms playing alone, whereas 16,98% (N=18) play games with relatives, and 33,02% (N=35) play with friends. When asked “What motivates you to play games?”, 73,58% (N=78) of respondents reported to be motivated by progress in game, 27,36% (N=29) by the competition with others that arises in the context of game-playing, 25,47% (N=27) by the provided learning experience, 18,87% (N=20) by the possibility of socializing and making friends, and 13,21% (N=14) of respondents feel motivated by being possible to play as a team.

4 Discussion

After the results of the questionnaire have been presented and analyzed, it is possible discuss them.

Despite the poor digital literacy that characterize older adults, and a certain resistance to use digital devices, more than 80% of the respondents use a personal computer to access the Internet. Mobile devices, such as smartphones, are also making significant progresses, as 69% of the sample use them to *surf* the Internet.

The interpersonal communication is something that older adults value much [10], being also a way to prevent mental diseases, such as depression that can lead to suicidal thoughts on more extreme cases of social isolation [6]. This fact is proven by the preferred activity registered, *i.e.* send and read emails. Access social media, a communication and contact space par excellence, is also quite valued, being the fifth most performed activity by the older adults sample. Staying up to date is, clearly, a priority, as read online news and online searching are the third and fourth most performed activities, respectively. Accessing online banking or other financial products, which frequently offers some resistance to use, is also featured in this 6 item-list of the most performed activities when accessing the Internet, social media and/or news' consumption.

Despite these advances on technology's use, the news' consumption is still very traditional, as television and radio are the most preferred means. However, more than a half of respondents use mobile devices with internet access to keep up with news.

The products of journalism are a great to keep up with the most recent events on the world. Results of this study allowed to assess the main motivations to consume online news of the questioned older adults, showing that worldwide news is simultaneously the main reason to consume news and the most preferred ones. Respondents also demonstrate to like having different perspectives on different events, possibly because it is a way to engage in debates in an informed manner; and having info about everyday life.

Expectably, reading is the most performed activity when accessing news. Sharing, reacting and commenting are all on this top of most performed activities, which are part

of self-expression, which is crucial to self-growth, change, openness, and self-revelation [11].

Lastly, as already discussed, gamification plays a major role in captivating one's attention. The subjects of this study revealed to have a moderate familiarity with this mechanism, as more than a half use them on daily basis – through the use of points, cards, coupons, or discounts; and a little less than a half claims to play games, which is good evidence that respondents are familiar with game elements. The sense of progress is highly valued. The same does not happen with the social side of game-playing, since the vast majority of respondents who play games claim to do it alone, and don't have a great sense of team or socialization while playing.

Therefore, in order to develop a gamification strategy that involves older adults and online communities or online news, it is important to know what activities must be valued and targeted. Therefore, the study's results revealed that older adults like to be valued the most by: (i) activity in groups; (ii) frequency with which they talk to other people in the community; (iii) debate news; (iv) share news; and (v) react to news.

5 Conclusion

In conclusion, this paper has allowed the researchers to assess some of the main contexts of the use of online news and games. The study allowed the characterization of the technological devices used, what type of activities the respondents perform on the Internet, by what means is made the news consumption, what type of news they prefer, and their familiarity with games and its elements in entertainment or non-entertainment purposes. Moreover, the main activities and motivations that can be targeted to construct a gamification system were identified.

This study, however, has some limitations. First, due to the use of a convenience sample, caution should be exercised when extrapolating results and findings to other contexts. Thus, throughout this study, it was only possible to make a descriptive data analysis.

Second, this study's questionnaire is cross-sectional, *i.e.* was applied during a specific point in time. During this period of time, due to the COVID-19 outbreak, the massification of the use of technologies and news consumption happened, which may have interfered in the respondents' perception of the usual reality.

To minimize these limitations, the following guidelines for future research should be considered.

First, a random sample should be selected from the students at the Universities of the Third Age from the different countries.

Lastly, it should be considered to apply the questionnaire in a different period of time. The mentioned pandemic has changed everyone's lives, and it may be interesting to realize the impact that this technological transition is having on the use of technological products and consumption of online news.

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