

17. *ELECTRO ARTS*, A TOOL OF INTERACTIVE DIGITAL EDUCATION: A CASE STUDY

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Abstract: *This research analyses the impact of the Elektro Arts Festival on the attending audience, based on the responses offered by 98 respondents, highlighting the socio-demographic characteristics of the participants, the interest in computer art and realising an evaluation of the event's quality by emphasizing preferences and customs of cultural consumption and identifying the communication and advertising channels preferred by the audience. The organizers of the future editions of the event obtained the necessary feedback on the interest manifested in digital arts as well as on the satisfaction and the preferences of the audience. The Elektro Arts Festival is considered an innovative environment propitious to IT-mediated artistic expression, and the newly organized editions have been linked to the research in the field of computer-based numerical technologies.*

Key words: *Digital art, audience, music, dance, computerized technology*

1. Introduction

Digital art is considered to be a totalization of the artistic manifestations which use digital technological means both as a mode of creation and as a mode of propagation. Digital culture goes far beyond the online environment, the social networks, the electronic media, the games, the communication in the virtual environment, the programming, as it comprises information on the screen of devices, surpasses technology (Carmody, T., 2013) and represents a means of expression and realization of the manifestations of creativity in accordance with the technological development. These expressions are closely linked to the propagation of instrumental benefits in such fields as education, social cohesion, and economic development (Belfiore, 2004; McCarthy et al., 2004). Digital technology is becoming an increasing part of our lives, moreover, there is a noticeably higher number of digital materials, with a continuously growing expressive potential. (Svenson, P., 2016)

There are also constraints inherent to the nature of digital technology, given by a paradoxically mature/immature creative environment, which has been in existence for less than a hundred years. This phenomenon has given rise to some very different approaches of its employment in digital arts, from those who would transform the extant forms into “technologic-digital” to those who would exchange the forms proper for it. These factors can constitute inherent constraints, treated in very different ways, with consequences for the future of the digital art

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process (Candy, L., 2007). Technology per se is incorporated with increasing frequency both in the practices employed in exhibitions and performances and in creating the works proper, thus producing new relationships between creators/curators and audiences/visitors (who often become participants in generating the artistic process) (Papadaki, E., 2019). The biggest challenge of artistic entrepreneurship is bringing digital art to the attention of the public, who must also be transformed, changing the possibilities of transmitting the artistic act which in turn offers its own challenges, namely:

- Technological problems identified by the artistic organizations versus lack of financing;
- The relationship between the practices found in digital art and traditional art and the context in which the work is done;
- The way in which entrepreneurs/artists/curators can take advantage of new ways of interacting with the public (Harding, C., Liggett, S., Lochrie, M., 2016).

A very attractive direction is the one in which technology offers interactivity, in real time, with many participants for a collaborative control over the outcome of the artistic act, especially that of music and dance (Mark, F. and Paradiso, J. A., 2006). The interactive performance brings a lot of technical challenges pertaining both to new artistic languages and special hardware components including sensors, methods of sound synthesis and technical software (Dannenberg, R. B., 2005). In our country these technologies, which enable the performer's interactivity by means of motion sensors (body sensors) and transformation of the signal generated by digital encoding into expressive resources/means, have been presented to the public rather sporadically. Nevertheless, the technological potential is now available to Romanian artists as well. The method of using computer interfaces containing sensors that can be programmed to capture sounds and gestures is a new challenge emerging in digital art. In other words, the human action is transformed into numerical data adapted to the computing environment in order to model various audio-visual parameters, the sound synthesis, the design generation or the processing based on audio and video effects. This results in the augmentation of art's instrumentality through the addition of interfaces, offering the performer the ability to interact, on stage, with the sound and the visual image produced by the computer (Miranda, E.R., Wanderley, M., 2006).

2. Case study

The European context presents a dynamics that highlights a significantly livelier activity in the past few years, for instance in Germany there are approximately twenty-four festivals of digital arts, among which "Transmediale / Art & Digital culture". Locally, the *Elektro Arts* Festival brings together musicians, choreographers, visual artists, dancers, stage and sound directors, programmers. As a rule, the festival takes place in May and is organized by the National Academy of Music *Gheorghe Dima*, the University of Art and Design, the Faculty of Theatre and Television of the Babeş-Bolyai University. The event started in the year 2013 under the patronage of the "Union of Cluj Universities"

and promotes electroacoustic music integrated in visual and gestural interventions, acousmatic, interactive, mixed, algorithmic music. At the same time, *Elektro Arts* brings forward interdisciplinary works of “kinetic art with sound augmentations”, modern computational interfaces containing sensors that can be programmed for gestural capture.

Our study was conducted with the help of a sample group comprising the audience that attended the last edition of the *Elektro Arts* Festival in 2018. However, the diversity of the activities proposed by this festival, slightly different from the content of the festival in the previous years, requires a more detailed presentation of the events included in the past edition.

In the year 2017 the festival was organized from 12th to 13th May and presented works accomplished by 55 authors from the fields of music composition, choreographers, visual artists, dancers, artistic directors, programmers, from Romania and abroad, both well-known and beginners, students and teaching staff. The festival proposed two novel events: technological dance and installations. The artistic productions included electroacoustic music accompanied by interactive visual and gestural interventions - a production called “sound-augmented kinetic art”.

The organizers’ declared vision was to support “numerical arts” which must be presented in a form accessible to the audience. We must stress the interest of a large number of authors in attending the festival with their works; prior to the event there was a selection of the music pieces for approximately 130 composers from all over the world: Canada, Mexico, Sweden, Australia, Scotland, Iran, Germany, the Netherlands, France, the United States of America, China, Austria, Chile, Italia, the Philippines, England, Argentina, Spain, Uruguay, South Korea, Singapore, Romania, Columbia, Taiwan, Ireland, Greece, India, Portugal, and Russia. The president of the jury who selected the works to be performed in the programme was composer Octavian Nemescu, and the selection committee was made up of personalities renowned in the field: Robert Rowe, João Pedro Oliveira, Alexander Mihalič, and Adrian Borza.

In the year 2018, the *Elektro Arts* Festival offered the occasion for the organization of interdisciplinary artistic events relying on technology, divided into six categories of activities, grouped into three lines of development:

- Artistic competition (initially there was a call for works and projects of electroacoustic music, “installation” art and mixed media, digital photographic art);
- Interdisciplinary art works (technological dance shows, acousmatic music and interactive visual image; mixed music and video art);
- Technological innovation (by developing computer programs for gestural control).

The link to a type of digital education that promotes sound art can be noticed in the diversity and novelty of the manifestations organized within the two editions - activities conducted by notorious artists:

Table 1. *The table of the events that took place during the Elektro Arts Festival 2017/2018*

YEAR/ Events	2017 I. Diverse Dimensions II.Arhipelag	2018 I. Fluxuri II The Geometry of Echo, III Diagnostique
Organizers	Academy of Music Gheorghe Dima, University of Arts and Design, Babeş-Bolyai University – Faculty of Theatre and Television	Academy of Music Gheorghe Dima, University of Arts and Design
Characteristics	-Technological dance -Installations - Sound-augmented kinetic art - multimedia videographic works	-music for soloist and electronic environment -dance, -video, -electroacoustic music, -sensors, computers, complex audio systems, - multimedia installations -choreography with technology
Composers / Visual Artists	I Daniel Blinkhorn (Australia), Ana Dall’Ara-Majek (Canada), Francis Dhomont (France), Gilles Gobeil (Canada), Panayiotis Kokoras (Greece/USA), Clemens von Reusner (Germany). II Laurențiu Beldean (Romania), Guillaume Dujat (Great Britain), Mei-Fang Lin (Taiwan), Paolo Pastorino (Italy), Dennis Deovides Reyes III (Philippines), Rodney Waschka II (USA).	. Andrei Budescu, David Bodescu, Diana Drăgan-Chirilă, Andrei Nicolas Fiuciuc, Fülöp Eduard, Tudor Gîrboan, Oana Onose, Alex Nistor, Carmen Timiș and Alexandru Rădulescu. Technical designer: Veres Mihály. II Dorel Găină, Kalló Angéla, Daria Ioan, Alexandra Mureșan, Delia di Rita, Ruth Borgfjord, Alex Nistor, Irina Măgurean and Diana Drăgan-Chirilă. Technical designer: Veres Mihály.
Dancers	Smaranda Ciubotariu, Iuliana Dane, Adelina Filipaș, Augustin Gribincea, Diana Groza, Antonia Indrei, Roberta Lupaș, Jessica Man, Raluca Perde and Oana Siminic.	Adelina Filipaș, Augustin Gribincea, Oana Siminic, Roberta Lupaș, Tudor Stupar, Raluca Perd

In order to measure the level of publicity for digital arts in the local community we conducted a research on the festival’s impact based on a survey that involved the attending audience. The goals of the research were:

- a. to conduct an **analysis of the festival’s audience** through: socio-demographic segmentation, highlighting preferences and customs of cultural consumption, identifying channels of communication and promotion preferred by the audience.
- b. **Evaluation of the festival’s quality** based on a general comparison related to the prior festival edition.

3. Method

In order to record the features of the audience that attended the Elektro Arts Festival in the 2018 edition, they responded to a questionnaire structured

according to the following aspects:

- Musical preferences
- Sources of information regarding the event
- Multi-Criteria, general and relative evaluations related to the prior festival edition
- Perspectives of improvement and organization of the event in alternative spaces, other than the traditional ones.

These were accompanied by the set of items employed to collect socio-demographic data. The research relied on the analysis of certain quantitative components, the human resources available as respondents; the sample group consisted of 98 questionnaires completed for a constant audience of over 200 participants. The data was collected at the end of the two events, so that the respondents could provide a valid assessment of the performances they had attended.

4. Results

The interpretation of the data obtained by completing the questionnaire pursued the following directions of investigation:

a. Analysis of the audience structure

A key variable in defining the socio-demographic identity of the audience of an event is the age of the participants (their distribution according to age groups), which in the case of the mentioned event is quite balanced, with a peak for the age group 26 to 40 years, which includes 34.7% of the viewers. From the data collected from the attending audience, we drew the conclusion that the audience of *Elektro Arts* is balanced in terms of gender (approx. 50% men, 50% women). We can thus notice a first particularity of the *elektro* events, namely the balanced preference for this genre, while the predominant age group is the more mature one, a fact that can set its print on the content of the manifestations as well as on the advertising techniques of the event.

Regarding the education level of the public interested in the digital arts, the data collected showed that the majority of those that attended the *Elektroart* performances have undergraduate studies (50% Bachelor, 28.6% Master, PhD), so that in this framework only 21.4% of the participants graduated only the secondary education. This aspect must be noticed, as digital education is accessible, according to the way in which this result is interpreted, particularly to those who have been professionally educated at university level.

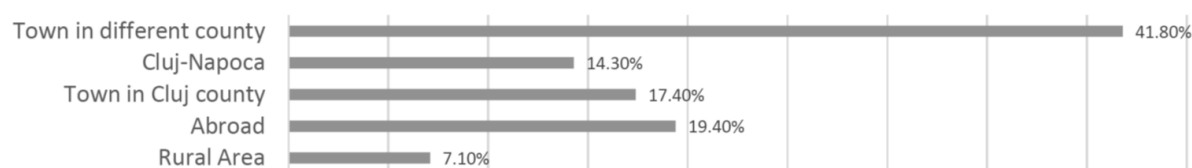


Figure 1. The audience structure of the two events according to residential environments

The audience's residence is an important item for the organizers of an event. In order to adopt a promotional strategy, it must be tailored according to certain analyses and results, as the *mass media* penetration in various residential environments is different. As depicted in Figure 1, in case of the event *Elektro*

Arts 41.8% of the participants come from other cities, the local audiences represent 14.3%, 17% are urban audiences from the Cluj county, 7.1% come from rural areas, while 19,4% of the audience live abroad.

b. Analysis of the audience’s representations, preferences, and cultural consumption habits

Beyond the socio-demographic identity elements (gender, age, education level or residence), the knowledge of the audience also requires an assessment of their level of musical competencies and preferences, the way in which they know how to analyse and evaluate the event, respectively the way in which they relate to other musical genres, both in terms of their general horizon of musical consumption and as an alternative factor/channel of publicity. An audience open to other genres can be informed by means of several media channels dedicated to those musical genres, while an audience captive inside one genre is approached in an exclusive manner, by means of the media channels which promote only that genre.

An aspect with a significant relevance, particularly with regard to the evaluation of the digital arts impact, was the structure of the audience in relationship to their musical education. For the *Elektro Arts* event an overwhelming percentage of the participants have a music education (77%), while more than a half have a university-level music education, (67%). We believe this aspect can be related to the tendencies of diversifying the school and university curricula through the introduction of such disciplines as: music informatics, electronic music technology – areas in which the young people become familiarized with varied software and multimedia applications.

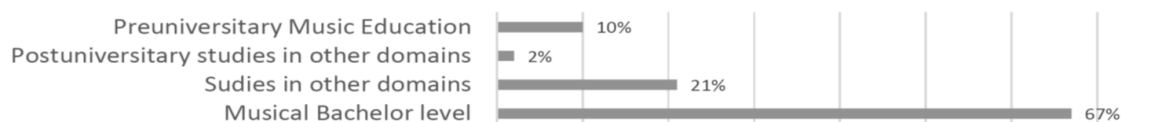


Figure 2. The audience’s musical structure according to their level of education

The audience’s musical preferences, measured in relationship to various musical genres: electronic music, symphonic/opera music, pop or rock and multimedia works varies, the participants being to a large extent open towards the specific music genres (electronic music, multimedia works):

Table 2. Musical preferences for the Elektro Arts audience

Type of music	5: very often	4: often	3: occasionally	2: rarely	1: never	9: I don't know
Electronic music	21.4%	4.5%	20.4%	18.4%	9.2%	6.1%
Symphonic and opera music	26.5%	27.6%	24.5%	12.2%	3.1%	6.1%
Pop, rock	30.6%	37.8%	15.3%	7.1%	3.1%	6.1%
Multimedia works	35.7%	24.5%	16.3%	9.2%	5.1%	9.2%

The promotion of autochthonous cultural values was a parameter interviewed in the analysis, measured by quantifying the answers to distinct questions in the field of musical preferences. The percentage of people supporting a cosmopolite festival is significant (69.4%) compared to those who want events dedicated first and foremost to autochthonous works, a fact that indicates a high level of information about the events of this kind which are organized at international

level.

c. Sources of information

In order to identify the main channels of information used by the audience, the questionnaire included a detailed and complex set of sources that can be used by the audience to gather information. As can be seen in Table 3, the behaviour of the audience in this regard focuses mainly on informal sources (networks of friends, acquaintances) and posters.

Table 3. How did you find out about the events included in this year’s festival edition?

		<i>Elektro Arts</i>
Posters	Yes/No	49.0% / 48.0%
Flyers	Yes/No	29.6% / 69.4%
Written media	Yes/No	24.5% / 74.5%
Radio	Yes/No	20.4% / 77.6%
Official site	Yes/No	45.9% / 53.1%
Other sites	Yes/No	33.7% / 65.3%
Social networks	Yes/No	58.2% / 40.8%
Conversations with friends	Yes/No	63.3% / 35.7%

In conclusion, the following sources of information had a leading role in advertising the events (in the descending order of their importance):

- Discussions with friends, acquaintances
- Social networks
- Posters
- Official festival site.

d. The evaluation of the festival’s quality was performed in a multidimensional manner, the respondents being asked to offer an opinion on 10 characteristics considered relevant. As can be seen in Figure 3, the majority of the respondents are “very satisfied” or “satisfied” with the evaluated aspects.

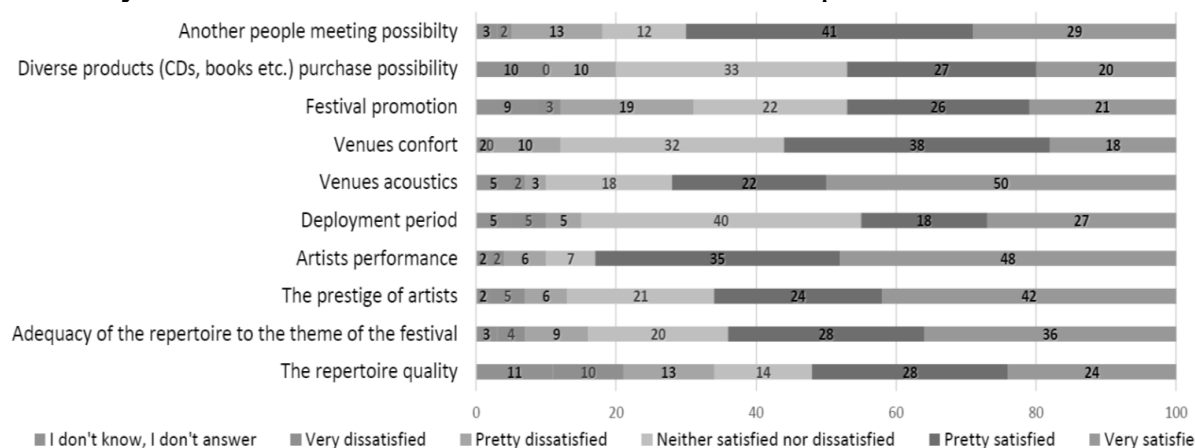


Figure 3. To what extent are you pleased or displeased with the following? (the values are in percents)

In order to determine the flow of participants in the events dedicated to digital art, the questionnaire included questions which had in view a comparative response between the current and the previous festival editions, in terms of the respondents’ satisfaction. In the conducted analysis we considered the respondents’ opinions on two distinct questions from the proposed questionnaire:

- *In general, how satisfied were you with the organization of this festival?*
- *How do you regard this edition compared to last year’s edition?*

According to the opinion of the 98 respondents, the edition organized in the year 2018 was more successful. We must point out the fact that in the chart (Figure 4), the column corresponding to Figure 4 includes the very satisfied respondents.



Figure 4. The respondents' opinion regarding the current festival edition

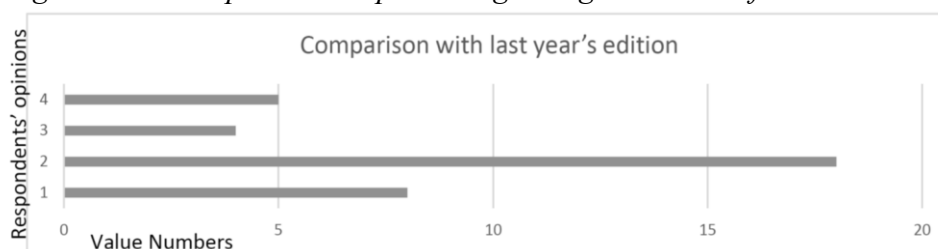


Figure 5. Comparison between different editions of the festival

Regarding the main aspects noticed by the audience as being different from the previous edition, the audience of the *Elektro Arts* event highlighted:

- The quality of the repertoire (mentioned 4 times),
- The authenticity of the repertoire (mentioned 4 times),
- The quality of the performances (mentioned 4 times),
- The advertising and the event organization (mentioned 4 times),
- The represented areas (mentioned twice).

Regarding the evaluation of the event, the *Elektro Arts* audience are conservative, as they do not consider many improvements to be necessary, as suggested by the indication to organize digital artistic events in unconventional venues (45%, Figure 6):

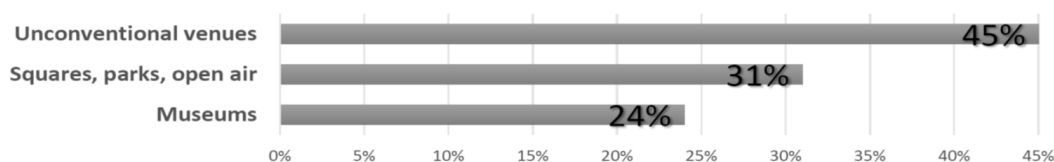


Figure 6. Do you consider the following venues as appropriate or inappropriate for this festival?

5. Conclusions

As a consequence of the fact that numerical technologies permeate everyday life, the artistic events created by means of information and communication technologies are gaining ground in Romania. The usefulness of the research derived from the necessity to obtain a set of measurable information on the level of satisfaction and interest of the public regarding digital arts, an aspect of major importance in coordinating digital education during professional training. The data collected revealed that the 2018 edition was attended by predominantly young audiences, that the events were perceived as better organized (Figures 4, 5), presenting a higher value due to the following factors:

- The quality of the repertoire

- The prestige of the invited artists
- The performance of the invited artists
- The publicity of the festival.

The fact that the percentage of people with a university education is dominant leads us to believe that the level of digital competencies accumulated during the professional training causes an increased interest in this type of music. The auditory and sound effects accomplished by means of these artistic productions are largely known/accepted by audiences aged 26 to 40. In their assessment of the artistic events the audience did not link the success of the events to their period of development, the acoustics and the comfort of the venues, the possibility to buy various products (CDs, books, etc.), the possibility to meet other people, to socialize. We must point out the continuous education of the already increasing audience interested in digital artistic projects, the increasingly complex, professional and financially advantageous future organization of this type of events. Alongside the media advertising, the role of networks of friends and acquaintances holds a major role in the publicity of digital art.

The extremely high professional level of the *Elektro Arts* festival (as certified by the attending audience) as well as the constraints stemming from the underfinancing of these artistic events made it necessary to organize the festival only once every two years, in spite of the interest that it arouses. *Elektro Arts* started from the premise that the digital arts of the future will reflect man's symbiosis with technology, the interaction between performer /dancer /audience and computer. Given the interest aroused by the festivals dedicated to digital arts, we believe that this research should be continued by investigating directions that can help organizers identify the factors which can contribute to creating a professionalized education for information and communication technologies in the field of music.

We recommend the further study of this type of events, according to the theory of the interested parties proposed by Reid (Reid, S. 2011), the identification and intermediation of the relationships between the parties interested in the event can cause a larger attendance of it, as a consequence of an improved understanding of the activities, of the event planning and of result monitoring. The digital arts of the future will reflect man's symbiosis with technology, the collaboration between performer and dancer, audience and computer, since, in a similar manner, the dancer receives by transfer the ability to "model" the digital audio-visual environment through gesture, in real time.

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