

SUMMARY OF THESIS

Gábor Megyeri

DIGITAL PASTS ANALOG FUTURES

Ph.D. dissertation

Supervisors:

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Budapest, 2023

Marketing- és Designkommunikáció Tanszék

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1. Preliminaries and aims of the study

1.1 Subject of the dissertation: handwriting

People write for countless reasons. They keep diaries, leave messages, write reports, articles, love letters, memoirs, wills. The reasons are endless and essentially irrelevant to our research. What makes writing really important for us is the self-expression it involves. The means of writing can be many and varied, but it is handwriting that makes this ancient form of communication a true work of art. It makes it authentic and, beyond the message, it transmits and preserves the personality of the writer/creator.

Handwriting is one of the foundations of human communication. This fully analogue method of action and knowledge transfer is perfectly associated with and has supported the analogue nature of man for thousands of years. Like so many other things, handwriting is significantly affected by digitalisation. It is changing the way we use our tools, speeding up everyday events, creating new 'values' and marginalising old ones. The question arises: will we remain analogue beings in the new environment or will we be transformed into some other, as yet unknown, form of existence by digitalisation? Can the new digital values, without background, replace the analogue values with real physical action and real tools?

If we take only handwriting as an analogue human activity, we can conclude that this analogue activity has much more added value than we might think. We tend to trivialise it and consider it as obsolete, replaceable, abandonable. Why do we need it if we can type anything on our computer or dictate on our phone? Handwriting has played a key role in the history of mankind and its role today is undeniable in the development of the human mind, part of communication and of human existence in general. In addition to democratising the transmission of knowledge, it continues to play a role in the development of the human mind from childhood to old age. In our research, we have explored the impact of handwriting from the perspective of several disciplines and have made sure that its future needs and preservation are justified.

Although our research focuses on handwriting, its present and future, it is not the only analogue value that needs to be preserved in order to maintain our analogue existence. We have identified several such values, and our aim is to develop a general methodology to enable us to preserve other values beyond handwriting that are proving necessary.

Will we remain analogue beings in the future? Can we preserve handwriting for the future, and if so, with what tools? Can we do something to improve the perception of handwriting? Can we find a way to communicate the impact of handwriting on humans, human development, and human existence? Can handwriting be adapted to our significantly changed environment?

These are some of the questions we seek to answer through an examination of the present of handwriting and the predestinations generated by the results.

1.1.1 Initial ideas – motivation - theses

Our hypothesis is that handwriting has a future and will play an important role in the digital life space, providing a link to our analogue existence. The contribution of handwriting is necessary for the development of the human mind in our accelerated, increased commuter life-space. This is tangible in our present and, experiencing and seeing the evolution of technology, it will become even more so in the future. We do not know exactly the impact of the dynamic development of digitalisation on human existence, but we can already recognise that our analogue existence is being replaced by a digital existence. This fundamentally threatens our culture and the values we have created and developed over time, both at the community and individual level. (Turel et al., 2019) We consider handwriting to be a prominent analogue value, the correspondence of which to the digital environment is important.

One of the motivations for our research is the realisation that the digital world, in addition to making life more convenient and faster, has a strong impact on the preservation of knowledge. In this case, the question is not whether the community is responsible for the seemingly unstoppable spread of this phenomenon, or those who are creating digitalization at a breakneck pace day by day, but how we as researchers and creators can influence it to survive, how we can interpret our results, find metaphors that are meaningful to us and to the community. (Horváth - Mitev, 2015) Knowing the contribution of handwriting to the present of humanity, the need to preserve it motivates our research.

1.1.2 Research mission

Our research focuses on the present and future of handwriting. Our aim is to preserve, maintain and, if necessary, reinterpret it. We do not see handwriting as an ancient but now obsolete form of communication, but as an analogous human activity and value that plays a prominent role in the proper development of the mind and its maintenance with age.

Our priority is to create the future of handwriting for the next generation. To achieve this, we are exploring the possibility of adapting handwriting to changing circumstances, including by rethinking its tools. The most important cornerstone and constraint of this idea is the maximum preservation of the values of handwriting. In order for handwriting to play its original role in the life of humanity, we need to look at how we can model and reproduce it in the digital world without compromise. The gliding of the pen on the paper, the flow of the ink, the hand position, the continuity and rhythm of the writing, the movements of forming the letters, the concentration it generates, the freedom of attention it gives, all contribute to the role of writing and its impact on the mind, body and spirit. This is what we need to preserve and, if necessary, reinterpret in the digital environment.

1.2 Interdiszciplináris megközelítés

Our four-phase research combines marketing research, design and design research tools to examine the results of each phase. From this multi-disciplinary, multi-perspective research, we expect to be able to formulate and create artifacts that validate our ideas both economically and theoretically. Although digitisation seems to have reached such a scale that the decline of handwriting is irreversible, we believe there is a real need to preserve it and we think that the way to do so can be explored. Our aim is to preserve the present and secure the future of handwriting for future generations.

In order to achieve our goal mentioned above, we are exploring the possibility of adapting handwriting to the changed circumstances, including rethinking its tools.

As a first step in our research, we will explore the relationship to the future, to the devices (analogue and digital) and habits (writing, watching, reading, etc.) that surround us, and will then turn it into a tangible object, supported by further research, proving that design communication is also research. All in all, design communication represents an interconnection approach that is *a bridge between different disciplines and discourses, between social and economic phenomena*. Its interdisciplinary and inter-professional approach allows for real-time links between education, research and development. (Cosovan - Horváth, 2016:43).

Marketing and design are in every aspect of our lives. Both are about customers and their needs. The common goal is to create better products and services. (Henseler et al., 2021) The future of the two disciplines lies in their synergy.

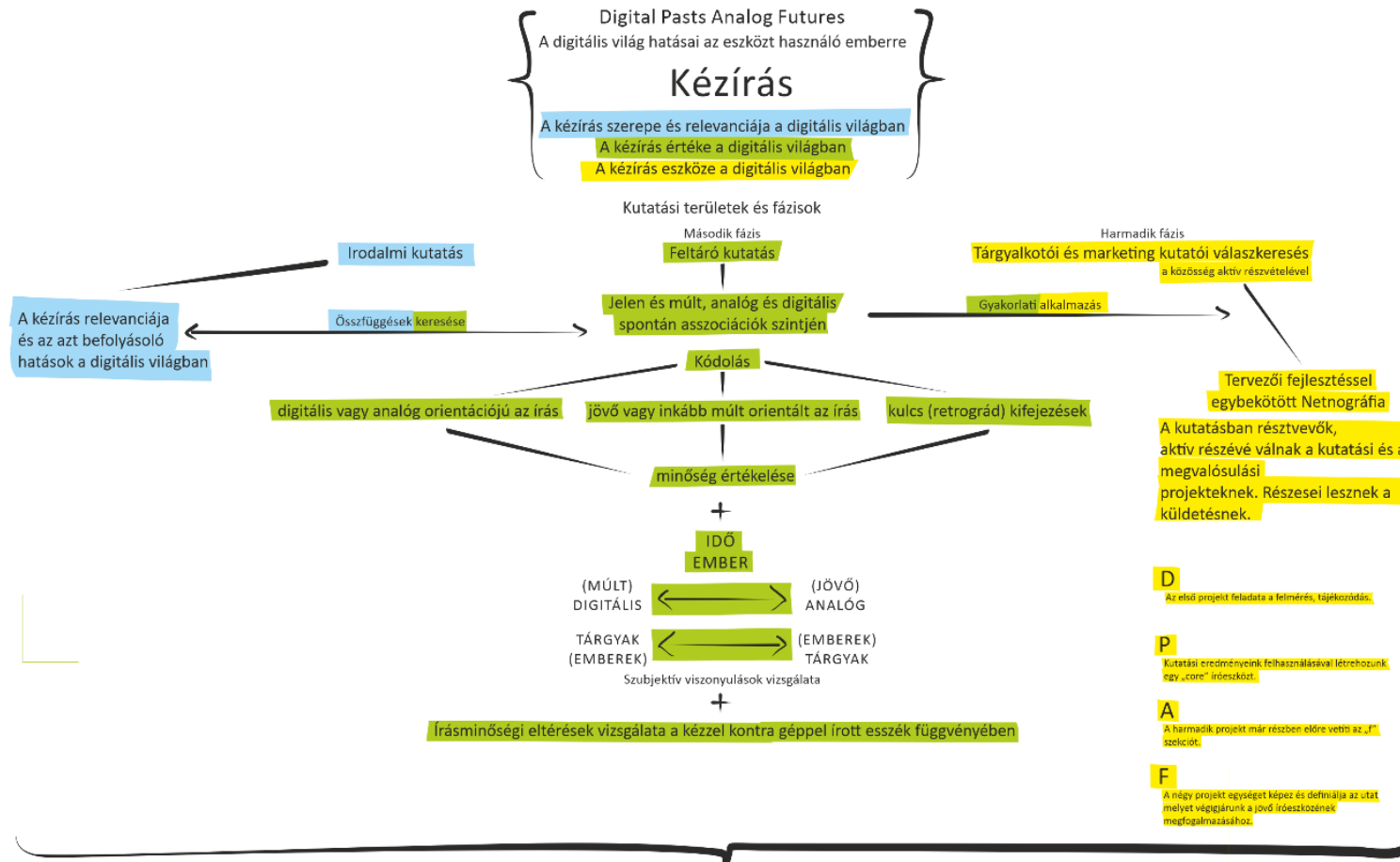
1.2.1 Empirical realist paradigm

The unconventional nature of our research stems from the combined use and combination of different paradigms. The relationship between the paradigms we use together is horizontal and based on a respect for each other across disciplines. In doing so, we create a co-creation process combining marketing research, design research and design creation. Our marketing research follows a largely empirical realist paradigm, while our design approach and design research typically follow a pragmatist paradigm (Henseler and Guerreiro, 2020).

We believe that combining our marketing research approach with qualitative research tools and design thinking, connectivity and product creation leads to economically viable results. At the end of our complex research, we not only simply release one or more products, but also validate them in the market through a series of community funding campaigns. This process ensures the theoretical, scientific and practical contribution of our research.

1.3 Az elméleti keret

1. ábra Digitális múlt – analóg jövő – egyszerűsített kutatási térkép



Forrás: saját szerkesztés

Elsődleges célunk a jövő nemzedékének megteremteni a fenntarthatóság lehetőségét egy olyan alapvető készség életben tartásával, mint a kézírás. Ezalatt a folyamat alatt számos információhoz jutunk a 21. századi ember analóg tárgyakhoz való viszonyáról. Ezen információk segítségével egy új tárgykultúrát és tervezői filozófiát fogalmazunk meg, melyek gazdasági szempontból is értelmezhetőek.

One of the main aims of our research is to explore the attitudes of the young generation living in the digital world and regularly using its tools towards analogue values and objects. We want to understand the direction in which the use of analogue devices is evolving with the development of digital devices, and to understand the emotional, mental and health effects of this phenomenon. We also investigate whether the analogue values that we hypothesise are key to humanity, especially handwriting, can be preserved for the future. If so, in what form. What new marketing research and product design approaches, mindsets and collaborations are needed to achieve this. Our research design is divided into four main parts: units of analysis, individuals, social product-social interactions, trend analysis. (Babbie, 2017)

The theoretical framework of the dissertation can be divided into 4 main units. The first unit of literature analysis examined the past, present and future of handwriting across disciplines. These disciplines include history, marketing, education, communication, medicine and others through the following dimensions: (1) a precise definition of the role of handwriting in order to clarify the research question, (2) the past, present and future potential role of handwriting in education, its historical and scientific perspective, (3) the mental health/educational consequences of abandoning handwriting, (4) the past and present tools of writing, with which we would like to formulate a potential toolkit and object culture of writing for the future.

2. ábra Digitális múlt – analóg jövő – szakirodalmi elemzés vizsgált területei és témái

Szakirodalmi elemzés	
Vizsgált területek	Vizsgálat témák
Vizsgált tudományos területek: -marketing tudomány -edukáció -orvostudomány -kommunikáció -menedzsment -történelem -design elmélet	A kézírás szerepének vizsgálata: -történelmi szempontból -edukációs szempontból -az emberiség fejlődésére gyakorolt hatása -az elme fejlődésében betöltött szerepe -a kommunikáció fejlődésében betöltött szerepe -a digitalizáció hatása a kézírásra -a kézírás jelene -a kézírás jövője

Forrás: saját szerkesztés

After the comprehensive literature review by discipline (Figure 2), I conducted a systematic literature search of the sub-disciplines of the research, where the aim was still to explore the position of handwriting as an analogue value and human activity in the digital world. Figure 3. presents the most typical disciplines studied.

3. ábra A szisztematikus kutatás főbb paramétere

	Pszichológia	Oktatás	Idegstudomány	Kutatás és fejlesztés/ Technológia/ Mérnöki fejlesztés/IT
folyóiratok	-Frontiers in Psychology -Educational Psychology Review -Physical and Occupational Therapy in Pediatrics	-Reading and Writing -Educational Psychology Review -Journal of Occupational Therapy, Schools, and Early Intervention -SpringerPlus	-Trends in Neuroscience and Education -Frontiers in Neurology -Human Movement Science -Journal of Learning Disabilities	-Future Internet -Sensors -Interactive Learning Environments

Forrás: saját szerkesztés

The **2.** phase is an exploratory study of essays written by young adults (also BCE students) (typed and handwritten) about analogue and digital experiences. This aims to explore and validate the problem and the issues raised in detail. The focus of the research is on the evolution of handwriting in the digital world and the relationship of young people who actively use digital tools to writing.

The empirical research was partly aimed at gaining an insight into the habits of people in the digital world and their attitudes towards analogue values. This data was used to formulate our research concept for the next research phases and to establish an indirect linkage, which partly supported and underpinned the product development phase.

Phase **3.**, the netnographic study that underpins our crowd funding project. The detailed analysis and coding of the data collected during the processes laid the foundations for the next phase.

Phase **4.**, which was a design action. Our mission to create the writing instrument of the future will be carried out in four steps (design action), each of which will be a separate crowd funding project. These will result in four products, an economic result and, hopefully,

a meaningful set of data that will contribute to the success of the project series and the final confirmation of our hypothesis.

2. Research methods and main results – research questions

We use qualitative tools in the phases of our research. The nature of the problem requires us to accumulate the deepest, most in-depth knowledge possible in order to provide real answers to our research questions and to be able to formulate our philosophy and our method of object creation in response to the new, changed environment in a way that is economically successful and applicable to other projects.

For the consecutive research phases, different research methods were used. Figure 4. outlines the research questions, research subjects and research object investigated in exploratory phase 2., netnographic analysis phase 3. and design action phase 4.

4. ábra Kutatási fázisok – vizsgált kérdések, a kutatás alanyai, a kutatás tárgya

Kutatási fázis módszer	Vizsgált kérdés	A kutatás alanyai	A kutatás tárgya
<u>Narratív technika</u> Írásban rögzített személyes történetek	A digitális világban aktívan tevékenykedők szokásai. Az anlgó értékekhez történő viszonyulások. Asszociációk a „Digitális múlt analóg jövő” címre. A kézíráshoz fűződő személyes vélekedések rögzítése.	BCE hallgatók magyar és külföldi hallgatók egyaránt nemek: vegyes korosztály: 20-24 év	Személyes emlékek Személyes tapasztalások Asszociációk
<u>Netnográfiai elemzés</u> -megfigyelő netnográfia -közreműködő netnográfia	A tollat rendszeresen használók íróeszközökre vonatkozó preferenciái. Vásárlói szokások. A téma iránti érdeklődés/ támogatás/elköteleződés.	Témaspecifikus (íróeszközök), nemzetközi internetes közösségek tagjai. nemek: vegyes korosztály: 20-85 év	Felhasználói kommentek közösségi szinten Felhasználói kommentek egyéni szinten
<u>DPAF</u> -közösségi finanszírozási projekt -termékfejlesztés -tervezői kutatás -netnográfiai elemzés	A kutatási és tervezési eredmények validálása. A támogatók íróeszközökre vonatkozó preferenciái. Vásárlói szokások. A téma iránti érdeklődés/ támogatás/elköteleződés.	Tollhasználók, tollvásárlók Nemzetközi	DPAF I. toll Vásárlói kommentek közösségi szinten Vásárlói kommentek egyéni szinten Értékesítési eredmények

Forrás: saját szerkesztés

2.1 Exploratory phase - Preliminary exploratory research: associations with the concepts of "digital past & analogue future"

In the 2. Exploratory phase phase, from the perspective of two designers and marketing researchers, we conducted an exploratory qualitative research to investigate how members of the young adult generation spontaneously react to the seemingly contradictory phrase "digital past and analogue future" and to what extent these associations correspond to general expectations. We ask to what extent the answers are useful not only from a (marketing) researchers' perspective, but also from a designers' perspective. As a result of the research, a formulated and modified object culture emerges, which plays a role, among other things, in the formulation of our designed products, and models and represents the philosophy created. The focus of the research is on the evolution of handwriting in the digital world and the relationship of young people who actively use digital tools to writing.

2.1.1 Exploratory phase - sampling

The collection of essays and videos started in 2018 and ended in 2021 (Figure 9). In 2018, 27 essays were collected in Hungarian and 13 in English, and 7 videos in Hungarian. The results of the coding and processing of these samples were used to define the focus of the age group studied (20-24 years). In 2019, we collected 80 essays in Hungarian and 30 in English. The processing of essays was ongoing. In 2020, the number of sample items increased by 135, and by a further 89 in 2021. In total, n=381 samples were collected and processed in the above mentioned period.

The majority of the essays were typed n=332. Essay writers typically followed and adhered to the instructions (Figure 17.). Samples that did not meet the pre-defined criteria were removed from the sample set and did not participate in the research. The relatively low number of handwritten essays n=42 can be explained by the fact that we did not impose the writing method in the first three periods of the research phase (2018-2020), while in the fourth period (2021) we made handwriting optional and encouraged it over typing.

2.1.2 The aim of the exploratory phase

The empirical research was partly aimed at gaining an insight into the habits of people in the digital world and their attitudes towards analogue values. This data was used to formulate our research concept for the next research phases and to establish an indirect linkage, which partly supported and underpinned the product development phase.

2.1.3 Conclusion and results of the exploratory phase

Apparently, what worked as an object in our analog world is being consumed in the digital environment we have created. This phenomenon is part of a "natural" process in this harsh environment. The most worrying consequence is the loss of value attached to objects. The logical regression that comes with the abandonment of handwriting, or the dying of human relationships as a result of the overuse of 'convenient' high-speed communication tools, are individually a great loss to humanity, and together they take it in an unknown direction. New values are being formulated, and the system of human-human, human-machine and machine-human relations is being transformed. The values that can be physically possessed are replaced by a volatile value that is intangible, elusive and immaterial.

As a result of the present research phase, we can conclude that the generation under study typically recognises the phenomenon described above and does not consider the direction outlined to be appropriate. They are open to addressing the problem. This line of thought does not imply a rejection of digitalisation, whose values are undeniable. In our opinion, supported by both our literature analysis and our exploratory research phase, the solution lies in combining digital and analog values. Moderation in the face of digitization is important, and a balance must be sought at the individual level.

From a design perspective, the answers are invaluable. The methods that have evolved over thousands of years of making objects have for a long time corresponded to a world of values that are very different from our present and future. The time has come when we need to examine, from an object-making point of view, what we can and should inherit into the new environment(s), and what we need to reinterpret.

2.2 Designer connectivity - a netnographic study supporting a 4-stage product development process based on crowd funding

We started the third phase of our research with a netnographic survey. This research phase consisted of participatory and observational **netnographic** analyses. (Dörnyei, Mitev, 2010,

Kozinets, 2010) Given that the age group and target group we are researching spend a significant part of their lives in the digital space, it was logical to conduct this part of our research there as well. (Kozinets, 2019) In this research phase, our aim was to find out about the habits of regular users of analog devices, especially writing instruments, and their expectations of writing instruments.

2.2.1 The platform for netnographic analysis

The channels to be included in the research were identified through a targeted, topic-specific search. The targeted platforms were selected by examining the available archived content to determine which platforms best corresponded to the research topics and which platforms were likely to provide relevant data for our research.

2.2.2 Steps and aims of the netnographic analysis

(1) In order to achieve our goal, we have decided to set out our aims and mission in a concise and understandable way for the communities we wish to involve in the study, in the form of an introductory post. In the first instance, we were looking for a general response. (2) Next, we formulated specific questions about the object to be created as part of the research and its intended marketing. **The aim was to use the data received to formulate characteristics for the design of the pen.** Information was also expected on the attitude of the communities surveyed towards crowd funding as a form of marketing. (3) **The extracted data helped to understand the preferences, price sensitivity and buying habits of potential customers. This information played an important role in the formulation of product specifications.**

2.2.2 Results of the netnographic analysis

Our plan was not only to be an observer on these platforms, but to inform communities about our project, our mission and our research, and to code the reactions and interactions and use them for research. Through these platforms we can potentially reach a large number of audiences who may be interested in our mission. We also expected our participant and observer analysis to provide data to formulate product features.

239 likes, 36 heart emoji, 27 wondering emoji, 2 heart hugging emoji. Based on these, we received no negative reactions and we have attracted the interest of our readers. Besides the reactions, 127 comments were generated, all of them positive, inclusive and friendly. In

addition to these, we have had several enquiries in the form of private messages and conversions have started. This provided an excellent opportunity to collect data.

The data extracted helped us to understand the preferences, price sensitivity and buying habits of potential customers. This information played an important role in the formulation of product features.

The netnographic analysis provided valuable data for both marketing researchers and designers aspects. It helped us to formulate all the features of the product we would create in the next phase, and to prepare the Community funding campaign from a marketing, economic and communication point of view.

2.3 Design action, concept phase: d-p-a-f - Community funding project

Crowdfunding is a method of raising money from a wide audience for a project, rather than a large capital investment (Shneor et al., 2020) This phenomenon is a collective effort of people who network and thus pool their money, usually on an internet platform, to invest in projects of other people or organisations, taking the risk that the project will not go ahead. (Ordanini et al., 2011)

2.3.1 Target group for the research phase of the design action

Basically, the target group for a writing instrument as a product is relatively easy to define (users who practice writing and drawing on a daily basis, collectors, people who use the pen as an accessory, status symbol, etc.) This also means that it can be clearly defined.

2.3.2 Research objectives of the design action research phase

(1) General reactions and feedback on the project, general attitudes towards handwriting in the 2020s. (2) Interest in the topic and projects, filtered by age, gender, location, etc. (3) Device usage habits of the target audience. (4) Identification of the basic differences between the expected target audience and the potential audience beyond that, and how to bridge them. (5) Economic performance and data on sales margins.

2.3.3 The platform for the design action

We chose the US-owned Kickstarter¹, founded in 2009, as the platform for our campaign. It is the community funding platform with the most projects. To date, 224,322 successfully funded projects have been completed on the platform, worth \$6,759,222,072 U.S. ("Kickstarter Stats - Kickstarter," n.d.) The success vs. failure ratio of projects on Kickstarter is 39.37% successful, 60.63% unsuccessful. ("Kickstarter," n.d.)

On Kickstarter, projects are divided into categories. Our project fell into the "Design and Technology" category. This category, thanks to the fact that backers receive a product for their money after the project is completed, is characterised by the need to have a detailed production and delivery plan and to provide detailed information about it. This includes risk factors and potential run-offs. (Mollick, 2014)

2.3.4 Results and evaluation of the design action

We raised \$31,144 through our campaign, which is 104% of our goal. 140 purchases were made during the official campaign (each supporter can only purchase one item, one time). This number does not include extra purchases made between the campaign close and delivery.

Our crowdfunding campaign, Digital Past Analogues Futures 1., was a success from both a marketing research and a design perspective. Although we had limited resources for marketing activities, we were successful in reaching our target audience. (Belleflamme et al., 2014) Throughout the campaign, we maintained dynamic two-way communication with both supporters and interested parties, providing us with a wealth of information that we were able to use to make the campaign a success. (Wang et al., 2018)

From a design perspective, the information and data obtained, requested or unsolicited during the campaign is invaluable to inform further design processes. It has helped us to gain a deeper understanding of our customers' expectations and their vision for the future of writing.

The economic success of the project, in addition to confirming our vision and supporting us in achieving our objectives, made the project self-financing and opened the way for the preparation of the next phase.

¹ www.kickstarter.com

From a research point of view, we have collected valuable data that contribute to defining the present and future of handwriting. The results provide a more detailed picture of the future and a greater insight than in previous research phases, as the samples in this phase are more mixed than in previous phases.

3. Results

Although in the business, product creation and sales world, rational and scientific marketing and the more creative and intuitive product design as an art/technology can work together, in the scientific world there are tensions between them. (Lindahl and Nordin, 2015) (Bauer et al. 2016)

3.1 The scientific contribution of the research

The methodological toolbox of marketing science is broad, and it is worth exploring the interdisciplinary intersections that can further enhance its effectiveness and efficiency in our dynamically changing digital world. (Henseler and Guerreiro, 2020)

We believe that combining marketing science and design approaches can be effective and open new horizons for both fields. (Bloch, 2011) Researchers need to be open to these intersections between science and design and their combined application. (Kotler and Keller 2016) Design cues and design communication can be a vital form of non-verbal communication. This communication conveys meanings and emotions to the target audience in a clear and understandable way. (Henseler et al., 2021) The social science study of these intersections is important because in this process the designers, the first actors in the designer's interaction, encode a message into the products they design. These 'products' are also messages, non-verbal messages.

In his study, Henseler describes design as the process of developing a system, component or process to meet a desired need. To create these processes, designers apply, among other things, the natural sciences, mathematics, and engineering to achieve the goal. In his study, Henseler describes design as the process of developing a system, component or process to meet a desired need. To create these processes, designers apply, among other things, the natural sciences, mathematics, and engineering to achieve the goal. In design and other applied arts higher education, marketing is part of the curriculum. And rightly so, as marketing professionals and designers have similar responsibilities.

The purpose and mission of design research is to generate knowledge for the design of art and utility objects. (Henseler and Guerreiro, 2020)

We believe that marketing researchers should ask themselves how design and the approach of designers and design researchers can contribute to the further development of marketing science. Recognising and jointly applying this synergistic relationship could open up new horizons in the scientific and practical world of product and service creation. In the field of digital transformation and changing management practices, researchers can benefit from a more creative and innovative approach to design. They can contribute to the understanding of consumers and their behaviour, drawing primarily but not exclusively on empirical and theoretical developments. As a result, research efficiency can be increased and the product risk factor reduced.

Of course, the above is just as valid the other way round, marketing science can play a very important role in product design and development. Openness is expected and encouraged in both paradigms. **In our research, we follow this spirit.**

3.2 Conclusions

The sequential nature of our research phases has helped them to be effective.

(1) The literature analysis confirmed our hypothesis that handwriting (and the other analogue values we examined) has a place and relevance in the digital world. This was confirmed by all studies in the disciplines we examined (Figures 2, 3).

(2) The exploratory research allowed us to understand the attitude of the target group defined as relevant towards digitization and analogue devices. After coding and summarizing the extracted data, we were able to learn about the attitudes that proved that **analogue devices have a present and a future in the digital world.**

(3) The netnographic analysis resulted in a real-world linkage, whereby the resulting data was coded and the results interpreted to formulate all the characteristics of the product created during the design action (4) and contributed to the marketing, economic, timing, production and management plans of the crowdfunding project.

(4) The success of the design and sales phase of the design action not only financed it economically, but also validated all the phases and results of the research.

3.3 Limitations

During the exploratory research, we conducted a preliminary study to identify the age group from which we could extract the largest amount of relevant data. This was determined on the basis of the results for 20-24 years. As a continuation of the exploratory, empirical phase of the research, the age group can be extended to provide a broader picture of the extent of digitalisation and attitudes towards digital-analogue values.

By expanding the criteria used for coding, increasing the number of samples and extending the sampling location, the final data can be further refined. Our primary sample source is the student population of Corvinus University of Budapest. Involving more universities would give a more diverse picture, and comparing results from different places would provide new perspectives for analysis. A larger sample of handwritten essays would be needed, so that a more accurate, detailed comparison could be made between the content and quality of handwritten and typed essays. More in-depth analyses could be carried out in terms of layout and spelling.

Our netnographic studies were carried out in the context of online communities with an interest in writing, handwriting and writing instruments. This has the advantage of providing data from one of the potential target groups of our crowdfunding campaign. However, after the first Kickstarter project, it became clear that they are not the only target group, so extending the netnographic studies to other communities with different interests could provide useful information for the preparation of further campaigns. This includes people interested in digitization, information technology and artificial intelligence. This environment, as an extreme from our point of view, would presumably provide data on the preferences and attitudes of individuals in the digital-focused community. Although we were able to gather some data on these topics from the digitally oriented essayists in our exploratory research, it would be worthwhile to confirm or refute them with analyses conducted in this different context.

The most significant inhibiting factor for a Crowd funding project is the self-financing nature of the target, which does not allow for the use of costly marketing activities to help it succeed. Partial pre-financing of subsequent projects would contribute significantly to potentially greater success.

Partly due to a lack of resources, partly due to a lack of contacts, we were unable to get our project out to a sufficient number of media outlets. The first project showed the positive

impact that press coverage can have, so our development in this area could be expected to make a major contribution.

3.4 Future research goals and plans – Project P

Preparations for Project P are currently underway, and we plan to launch the campaign in the beginning of the last quarter of 2024. The design of the first project has been minimally modified, and the pens will be extended with an additional analogue and, conditionally, a digital solution.

3.4.1 Expectations for the project

We expect to obtain additional data that can add to our scientific results. We would like to get an idea of whether the changes in the economic, health and social situation that we are witnessing today are affecting the chances of achieving our research objectives? If so, in what direction?

3.5 Future vision

Alongside the positive aspects of digitization, it is important to understand and, where possible, manage the negative impacts of its excessive advance. Knowing these will give us a better understanding of the future and its threats.

The balance has shifted dramatically and digitization is overwhelming reality. A reality where values do not exist as ones and zeros, but as real values. The dangers and negative effects of digitalisation are a real threat for responsible adults, but the real problem is for the younger generation.

In this situation, it is adults, parents, who have the biggest role to play in protecting children from digitization. This is a problem today because the way adults live is an example for children. It is difficult to set a good example for our children because the use of digital devices has become a pervasive and technically present part of our lives.

The wave of digitization is having a radical impact on our culture and its values. These raise serious ethical and social problems that we are currently ineffective in addressing.

One reason for this is that we do not have an accurate, comprehensive picture of the impact of digitalisation. (Royakkers et al., 2018)

*We believe that our research can play a real role in the discovery, preservation, interpretation and maintenance of human analog values. These processes and their results can help to preserve the control threatened by digitalisation and allow people to **remain human** in the digital space, instead of being one and zero.*

We are not aware of what lies ahead as digitization continues to evolve. It is important to stress that our research is not against digitization and its development. On the contrary! We are looking at how we can use its achievements to create a combination of digital and analog existence that allows us to preserve our values and thus enhance the values that digitization has created.

Our research does not end with the completion of the PhD program. Our aim is to formulate the writing instrument of the future. Based on the feedback and research results, we believe we are on the right track and have a rational vision of the next steps.

We know that simply creating a tool will not achieve our goal. Accordingly, we see it as our responsibility to educate current and future generations about the benefits of handwriting and to provide them with opportunities to use it. We need to create the tools to adapt to the new, changed environment. We need to ensure that handwriting is not a nostalgic practice of the ageing generation, but part of the everyday life of future generations.

We see handwriting as a real analogue value, the preservation and future of which is in the social interest of humanity. Our research results are thought-provoking. They have confirmed our initial assumption that *handwriting has a future*, although this assumption now needs some reformulation. *Handwriting must have a future(!)*, as must personal human relationships, direct communication and all the analogue values that help us preserve our humanity in the digital space.

Our research is based on a combination of different paradigms. We create a co-creation process combining marketing research and design research and design creation.

We believe that our research combines design approaching, connecting and product creation to make a scientific and practical contribution.

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5. List of publications

Journal article - English:

- Megyeri, G., Boros, K., Fekete, B., 2022. A Theoretical Concept of an Innovative and Sustainable Product Based on an Unconventional Approach to Design Development. SUSTAINABILITY-BASEL 14. <https://doi.org/10.3390/su14053022>

Journal article - Hungarian:

- Megyeri, G., Boros, K., Fekete, B., 2021. 3S Traveling – Turizmus a poszt-Covid19 érában. TURIZMUS BULLETIN 21, 52–62. <https://doi.org/10.14267/TURBULL.2021v21n4.6>
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Conference presentation and/or Appearance in Book of Proceedings:

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