Marketing Research 2.0

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I.   Introduction

Marketing research always follows the trends and improves its methods according to the ever-changing demands of companies. Thus, consecutive periods, alternating between growth and decrease, enliven the days of researchers. We can already see that the mid-'90s and the second half of the decade were an end of an era, or rather the beginning of a new chapter that has been evolving steadily until today, changing everything we had learned. The changes were hard to detect in the Hungary of the late '90s and the turn of the millennium, yet they had already started in the field of applied marketing research in economically developed countries. The changes presented themselves mainly due to technological development and were later amplified by the global economic crisis in the first decade of the new millennium. These two effects triggered fundamental changes in the industry and its research methods. First, the efficiency of traditional techniques and the novelty of results were questioned, then, by the years of the crisis, even the value-creating potential of research firms was disputed.

The past decade witnessed a kind of renewal, that entails a significant transformation of methodologies on the one hand, while on the other, it has enforced research companies on the market to identify and augment new skills and competencies. Our book summarises this process with the main stages and levelling points while drawing upon some limitations to set our frame of reference. Consequently, we will not discuss the methodological transformation of fundamental research, the changes of mathematical and statistical devices, or the developments in B2B, and other fields of research.

We will try to provide, however, insights to a wide range of topics such as the current status of consumer research, the trends setting the near future, and we will also draw a generic model that has taken the place of the former cooperation among the actors of the industry ultimately changing the points of references for researchers to appear on the market with competitive services.

II.   Trends and changes in marketing research

Assessment of the changes of the recent past, as well as their consequences in the near future, is almost always risky, yet it is necessary. The following chapter lists the effects and the changes that have had a considerable impact on the methodology of marketing research. It collects those instances of re-orientation that allowed for new frameworks, renewed sets of devices, and approaches as well as a more effective understanding of consumer behaviour.

The altered framework and definition of marketing research

The most important change defining the beginning of the 21st century was, without doubt, the development of info-communication technologies, and the economic crisis that was a result – at least partially – of the ripple effect of this development. These events did not leave the marketing research industry untouched and triggered radical changes and significantly altered expectations.

This claim is supported by the low number of scientific publications in Hungary and abroad, as well as by the currently valid definition of marketing by AMA (American Marketing Association) cited in a summary (Simon, 2016), which serves as the starting point for this study.

However, the AMA definition, accepted in 2017, interprets the notion of marketing research by focusing on consumer and customer markets.

Marketing research is the function that links the consumer, customer, and public to the marketer through information – information used to identify and define marketing opportunities and problems; generate, refine, and evaluate marketing actions; monitor marketing performance; and improve understanding of marketing as a process. Marketing research specifies the information required to address these issues, designs the method for collecting information, manages and implements the

data collection process, analyses the results, and communicates the findings and their implications.

Although this explanation suits our interpretation at large, other widely accepted definitions (e.g.: Malhotra, 2009) designate a more complex scope on marketing research. Upon a closer look at these definitions, it becomes apparent that currently, the most valid ones are suitably general, yet address the changes of the recent past. For example, according to the 2016 definition of ESOMAR:

"Research which includes all forms of market, opinion and social research and data analytics, is the systematic gathering and interpretation of information about individuals and organisations. It uses the statistical and analytical methods and techniques of the applied social, behavioural and data sciences to generate insights and support decision-making by providers of goods and services, governments, non-profit organisations and the general public."

Compared to the above definition, Malhotra-Simon (2009) provides a rather practical one on page 37, which is also based on the definition of AMA, and can be divided into three parts. According to Malhotra-Simon marketing research is:

1. an objective and **systematic process,** that
2. incorporates all activities, **from the definition of the problem, preparation and data collection to analyses, ultimately aiming to**
3. **support the decision-making work** of clients.

Apart from the above, the guide (2011) published by the British Market Research Society and the Incorporated Society of British Advertisers (ISBA) may also be mentioned here as one that emphasises even more that the ultimate goal of marketing research is to support business decision making by way of providing appropriate information.

Without a generic evaluation of these definitions, it is important to highlight that each of them involves a **systematic collection of data** as a primary function, and

several of them mention the **demand for obtaining objective information**. The first clause can hold in the case of new methodological solutions and remains an important condition to all value-creating processes carried out by research firms in marketing research projects. The second expectation for an objective assessment of the situation is harder to meet. Following Simon's (2015) conclusions on the era of postmodern marketing, it is visible that in the early 2000s the search for new paths in the field of marketing affected the solutions of research methodology too. This means that the earlier scientific urge (adhering to quantitative results) seems to be loosening up and giving way to other, mostly qualitative trends.

This book relies on the below interpretation of marketing research, rather than the classic definition of it:

- marketing research is mainly understood as the examination of consumer and customer behaviour, and more specifically its applied directions that support market operations;
- with lesser emphasis, we also touch upon questions of fundamental research and the review of intercorporate (B2B) issues.

The traditional operating model of marketing research

In the following we will rely on the notion of applied market research, and concentrate on consumer research within it.
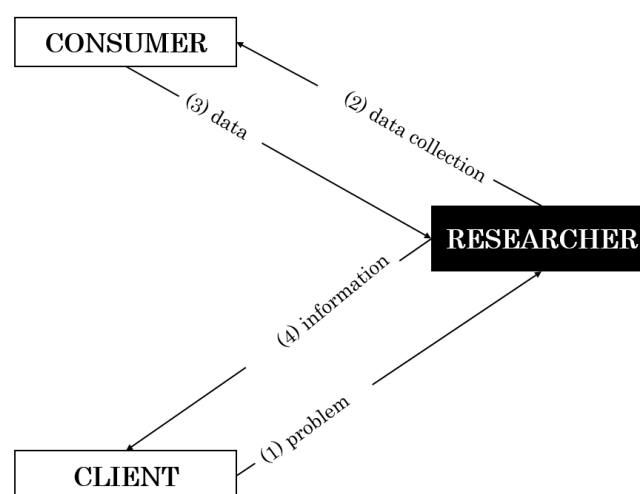
Figure 2.1: The traditional operational model of applied marketing research (own edition)

Applied market research and consumer research within it usually supposes cooperation among three parties:

1. the client firm and its representative, mostly an executive with a firm background in marketing, who needs market information for some business decisions,

2. a staff member of the research company (researcher), who interprets the problem at hand together with the client, identifies the scope of information necessary for decision-making and makes suggestions on how to collect them most efficiently; as well as

3. the consumer (or in many cases rather the customer, if the two are not the same), who has all the relevant information for making business decisions.

The competence of the researcher (firm) is clear in this operational model, as they are able to understand the problem of the client, to define the missing information from it, and to specify the most effective data collection process. In addition, the researcher has the resources and expertise for data collection, the knowledge, hardware, and software to analyse the collected data, the researcher is capable of properly supporting decision preparation.

A further assumption of this model is that the consumer has all the knowledge needed for decision-making on the part of the client, and what's more, the consumer is willing to share this knowledge with the representative of the researcher firm.

The generic operational model of applied marketing research is still significant to this day and is the starting point for most researches. Unfortunately, the majority of these assumptions have lost all of their validity by now.

In order to understand the main motivations of the changes within the industry, one needs to know about the tendencies affecting marketing research. The following is a short overview of these.

The evolution and operation of the industry were formed by the acknowledgment of the competencies listed above. This gave way to the rise of research firms with special services in the collection and analysis of external data. It will be less of a surprise that

the research projects were implemented in accordance with the clients' performance on the market, that is, in lucrative periods of the economy, there were more orders, while in recession less. A clear consequence of this tendency was that clients operating among harder circumstances on the market regularly lessened their orders of this kind and eventually governed market operations relying on mere intuition without any market analysis, or at best on internal (mostly sales) data.

The last two decades of the twentieth century were characterised by prospering cooperation, and new and new solutions were invented in data collection and analyses. The first signs of change came with postmodern thinkers who questioned the initial assumption of the generic operation model (we will discuss it in detail later).

Almost half of the orders of this period came from production companies since tracking of current consumer demands was of utmost relevance for them, while media concerns, government bodies, and NGOs also had a fair share of the market. Quantitative techniques ruled the data collection solutions, mainly due to the analysis of representative (and apparently more reliable) samples. Examining geographical distributions, we can see that applied marketing research projects were more commonly ordered in developed countries, and typically multinational research companies gained strength, which in turn served globalising markets.

Recession in the industry was perceptible at the outbreak of the economic crisis in accordance with the phenomenon that the market research industry's incomes show a close correlation with the performance of the demand-side.
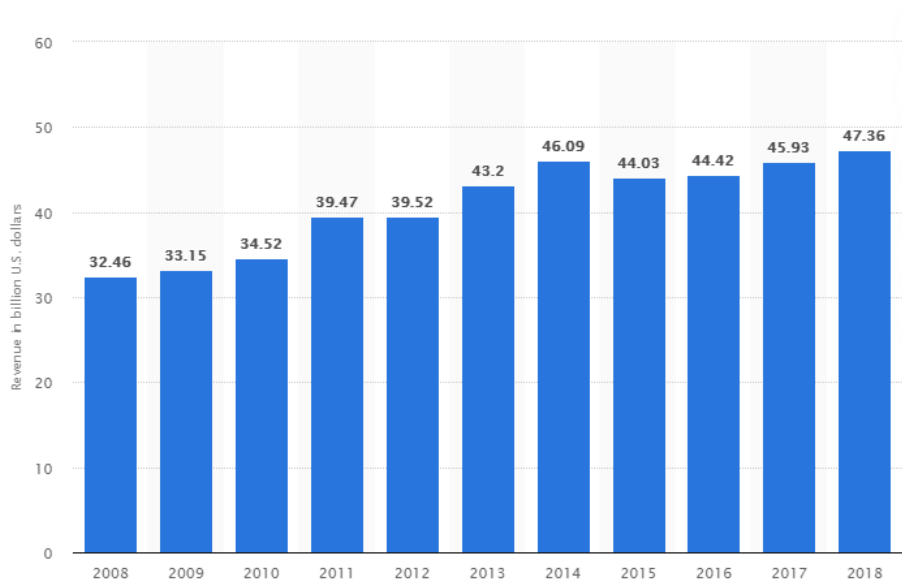
Figure 2.2: Global revenue of the market research industry from 2008 to 2018 (in billion U.S. dollars)
(Source: statista.com)

Let's examine the changes in the market in Hungary, which, as a result of the presence of multinational companies, followed global changes with some differing characteristics.

The state of marketing research in Hungary

First of all, we have to highlight the size of the market, which posed serious limitations on development. Although international research companies did set up their local representative offices following the political transition, the majority of their services consisted of standard products (traditional methods such as focus group discussion, in-depth interviews, and questionnaires). This naturally provided opportunities for smaller, more specialised agencies, yet developments there were hindered by a lack of resources.

The below figure summarises the changes in applied marketing research from the turn of the millennium until recently.
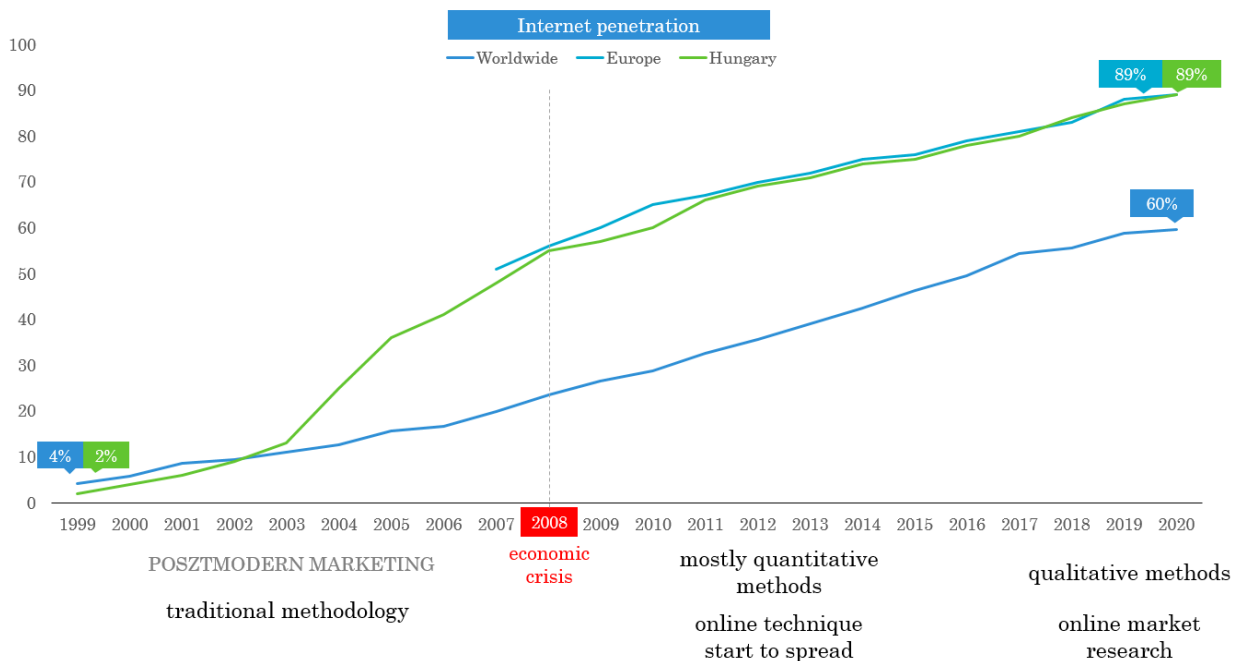
Figure 2.3: Changes in the circumstances of online marketing research between 1999 and 2019 (own edition)

An article, published in 1999, reported the following on the situation of the industry:

"There are around one hundred companies doing marketing research and opinion polls in Hungary, with a little more than five hundred permanent researchers. The turnover of these companies last year neared six billion forints (HUF) – according to the summary of the Hungarian Association of Marketing Researchers. There are 15 members of the Association and it gathers all the major companies, however, 60-70% of the income is generated by only 7-9 companies. Forecasts predict further concentration: within five-six years five or six companies will share the incomes of the industry. Most of the research companies are affiliated with international groups, or their owners are foreign, or they are affiliated with one of the multinational chains through a franchise, yet of course, there are enterprises with sole Hungarian ownership." (cegvezetes.hu)

A decade later, in 2010, the following summary was published on the state of the industry that predicts future changes:

"… A large majority of the researches are quantitative with a value rate of 82% in 2010, which is slightly decreasing, just like all around the world. The share of qualitative researches was 12%, and that of other kinds of research (desk research, secondary research) was 6%. In terms of applying up-to-date data-collection methods, Hungarian marketing research is catching up

with international trends. The share of personal inquiries dropped to 42 percent from 62 percent in 2004, due to the ever hardening conditions, the decreasing willingness to cooperate, the shift towards cheaper techniques of data recording. ...The rate of telephone surveys dropped to 15 percent in Hungary (in comparison it was 22 percent in 2006), this method loses territories worldwide. There are significant shortfalls in Hungary in the field of online surveys: their value rate in 2010 was 6 percent – hardly exceeding one-fourth of the international average. Although Hungarian marketing research companies have been prepared for implementing online surveys, their clients are often reluctant to rely on those due to the novelty of this method. ..." (piackutatas.blog.hu)
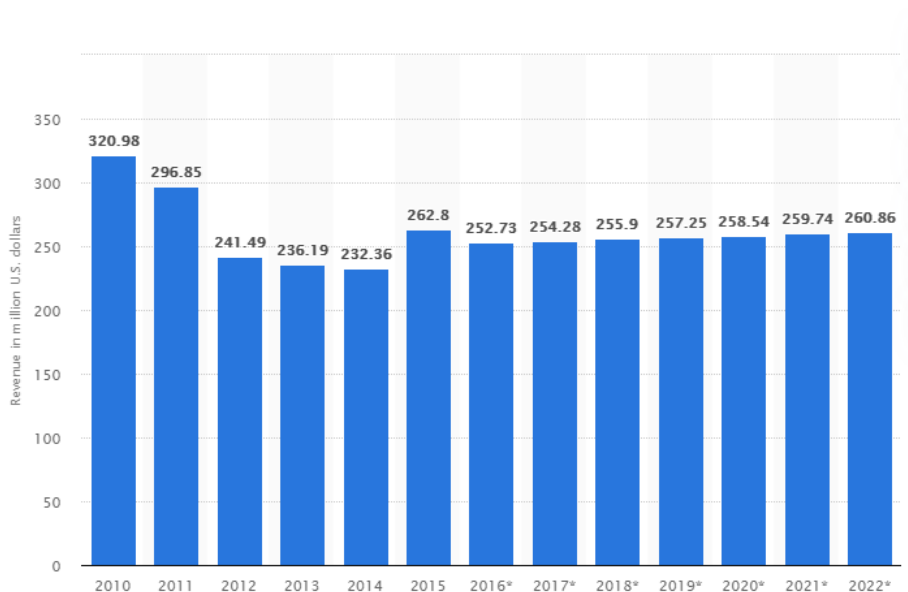
Figure 2.4: Market research and public opinion polling revenue in Hungary from 2010 to 2022 (in million U.S. dollars) *estimate

During the crisis, the demand for change was on the rise both on the side of clients and researchers. What is more, the pressure also grew in relation to technological development, resulting in profound changes in accessing consumers and involving them in research.

The turnover of the industry was rather stagnating in the years of the crisis, although inflationary effects were not considered in this report, and produced a steady growth following that period, even if at a lesser rate than the global average.

In the background, however, significant changes were taking place with the radical transformation of stakeholders and their services on the market.

2019 reports on applied marketing research are about the spreading of online methods and the reliability of data obtained this way.

"Online market research in Hungary started as a practical method in 1999, and nowadays it has become a full-fledged 'mainstream' research method. While Internet penetration was below 50% in Hungary, it was difficult to argue with the reliability of the method. The year of change was 2008 when domestic Internet access increased to 55% among the population. Indeed, the domestic history of the online method can be calculated from this point, although it is true that besides such penetration there were still target groups that could not be reached or only partially through the Internet, so caution was not unreasonable in these times. The real turnaround, the real breakthrough was in 2013, when Internet penetration rose above 70% and most of the target groups actually became available online. The situation has improved even more since internet penetration is currently 75% in the whole population in Hungary (source: KSH, 2018) and over 90-95% at younger, wealthier, more educated consumers, so we can practically reach almost all target groups, like with other non-online methods (except for those over 60, where penetration is only 41%; this does not mean that they cannot be reached online, just to take into account that less than half of them are accessible via the Internet).
The method has thus become reliable in the scientific and academic sense nowadays, and the results of purely online research are as accurate and reliable as any other research method would have done." (piackutatas.blog.hu)

But what effects were defining the technological side?
The change was palpable probably for everyone on part of the consumers. The extract of NRC's "Smart-Device review" gives a good summary of the situation in Hungary.
"Smart-phone penetration has been constantly on the rise since the first quarter of 2012: while only one third (32%) of net-users could sport an own smart device that year, their rate has risen to 73% since then. This, of course, meant that traditional mobiles have been losing ground: at the beginning of 2012 three quarters (77%) of net users owned a traditional device, nowadays we can only find such mobiles at every third person (33%).
It is by no surprise that there has been a decrease in the penetration of PCs compared to that of tablets and laptops, with a steeper increase curve of the former. Since the beginning of 2012, the group of tablet-users has multiplied by 11 times (from 2% to 24%), and those owning a laptop have increased by 10% (53% vs. 42%) – while on the other hand, the rate of PC owners has dropped from 72% to 54%.

There have been data collected on Internet usage via smart devices from as early as the first quarter of 2013. Although the rate of smart-device owners among those who went online, even if occasionally, in the 18-69-year-old age-group was similar (90% vs. 93%), mobile network access was less prevalent. At that time, two out of three people (66%) went online on their smart devices using mobile networks, while today their rate is 78%. Obviously, this trend is enhanced not only by the changes of consumer preferences but by mobile service providers too, who trade almost solely with a subscription or post-paid packages that include data traffic as well.

Besides smartphones and tablets, smart-watch is the next big runner-up device. Although its user base is not that huge yet (4 percent of Internet users), we can surely presume that this gadget will appear on a lot of wrists soon. This is corroborated by the fact that almost as many respondents think that they might buy a smartwatch in the next 6 months (6%) as those who are pondering to purchase a tablet (7%). ...

In the past four-five years, the number of mobile Internet users regularly chatting on their smartphones has risen. While 34% used their smartphones for chatting at least once a week in 2012, and 17% of them chatted daily, their numbers have doubled by now (weekly: 68%, every day 43%). Facebook's Messenger can be found on the smartphones of two-third (69%) of Internet users and Viber is used by half of them (52%). Also, there are more and more people who make calls via the Internet, rather than by phone.

16% of people who use their smartphones to access the Internet make regular phone calls this way, and 57% of them do it occasionally. Four years ago this rate was far lower (regular use: 6%, occasional Internet calls: 34%). Communication via the Internet naturally results in a diminishing significance of traditional phone calls and text messages: those who make calls via the Internet admit that they make less traditional calls, and 81% of chatters send fewer text messages, thanks to these possibilities than they had before (nrc.hu).

Technological trends influencing the changes of marketing research

Which technological trends influence the apparatus of applied marketing research, and its directions of development, which are the ones that shape our everyday life, either as consumers or as clients (digitaltrends.com, forbes.com, gartner.com, deloitte.com, euromonitor.com)?

1. The Internet of Things, or the network of smart devices, where everything communicates with everything, facilitates the evolution of smart-homes. The use of these devices results in an unfathomable amount of user data apt for applied marketing research that aims to understand consumer habits and habits of use, as well as to improve the services related to them. Naturally, the analysis of this data may be used for further purposes as well, such as consumer segmentation or market potential forecasts.

2. AI (Artificial Intelligence) and automation, which is clearly connected to the previous development trend, provides the opportunity to process vast amounts of data and turning the information in them into knowledge. The combination of the two trends clears the path to unbelievable opportunities since self-taught algorithms enable them – without human intervention – to match services even on an individual level.

3. Reality merges with virtuality, and Augmented Reality (AR) starts to expand. Inserting virtual reality into everyday life seemed problematic for a long time, but by today it became clear that the two can be bridged, which is both attractive and useful for users. A lot of applications of AR are available by now, which also requires the connection of databases and the hardware-developments in this direction. We can see an interesting phenomenon in the retail trade, where shops mainly specialising in online access services are launching more and more tangible products in the market (Amazon Dash Buttons), while traditional retail chains are heavily developing their online services. There is ever more talk about the next level of the cooperation between reality and virtuality, even as a mixed form of extended reality, where users interact with digital objects in reality.

4. The evolution of wearables and augmented humans has started with the spread of fitness tools, but their significance has reached far beyond that by today. A vast array of devices is available to ease the life of the individual and to enhance their efficiency. Some prognoses forecast the near appearance of augmented human or transhuman phenomena. These devices lay new foundations not only to efficiency enhancement, but to the long buzzing personalisation, by establishing services truly tailored to individual needs (e.g.:. Google Glass, Neuralink).

5. 3D printing is a remarkable trend among technological developments. Both its hardware and software devices are available for the public ready to shape our habits. Yet, as for now, it is rather unclear where these devices will integrate into everyday life, neither is their influence on applied marketing research.

6. "Consumable" Big Data – while there is an improvement already in the processing of large amounts of data, it is of utmost importance that researchers turn them into consumable visualisations to make the utilisation of results simpler. "Consumable" Big Data – while there is an improvement already in the processing of large amounts of data, it is of utmost importance that researchers turn them into consumable visualisations to make the utilisation of results more simple. This trend will certainly be strongly connected to applied marketing research. What is more, it will be considered as the starting point for such researches.

7. Besides smart devices, the emergence of smart spaces is becoming more and more accepted. This is also connected to IoT and AI technologies and covers larger spaces, such as offices and homes.

8. 5G technology that makes Internet access faster and more stable than ever before. Although the technology was first available in 2019, experts predict its wide use and popularity from 2020. A mobile internet connection that is super-fast, stable, and accessible anywhere may bring about a new revolution of Internet use both for individuals and on the corporate level.

9. Thanks to 5G technology, the use of mobile applications and smart devices will gain momentum. Readily accessible services: based on the success of Uber several applications have been developed that offer most extraordinary services in novel business models. The most important feature of these applications is that they use mobile phones to form suitable platforms for business making among individuals.

Similarly to any trend-forecasts, tracing the directions for technological development implies a lot of uncertainties, because new developments, showing opportunities that have never been anticipated before, can make a breakthrough at any point in time.

Still, we think that the trends shaping our not so distant future become tangible if we consider and list the current tendencies.

It is worth listing some of the technological trends of the previous decade to compare them with those of today, and to see the scale of development and the phenomena that could not gain strength since then.

Let us highlight the more interesting forecasts and product developments, based on trend 2007 summaries (techdigest.tv).

- iPhone was starting to change how we use our mobile phones,
- the music industry was about to change due to downloadable albums,
- Second Life opened up possibilities towards virtual reality both for consumers and brand owners,
- Nokia realised the importance of content providing services and has started producing digital content,
- netbooks appeared as a new category and became successful (for a while) with reasonable prices and a performance tailored to the average user,
- Facebook launched its application platform in hope of further growth,
- we were waiting for the 2008 launch of Asimo, the robot. :-)

The effect of the economic crisis on the marketing research industry

It is important to discuss briefly the effects and consequences of the economic crisis that are known for the most part, however, it is worth brushing up our memories of some details to understand changes on the clients' side.

The financial crash that sparked off in the USA in 2008 quickly escalated into an economic crisis, in the broad sense of the term. Hungary was also hard struck by the crisis, due to its extensive economic exposure.

Figure 2.5: Changes in the volume of Gross Domestic Product in Hungary
(compared to the same quarter of the previous year)
(source: ksh.hu)

According to a study by the researchers (Lengyel-Fejes, 2010) at Financial Research Plc., the depression triggered in the real economy was shaped by the following aspects:

- the multinational companies present in Hungary traded a major part of their products in foreign markets, and this was even aggravated by the structural distribution and vulnerability of these products,
- the state of the economy in Hungary could not provide proper safety, despite the corrective economic policy programme launched in 2006,
- the stabilisation programme launched earlier came to a complete halt following the 2008 referendum, and this further increased our competitive disadvantage in the region.

These changes resulted in the erosion of the client base of applied marketing research in Hungary, due to which the marketing research projects got cancelled first, followed by significant changes in requirements.

This was supplemented by the change of communication platforms and habits that resulted in a continuous failure of the classic consumer behaviour studies, eventually leading to the evolution of a new-type business model.

In the following chapters we will concentrate on the consequences of these changes with focus on clients' expectations. This will be followed by an overview of the developments connected to the tools of marketing research with special regard on technological innovations.

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III. Trends and changes of consumers and firms

As a starting point, let us refer to one of the related works of postmodern thought in which Brown (1995) summarises the categories of marketing research within the dimensions of ontology and epistemology. According to this concept, consumers may assess their demands and expectations, as well as the world around them differently depending on whether their perceptions are rather realistic or more relativistic and subjective.

The Irrational consumer

We may assume that there are markets, product categories, and of course consumer groups with a (more or less) objective perception of reality. We can imagine consumers who are aware of their expectations, able to assess the full scope of market supply, and who can select the most suitable products in cases of real purchase decisions (Törőcsik 2009) or if they are highly involved. But these instances are rather uncommon and describe only a fraction of consumers similarly to the homo oeconomicus, the notion of which is more feasible within a theoretical set of criteria.

Another more probable approach is that consumers – mostly because of the rate of oversupply – are not able to evaluate the whole range of supply and make a rational decision but simply forced to rely on their emotions and intuition. If we add to this that their needs and expectations are often not very clear for themselves, then we are exactly in the postmodern state that Brown put forward.

These (may) lead us to the currently fashionable approach of behavioural economics too, the foundations of which were laid by Kahnemann & al. (1982) in the '80s, when they described individual behaviours in uncertain situations with decision-making heuristics. By importing uncertainty to economic models these can provide a better approximation of reality. What is more, they support the specification of algorithms explaining irrational decision-making. And that is highly needed, because:

- the models developed following the economic crisis can only be partially fitted in the earlier classical system of thought, or cannot be fitted at all,
- individual decisions are largely made on emotional grounds,
- models of behavioural economics can lead to more accurate prognoses in the future.

How did the "life" of the consumer evolve in the last couple of decades?
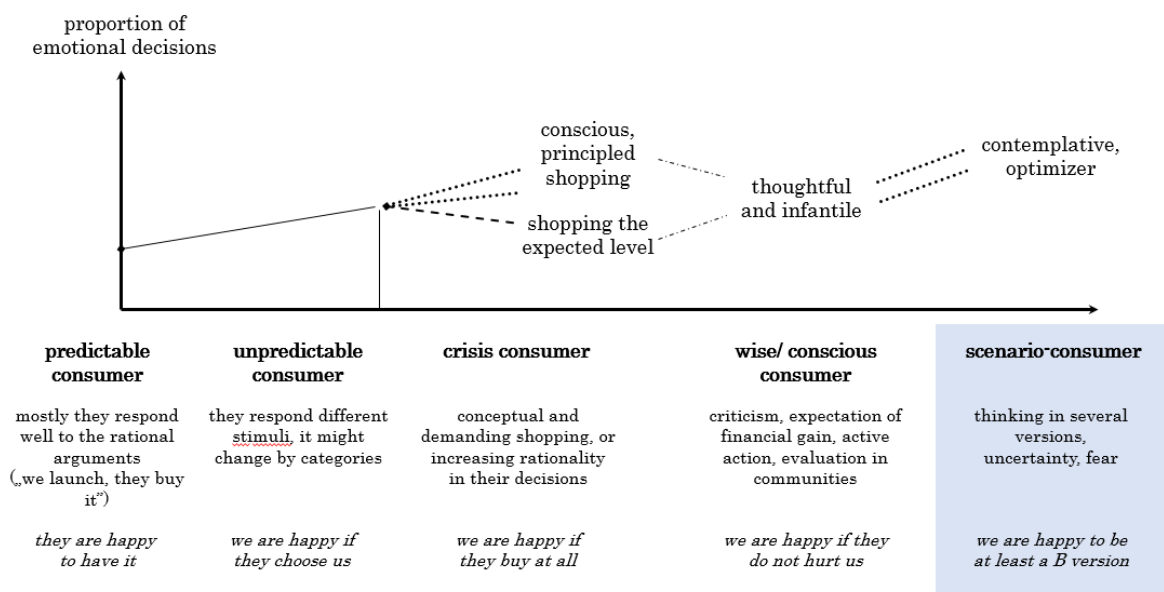
Figure 3.1: Different periods of consumer behaviour
(Törőcsik, 2019)

In the concept developed by Törőcsik (2019), consumer behaviour was taken to be predictable for longer periods because markets were characterised by a dominance of demand. More and more people were able to purchase what they really needed, they could (still) appreciate the range of goods available, thus their decisions showed almost full rationality (the use of past tense here does not necessarily mean that this cannot happen in the present, however, experience shows that if a similar situation occurs that lasts shortly and involves only a small group of consumers).

Then came the age of the unpredictable consumer, when – basically at the time of oversupply on the markets – customers became somewhat discouraged and started to

rely more and more on their emotions and intuition. They often bought products and services they did not really need, while environmental effects, financial opportunities, and last but not least technological development – or in other words, the companies' pressure for growth – made consumption exceeding real needs possible, or rather expectable (and this situation is much more common these days).

Let's look at these effects in a little more detail. The influence of the social environment has to be highlighted here. The social environment contributed to several distortions of rational decision-making, and we tend to communicate our system of values and seize our position in smaller or larger communities by making purchases in an outward manner so that they can be shown to others.

In the past couple of decades saw an enlargement in financial possibilities both in developed and developing countries. Such expansion of limits resulted in a significant narrowing of the decision-making ability of consumers, as the demands to be met go far beyond their basic needs.

We have already discussed the consequences of technological development, yet its effects are worth emphasising again. Let's just imagine the situation when we "go shopping" in our favourite armchair at home without any real banknotes changing hands. The fact that financial transactions are becoming virtual enhances the irrationality of consumer or customer decisions further.

And naturally, all this is moulded by the pressure for growth of companies that bedazzle consumers with ever-renewed solutions and opportunities. Who would have thought even 15 years ago that we need our mobile devices for almost every second of our lives (just to mention a most obvious example)?

But we inevitably had to face the limitations of development and growth. As László Mérő has pointed out (2012:231): "We have to go too far to understand how far we can go." We already discussed that it was the economic crisis that showed us eventually

how far we could go. New ways had to be found, and the trends and directions have slowly taken shape.

As a result of the economic crisis, the category of "crisis-informed consumer" appeared in Törőcsik's concept (2017) who prioritises rationality again due to necessary restrictions (as much as this is possible amidst the oversupply present). This means that conscious consumer behaviour could gain strength partly because of economic constraints. Although the tendency had appeared prior to the crisis already, it characterised mostly the consuming habits of groups disappointed in unnecessary over-consumption.

The "crisis-informed consumer" does not seem to bring into play a completely new approach. While they have rid themselves of the feeling of boundlessness, they have not altered their basic motivations for purchase. Does it really mean then that consumers became more conscious during the years of crisis?

Partially it does, as a general mistrust evolved around consumer credits, and the products' place of origin, or the ingredients and commodities used for production became important factors in purchasing decisions. Yet it is absolutely clear that the inner drive for possession could hardly be eased in the years of the crisis, thus new forms of self-expression evolved. Partially it does since a general mistrust developed around consumer credits, and the products' place of origin or the ingredients and materials used for production became important factors in purchasing-decisions. Yet the inner drive for possession could hardly be eased in the years of the crisis, thus new forms of self-expression evolved. The post-crisis period was ideal for the behaviour-economics approach by calling attention to the rational and irrational aspects of decision-making and using both types in modelling consumer behaviour.

By moving forward and predicting the next possible phase of consumer periods, we can see the outlines of the category of the "smartened consumer" (Törőcsik, 2017) who, upon realising the possibilities in community and in influencing, treats service providers, producers, and last but not least retailers in a new fashion. We still have

to wait for the coming-of-age of this type of consumer, as consumer communities are just starting to recognise and master the power of collaboration.

It is important to bear in mind that the above categories may exist parallel to one another in the same or different markets. Even their blend is possible within the same consumer formed by one given purchasing situation or involvement.

Then how can we describe the consumer of our times? Conscious, smartened, confused, or on the contrary, "awakened"? Or of all of these at the same time?

- It is a positive fact that we leave behind an ever-growing abundance of data in the virtual space due to the ubiquitous use of modern technology, giving way to companies to increasingly track our decisions and preferences.
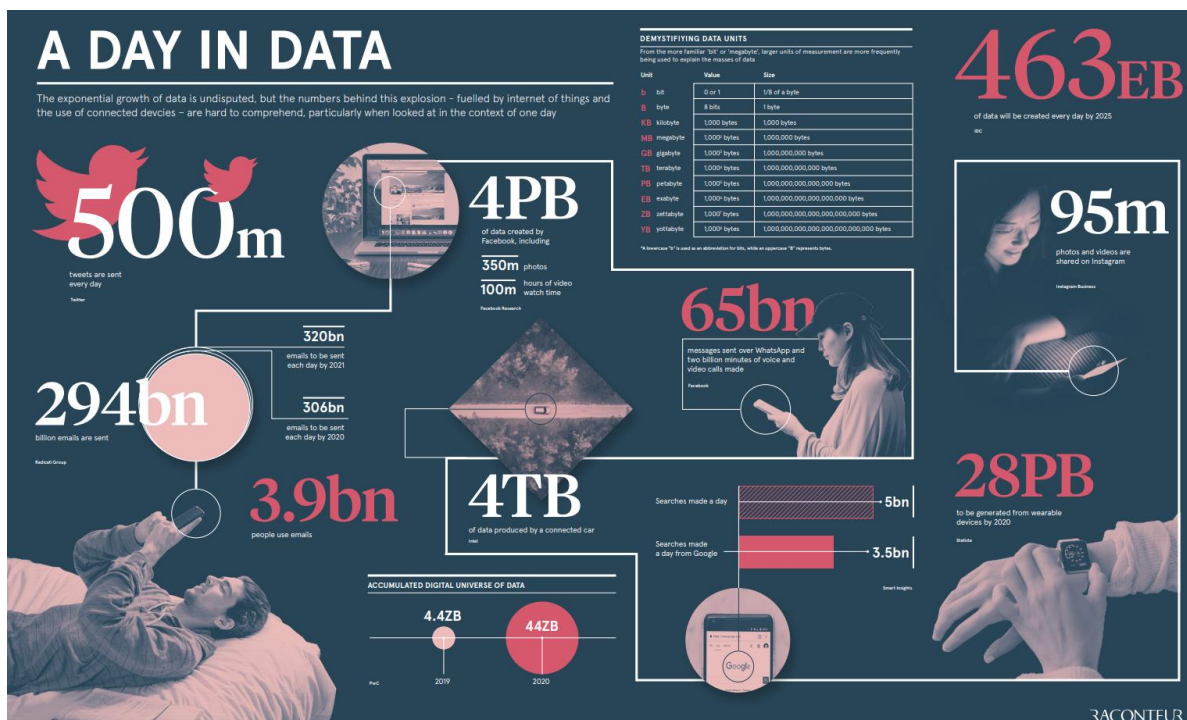
Figure 3.2: A day in Data
(raconteur.net)

This infographic by raconteur.net from 2019 shows the magnitude of the digital data that users produce either for private or business purposes.

And this does not even contain other impulses we have to process during each purchase decision.

The Euromonitor annually identifies the major trends influencing the habits and decisions of customers. The enlisted trends point to three directions:

1. The significant role of digitalisation and robotics resulting in an accelerating pace of life, besides which

2. the strive for individuation and personalisation is still a driving force, just like the enhancement of diversity and the ensuring of mental wellbeing.

3. And as a countertrend to acceleration, we can witness a restraint in consumption, a pursuit for eco-consciousness, as well as business models based on sharing and recycling/reusing.

The compilation includes the following phenomena for 2020:

- **Beyond Human**: People are beginning to accept that robots or other artificial intelligence can perform certain tasks traditionally done by humans.

- **Catch Me in Seconds**: Consumers are growing accustomed to shorter content. In response, brands are launching offerings with visual cues and auditory comments – multisensory and quick for instant gratification.

- **Frictionless Mobility**: Consumers want their transportation across cities to be modular and personalised to their individual needs.

- **Inclusive for All**: Consumers see needs for cultural change. As a result, companies are reframing their products and services to be more accessible to everyone, representing individuals beyond the mainstream.

- **Minding Myself**: As mental wellbeing is brought to the forefront of consumer concerns, people are seeking outcome-based goods to address specific need states, such as stress and sleeplessness.

- **Multifunctional Homes**: With remote work gaining popularity and greater access to 5G, consumer habits regarding working, dressing, shopping, exercising and more will revolve around their homes.

- **Private Personalisation**: Consumers are conflicted. They expect brands to tailor products and services to them, yet they must provide their personal information to optimise their experience.

- **Proudly Local, Going Global**: Consumers are retreating from globalisation and hyper-consumption and moving towards buying fewer, higher-quality products while shopping in and supporting local neighbourhoods.

- **Reuse Revolutionaries**: Consumers are prioritising experiences over ownership. New business models that aim to offer more with less through sharing, refilling and renting are appealing to more ethical consumers.

- **We Want Clean Air Everywhere**: Air pollution awareness is impacting consumer choice. Brands are positioning themselves to target these environmentally conscious consumers.

Now, the question presents itself: how can the consumer cope with the vast amount of data and impulse that they face day by day, while they also produce and release data about their own decisions and preferences.

No-one will be surprised that rationality gets played down by rules-of-thumb, and the consumer attempts to "survive" modern reality by using heuristics, that is, the simplification of decisions. However, we must admit that there are also a number of advantages to this. It is enough to mention the information available online, the shopping done from the convenience of one's armchair, or the self-learning algorithms using AI and assisting us in our decisions.

The extent to which analyses relying on past data are suited for prognoses may vary among individuals, but understanding mass phenomena can be safely used for planning, especially if we take into consideration their rate of price/value ratio.

Dan Ariely, one of the prominent figures of behavioural economics, states that a large part of our decisions is irrational (Ariely, 2011). The more so that our behaviour becomes predictable as a result of the set of irrational decisions we make. He corroborates this conclusion in his book with a lot of examples and research results, making his readers realise the reasons and characteristics of predictably irrational behaviour.

The above is supported by the 2014 survey of POPAI (popai.com), an international organisation, according to which 76-82% of all purchases happen in a non-planned manner. In most cases, we make purchase decisions on the spot. Tracing each stage of the real purchase decision is obviously impossible in a given situation. We need simplified rules to support our choices, often resulting in irrational decisions.

The behaviour of consumers has gone through a lot of changes in the past decades, and the process is far from complete. Thus we try to name the significant developments and outcomes from the last decade that are emblematic of this transformation (for more on the subject see at trendinspiracio.hu):

- The growing appreciation of consumer communities: We have been anticipating for a while now that consumers overtake the bargaining power of retailers. For this to happen, a proper concentration of them would be needed, and the power of community seems to bear this opportunity. Of course, groups may still form or break up alongside ephemeral interests.

- Transformed platforms of communication: consumers are instantly and continuously absorbing information the exchange of which happens through appliances, making personal coordination and communication difficult.

- Multi-channel purchases: although to varying extent, the online and offline channels blend in customer decisions. However, in cases of high involvement, online information gathering is followed by offline purchases.

So, what we can see is that customers remained unpredictable (luckily). Even if their behaviour is describable or predictable with suitably long time-series analysis and transaction data (Barabási, 2010), they have higher expectations towards companies, while their loyalty is incidental.

Changes on the clients' side

When approaching the changes from the point of companies, we have to emphasise again the effects of the crisis and technological development, the consequences of which we can see in the operation of organisations. We consider the below selection of current business trends significant (forbes.com, visioncritical.com, inc.com, www.telegraph.co.uk):

- Technological and IT developments: almost every trend list features technologies among the top items fundamentally reforming business processes and almost all other areas of life. Some of them are artificial intelligence (AI), augmented reality (AR), and virtual reality (VR) technologies. Their significance is enormous in this aspect because they support quicker, better informed, and more effective decision-making processes for companies. According to the latest forecasts, these will not be the exclusive privilege of large companies, as they are steadily spreading among small and medium-scale enterprises too.

- The importance of adjustment to change: one of the main consequences of the economic crisis is the globally perceptible fluctuation and constant change that has become the "new norm" in business life. Consequently, there is a growing appreciation of trust both in B2B and B2C relations (we have already mentioned the credibility of brands, brand owners, and the quality of relations in connection to consumer trends) with market and company consolidations becoming a

constant. Although the political and economic environment is less flexible when it comes to transformation, corporate decisions are also heading towards simplification, protecting the interests of the company.

- Focus on productivity: At times of uncertainty, the main challenge for companies is planning. For this reason, attaining effective operation for which they try to utilise all the resources provided by technological development. Project management, time management, team management, and customer relationship management have become buzzwords, not to mention 5G technology that has raised productivity to new levels by accelerating processes carried out in the online space.

- Community-based cooperation: consumers call for their own space in corporate decisions, they come up with new solutions for funding their plans, and companies have to adjust, because with the right tools they can "get closer" to their customers, and cooperation can become much more effective. On content sharing platforms for individuals, corporate communication appears strange or even clumsy, yet it has a growing percentage in the communications budget (taking over TV broadcasting costs in many countries, also in Hungary).

- Supplementing classic competencies is a competitive advantage: besides their existing (or reinvented) primary competence, companies have to offer ever new services that are valuable for their customers. This defines the directions for development in traditional retail trade and may be significant for production companies too. A prevalent demand from consumers is the development of smart and automated devices that have become relevant from home-making to driving.

- Generation Y has grown up to take management positions, and the approaches they represent may become widespread at companies. This, in turn, will assign significantly different focuses and cultivate new types of corporate culture (for example by growing the number of staff working distantly).

The corporate community is exclusively focusing on current challenges that present them with radically new situations in which the solutions that were effective earlier work only in the short run or not at all. By taking into consideration that this is topped up with decreasing profits (and the constant requirement of growth), it is obvious why so many start to turn their back on the traditional tools of applied marketing research.

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IV. Answers in applied marketing research

It might be clear from the previous chapters that obtaining appropriate information on the market and consumers has been a continuous challenge for marketing experts to this day. Moreover, this requirement has been posing more and more serious questions in the past decade, for example, about the effectiveness of applied marketing research tools. This has led to the continuous realignment of the field.

A new model of operation and trends in marketing research

As the credibility of the methods researchers applied earlier to this purpose becomes more and more questionable (Zolli, 2006), the demand arises for an approach that considers both the expectations of clients and the altered habits of consumers.
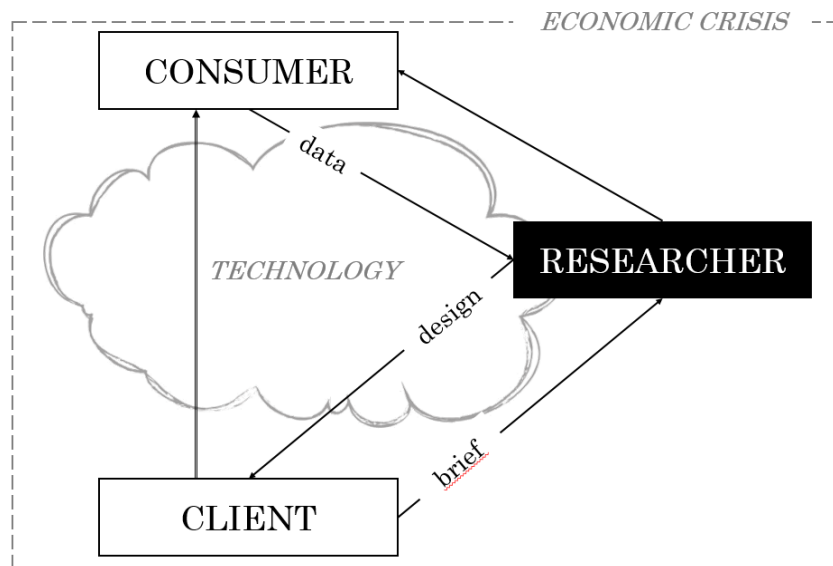
Figure 4.1: The new operational model of applied marketing research (own edition)

The effects of the economic crisis that restructured the priorities of companies and inevitably influenced consumer behaviour set the framework of reference for operation. This framework is challenged by the development of technology, which shapes the relationship of cooperating parties sometimes in a supportive manner, at other times by heading in opposite directions.

Either way, the direct relationship clients can build with respondents partly due to technological developments, and partly for cost-effectiveness is a new phenomenon. In this situation, finding or developing competencies that have value in this new operational order is (was?) vitally important.

There might be a genuine paradigm shift taking place in applied marketing research this time, with several new techniques and solutions arising in practice and in theoretical publications too (see, for example, Malhotra & Peterson 2001, Grover & Vriens 2006). Let us review the trends currently working, starting with phenomena publicised by Malhotra and Peterson. Although they collected these 20 years ago, many of their aspects are still relevant today.

- The researcher becomes part of the decision-making process: It is becoming more and more of a requirement that the researcher knows not only the market and the industry but the given company together with its current aspirations and market position to assist decision-making with meaningful information and suggestions.

- The client also becomes part of the research process: that is, they are taking an active part in developing the research design, or in executing surveys.

- Research becomes part of the operational structure of companies: especially, if they are based on internal corporate information. Unfortunately, the use of external information, due to associated costs, has not become continuous and sporadic researches have remained the order of the day.

- Individual evaluation of secondary data becomes general practice: this phenomenon may be the one which has significantly transformed research projects in the past 15-20 years and is dominant today.

- The role of database marketing is still gaining momentum: this trend has increased similarly to the previous two since companies are registering more and

more transactional data that mainly describe their customers. By forming suitably long time series and representing masses, these data have huge potential in tracing the patterns of consumer preferences (see the works of Barabási) or even in forecasting them.

- Marketing decisions are becoming more and more automated: the clues of this are starting to appear in the forefront, when automation is gaining momentum with the advent of online marketing, moreover AI hugely assists the automation of decision-making.

- Participation is becoming a priority of research methodology: as shown in the previous chapter, consumer perception is becoming relative and subjective, resulting in reduced efficiency of the tools aiming at the objective understanding of rational decisions (this necessitates to discuss the application of questionnaire surveys and their changes later).

- With more and more data becoming available for processing, the size of qualitative samples is growing: there is a growing number of software applications facilitating textual analysis from the most simple ones (such as word cloud generators) through sophisticated applications (such as SPSS, NVivo, ATLAS.ti) to completely new approaches (for example Neticle/Zurvey developed in Hungary).

- AI and the genetic algorithms become dominant in data analysis: we are witnessing this revolution currently. The applications are becoming more and more available for everyone (such as the Watson platform by IBM).

- The international character of marketing research is intensifying alongside several other changes that are not listed here, mainly because we are focusing on the Hungarian context, however, the Authors have predicted several changes precisely in this respect too.

- The role of the Internet strengthens in the field of qualitative techniques, leading to the transformation of some traditional techniques (e.g.: online focus group, online in-depth interview) and the evolution of new methods (such as netnography, market research online communities (MROC), online eye-tracking).

- Data-processing is becoming an even more sensitive issue, particularly because the respondents' basis on online platforms is continuously expanding, together with the respondents' technological literacy.

- The contribution of consumers participating in research projects must be acknowledged in multiple ways, either by improving the comfort level of the survey, or the proper compensation in exchange for the information provided.

Among the current, evolving trends, the following are the definitive ones (visioncritical.com, greenbookblog.org, newmr.org, interq-research.com, takenote.co):

- It is by no surprise that AI technologies play an increasingly important role here. Consumers have less and less time and an affinity to participate in surveys or fill out questionnaires. The vast amount of data collected with the help of artificial intelligence (Big Data) – combined with short questionnaires and swift survey solutions – can spare a significant amount of time for researchers. Machine learning is one of the often utilised solutions providing a reliable picture of the target groups from large amounts of consumer or customer data.

- We have to face an increase in the use of qualitative methods on several levels. One group of these new methods exclusively concentrates on collecting quality data: digital ethnography, online interviews, netnography, and community research. However, quality data play an important part in the other group of trends because the ever more significant storytelling method requires this too.

- Agile marketing research: This is a project management approach adopted from IT developments. Here the parties define several shorter cycles based on

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cooperation and negotiation to keep the client's requirements a priority during the phases of preparation – survey – analysis – conclusion, even if the researchers have to implement changes in the methodology on the run in the topics concerned. A natural outcome and condition of this solution is a pay-per-hour structure replacing the prior accepted pricing models, as well as a transparent work-time-recording.

- Relevant big data analyses: not only the evaluation of large-scale data coming in diverse formats has to be solved but, what's more, the results of the evaluation have to provide useful insights to assist decision-making. In many cases, this requires an automated process calling only for surveillance on the part of the researcher.

- Integration of IoT among the tools of applied marketing research: Connections have appeared only on a conceptual level, however, in the near future, the examination of consumer behaviour must be assisted by these effective applications.

- Decision-makers need facilitation to directly and quickly access respondents: while earlier it was done by different DIY (do-it-yourself) solutions, today focused micro-surveys, and reaching out to the brand community's members will support decision-makers in gaining personal impressions of their users.

- To collect valuable data we need a more precise target-group definition: Including only willing and outgoing respondents, who are active on online platforms will not be sufficient. First, we have to find out how we can access – in time and space – those potential participants whose opinions and feedback will be especially important for us, even if this means some challenges during the survey (see the insight on hybrid surveys later).
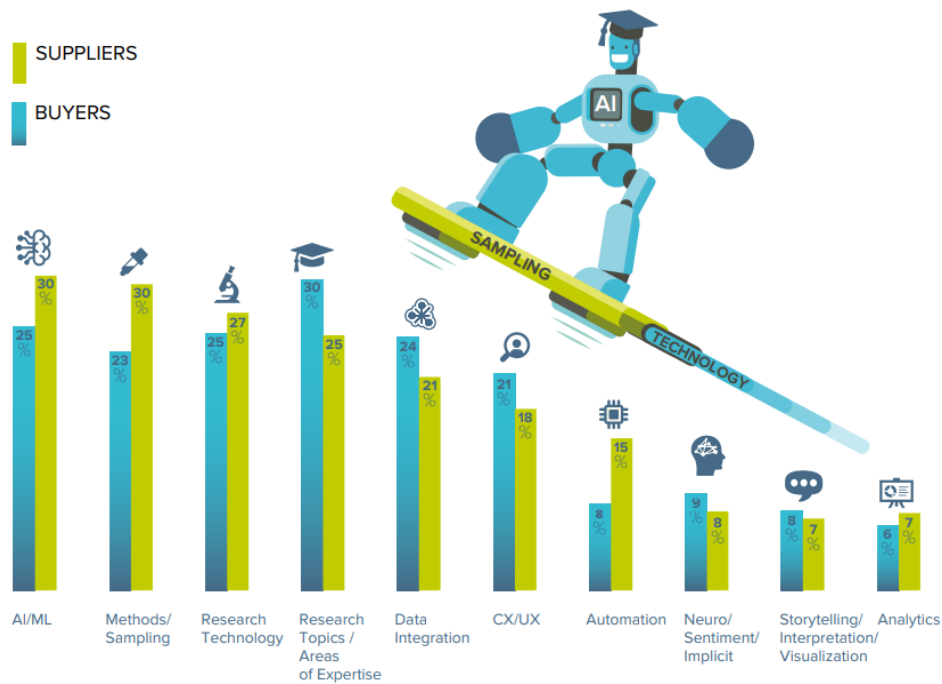
Figure 4.2: Buzz Topics: Tech & The Skills used to lead it

(GRIT 2020)

We can see that, on the whole, we either have to find valuable competencies for researchers, or we have to develop new ones to meet the requirements of clients. We have to get even closer to the respondent and instead of examining consumer behaviour, researchers will have to concentrate on understanding customer decisions.

Challenges of respondents

What characterises the participation of respondents in applied marketing research projects?

The following section will highlight some of the changes on the side of the consumers that have mainly influenced the development of tools in applied marketing research. The greatest challenge of them is the decreasing willingness to respond, thus we examine the possible tools and decisions to make up for this negative tendency.

According to one of our previous studies (Szűcs, 2013: 105) "most markets feature an interesting phenomenon: the value of information is continuously increasing in an unstoppable manner, yet its value has practically vanished if we examine from

another aspect. The reason for this might be that understanding the target market, the preferences influencing the purchase decisions have become the most important goals for corporate users on the one hand, while on the other, consumers (mainly members of younger generations) are whole-heartedly, and what is more, freely share information with each other or the world".

Hungarian and international studies (e.g.: Pintér - Kátay 2010, visioncritical.com/2) report on corresponding experiences in relation to the continuously and significantly decreasing willingness to respond. While "in 1995, typically 50-60 percent of all respondents in the main initial address sample were willing to do the personal interview, 15 years later, in 2009 this rate has barely reached 20 percent" in Hungary.

The Pew Research Center (people-press.org) published the following results when assessing a similar period in the USA: in 1997, 36% of the participants were willing to respond, and this decreased to 9% by 2012. This rate seems to have stabilised since then. According to NRC, a Hungarian market research firm, participation willingness may be improved, especially with qualitative methods, since consumers are more open to an online focus-group for an hour than to a personal one, which may take 3-4 hours with travel.

But what causes this phenomenon? Why do potential respondents withdraw from taking part in surveys? Fletcher (2006) calls attention to the fragmented social structure and the ensuing challenges of surveying, while Gordon (2006) points out basic tenets that dispute the credibility of traditional surveying.

Processing a wide range of literature while studying this field, three (groups of) possible solutions were taking shape to counterbalance the decrease in willingness to respond:

- The proper selection of the survey technique: at the beginning, researchers were contrasting the efficiency of telephone and postal surveys (Yammarino et al. 1991, Kaldenberg et al. 1994), then the beginning of the millennium was marked by the

reports on the experiences with online surveys (such as Porter and Whitcomb 2003, Shih and Fan 2008, Galesic and Bosnjak 2009).

- The suitable buildup of the research tool, or in other words, the influence the questionnaire structure and its length exert on the respondents' willingness to participate: the topic is also covered in a large number of studies, concerning both the data-collection technique (Pintér and Kátay 2010) and the topic of inquiries (Vicente and Reis 2010, Lynn et al. 2008, Lynn 2014).

- Last but not least, it is important to get to know the base population, the potential respondents, especially in terms of willingness to respond to questionnaires: a swarm of studies was written in the 1990s (e.g.: Kaldenberg et al. 1994) analysing the correlation of age to the willingness to respond. Experience then showed that in the cases of both the personal and the telephone inquiries, members of older age groups were less willing to cooperate.

Based on the experiences above, we have concluded that the Hungarian base population seems to be worth examining from this angle and it would be good to specify (if possible) those respondent groups that show above-average willingness to respond. A further question of the investigation was whether there are any identifiable attitudes characterising respondents who are more open to participating.

The (environmentally) conscious consumer group served as a starting point for the study (Szűcs, 2013) which analysed their response willingness because we thought them to be more open, innovative and empathic in general and with questionnaire surveys. Based on the insights of this survey, we found those characteristics and attitudes that facilitate the identification of respondent groups with an above-average willingness to respond.

A 2000-participant nationwide questionnaire survey was carried out within the framework of a complex research project. The survey represented the adult population in Hungary according to age, gender, size of settlement, and regions (Németh et al.

2013). The first phase of the survey focused on what types of respondent groups may be outlined if the primary test point was the number of questions.

During the data collection, 311 variables were recorded, which thus meant the theoretical maximum of the questions answered. A lack of completion in the case of several variables did not necessarily mean rejection to respond, however, this testing device seemed instructive when examining the willingness to respond. As this can be seen in the below figure, the number of answers showed a bimodal distribution, defining two larger groups of respondents.
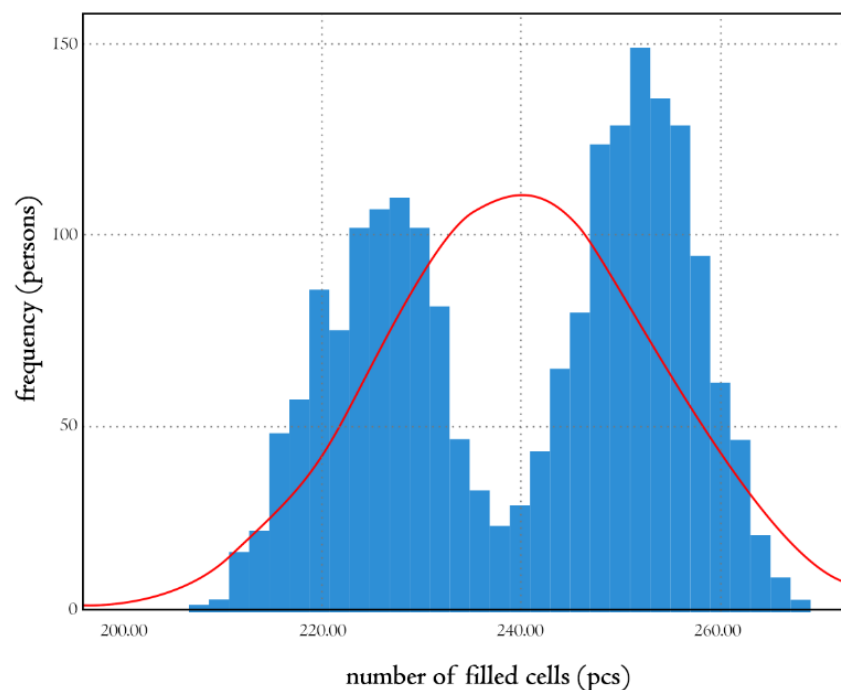
Figure 4.3: Distribution of answers in the full sample (n=2000) (Szűcs, 2018)

We could carry out the research within a 208-268 response range, but due to the bimodal distribution, the average and the median did not yield relevant information. With simple K-Means cluster analysis, we could establish that the concentration points characterising the two groups emerged by 225 and 251 questions. The size of the groups, however, predicted significant heterogeneity, since the first cluster comprised 895, while the second 1,105 respondents.

Upon examining the full range, we could further divide these two groups as follows:

- answers significantly below average: comprising 15% of the range with a cluster centre value of 218,
- below-average number of answers: 27.1% of the full sample (542 respondents), with a cluster-centre value of 228,
- respondents answering an average number of items: 11% of the sample (227 respondents), typically with 241 answers,
- responses above average: 28.6% (572 respondents), with answers around 250,
- responses significantly above average: 18.0% (359 respondents), where the value of the cluster centre is 258 answers.

By joining group 4 and 5, we received a subsample (with 931 respondents) that was similar in size to the one outlined on the right side of the histogram (and which fashioned a similar two-cluster solution of 1,105 committed respondents).

Since these approximations outlined overlapping groups of respondents, we decided to examine in more detail the two groups answering significantly larger number of questions.

Crosstab analyses showed that the willingness to respond was significantly higher among men:

- living in larger cities (!), with
- an above-average income and a higher (at least secondary) level qualification,
- who are single or live in a partnership, in standardised dwellings or apartments, and small households, and
- mostly consider themselves as a member of the younger generation.

Further characteristics of this group based on the attitude scales used in this survey show that they

- would like to be entrepreneurs,
- are rather satisfied with their present lives,

- do not feel themselves very close to nature, however,

- are" moderately eco-friendly",

- fundamentally believe in the power of consumer cooperation, and

- are specifically sensitive to campaigns launched by companies that emphasise social responsibility.

A further detail of interest – that might show correlations with the groups' average age – was that a higher-than-average number of respondents had smartphones and mobile Internet access. Surprisingly, the willingness to respond reached higher rates among the younger generation, thus, we carried out further analyses with attitude statements developed to identify lifestyle groups.

Similarly to the previous solution, we only introduce those connections that show significant differences between the two variables.

There was a significantly higher rate of agreement with the below statements among those who answered a higher-than-average number of questions in the surveys:

- I like to be present everywhere and keep it busy.

- I take great care of how I look.

- My big achievements are still ahead of me.

- I know what I want in the future.

- Everyone listens to my opinion.

- My parents and I have always been close.

- I do sports every day.

There was lesser agreement with these statements:

- I usually miss most things.

- We can only understand our generation.

- A man must provide for his family.

- I rather observe the world.

- The less change, the better.

- I live life slower than most.

- I do not understand today's world.

The resulting attitude groups are rather homogenous, meaning that the variables describing them outline very similar lifestyles. The above made it clear that the majority of the attitudes showing higher agreement delineate a faster pace of life (Törőcsik 2011), which was also corroborated by those variables where agreement was lower than average.

Although these insights of the analysis on age-related characteristics are in line with that of the literature, the question may still arise about what makes the younger generation (generally) more willing to respond. Based on our current knowledge we think that the reason for this is mainly in information sharing, a practice that is rather intensively pursued in their everyday lives, which further corroborates our hypothesis on the relative value of information.

Nothing is surprising in the fact that with the emergence of the virtual world, the development of new communication platforms consumers are increasingly avoiding personal interactions. They are open to express their opinion, but not in the earlier familiar methods. Turning back to Brown's theory (1995), we have to emphasise the influencing power of conformism. In today's world overwhelmed by data and information, it is almost an impossible mission for consumers to obtain some kind of objective view of the world.

In sum, we can see the following directions of improvement based on the changes and their consequences on the side of consumers:
- The "experience" of sharing together with the spread of open-source and web 2.0 solutions made formerly unimaginable business models successful, and destroyed others in a very short time. This obviously determines consumers' perception of the value of information.

- The main sites of information exchange are those social platforms that reunite fragmented consumer groups (tribes) even if momentarily, this is why

researchers also have to visit these platforms when looking for effective data collecting solutions.

- And last but not least, analytical and information processing tools connecting to these platforms can be purchased at a very low price or are even free and can handle the vast amount of information the consumers share with each other.

The consequences of change: the initial period of transformation

What expectations emerged on the side of the clients?

The changes have continued to trigger friction between the clients and researchers in the projects. They are facing new limitations and opportunities, thus the transformation of fundamental frameworks is still underway. First and foremost, maximum effectiveness has become a prioritised requirement since the economic crisis made returns to almost the sole key performance indicator, the time and financial resources to produce research results are tighter than ever, while corporate decision-makers expect heightened levels of proactivity, involvement, and extensive counselling services (Chadwick, 2006).

Clients do this while, as a result of the economic crisis, they have significantly cut back on research expenses attempted to replace researcher competency with opportunities provided by technological development. The main tools of this are the DIY (do-it-yourself) techniques that settle on emerging customer databases and support corporate marketing experts to directly contact their consumers. A DIY software facilitates questionnaire development, delivery, and the coordination of data collection, they also come, in some cases, supplemented with analytical toolsets. Then what can necessitate the involvement of a marketing research company in the wake of these solutions?

At first sight, one might think nothing can. This is why emerging DIY tools caused a lesser panic among researchers. Later, several limitations became obvious, and this normalised collaboration. It turned out that in most cases, examining our own

clientele is not enough, even in the case of over-saturated markets. The online panels or respondent communities evolved as a reaction to this problem, and they were managed first by smaller and later by larger research firms.

It was important to realise that the development of questionnaires and the design of the sample is professional work calling for proper experience and knowledge. The DIY solutions operating mainly online made access to significantly larger samples possible without any particular rise of expenses. The sanctity of representativity might have been challenged for a short time since the majority of the target population became accessible and was willing to respond upon the request of the provider (despite the earlier detailed low levels of willingness to respond). Later it became apparent that the survey participants' composition, be it based on demographic or any other variable, is rather homogenous (let us refer to the respondent types earlier introduced), which at large did not yield relevant results that support decision preparation. The phenomenon could be observed with qualitative studies as well: qualified and experienced moderators were replaced by the representative of the client in focus-group debates, either because they had a deeper understanding of the decision-making situation and goals, or the state of the market in general.

Experience has shown, however, that these solutions cannot fully replace the work of researchers. Apparently, there are situations, decision-making problems to which DIY tools may provide complete solutions, but this does not hold in general.

Technology – as we will later see – has completely subverted data collection. Online questionnaire surveys can reach larger samples faster and at much lower costs than before. This was clearly advantageous for clients, but the profitability of research companies suddenly and dramatically decreased. The quality and controllability of surveys have developed as well thanks to computer assistance, however, the verification of the identity of respondents, or the efficiency of questionnaire surveys, just like the objectivity of results are still problematic issues.

While more and more DIY solutions offer analytical (dashboard) functions displaying basic descriptive statistics, these are not suitable for elaborate inferences. Thus the demand for research competence and expertise arises anew, making researchers responsible for the analysis and visualisation of data and results in an extended researcher position.

In the case of collecting non-primary data, we may witness remarkably similar circumstances. Although transactional data – chiefly from internal resources – can be easily produced, their analysis, management, and utilisation in decision-making still prove to be difficult. This happens to be one of the major challenges today, as we have discussed it the previous chapter.

Financial pressure is clearly mounting from the side of companies, in addition to increased temporal expectations (although this is no novelty compared to the pre-crisis period). This partially justifies the emerging requirement for the change of methodologies, which is still hard to detect in practice, at least not in general (and surely not on the Hungarian market).

The above is supported by the series of GRIT reports (greenbook.org) that examined the markets of applied marketing research both from the perspective of the client and the researcher, first in North America and then gradually extending their scope to other continents. The insight of these reports shows that there is still a significant difference between the supply and demand of innovative research solutions. The application of novel tools on the side of clients is still lagging behind our expectations, and the most popular solutions are still the traditional techniques (or their modernised versions).

The GreenBook Research Industry Trends Report assesses the acceptability of the new, mainly technology-based solutions and tools of primer data collection every year. Below we list some of the results related to our topic from the 2019 issue (GRIT 2019):

- Studies in the past couple of years clearly projected the dynamic spreading of mobile device surveys – these are top contenders in the 2019 GRIT report as well – however, this is not yet the practice in Hungary. The trade is already divided over the use of questionnaire surveys, partly because of the participants' low-level willingness and ability to respond, and partly because of their high relative costs.
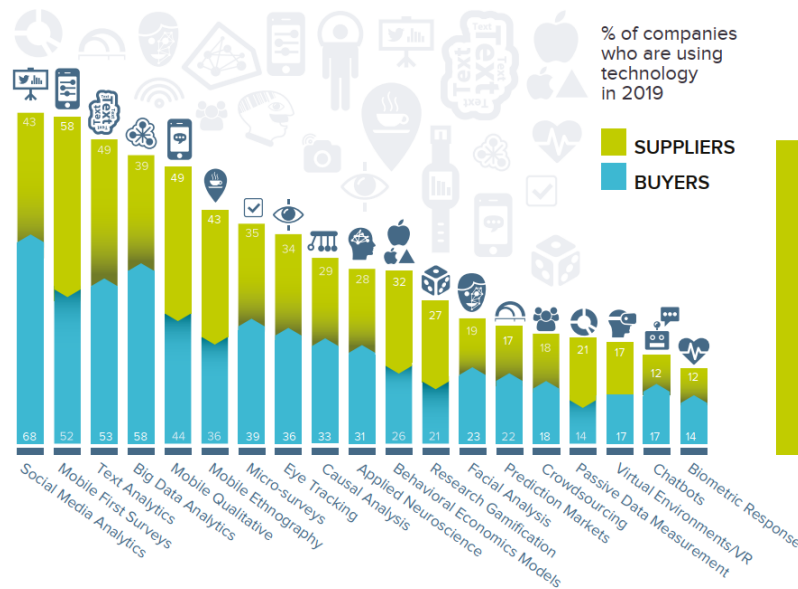
Figure 4.4: Emerging methods in use by buyers vs. suppliers
(Source: GRIT 2019)

- A more visible tendency is the research cooperation with virtual communities, be it about questionnaire survey and individual or group interview.

- Consumer activities on social media can be easily measured and analysed, either as secondary data, or as conducted primary research. The related textual analysis has improved tremendously in the past decade, facilitating the analysis of qualitative data on large samples.

- Also concerning online qualitative techniques, we can see positive anticipation rather than widely spread application, while company representatives participating in the study deemed mobile device based qualitative surveys significant.

- Interestingly, instrumental observations (eye-tracking, neuromarketing, face recognition/analysing systems) more commonly feature as striking new possibilities, and a rather large part of researchers do not even plan to try to experiment with techniques.

- The study lists several other supplementary tools that aim at reinventing questionnaire surveys to better meet altered frameworks. Such tools are in this developmental direction as micro-questionnaires and gamification that attempt to enhance the willingness to respond.

- Including tools related to virtual reality and behavioural economics, the alternative trend of today into the study is a novelty, yet there is only a moderate probability of them becoming widespread according to the same document.

- The examination of data recorded by portable smart devices is a new research direction. While the trade seems to be divided about how much potential there is to these solutions, we think the expansion of sensor-recorded behavioural data is unquestionable.

The consequences of change: the second phase of transformation

To convey the dynamics of market changes we shortly present the latest, 2019 report main findings:

- Surveys – mainly questionnaire-based – implemented on mobile devices are still on the rise with a last-year increase of 11%, while 65% of buyers rely on them (that is, almost two-thirds of clients use the solutions of mobile research).

- The use of micro questionnaires comes second among the rapidly developing tools in the field, and of course, it supports mobile researches really effectively.

- Furthermore, the application of webcam-interviews is expanding at a faster than average pace, but online community researches and textual analyses are more popular.

- Earlier experiences seem to be supported in that the tools for instrumental observation such as eye-tracking camera, and neuromarketing solutions, show signs of stagnation, their share of utilisation is one-third of all options. This is very similar to that of upcoming approaches and data analyses from behavioural economics tools and mobile devices.

We have discussed earlier that globalisation exerts its influence in Hungary as well. Several multinational companies collaborate with multinational research companies in Hungary, and cutting edge research solutions are produced in the academic sector (mainly in the field of methodology, e.g.: Simon, 2016).

However, there is a little lagging perceivable, the reason for which may be primarily the size of the market, as well as the conservative requirements by clients. On the one hand, the opportunities in the Hungarian market are scarce for well-capitalised research companies with state-of-the-art technologies, while on the other, the interest in innovative techniques rarely teams up with real purchase orders in Hungary.

Figure 4.5: Automated text analysis of the article titles published in 2020 on piackutatas-hirek.hu (own edition)

The content analysis of the titles of articles, blog posts and quoted content (n = 468) published on piackuatats-hirek.hu in 2020 sorted the topics by keyword. The resulting word cloud is a good illustration of the main trends and topics in the current Hungarian market research industry. It is clear that in addition to the traditional methodological framework, the Internet and social media provide the most frequent topics. However, new, innovative solutions rarely appear.
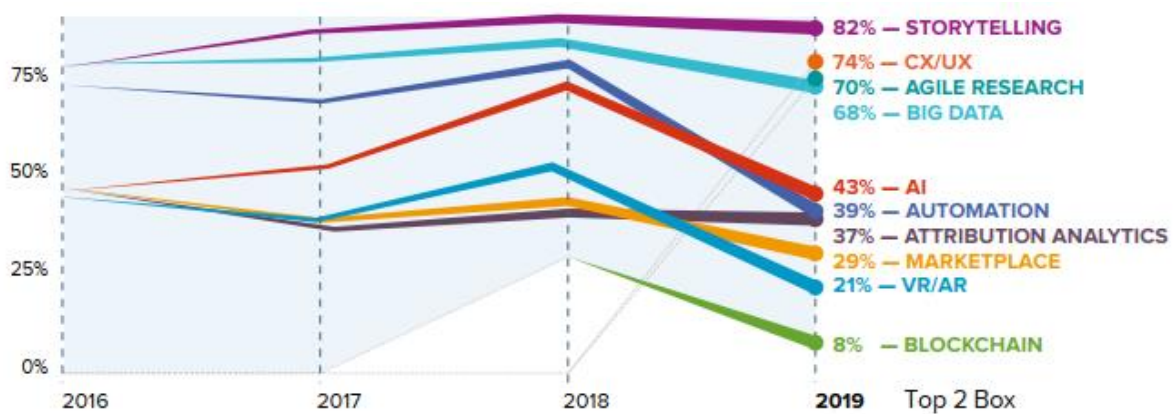
Figure 4.6: The most definitive phenomena in marketing research, 2016-2019
(Source: GRIT Report, 2020)

The 2019 edition of GRIT Report gathers the key buzzwords that have been dominant in the marketing research industry worldwide in recent years. The figure clearly shows the unbroken popularity of storytelling, CX and UX tests (customer and user experience), agile research solutions, and Big Data since 2016, while artificial intelligence, virtual and augmented reality technologies show a more downward trend.

Closely related to this issue is what competencies the industry expects from the researcher.

According to the GRIT Report, the researcher is no longer simply a researcher, but rather a data analyst, and even a data scientist, who, by the way, visualises data well and is also at home in the art of storytelling. Further outstanding competencies such as sales and business knowledge, research experience, and knowledge related to software development are becoming more and more valuable.
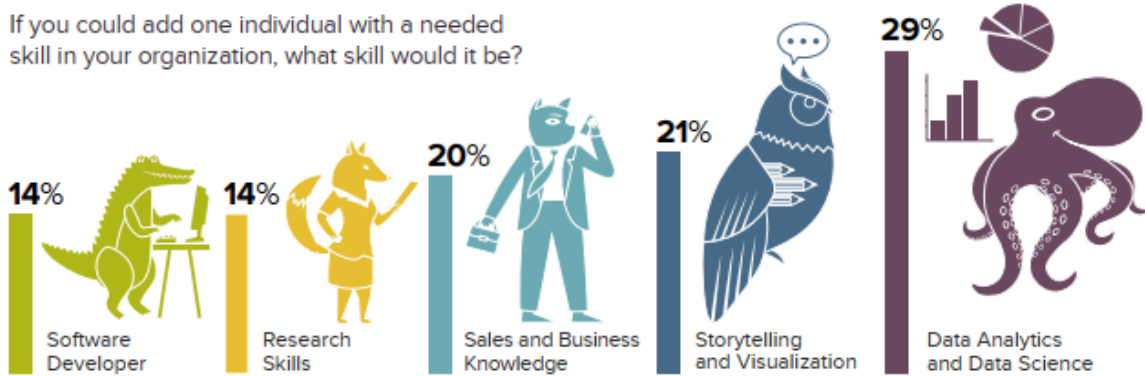
Figure 4.7: Valuable researcher competencies in the future
(Source: GRIT Report, 2019)

The methodology related to the new operational model

Based on the above, it is even more perceptible that the renewal of the entire research methodology will not be avoidable, moreover, it will have to be done within a framework in which interactivity and sharing dominate. It is a question to what extent key concepts from the past, such as representativity, or objectivity, can continue to guide consumer research without rethinking their definitions.

Of course, a new operating model is also needed for the implementation, since cooperation frameworks and profit-making processes in the research projects were formed for traditional solutions, which have become a determining element in the value chain.

Although the value of the data collected was little acknowledged by researchers, the information base compiled for the analysis was interpreted as a real contribution to the research process. In the future, this system will be difficult to sustain, as here we can clearly observe both client expectations and the altered behaviour of the consumer side as well (Szűcs, 2018).
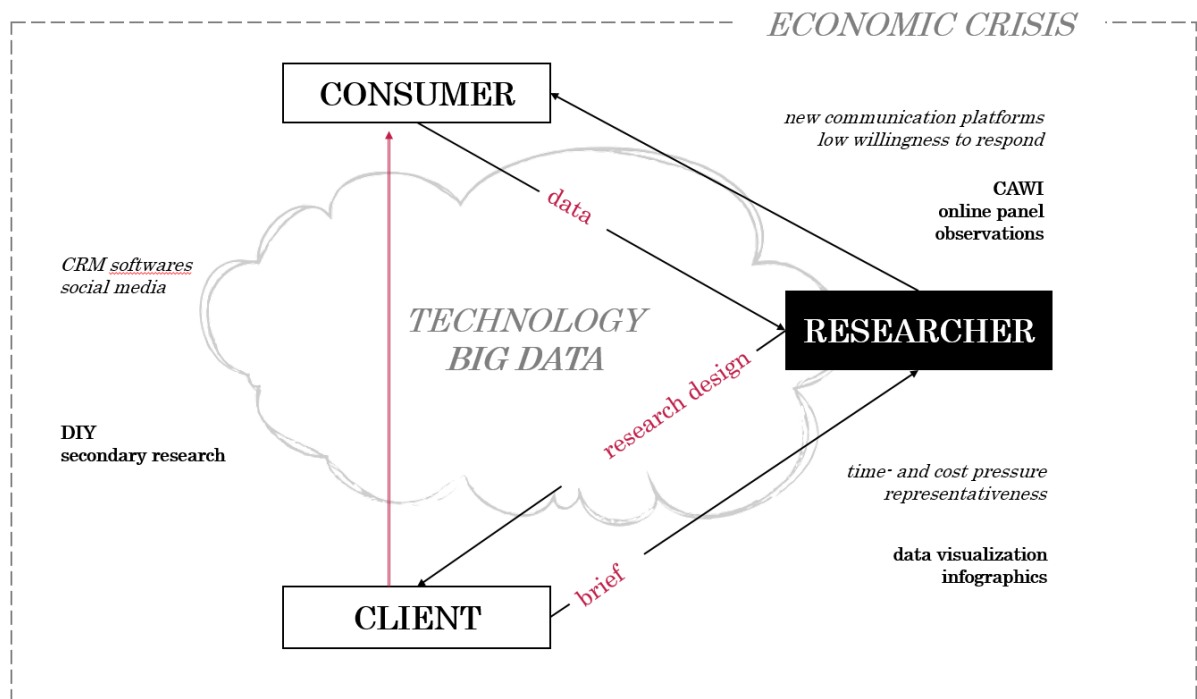
Figure 4.8: The changes defining the new business operations with their consequences
(Source: Szűcs, 2018)

The following chapters, therefore, focus on the consequences of changes, and list the innovative research solutions that emerged in the last decade and a half as shown in the figure above.

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V.   New directions in marketing research

The categorisation of classical research methods is clear in the marketing research literature (see Figure 15). However, the placement of the new, innovative solutions presented below is not so simple at several points.

Figure 5.1: Traditional categorisation of research methods

(own edition based on Malhotra, 2019)

Mostly, of course, because some of the new solutions are based on the combined application of various methodologies (e.g.: netnography), but some solutions result in large amounts of quantified data with a smaller number of samples (e.g.: instrumental observations in neuromarketing). The question may arise to what extent can the boundaries of the previous classifications be kept. In what ways shall we be able to talk sensibly about quantitative and qualitative research solutions and tools in the future?

In the increasingly dominant new business model, data collection is not conducted primarily through surveys. And it is often not even research companies that do them, but the consumers themselves. Or businesses that detect a research problem.

That makes us believe that the distinction between qualitative and quantitative priorities is still relevant for research problems, even if they can often get mixed within a given research project, however, the above classification needs significant revision on the part of the applied methodology. In this case, just as in the interpretations of several other overlapping areas, we see two solutions to deal with

the situation: in one of them, we "force" the new solution into the traditional framework, while in the other, we create a "for-the-time-being" flexible framework in which the innovative methodology can be interpreted, more or less retaining previous limitations. We experiment with the latter in Figure 16, where we group the new research solutions according to their primary and secondary, as well as their quantitative and qualitative nature.
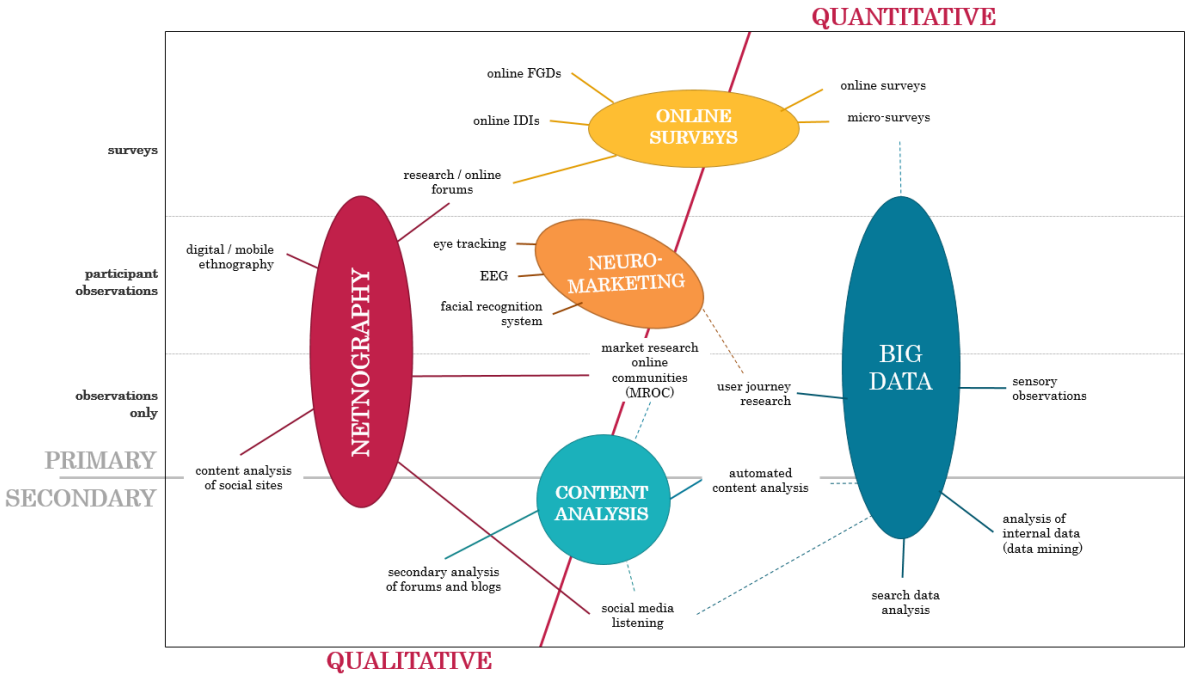
Figure 5.2: Grouping of the most commonly used innovative research methods
(own edition)

Since the names and composition of the main methodological groups may change, this figure shows only the tools that are discussed in the following chapters. Thus we touch upon secondary research solutions using new types of internal and external data sources, innovative forms of online quantitative and qualitative solutions, as well as instrumental and digital observations.

VI.   New solutions: secondary data analysis

Traditional secondary data

In the traditional sense, secondary research (or desk research) seeks to answer a given research question by relying on data already existing or recorded in other studies (for other purposes). And in this sense, it is the opposite of primary research, where data is collected that focuses directly on the research problem raised. As a result, data collection and processing can be simple, fast, and cost-effective (Malhotra, 2019). Regarding the data, secondary research is public (mainly available on the Internet), or the company's existing own data is secondary analysed (blog.marketingresearch.com, 2019). According to the traditional definition of secondary data (ama.org), the result of data collection was not produced to support a particular research goal, but to process another, more closely or loosely related topic. In this framework, we were able to clearly separate the subject of analysis to data from internal and external sources. An internal source would be the existing research results and the company's own, usually collected data (i.e.: customer information, CRM systems). Data typically available on the Internet, government data such as census information and results from syndicated services also served as external data.
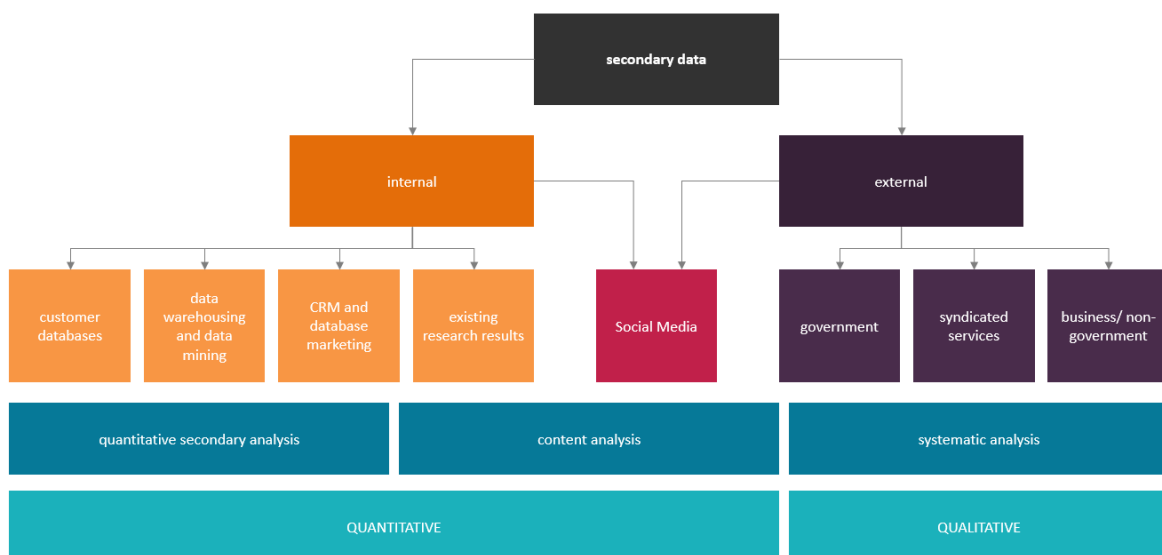
Figure 6.1: Grouping of secondary data, sources, and methods

(own edition, Malhotra, 2019; 't Hart – Boeije – Hox, 2005; blog.marketingresearch.com, 2012)

As the figure above shows, innumerable forms of source and analysis of secondary data are possible. The applied methodology (secondary analysis of quantitative data, content analysis, systematic analysis) and the data sources used (internal and external data, social media contents) are basically determined by the nature of the research question. A qualitative research question, for example, is what direction a given industry is developing in, or what trends can be perceived. A quantitative issue in comparison to this is the customer basket value or the size of the market (blog.marketresearch.com, 2012).

The constraint of reinterpreting secondary data

This approach may be and still is valid today in most cases. However, with the development of technology (especially data mining systems) and social media, we are often confronted with instances when it is difficult to determine whether the data obtained are external or internal, and with methods that yield both qualitative and quantitative results. In many cases, public content is shared specifically by members of the target group (issues of personal data protection and use are not detailed in this study; we recommend Katalin Fehér's work: Digitalizáció és új média, published in 2016).

Technological advancement has affected the development of secondary research methodologies on several fronts, which has brought innovations in terms of data on the one hand and analytical tools on the other.

On the one hand, the data have become richer and more colourful in the online space. The consumer footprint left on social media can be interpreted as both an internal and external data source, either qualitatively or quantitatively.

On the other hand, artificial intelligence technologies and advanced algorithms enable analytics solutions that often eliminate the time and energy needed for manual data collection or analysis.

The table below illustrates the new secondary research solutions that have recently expanded (and their practical application) in the market research industry worldwide.

	internal data	external data
QUALITATIVE		secondary analysis of forums, blogs
	content analysis of social media sites	
QUANTITATIVE	internal data analysis (data mining)	search data analysis
	automated content analysis / social media listening	

Figure 6.2: Grouping of secondary research methods

(own edition)

Therefore, it seems appropriate to extend the scope of interpretation of secondary data as follows: **all previously created or collected data that have not been specifically related to the research are considered to be secondary, regardless of whether the provider produced the data with research purposes or entirely different motivations.** This interpretation makes room for – increasingly relevant – data that can be collected directly from consumers without formally involving them in research.

It is important to note that this definition still refers to the analysis of already existing data, not the ones created for the particular research, and the extension of the interpretation is important because of the diversity of data sources.

There are also significant differences between potential sources of secondary data in terms of the format in which they make the data available. Of course, the data in printed publications and studies are still available, yet electronic data sources have become more widespread in the last decade without doubt. Therefore, we will focus on these in the next section and will not discuss traditional secondary data sources.

Secondary analysis of forums and blogs

In addition to search trends, it is important to highlight the textual contents, posts, and remarks that appear on online forums, blogs, or evaluation sites. These data sources may be useful starting points or even valuable research support. They provide an overview of the target groups, the topics, and brands of interest, as well as relevant

information on their experiences, including the assessments and opinions formed. This branch of secondary analysis relies on an external data source and produces qualitative results, which can be interpreted as a kind of content analysis.

When evaluating opinions and user content available on the Internet, we must proceed with due care, since (Jensen et al. 2013, Senecal & Nantel 2004):

1. **only a small part of the users share their opinion with others** (according to a recent report of NMHH (National Media and Infocommunications Authority in Hungary), only 51% of the users in Hungary belong to the "very active" group, who post, share, and publish their own content in textual or visual form (nmhh.hu, 2020),

2. **they prefer to do this if the experience is a negative one**, and what is more,

3. **in many cases, negative opinions seem more credible.**

The above, simplified, approach is, of course, much more nuanced in reality (Korfiatis et al. 2012, Racherla et al. 2012), as the reliability of evaluations is determined not only by their content but also by many other factors (e.g.: length of the entry, the author's socio-demographic background, as well as the involvement of the potential user). It is important to note that what takes place here is a secondary analysis of these texts. It is part of the methodology of netnography when we gather in-depth information about content sharers and observe them in more detail.

Data derived from the secondary analysis of forums and blogs may be handled as secondary information because these were not created for a specific research purpose, but – even if not on their own – they can contribute to the results of the classical methodological framework.

Let us look at an example. One of the most popular forum gathering sites in Hungary belongs to the index.hu portal. If we select the "Economy, business, career, work" groups within it, we get to additional topics. If we select the topic "Fintech Banking (Revolut, TW, N26, etc.)" within, we see that the interface has been open since July 2018, during which time a total of 167 users posted 2,752 posts. By looking through the posts, it becomes easy to outline the issues around which user opinions centre.
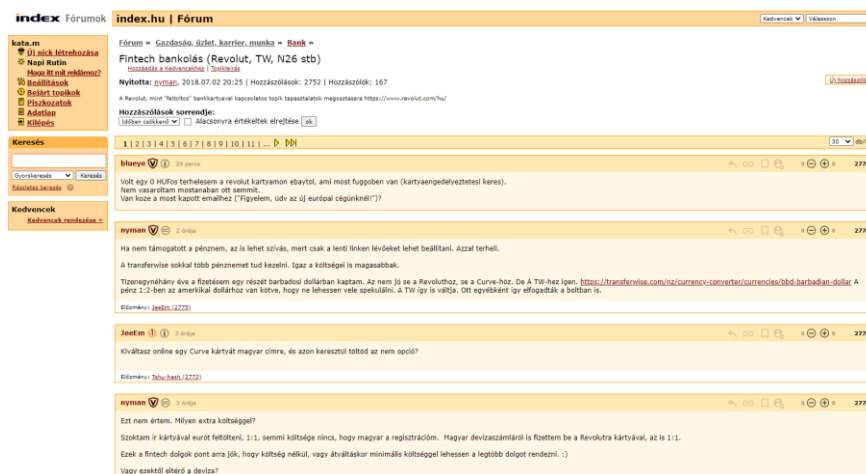
Figure 6.3: Posts related to "Fintech banking (Revolut, TW, N26 etc.)" on forum.index.hu
(http://forum.index.hu/Article/showArticle?t=9019016)

And if we are interested in further opinions and user feedback, we can search for them via search engines, and eventually get some relevant, additional results in various approximations.

A genre different from the previous ones, yet belonging to this category, is the blog. The blog is created by users (most of the time) to elaborate on a topic or story in a meaningful – and mainly subjective – way. The impact of blogs on shopping is less measurable (as opposed to online ratings), but their moderating effect can be significant in a given situation.

Content analysis of social network sites and groups

The various social networking sites are becoming a goldmine of research for several industries in different ways because users are increasingly willing to share their thoughts, opinions, and experiences on a variety of issues. The analysis or secondary analysis of this content provides crucial market information for companies.

Users share not only textual content but also images and videos, even leaving socio-demographic traces that allow for in-depth analysis.

In general, the most suitable platform for this purpose is still Facebook, which is the social network with the largest number of active users. However, it is important to weigh the source based on the specific industry or research question.

For example, for a tourism research, we cannot take for granted that visitors will share their opinions and experiences on Facebook, but they are happy to recommend restaurants and programmes on Tripadvisor, rate their accommodations on Booking.com, or mark their positions on Google Maps.

We can learn more about customer feedback on a certain product, for example, from comments on a product video on YouTube or customer feedback and ratings.
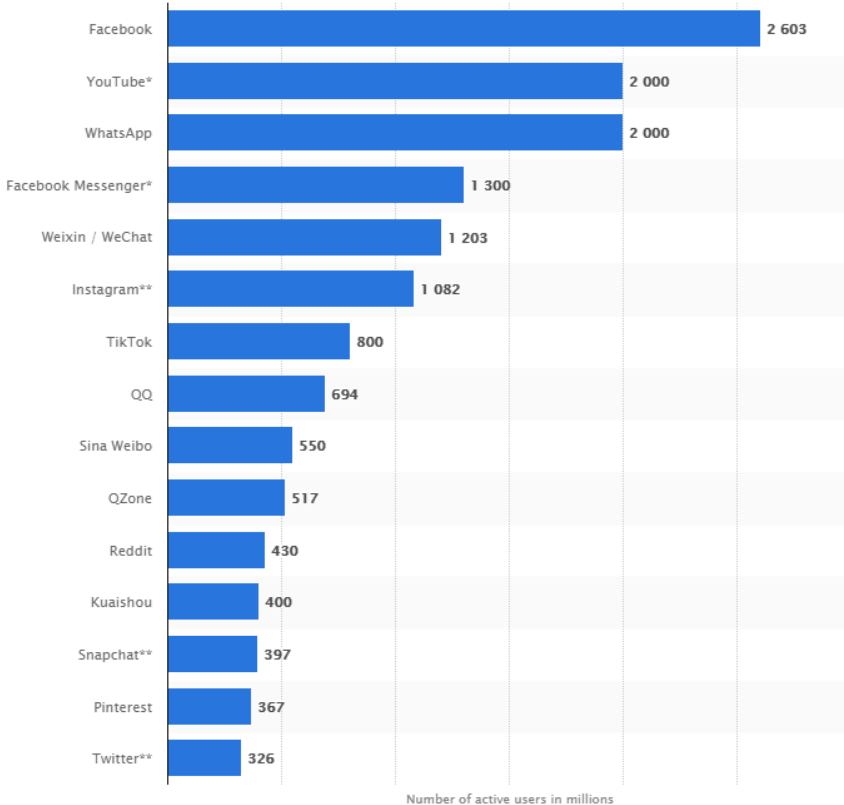
Figure 6.4: List of top social sites by number of active users – July 2020
(Source: Statista)

When categorising qualitative information from social-networking sites, the question arises whether it is internal data. The answer is twofold: if the information comes from a company's social site, closed group, or content collected by its own chatbot, it can be considered as such. But in most cases data collection is not as simple as that. In reality, these data are also mixed with non-proprietary content, as public sites and user-groups provide an obvious opportunity for this.

The data itself may be considered secondary in this case because the content is created by users or companies independently of the research. When the process takes place in an organised way and users create this information as a research community, we talk about an online community (Market Research Online Communities), which we discuss in more detail together with the new methods of primary surveys and observations.

When interpreting the data, it is essential to take into account that the information in the data collection (comments, posts, text, image, or video contents) was shared by followers and fans of the given page, so they represent a biased target group.

Social Media Listening

Manual analysis of information publicly available on social networking sites or the Internet is becoming increasingly challenging. Therefore, we tend to use some forms of artificial intelligence-driven automation to process this information.

The methodology actually automates the manual methods discussed in the previous two sections by using specialised algorithms and processing textual content on public sites (blog posts, articles, website content) and by users (posts, comments, forum posts). Although labels of technology such as Social (Media) Listening or Social (Media) Monitoring are quite focused, they often do not only relate to content found on social media sites but are able to process all public online content.

Textual analysis – available in more and more languages and across different systems – is a fairly mature technology that encompasses everything from simple word-cloud applications to sophisticated software solutions that help us find meanings, feelings, contexts, and keywords in large amounts of text.

The advantage of this method is that it

- allows for the **continuous** monitoring of user opinions and feelings about certain phenomena, brands, products,
- provides **precise and accurate** results, firstly because the algorithm used in the software is able to analyse with near-human accuracy, and secondly it eliminates the conformism of queries and subjective judgment in manual content analyses, thus providing a much more realistic picture,

- is a **quick and easy** solution since most available systems perform automatic analyses and offer easy-to-use data, as well as a dashboard interface with which data can be easily tracked.

The method can be efficiently used to measure and track user satisfaction, brand awareness, brand judgment, or changes in user opinion.

The complexity of the analyses, as well as the structure and constraints of the examined language greatly influence the solutions to be used, but in the case of several (mainly Hungarian), practical examples we find that the resources utilised are not or only slightly suitable for substantially enhancing the existing market knowledge. A refreshing exception and a targeted, effective tool is the Hungarian Neticle (neticle.com), which allows the analysis of large amounts of texts mostly in a user-friendly way – and in up to 16 languages. The service of a startup called Media Intelligence analyses the occurrence of predefined keywords (which can be almost any word, phenomenon, brand, or product) in the online space based on location, frequency, and context. It is not only the method of data collection that makes the system extraordinary but also the results, as they provide such outputs as the development of mentions, opinion index, or citation graph (Figure 21).

Zurvey is another Hungarian startup development. It is based on a similar principle yet able to analyse primary data. The input can be specified as answers to questionnaires, customer feedback, evaluations, the content of which can be broken down into keywords in the same way, and then interpreted in their context.
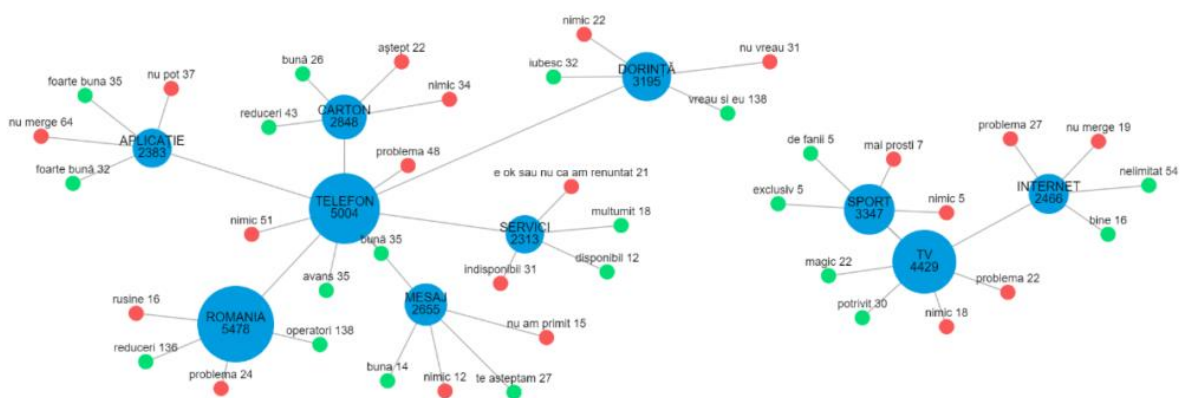
Figure 6.5: Mention graph in the Neticle system

(neticle.com)

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The industry has been excited about this method for years and the question of whether Social Listening can replace traditional questionnaires in the future. There are already many attempts where the method is used to replace marketing indicators and usable results:

- One of the most popular indicators of marketing research is the NPS (Net Promoter Score), which is sought to be replaced by the Net Sentiment Score from social content.
- The emotions detected this way can well illustrate the mood and opinions of consumers about a brand, which is typically asked through well-structured questionnaires.
- Several market-research firms are trying to use this data to determine potential sales volume or market share.

Although the traditional survey is not replaced (or only in a limited way) by automated analysis of online content, this picture may change as the use of smart devices and social sites evolve (greenbook.com, 2016).

Search data analysis

We have already seen that the Internet is a secondary goldmine for research via social sites, blogs, forums, and more. One of the most significant secondary data sources today is search engines. This is not surprising at all, given that 59.0% of the current population on Earth can access the Internet, which is 4.6 billion people (internetlivestats.com). And everyone has questions that are the easiest to ask in a search engine.

It is no wonder, then, that more than 7 billion searches occur on an average day on the most popular search engine, Google (and its country-specific pages), with a current market share of 91.98% (oberlo.com, 2020) (Figure 22). The fact that this search engine is the most popular worldwide also means that the most and varied data about users is available here:

- search data
- search topics
- Google Trends Analytics (Search Insights)
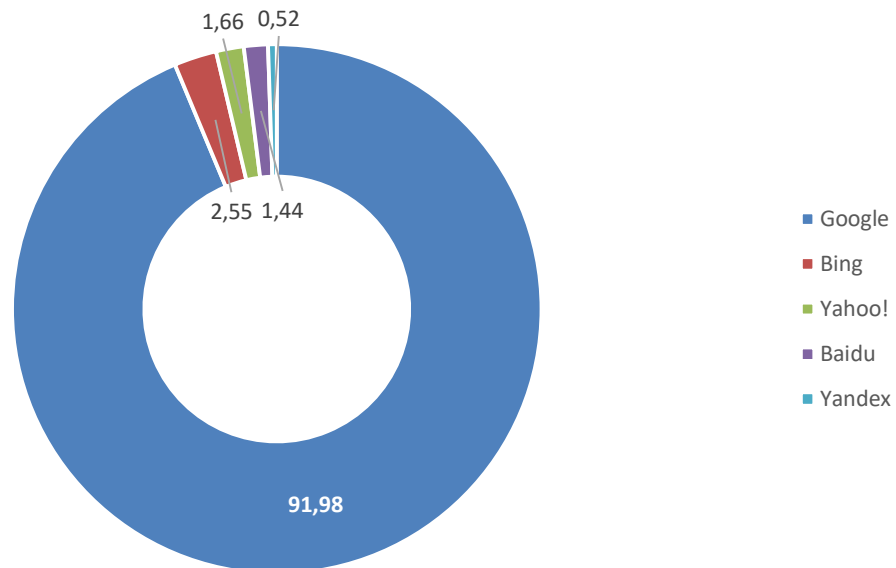
Figure 6.6: Market share (per cent) of online search engines in 2020
(oberlo.com, 2020)

Not only the quantity and quality of the research results are impressive, but the topics and issues that concern the users as well. "Fortunately", Google has yet another free service, Google Trends, which serves as a useful starting point for many research questions by providing – mainly temporal and geographical – filtering and analyses in addition to the topic of search-keywords.

Google publishes the most popular search topics sorted in categories, thus we can find the most popular searches in general, and also the most popular news, people, actors, athletes, movies worldwide as well as listed by countries (trends.google.com).

Searches		
1	India vs South Africa	
2	Cameron Boyce	
3	Copa America	
4	Bangladesh vs India	
5	iPhone 11	
6	Game of Thrones	
7	Avengers: Endgame	
8	Joker	
9	Notre Dame	
10	ICC Cricket World Cup	

Figure 6.7: Google Trend searches worldwide in 2019

(Google Trends, 2019)

Various social media platforms offer a useful basis for collecting currently popular topics and expressions. Facebook and YouTube stand out among them, but especially for the younger generations, the emerging Instagram, Snapchat and TikTok may provide a good starting point for research. In addition to textual comments, there is an increasing emphasis on images and videos, but their analysis is still poorly addressed.

Websites of targeted services that perform functions completely different from the purpose of the research may also prove to be useful resources. Take, for example, the range of real estate brokerage sites used to support lifestyle surveys, which allow us to review the interiors and homes within a price range and a given settlement size without involving the members of the given target group. This is particularly interesting in the case of social groups where this form of primary research is almost impracticable: think only of members of the highest-income groups whose home milieu can also be examined this way.

Augmented reality solutions will serve as additional data sources, with which we will be able to get a comprehensive view of the habits, interests and even the lifestyle of service users. One of the first key players in this area has been Layar (layar.com) that now offers several kinds of services in this field. The relevance of this idea for applied

marketing research lays in the fact that by connecting different databases it can provide customised offers and services to the user by presenting local offers based on mobile-device localisation. In other words, if we are looking for accommodation in a unknown city, using the phone's camera, the offers of the nearby accommodation providers will appear on its display screen. These data, together with the user's other search and usage habits, can provide a rich profile description for the analyses. And we haven't even thought of this software identifying Facebook users using the camera…

Internal data analysis (data mining)

An important type of internal data source is the large amount of data collected at companies, the processing and interpretation of which imposes a serious challenge. Basic analytical competencies are no longer sufficient. The work requires expertise in data sciences, giving further nuance to the position of the researcher.

Among the innovative tools for the analysis of large amounts of (secondary) data, we highlight two main areas within the framework of this study: the automated content analysis discussed in the previous section, which basically processes information from an external data source, and data mining for internal data analysis.

The aim of data mining is to demonstrate the correlations explorable in large data sets and to build an information base that presents typical consumer and consumption patterns. The methodology for these analyses is fairly broad. Currently, the integration of artificial intelligence means the biggest challenge, but solutions are already available. It is worth highlighting the services of IBM Watson (ibm.com) as an example, which indicates the possibility of a new type of data analysis with the automation provided by artificial intelligence.

The main focus of data mining is the collection and analysis of internal transactional data. Although the efficiency of data analysis depends on a sufficiently long time series and a large number of customers, yet its logic may also be valid in differing market situations due to the availability of data.

Analysis of data, mainly collected for controlling purposes, came to real popularity around the turn of the millennium, which later was augmented with supplying of data in other functional areas (e.g.: sales, logistics, customer service). CRM (Customer Relationship Management) systems first appeared in corporate practice, providing increasingly important background information for business decisions. Initially, and perhaps presently still, during the launch of new systems, integration of consumer and user profiles (primarily with socio-demographic variables) into databases has been a significant challenge.

A solution to this problem may be the development of loyalty programmes, which, of course, does not attract all customers, does not result in complete transparency, but a much more accurate picture can be outlined with this data than without them. Let's see an illustrative example of this as well:

"...We work with data from millions of customers who cannot be targeted on a weekly or daily basis. Our task is to recognise the algorithm that can be used as a targeting methodology. From now on, the systems will be suitable for targeting masses with the right offer.

… Indeed, research is relevant here, although 60 percent of Tesco's turnover "goes through" club cards, which allows the company to see what products, when, and why a particular consumer is buying together, and with this information, they can also draw conclusions about the customers' motivations.

Where, however, market research is indeed unavoidable is the exploration of deeper causes. We ask our customers how they think about their favourite product, what they would call a favourite, and why. Thousands of respondents say that my favourite product is what I buy at least ten times a year, and I can save thousands of forints by getting a discount on this product. Based on this, we will develop a targeting methodology that can be projected onto the two million club cardholders."
(piackutatas-hirek.hu)

The management of large amounts of quantifiable data is solved today. At the moment automation, the integration of artificial intelligence is more of a challenge (see the

relevant sections of the previous chapter) in addition to the fact that data from various systems and external sources (such as social media) are not necessarily expressed in numbers.

The management and analysis of large amounts and mostly mixed format data sets are collectively called Big Data analyses. The mixed format is not a problem for textual and quantified data, but the processing of image and video formats is still not fully resolved.

In sum, Big Data has enabled marketing, and in particular applied marketing research, to make a meaningful contribution to supporting strategic decisions. Managing data warehouses is a novel challenge for most companies, but several good examples have proven the usefulness of user data.

The more so that a new concept has emerged in connection with the field. Marketing insight research, unlike the traditional interpretation, means the examination of user habits over a longer period, and the incorporation of insights (algorithms, patterns) into marketing activities. The trend based on the theory of behavioural economics also fits into this tendency, as we have also discussed in detail earlier.

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VII.   New solutions: online quantitative surveys

As indicated in previous chapters, the transformation of applied marketing research tools has begun, however, clients are still leaning towards more traditional methods, so it is less of a surprise that substantial changes have been made mostly to interview techniques.

Questionnaire-based methods are traditionally divided into two groups, namely, quantitative and qualitative techniques. Examining the methodology used in this division, we see that due to the fascination with the representativity of samples, the use of quantitative tools is prevalent, according to Esomar reports, at around 75-80%.

In contrast, according to the GRIT Report at the end of 2019, only 46% of applied research uses quantitative solutions, 25% use mixed solutions, in which qualitative techniques also appear.
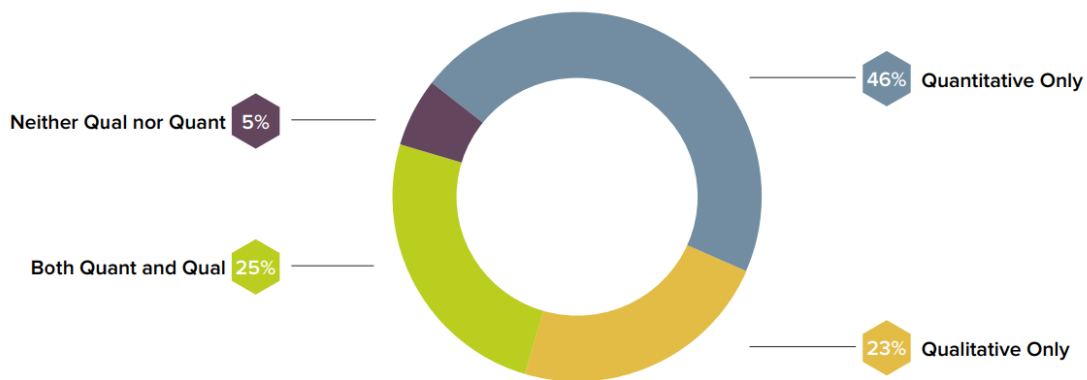

Figure 7.1: Proportion of questionnaire survey methods in applied marketing research
(Source: GRIT Report 2019)

Of course, differences in interpretation may be behind the diverging results since it is possible to integrate a qualitative instrument into research devices when using questionnaires. But the direction of change shows that the effectiveness of quantitative instruments is limited.

In the field of online/digital marketing research, solutions related to social media, and search engine optimisation are mentioned more and more often (Ali, 2017). In many cases, it is about working with already existing data, not data created or collected specifically for that research.

The 2019 GRIT Report also confirms that the share of online solutions is relatively high, with the new online communities coming third among the quantitative methodological instruments. The same method can be seen among the qualitative methods, and the rate of webcam interviews is over 50%. (We will discuss later how online communities can be listed under both quantitative and qualitative methods.)
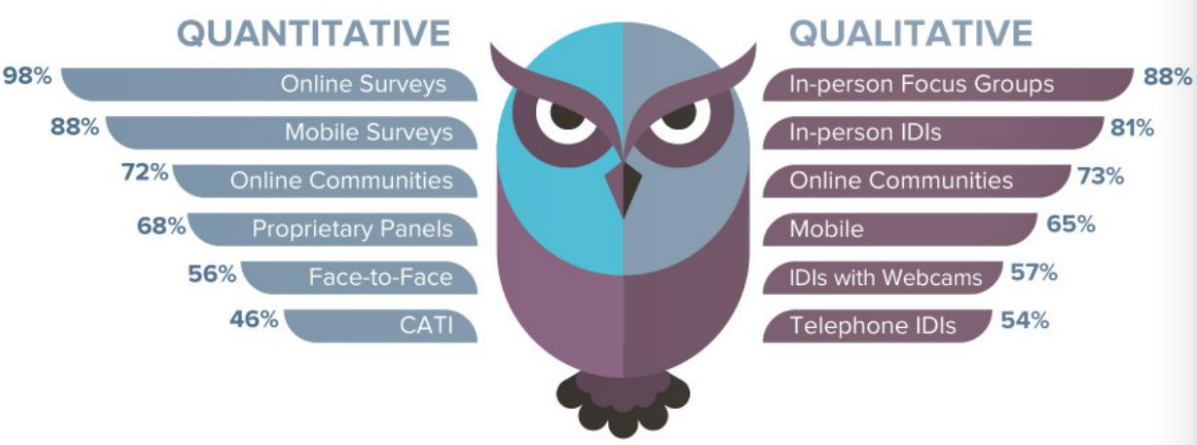
Figure 7.2: The share of different survey methods in applied marketing research in 2018
(Source: GRIT Report 2019)

Industry stakeholders see artificial intelligence, big data, machine learning, and digitisation as the most innovative opportunities in research, as shown in Figure 26 (GRIT 2019). In addition to traditional quantitative and qualitative data collection methods, new solutions are emerging (Murphy - Poynter 2015), as well as various IoT (Internet of Things) solutions, monitoring tools and methods, automated systems (e.g. programmed questionnaires, which are no longer a novelty today), and solutions related to mobile research (Murphy – Poynter 2015).

Figure 7.3: Opportunities for innovation according to the industry

(Source: GRIT Report 2019)

According to research companies, innovation in the sector is indicated by methodologies, and technological innovations applied, while clients emphasised the speed of research and additional services (GRIT 2019). These expectations have also influenced the development of the innovative quantitative and qualitative methods referred to in this chapter.

Online questionnaire surveys, online questionnaire systems

Many popular solutions have emerged in the last decade to support online web interviews (cawi: computer-assisted web interviews). These can be divided into the following groups in terms of the user base:

- developments by research companies: which offer solutions for their own or other specialised companies/actors operating in the industry (e.g.: SurveyMonkey, Qualtrics), some of which are free (with full or limited

functionality), but in all cases the accuracy and professional quality of data collection is in focus,

- developments by IT companies: these include those tools that are mostly aimed at a wider range of users and are therefore available, largely for free, and which aim mostly at user-friendliness (e.g.: Google and Microsoft Forms),

- corporate in-house developments: in cases where the potential client conducts regular (or continuous) surveys, for example, on customer satisfaction, therefore – even in connection with the existing CRM system,

- a customised solution for online questionnaires and data collection will be developed.

There may be differences between online questionnaire systems in terms of what parts of the process the instrument – or to use a fashionable term, the platform – covers. The basic functionality is, of course, the compilation of questionnaires, even if there may be some differences, especially in terms of the types of questions to be used. Several solutions, often available for free, offer, for example, a simple analysis module that displays descriptive statistical results using charts. Today such interfaces where results can be tracked are called dashboards.

A further module of the platforms may be a function group supporting sample selection and management. In the case of an existing sampling framework, this can be of great assistance in reaching potential respondents, or receiving accurate feedback on the completion process (e.g.: who opened the link, at which question did they stop, etc.).

However, online questionnaires could not have achieved such popularity without building online panels recruited from potential respondents. These ensure that, in addition to corporate contact databases, we can also understand the opinions of potential customers, practically providing a sampling framework for many target

groups. It is important to re-emphasise here the role of technology, with a steady increase in Internet penetration, which has led to the members of the older generation becoming available via online channels and, and what is more, they are willing to participate in online surveys. Research agencies bravely state that they can work now with a representative sample of the population during their online survey.
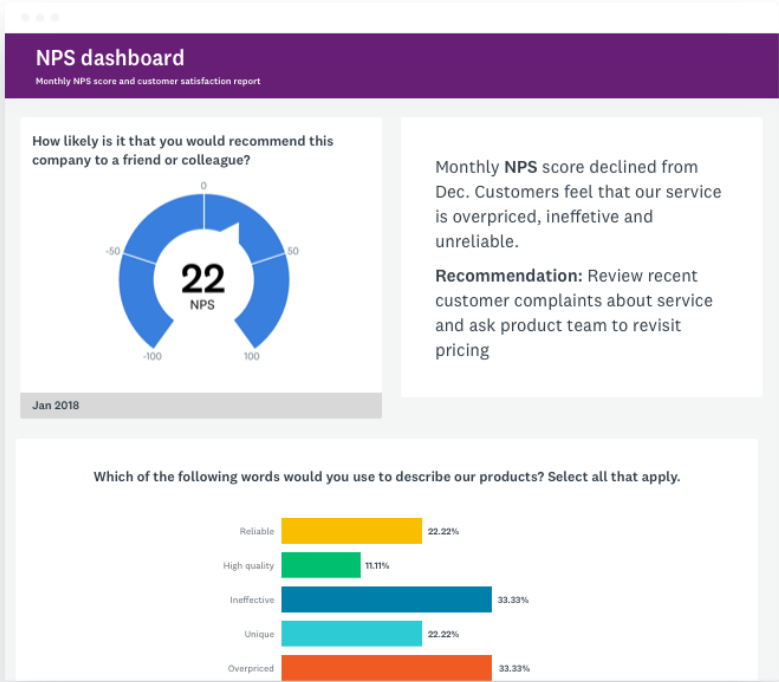
Figure 7.4: Dashboard surface in the system of SurveyMonkey
(Source: surveymonkey.com)

Panel

The design and operation of the panels impose significant costs on research companies. These costs are readily acknowledged by the clients, setting a new balance in the field of data collection. Several companies have responded to the emerging demand and are currently offering various software solutions specifically to support panel management activities.

Several respondent panels are available online also in Hungary, the largest of which is the Netpanel operated by NRC (NRC website 2018). Although there are scarcely

any reports or information on the exact number and composition of registered users, based on previous presentations and practical experience, the size of the panel and its demographic coverage allows for a representative sample in most target groups.

The Netpanel -operated by NRC has been on the market since 2000 (NRC 2020a). The panel currently counts of 150,000 registered respondents, and recruitment of new respondents is continuous both from external websites and by offline methods. The data are constantly updated and clarified. Filtering may be carried out along 250 standard variables in the database. Respondents are motivated to participate by an incentive system: by quarterly prize draws and, from 2019, a credit-point system. Registered respondents complete more than 300,000 questionnaires per year (NRC 2020b). Continuous IT development and digitisation are also visible in Netpanel: an online questionnaire editor is integrated into the system, and in addition to data collection, the NRC system provides automatic data processing. Furthermore, fill-ins may be tracked in real-time on a dashboard.

> *"We create the basic research sample with stratified random sampling and by sending multiple emails in the NetPanel system of more than 150,000 people. Samples are usually developed according to international standards based on five main demographic criteria (gender, age, education, type of settlement, region).*
>
> *In the case of Internet user samples, the variables related to Internet use are always included in the sample-forming criteria. We use the available background databases (e.g. Central Statistical Office's database) to determine the composition of the sample. In some groups where necessary, we increase the number of items by targeted sampling, and we boost the sample to the required number of items in the defined target groups to improve analysis.*
>
> *At the end of data collection, we check the respondents in the database, and the database is cleaned. Steps for the procedure are the examination of control questions, completion time, content, and logical control. The cleaned and audited database is weighted according to demographic variables and, because of the composition of the online research panels, some "soft variables." (NRC 2020a, page 5)*
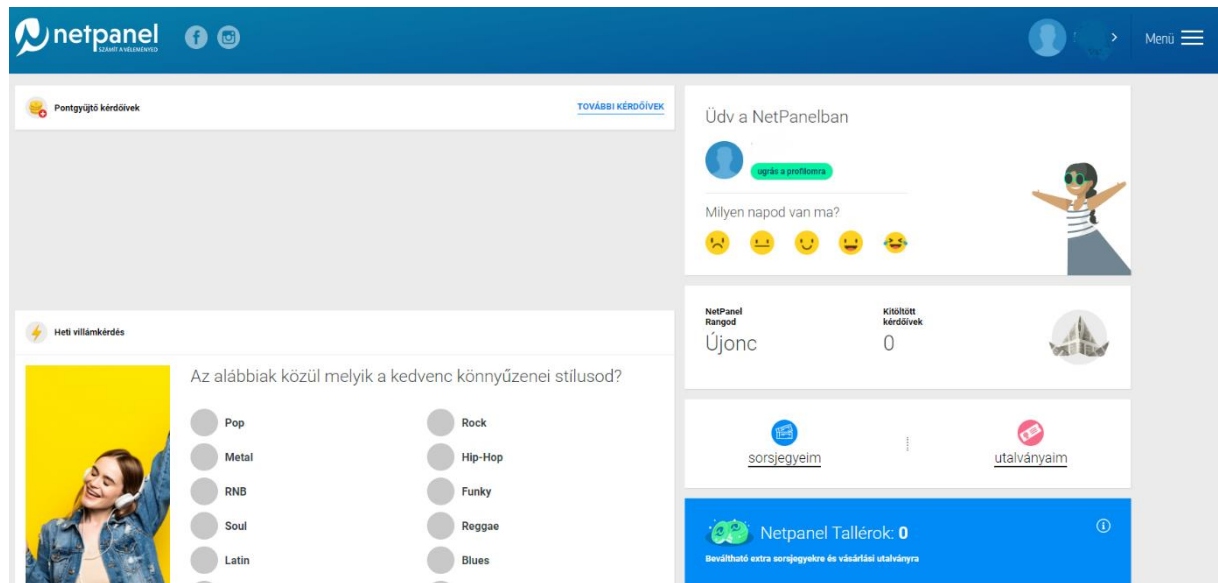
Figure 7.5: The user surface of the NRC Netpanel.hu

(Source: Netpanel.hu 2020)

Apart from the NRC service, GfK, Ipsos, and Research Center also have a community of respondents with a number and composition that allows for online questionnaires, providing generalisable results for the population.

As a result of an obvious development, Google launched its own research service (Google Surveys) a few years ago, which immediately woke the industry, although, the domestic (Hungarian) market was less affected by the company's entry. Google Surveys is built for Internet and smartphone users. An app, which currently provides access to about 4 million people worldwide, must be installed to participate in the panel. Google also places links to questionnaires on a number of partner websites to reach out to unregistered respondents. Google pays registered panel members per questionnaire between 10 cents and $ 1 currently, while the customer can expect to pay between 10 cents and $ 3 per completed questionnaire. Users can freely spend the money raised this way on books, music, movies, and games in Google Play Store.

Mobile research, gamification

Almost every GRIT report indicates a rise in mobile researches in recent years. The method has not yet become widespread in Hungary, but it already has a substantial share among quantitative methods in more developed countries. In a pioneering work, Toninelli et al. (2015) gathered the methodological challenges of mobile research, its future possibilities, covering the trends that influence the methodological basis of applied marketing research in general.

Micro-questionnaires and gamification solutions are especially important among them, as response and participation in the study can be even more stressful on the small display of mobile devices. However, it is also important to note that apart from designing questionnaires, mobile devices can be utilised in observational surveys (including integrated eye cameras), netnographic approaches, and this platform may even give room for qualitative techniques.

Due to the rise of smart devices, their widespread use, and the emerging measurement solutions, it has become necessary to regulate the framework for mobile research, concerning users' rights in particular. This is summarised in the Esomar Guide (esomar.org), adopted and published in 2017, which covers passive data collection in addition to privacy rights and data protection, since we allow access to our personal data when installing many applications.

The application called Pulse allows the user (respondent) to answer several questions per day. In September 2020, the number of users in Hungary was 50,000. The system is unique not only because users can be asked questions on a daily basis, but also because participants can be asked in a targeted way for a specific region or even for a specific event. The questionnaire interface can be made unique with the image elements of a given company, and notifications of new questions can be sent to users (Pulse website 2020).

> "Pulse is a new, innovative research tool, a downloadable app for Android smartphones and iPhones, as well as Facebook chat. Using Pulse makes polling an experience. We give points for all your votes. We believe that expressing one's opinion is not only an inalienable right but also an opportunity. It is your opportunity to get to know and shape the world around us. Voting does not happen

only once in for years. With Pulse, it can be done daily. Voting is not compulsory,
but fun and educational now. The larger the Pulse Community, the more of us can
regularly voice our opinions, and the more opportunities to have a say in decisions
that affect our lives. Voting is anonymous, we will take great care of your personal
information and not pass it on to anyone. " (Pulse website 2020)"

Being one of the most reliable tools for stimulating and developing responsiveness, **Gamification** (or gaming, as we now more often call it) is also a major segment of mobile research, as well as other online solutions.

No doubt, however, that questionnaire surveys are fundamentally less entertaining, and what is more, gamification solutions can only affect them positively in this aspect, yet, even these have little potential to enhance data quality and, ultimately, objectivity.
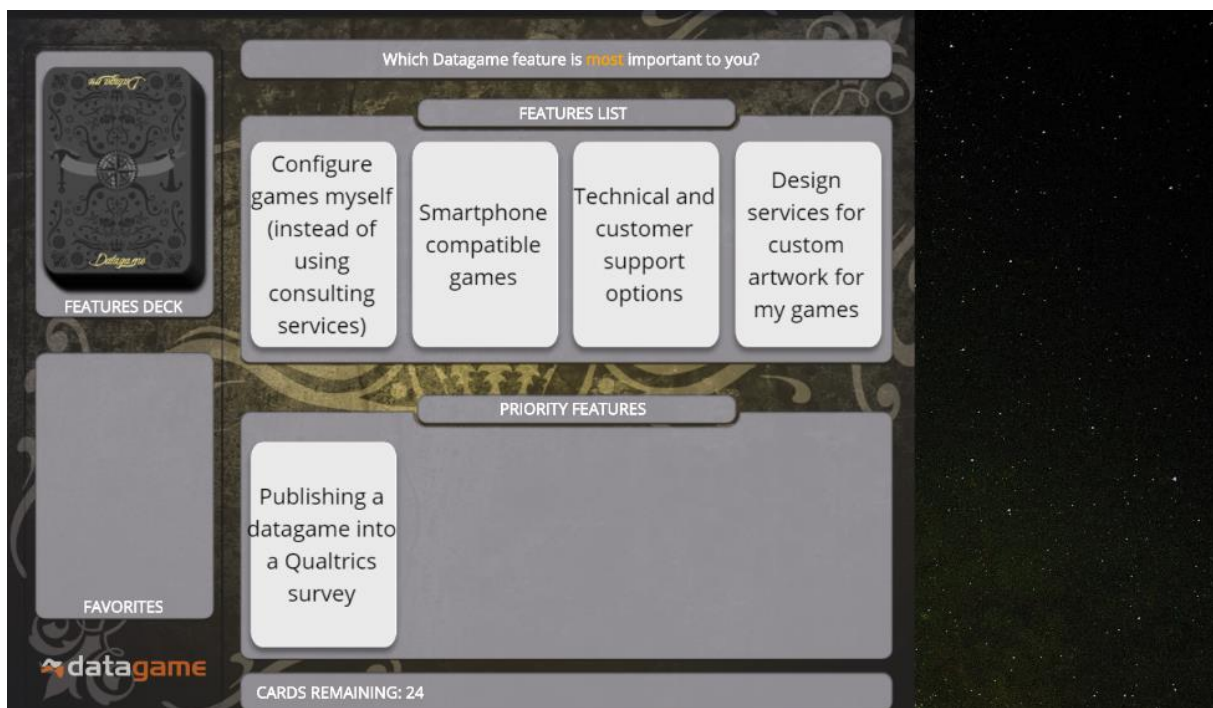
Figure 7.6: An example for gamified questions – ranking
(source: Datagame.io 2020)

In a summary study of their research, Harms et al. (2015) clearly state positive correlations between playful questionnaires and willingness to respond, as well as in relation to errors in research, such as the quality of data. Aubert and Lienert (2019)

also point out that questionnaires with gamification elements provide a more enhanced experience of completing the questionnaire than those without such features. Their claims were supported by empirical studies. Similar findings are presented by Adamou (2019) who explains the eight side effects of low respondent engagement. These are the following: low response rate, low completion rate, decreasing panel-response rate and decreasing panel size, longer fieldwork time, longer time requirement and higher costs, less reliable data and/or low data quality, similarity of research companies (everyone offers the same), less committed staff and customers.

VIII. New solutions: online qualitative surveys

Another important group of online surveys is the renewal of qualitative tools. The development and change in this field are by no means as great as in the case of quantitative surveys, not so surprising if we consider the prevalent conservative attitude of clients as a point of reference. Yet, it is certainly unfortunate to accept the limitations of questionnaire surveys.

As can be seen from the list below, traditional focus group discussion remains the most popular among the qualitative techniques, with 68% of the surveyed (client) companies using this tool in the given year. This is followed by the traditional in-depth interview technique and in-depth telephone interviews.

The first "real" online qualitative solution only came in position eight, which, according to this overview, meant focus group discussions conducted using webcams.

WHICH OF THESE QUALITATIVE DATA COLLECTION METHODS
HAVE YOU USED MOST THIS YEAR? (SELECT UP TO FIVE)

Option	Response %
Traditional (in person) Focus Groups	68%
Traditional (in person) IDIs	53%
Telephone IDIs	31%
In-Store/Shopping Observations	25%
Interviews/Groups Using Online Communities	25%
Mobile (diaries, image collection, etc.)	24%
Bulletin Board Studies	21%
Online Focus Groups with Webcams	17%
Chat (text-based) Online Focus Groups	16%
Online IDIs with Webcams	12%
Monitoring Blogs	8%
Telephone Focus Groups	6%
Chat (text-based) Online IDIs	6%
Automated Interviewing (via AI systems)	3%
Other qualitative methods	19%
I haven't used any qual techniques	0%

Figure 8.1: Qualitative techniques in applied marketing research
(Source: GRIT Report 2015)

It seems that technology has not yet been able to achieve a meaningful breakthrough in qualitative research, at least in terms of use. On the supply side, however, a

number of solutions have already been developed, both for focus group discussions and in-depth interviews.

According to Carrasco (2016), new technologies are integrated into various market research methods, and these technologies help to provide the clients with the most relevant and useful ideas and inspirations. Besides, the emergence of new technologies along with traditional methods, despite the existing conservative attitude, in many cases can help a market research agency to become unique and come up with an offer that truly sets them apart from competitors. Since clients are less familiar with the technological innovations in the industry (and the background of their operation), gaining their trust for a methodology that opposes the old and well-known one is difficult and takes a long time.

Online focus group

The first modern version of focus-group discussions are solutions where the discussion takes place at one venue, and the client's representative can follow it remotely (via streamed broadcast). With the help of advanced technologies, the client can even send message-comments to the mobile device of the moderator.

In the next development phase, group members log in to a "chat room" from different locations and participate in the conversation with text messages.

Participants are not visible to each other in this format, that is why this format received criticism for its lack of controllability and tracking nonverbal communication. Therefore, as soon as technology allowed, webcam-based discussions emerged in which participants could finally see each other, and the moderator eliminating the above distortions. The main advantage of these solutions is that difficult-to-reach target groups (such as employees working longer hours) can be involved in traditional focus group discussions, and geographical distance is not an obstacle anymore (except for time lag in the case of international research).

Online focus groups are not entirely new, as Reid and Reid (2005) already articulated the differences between traditional and online focus groups in a study in the early 2000s.

Vicsek (2017) pointed out that several potential problems may arise with online focus groups, such as that they allow for a less rich and in-depth analysis, or that it is more difficult to ensure interaction between participants. Yet empirical studies show that an online organised group is almost as effective in terms of information content as one with personal presence (Abrams et al. 2015 via Jokes 2017).
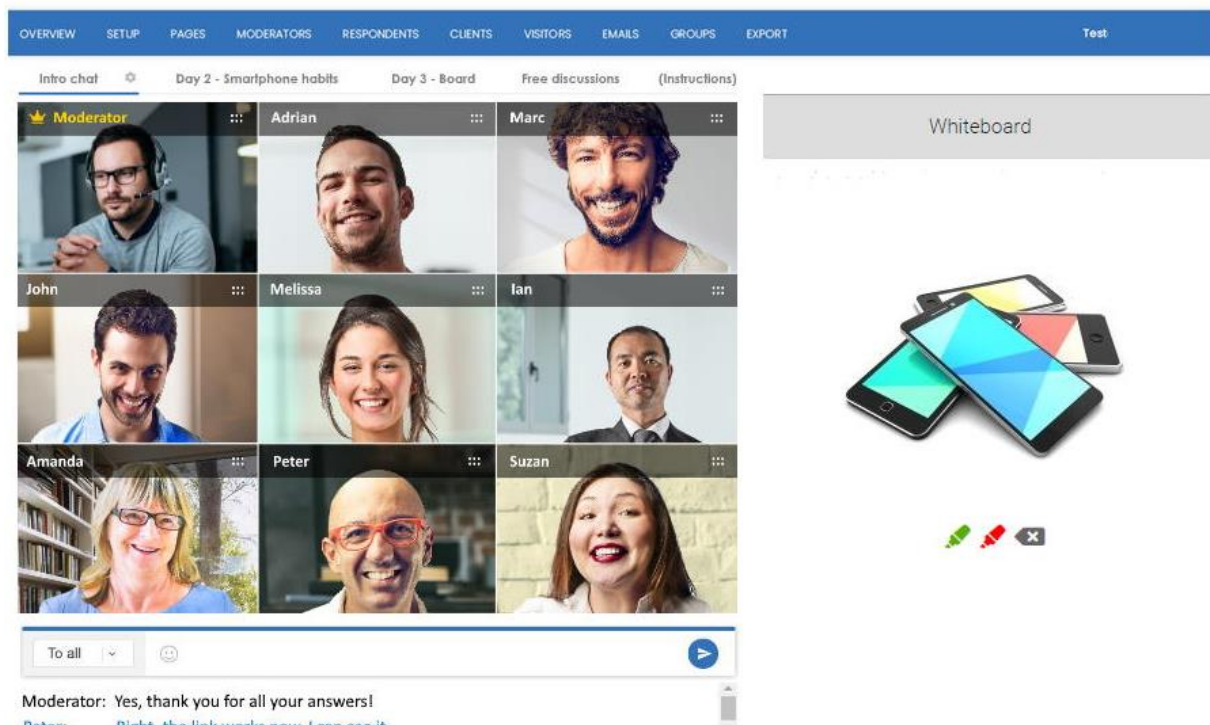
Figure 8.2: The user platform of an online focus group on Collabito's website
(Source: Collabito website 2020)

Online in-depth interview

The focus of in-depth interview research in the online space is also on webcam solutions, which in turn is quite a popular tool, especially among the younger generation because

- it is not necessary to admit the researcher to the household,
- communication does not take place in person, but through devices common in other areas,

- there are many options and applications where such an interview can be conducted – for example: FaceTime, Skype, WhatsApp, Facebook Live, Periscope, MS Teams, Facebook Messenger (Carrasco 2016).

Thus, experience has shown that interviews conducted this way allow for better atmosphere, less conformist responses, and overall more reliable results.

A critical point with in-depth online interviews is if we intend to record the conversation, and even more so if we plan to share our own screen with the interviewee. That may appear as if the respondent's data also became accessible remotely. As a future solution, online focus group discussions and in-depth interviews may be extended to mobile devices, and several academic publications already discuss avatar-based interviews, which can be supplemented by automated surveys using AI.

Netnography

Researchers exploit the potential of the Internet and user activities to obtain information about consumers by a methodology called netnography (Gyulavári et al., 2014). This method is considered a borderline area because, on the one hand, it means the observation of online footprints and content left behind by consumers while, on the other, it is more and more common to talk about digital/mobile ethnography when the consumer or customer provides data through predefined tasks, such as recording purchases.

In this sense, it is a hybrid solution that should be included not only here, but related to virtually all research elements, since there is netnographic research based on secondary data sources too. Yet, it is typically a method based on qualitative survey or participatory observation, so we discuss netnography here.

Netnographic research (Kozinets 2015) uses the ethnographic approach in the classical sense to explore other circumstances and contexts related to consumption by observing and analysing the online behaviour and communication of target group members, analysing them, often supplemented with traditional techniques – be they quantitative or qualitative solutions.

Research relying on netnography is not significantly different from traditional solutions in terms of the steps in the research process. Kozinets (2010) distinguishes the following phases:

1. the focus and purpose of the research have to be defined,

2. the (online) community fitting the problem has to be identified,

3. members of the community have to be invited to participate in the research, their interest should be developed,

4. it is necessary to perform data collection and analysis with multiple iterations, and

5. to summarise and present the findings.

As can be seen from the above, the main difference is that the research targets online communities, and thus the methodology used is tailored to this. Among the advantages of the method, the continuous communication of results should be emphasised, which can lead to the construction of long-term and short-term communities.

Advantages:

- Target groups that are difficult to reach with traditional solutions (e.g.: focus group discussions) can also be examined.
- A combination of several research tools can be used in netnographic research (from log analysis to social media analysis).
- Digital footprints are archived in most cases, which is a real "treasure trove" for researchers (Xun and Reynolds, 2010: 19).

In terms of disadvantages, the limitations to observation are most noticeable, such as the risks inherent in interpretation or the proportional difference in cost and time requirements compared to other solutions (although costs can be kept at a more favourable level compared to traditional observations). Interpretation of the data may

also be complicated by the fact that, in certain cases, avatars may be included in the sample in addition to the "real" participants, causing more significant bias.

Overall, we believe that netnographic research can be an important complement of other methods, but is not viable yet on its own (partly because the range of softwares available for this research direction is rather limited).

Online communities (MROC) and research forums

The methods of the online communities and research forums are very similar in our interpretation, they typically differ only in timing and the number of participants.

The essence of these methods is that a group of respondents answers the researchers' questions or even each other's comments on an online interface over a longer period (months or years even). It is also possible for participants to solve tasks, either individually or in groups. The online community and research forums are a new research tool and are increasingly being used by agencies as well (GRIT report 2019). Due to its nature, it is impossible to state clearly whether the method is of the qualitative or quantitative kind. Depending on the type of questions and tasks the participants receive, it may be necessary to carry out the analysis in both quantitative and qualitative ways when data processing.

In the following, we describe the differences between the two methods based on our own ideas:

An online community is a group of consumers who are asked to provide information from time to time by a researcher, or the creator/maintainer of the group. These communities are not necessarily created for a research but can well be "used" for such a purpose because they represent a closed or public group of a brand or company. They usually feature a larger number of people and exist for a longer period of time. It also means that, similarly to panels, these groups need to be maintained, participants have to be motivated to become members and contribute to the success of the company or the brand by sharing their views. This method allows you to get the opinions of

consumers who have bonded more closely with a particular company or brand, and thus the research provides answers to questions related to that company, brand, or product.

It is based on the previously presented changing consumer behaviour, providing an opportunity for professionals involved in marketing research to observe either spontaneously organised or consciously constructed communities. Online community research builds on secondary data analysis from the applied marketing research methods on the one hand, and observations on the other, using survey tools in some instances. There is a huge advantage to these communities in bringing together people who are familiar with the given topic and are more involved than average, be they spontaneously organised or organised for a specific purpose.

It is important that the involvement of the community in the examined topic is above average in this case, so the results are not generalisable, but at the same time it can be a very effective instrument for developing product and communication activities. However, the moment the relevance of the topic diminishes or ceases, the group disintegrates as well, which is why continuous care, evaluation, and the necessary selections among members are a must.

A *research forum*, on the other hand, is usually an online community created for a specific research purpose, where participants (15-20 people) are recruited based on specific briefs and criteria, usually answer questions and solve tasks for 5-7 days. It is possible to research more general topics with this method, due to its characteristics, In the case of a planned community, interaction is a much more natural part of the research, the presence and role of the moderator and the time frame of the community are predetermined. The research follows a pre-defined scenario in which several parts of the survey are available:

- open-ended forum questions,
- custom log entries,
- sharing image and video content,
- tasks,
- common thinking surfaces,
- tasks suitable for UX testing.

Online communities/forums are also the most widely accepted and used methods among the emerging methodological elements, based on the findings of the GRIT report (2019) and Carrasco (2016). There are several online platforms and systems that are suitable for use in marketing research, even if they are not primarily designed for such a purpose. Examples of such sites are Vanilla (https://vanillaforums.com/en/) or Groupsville (https://groupsville.com/).

Digital/ mobile ethnography

Smartphones are playing an increasingly notable role in people's everyday lives, it is enough to think that, nowadays, there is an application for everything that we can use on a smartphone (too). Marketing researchers and companies can use the data that users leave behind to learn even more about how consumers behave and what typical patterns of behaviour emerge (Carrasco 2016).

Digital ethnography is based on traditional ethnography, mainly practised in social sciences for sociological research, which aims to observe "natural behaviour" and draw conclusions about cultural customs, issues, and theories. The qualitative method is mainly carried out by personally studying 6-8 participants.

As its name suggests, digital ethnography is very similar to this, however, technological embeddedness makes it possible to eliminate personal observation.

The methodology is becoming increasingly popular, partly due to changes in user habits:
- increasing use of the Internet and online tools,
- IT is capable to set up sophisticated monitoring platforms,
- devices to support digital communication are becoming more advanced,
- besides, participation in research is much more active online than in person.

There are numerous software solutions available online for conducting digital or mobile ethnographic research, in which participants record certain actions and activities (e.g. shopping, consumption, various steps in decision-making, etc.).

One of the most comprehensive applications is indeemo (indeemo.com), specialising in mobile user interviewing. The system is similar to a social networking site, which also allows you to interview and observe participants.

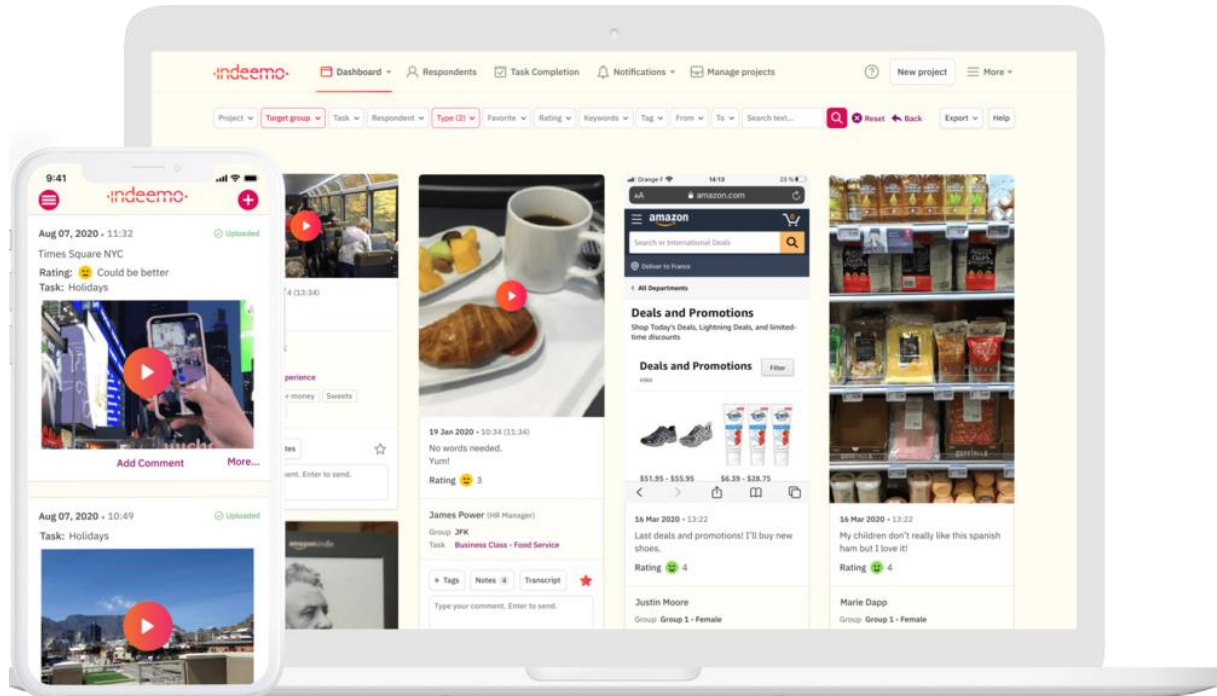Figure 8.3: The dashboard of a mobile ethnography research in the system of indeemo
(source: indeemo.com)

In addition, smart tools are available to provide additional information for understanding a life situation, circumstance or activity. Such a device can be a body cam, a smartwatch, a smartphone, an activity meter, a home, or a dash cam. Any tool that deepens or colours the recorded data can be used in an ethnographic research.

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IX.   New solutions: instrumental and digital observations

The popularity of observational methodology has grown significantly over the past decade and a half within the methodology of marketing research. The reasons for this are basically the following:

- observations can be used to examine real behaviour, thus eliminating respondent conformism, in addition to
- conscious information and decision-making aspects, they also make unconscious (or subconscious) influence measurable,
- the study can be carried out without the conscious participation of the target group members, thus eliminating (at least in part) the low willingness to respond,
- with the development of technology and the transformation of communication habits, instrumental and digital measurements make it possible to record and process large amounts of data.

Since the first issue the GRIT report in 2016, which has been referenced here several times before, also includes in detail the techniques that are by the client-side or will be used in the near future. It is clear from the 2019 data as well that in addition to social media and Big Data analyses, observational data are becoming increasingly dominant among the innovative solutions (see Figure 10.). It is true, however, that there are significant differences between supply and client-side preferences.

This is also illustrated by the summary of the GRIT Report, according to which the following trends of observation can be outlined:

- there is a greater demand for social media and Big Data analytics than currently available (although most of these are done "in-house" by companies),
- there is a neat balance of demand and supply for online communities, eye tracking research, and neuromarketing solutions, and
- an oversupply has emerged (at least currently) concerning mobile ethnography, facial coding, IoT solutions, and virtual reality techniques.

This chapter, similarly to the previous ones, does not deal with the basics and classical techniques of observational methodology, instead, we focus specifically on innovative solutions. In the field of instrumental and digital observations, we can discuss methods that can be performed with participatory observation (neuromarketing techniques, digital ethnography) and methods that can be fully implemented as observers (a certain type of netnography, analysis of user behaviour, sensory observation).

Neuromarketing

Neuromarketing, as an innovative interdisciplinary field, takes advantage of technological facilities and relies on the use of instrumental measurements when examining cognitive responses to different stimulus agents (Bercea, 2013). The rapid development and proliferation of devices capable of registering various biological functions allow for the growing use of these innovative devices.

Ariely and Berns (2010) approach the growing popularity of novel research instruments from two perspectives. On the one hand, they are justified by the constant reduction of costs in the case of neuromarketing methods, while they provide faster solutions, compared to the traditional market research methods. On the other hand, these methods provide information to marketers that are not accessible with conventional research techniques, as they focus on the roots of subconscious reactions in addition to conscious responses when examining emotion-based, limitedly rational choices (Varga, 2016).

Innovative research methods are used in an increasing manner to measure consumer behaviour, the decision-making process in purchases, and the effectiveness of marketing communication materials. Understanding subconscious motivations, preferences, and feelings is made possible with the help of neuromarketing tools, which can be supplemented by "traditional" questioning techniques to examine the conscious impulses and the factors influencing the decision. The great advantage of these studies is that we can measure previously unexamined aspects of decision-making processes. Here, it is important to emphasise that the results typically do not

refer to the entire population but a target population specified based on well-defined demographic and behavioural characteristics. Thus, the research population is, in most cases, a well-defined target group.

In marketing research, we currently see three methods that are sufficiently accessible, easy to use, analyse, and interpret. This is why the issues of eye-tracking, EEG, and facial recognition systems are discussed in more detail in this section.

Eye tracking

Of the above solutions, perhaps eye-tracking studies have become the most accepted of the neuromarketing methodology. This is partly due to the simple, flexible application, and even more so to the easy-to-understand, well-visualised research findings. Eye-tracking is suitable for examining cognitive processes and behaviour without recording brain activity by detecting two types of eye movement (fixations and saccades, which we will discuss in more detail later), thus providing a simpler and more cost-effective alternative for marketing research.

The starting point of the method is the biological phenomenon that we are constantly moving our eyes because there is only a small area of the retina that gives a high-resolution image. There are several types of eye movements listed in the literature, some of which have a role in maintaining the stability of the seen image, while others gather new information.

From a biological point of view, we differentiate between saccadic eye movement and fixation. The former is the primary means of acquiring new visual information by moving the eye from one place to another with rapid movement (Laubrock, Engbert, Rolfs, & Kliegl, 2007). Between two saccades, the gaze is "in one place" allowing for visual perception, which is called fixation. We can deduce the perception and processing of various information from the density and duration of fixations in the course of research. The operation of most eye-tracking cameras available on the market is based on the capture of saccades and fixations (Feng, 2011).

"The eye camera makes it possible to measure the focus of attention and types of behaviour" (Bercea, 2013, p. 4). The device is able to record what (which product, communication message, etc.) participants are watching, in what order, and for how long.

Figure 9.1: Three generations of Tobii Glasses mobile eye tracker
(Source: tobii.com)

Most eye-tracking camera devices available on the market record eye movement based on the principle of pupil-centred corneal reflection (PCCR) (Gere, 2015).

Regarding the design of the device, we distinguish two types of eye cameras, thus professionals work with wearable (mobile) or fixed (stable) devices depending on which fits the subject of research. The mobile eye tracker is typically worn by the participants as goggles during the research, in which two types of cameras are located, the eye tracker captures the position of the pupil, and the object camera films how environment that the participant can see. In contrast, the so-called stable eye camera, which is used primarily for website or communication testing, works attached to a screen. The main difference in the structure of the mobile eye tracker is that it automatically captures the image that the participant sees, so there is no need for an object camera, the signals detected by infrared light will appear in the image.

Figure 9.2: Structure of an eye tracker

(Source: tobii.com)

Heat maps and gaze plots are the most popular among the research results but it is important to point out that a number of other indicators can also be examined, which can be produced from the data recorded by the devices.

Figure 9.3: Result of eye tracking measurements: heat map

(Source: own research)

- The primary goal of eye movement studies and analyses is to gather insights that can be used to understand attention-related behaviours. The tool reliably shows where participants are looking, in what order, and for how long by involving a relatively small sample (O'Connell, Walden, & Pohlmann, 2011). When analysing the data collected during the study, it is possible to take into account several statistical indicators, such as

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- performance indicators:
  - ↪ efficiency: time spent on a given task,
  - ↪ effectiveness: number of erroneous measurements,
- process indicators:
  - ↪ number of fixations, which shows the proportion of glances during the processing of the stimulus material,
  - ↪ duration of fixations, which shows a correlation of cognitive functions (longer glances indicate increasing cognitive processes); in this case, the length of the first or total view of the stimulus can be measured,
  - ↪ changes in attention, which is an indicator of the distribution of visual attention,
  - ↪ similarity of viewing pathways, which compares eye movements of different participants (Duchowski, 2007).

EEG

An increasingly common solution used by neuromarketing research is the electroencephalograph (EEG) based on recording brain waves with amplitudes corresponding to certain mental states. With this device, we can detect wakefulness (beta waves), relaxation (alpha waves), calmness (theta waves), and sleep (delta waves). Because data acquisition is through electrodes attached to participants 'heads, the EEG can also be used as a portable research device.

Figure 9.4: Mobil EEG (dry technology)

(Source: emotiv.com)

The EEG captures electrical signals of the brain that are generated by the (consumer/customer) stimulus under study. In contrast, the fMRI device relies on magnetic resonance imaging to provide a more comprehensive picture of stimulus responses. The latter device requires much greater expertise, larger budgets, and is less flexible due to its size and space requirements. These devices currently fall into the category of the exotic within neuromarketing, even if several publications have supported their effectiveness, for example in the film industry, where they can be excellent tools for product design.

EEG measurements are often supplemented by facial detection and coding, heart rate measurements, and psychogalvanometer examinations. The latter captures the measurable changes of the skin surface as a result of excitement, while facial coding is used to study emotional reactions. The purpose of these measurements, in addition to product and communication development, is often to support price tests, the so-called determination of reservation prices demanded by clients.

Unfortunately, however – most of the experiences currently underline this – consumer and customer decisions are so complex that it is difficult to identify cause-and-effect relationships and accurately map the stimulus-response relations by way of the perceived changes.

Facial recognition system

Another commonly used tool in neuromarketing is the facial recognition system, which can basically assess the emotional effects elicited by a given stimulus by detecting different points and their movement on the human face. The biggest advantage of the solution is that it can be used without an external device, as it only requires a webcam and software developed for this purpose.
Automatic measurement of emotions is reliably used in many issues in the market.

One of the best-known face scanners currently is iMotions (www.imotions.com), which is able to detect 10 emotional nuances along two dimensions (polarity and intensity)

in addition to the 7 basic emotions (joy, anger, surprise, fear, contempt, sadness, disgust).

The method can be applied in several areas:
- examination of consumer behaviour,
- testing of communication and advertising materials,
- psychological tests,
- website UI (user interface) and UX (user experience) tests.

Analysis of user behaviour

We can see a number of solutions for externally monitoring a user's behaviour. Entering a site, the visitor leaves countless traces with scrolls, clicks, various interactions that we are able to measure and analyse without using a query method. Software applications (Hotjar, Crazyegg, Mouseflow) allow us to monitor visitors of the site at specified intervals.
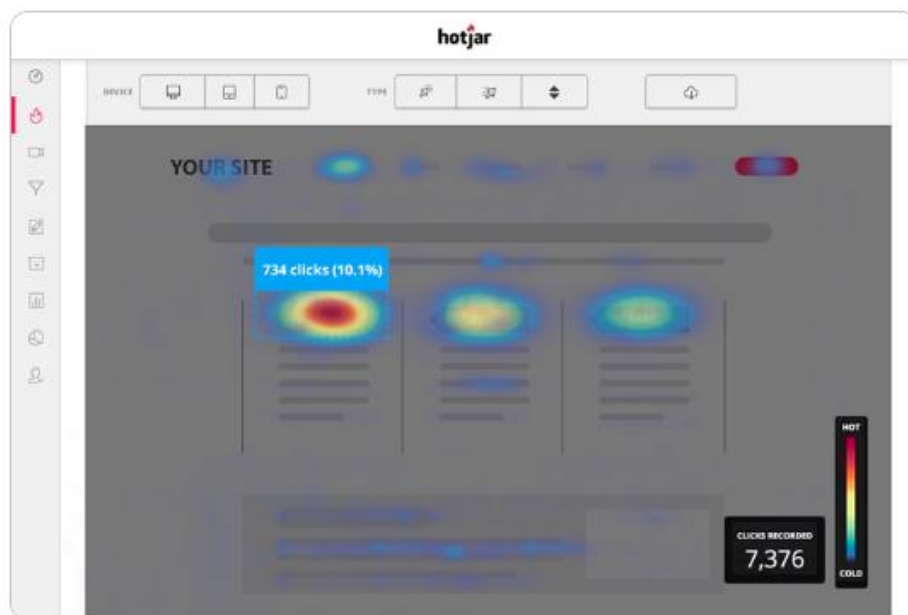

Figure 9.5: Heat map showing the activities of website in the Hotjar system
(Source: www.hotjar.com)

The most typical output of instruments that specialise in examining user habits is the heat map, which shows the most frequently visited or clicked parts of a website.

Sensory observation

Solutions related to netnographic researches, but not specifically analysing online behaviour, are in-store kiosks, which in combination with augmented reality (see previous chapter) provide an increased customer experience on the one hand and a good analytical basis for purchasing decisions on the other.

One of the most successful examples of this is the AR kiosk of Lego, which allows the device to project the vehicle or building to be constructed onto the image of the box, thus helping the customer to examine the final product of the activity. The tool can also collect useful data for applied marketing research with this service, as we can draw further conclusions from the correlation between the number of views and purchases. The more so if the kiosk also has a face recognition application to help with demographic data (especially age and sex) in the analyses.

Another interesting solution is the application offered by the USPS (United States Postal Services), which allows customer to decide at home the number of envelopes or boxes needed for delivery, as well as to buy and label them in advance. In addition to being useful for customers, this service offers a great opportunity to record registered user habits, analyse them and plan for future demands.

RFID technology also helps to record the parameters of in-store purchases by tracking product movement within stores equipped with radio frequency identification. A related current development is the concept of Amazon GO (amazon.com), which can realise the concept of "open business" using RFID technology.

The essence of this is that customers identify themselves with a mobile application upon entering the store, take the products they want to buy off the shelf and simply walk out between the RFID gates, which in turn register the purchases and debit the bank accounts. With this development, Amazon is able to further improve the customer experience (although a huge interest in opening the store has had the opposite effect and created a long queue), thereby increasing satisfaction and

efficiency, not to mention that new target audiences also become available with this solution.

Among the great future possibilities, according to researchers, are smart devices called wearables, which convey a constant data flow while we wear them, thus making the most important parameters of activities related to our everyday life available, without the active involvement of the consumer/respondent.

Collecting, organising, and ultimately analysing these observational data can help researchers gain a cross-sectional view of users 'daily activities and key lifestyle characteristics.

Virtual Reality Techniques

Another technology-intensive area of the observational methodology is the range of virtual reality techniques (VRTs), that appeared in applied marketing research as early as the 1990s (consult, for example, the Rosenberger and De Chernatony's study in 1995), but was then more of a pioneer nature since neither the necessary hardware and software infrastructure nor the user side was ready for it.

At the beginning of the new millennium, VRT solutions, such as the Visionary Shopper® application, were developed mainly for the interior design of the store. These were initially simulations optimised for computer displays, which were later replaced by virtual reality (VR) devices and virtual store interiors produced by using them. In addition to optimising the shopping route, the main goal of the research was to design a shelf placement and, in many cases, to place the planned packaging in a competitive environment.

Figure 9.6: VRT application in Shopper 360 system
(Source: lumaten.com)

VRT systems may gain popularity in the near future partly because of their flexibility, and also because they register data at many points of the purchasing process. Researchers can analyse it later, with a particular focus on the "moment of truth," that is, the moment when the purchase decision is made. The high level of the initial investment and the unfamiliar environment of the virtual space for the consumer, derived from the unnatural quality of "moving" in the virtual space, are still among the disadvantages of these solutions.

Thus, instrumental observations may also be suitable for monitoring consumer behaviour over a longer period of time, which may lead to large data sets that also allow for the identification of temporal patterns. It is, fortunately, still doubtful whether these are indeed capable of describing, even more predicting consumer decisions, however, they are truly able to offset conformism and the decline in responsiveness.

For the time being, these solutions are in the development and experiential phase. While they make way for novel approaches, and in many cases, can contribute to our understanding of consumer behaviour, they are still less accepted as an independent research solution.

Overall, this seems to justify Simon's (2016) insight that the technological development of observational methods prioritises the analysis of real behaviour, however, the technical transformation of questionnaire surveys still takes place according to the platform(s) most commonly used by consumers.

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