

PAPER VS. DIGITAL

Information from Steinbeis Papier GmbH

In the debate about media on paper or digital, ecological balance, haptics and perception as well as reception play an important role:

Life cycle assessment

- Paper is made from wood and is a centuries-old cultural asset that fulfils needs that cannot be replaced digitally.
- Paper manufacture: A large proportion of the paper used consists of virgin fibre paper, which comes from Scandinavian commercial forests. The resulting paper is 78 per cent recycled.
- Digital media require precious metals and rare earths such as tantalum, palladium, cobalt, gold, silver and copper. These raw materials are extracted under difficult conditions that cause environmental destruction and poor working conditions.
- Paper performs better than digital media when it comes to the use of renewable raw materials. However, the balance of digital media improves with increasing useful life and the recycling of raw materials.
- Water consumption: One sheet of virgin fibre paper consumes around 10 litres of water, while a computer requires around 20,000 litres of water to manufacture. However, a computer can be used for years, whereas paper is often only used once. It therefore makes sense to recycle paper as often as possible after use.
- Energy and CO₂: The paper industry is energy-intensive, but printed media can be used over longer periods of time without consuming energy. Electronic devices and the use of the Internet are also energy and resource-intensive.

Haptics and perception

The haptic experience and the cognitive advantages of paper cannot be replaced by digital devices:

- People respond better to stimuli that appeal to several senses.
- The printed medium offers a more intensive experience of content compared to simply viewing digital content.
- The sense of touch shapes our decisions and is particularly important for children's development.
- The book as a haptic experience creates its own sensory world and emphasises the value of the content.
- Haptics play an important role in communication and continue to lend relevance to printed messages.
- High-quality paper with special finishes enhances the haptic experience and can increase attention.

- In the digital world, we filter content subconsciously and perceive it selectively, which makes a deeper analysis more difficult.
- It is important to give more weight to the other senses in perception and to value the haptic experience.

Despite the variety of digital offerings, the printed medium will continue to be relevant due to its special characteristics.

Reception in the context of advertising

Advertising conveys information and emotions that are absorbed and processed by the human brain. Neuroscience provides insights into the effect of advertising:

- Advertising on paper and digital advertising each have advantages and disadvantages in terms of communication.
- Neuroscience is used in marketing to better understand consumers.
- The perception of advertising on paper depends on factors such as layout, colours, text and context.
- Studies show that printed advertising is often perceived as more trustworthy and credible.
- Print advertising increases activity in certain areas of the brain and leads to better processing and memory.
- Digital advertising is processed more quickly, but memorability can suffer as a result.
- Too much digital advertising can lead to overload and filter bubbles and can be perceived as annoying.
- A combination of print and digital advertising is favoured for maximum reception.
- Cross-media marketing and multi-channel marketing combine print and digital advertising measures.
- Both forms of communication will continue to co-exist in the future.

Note: The perception of advertising can vary from person to person and is influenced by individual experiences, attitudes and values.

Cyber-security: Handling sensitive data

Both digital and physical data have their own security risks and challenges. The perception that digital data may be more vulnerable could be based on several factors:

- Cybercrime: In the digital realm, there is a wide range of cybercrime activities, including hacking, malware, phishing and other forms of attack. These types of attacks can be faster, more global and less visible than physical attacks on paper documents.
- Technological progress: The rapid development of technologies is creating new forms of attack. If software or operating systems are not kept up to date, security gaps can be exploited.
- Human factors: The human factor plays a major role in the digital world. Weak passwords, untrained employees and negligent behaviour can lead to security breaches.

- Data storage and transmission: Digital data is often transmitted via networks and stored in storage systems. During these processes, data can potentially be intercepted or compromised.

Nevertheless, there are also specific advantages of paper data that digital data does not have:

- Physical access required: Paper documents usually require physical access. This means that potential attackers must physically reach the location where the data is stored.
- Limited distribution area: Paper documents often have a limited distribution area, which means that access to the information can be controlled locally.
- Security measures: Physical security measures such as safes, lockers and surveillance cameras can restrict access to paper data.

It is important to emphasise that the security of data, regardless of its form (digital or physical), depends on the implementation of appropriate security measures. Both types of data require careful attention to ensure their integrity, confidentiality and availability. Organisations should pursue a comprehensive security strategy that takes both digital and physical aspects into account

Paper and digital media both have their strengths. When using paper, it is important to use sustainable paper. Recycled paper with the Blue Angel label saves valuable resources in production compared to virgin fibre paper.