

Human-App Interaction for Disruptive Innovations: User-Centered Contributions to Technology Acceptance and Effects

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Abstract

Disruptive technologies have a profound impact on industries, societies, and individual behavior, making their adoption and consequences a vital field of study. While prior research often focused on isolated technologies or narrow acceptance models, this dissertation takes a more holistic approach by integrating psychological, social, and behavioral dimensions with user-centric outcomes across diverse disruptive technologies. The first chapter provides a comprehensive framework that connects all six included studies, offering a unifying perspective on the diverse examined technologies.

At the core of this dissertation is the intersection of human-app interaction and technology acceptance. By systematically analyzing six disruptive technologies, ranging from health applications to social media and financial innovations, the dissertation sheds light on both commonalities and differences in adoption patterns. Established acceptance models like the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) serve as a theoretical foundation but are expanded by domain-specific factors. For example, social influence and trust are crucial for government-imposed applications, while hedonic motivations shape voluntary use cases like social networks or non-fungible token (NFT)-based collectibles.

Another key contribution of this work lies in its structuring principle. The dissertation follows a logic of increasing voluntariness in technology usage, starting with applications that are externally driven – such as pandemic contact tracing apps – towards those that are primarily hedonic in nature, such as digital collectibles. This structure not only reflects real-world adoption patterns but also highlights how different user motivations shape technology acceptance. Throughout all studies, a recurring theme is the balance between perceived usefulness and the unintended consequences of adoption. While many technologies offer clear advantages, they also introduce risks such as technostress, privacy concerns, financial overconfidence, or social shortcomings.

From a methodological perspective, the dissertation is structured as a cumulative work, comprising six research papers that each investigate a specific technology while contributing to the overarching discussion on human-app interaction. The studies employ quantitative models based on structural equation modeling, ensuring robust statistical validation across different domains. Despite the heterogeneity of technologies analyzed, the findings contribute to a shared understanding of how user expectations, psychological traits, and

social environments interact to shape technology engagement.

By integrating perspectives from technology management, behavioral science, and information systems research, this dissertation offers a holistic view on the challenges and opportunities of disruptive technologies in a user-centered perspective. One important insight across the six studies is that user motivations change along the spectrum from mandatory to voluntary technologies – from trust and obligation in externally imposed settings to enjoyment and self-expression in more hedonic ones. What became also clear is that acceptance is rarely only about functionality, but shaped strongly by social context, individual relevance, and psychological needs. The findings provide valuable insights for both academia and practitioners, particularly in designing digital innovations that align with human needs while mitigating unintended negative consequences.

Index of Research Papers

Research Paper 1:

Fortagne, Marius Arved; Reith, Riccardo; Diel, Soeren; Buck, Christoph; Eymann, Torsten; and Lis, Bettina (2021), “COVID-19 Infection Tracing with Mobile Apps: Acceptance and Privacy Concerns”, *International Conference on Information Systems 2021 Proceedings*. 10. https://aisel.aisnet.org/icis2021/is_health/is_health/10.

VHB Ranking 2024: A

The submission builds on a previous publication:

Reith, Riccardo; Fortagne, Marius Arved; Diel, Sören; Buck, Christoph; Lis, Bettina; and Eymann, Torsten (2021), “Pandemic Containment with Digital Measures: Acceptance And Privacy Aspects Of Contact Tracing Apps”, *ECIS 2021 Research Papers*. 6. https://aisel.aisnet.org/ecis2021_rp/6.

VHB Ranking 2024: B

Research Paper 2:

Fortagne, Marius Arved; Stichnoth, Kaj-Johanna; and Lis, Bettina (2024), “Technology-Induced Strain from Team Communication Platforms: Empirical Evidence for Working from Home”, *management revue Socio-Economic Studies*, 35(3), 300-327.

DOI: [10.5771/0935-9915-2024-3](https://doi.org/10.5771/0935-9915-2024-3).

VHB Ranking 2024: C

Research Paper 3:

Fortagne, Marius Arved; Reith, Riccardo; Nguyen, Khanh; and Lis, Bettina (2023), “Technology Acceptance of Neo-Broker Applications: An Empirical Investigation”, *International Journal of Innovation and Technology Management*, 20(5), 2350029.

DOI: [10.1142/S0219877023500293](https://doi.org/10.1142/S0219877023500293).

VHB Ranking 2024: C

Research Paper 4:

Anderski, Matthias; Fortagne, Marius Arved; Kapfer, Kevin; Lis, Bettina; and Ströbel, Tim (2025), “Navigating Fan Reactions: The Role of Innovation Resistance and Acceptance in Smart Stadium Technology Use”, *58th Hawaii International Conference on System Sciences 2025*, 4313-4322. <https://hdl.handle.net/10125/109362>.

VHB Ranking 2024: B

Research Paper 5:

Fortagne, Marius Arved; Brand, Benedikt; and Lis, Bettina (2024), “Do You Want to Be-Real? Usage Intention and Well-Being for the Social Network BeReal”, *International Journal of Innovation and Technology Management*, 21(8), 2450056. DOI: [10.1142/S0219877024500561](https://doi.org/10.1142/S0219877024500561).

VHB Ranking 2024: C

Research Paper 6:

Fortagne, Marius Arved and Lis, Bettina (2024), “Determinants of the purchase intention of non-fungible token collectibles”, *Journal of Consumer Behaviour* 23(2), 1032-1049. DOI: [10.1002/cb.2264](https://doi.org/10.1002/cb.2264).

VHB Ranking 2024: B; ABDC Ranking: A;

Achievement: Journals’ top 10 most-cited articles of the year 2023

List of Abbreviations

ABDC	Australian Business Deans Council
APCO	Antecedent Privacy Concerns Outcomes
API	Application Programming Interface
App	Application
AR	Augmented Reality
CB	Covariance-Based
CTA	Contact Tracing Application
EPPM	Extended Parallel Process Model
FOMO	Fear of Missing Out
HCI	Human-Computer Interaction
IoT	Internet of Things
IRT	Innovation Resistance Theory
IS	Information Systems
IT	Information Technology
NBA	Neo-Broker Application
NFT	Non-Fungible Token
NFTC	Non-Fungible Token-based Collectibles
PLS	Partial Least Squares
RP	Research Paper
SDT	Self-Determination Theory
SEM	Structural Equation Modeling
SNS	Social Networking Service
SOR	Stimulus-Organism-Response
SST	Smart Stadium Technologies
TAM	Technology Acceptance Model
TCP	Team Communication Platform
UTAUT	Unified Theory of Acceptance and Use of Technology
VHB	Verband der Hochschullehrerinnen und Hochschullehrer für Betriebswirtschaft e.V.
WFH	Working from Home

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1 Synopsis

1.1 Motivation

The influence of disruptive technologies is becoming increasingly significant, affecting not only our daily lives but also numerous industries. These technologies are impacting domains such as healthcare, finance, and entertainment, and media are transforming existing structures and processes in fundamental ways (Alt et al., 2018; Secinaro et al., 2021). Since disruptive technologies are developing at a rapid pace, it remains unpredictable which industry will be affected and to what extent these changes will occur. A current example is the impact of generative artificial intelligence, which is fundamentally changing industries such as marketing, journalism and creative professions with text-based apps and tools for image and video production (Davenport & Mittal, 2022). However, the advent of these innovations also gives rise to novel challenges in the domain of human-technology interaction. Users are confronted with an increasing number of complex expectations, which necessitates the redesign of their interactions with digital applications (apps) (Tam et al., 2020). Consequently, research into the factors that influence acceptance is of particular importance, as well as the impact usage has on humans.

Therefore, this dissertation uniquely bridges two critical but often independently explored areas in the study of technologies: user-centered technology acceptance and its behavioral and psychological outcomes (Lu et al., 2019). By integrating these domains, it addresses notable gaps in the existing literature, offering a comprehensive framework that explores not only the factors driving technology adoption but also their downstream consequences for users and technology. Accordingly, the overarching research question of this dissertation poses:

What determinants influence the acceptance of disruptive technologies, and how do these technologies impact their users?

To address this research question, this dissertation analyzes a diverse portfolio of technologies in a specific range from rather mandatory to voluntary usage. By posing questions such as "How does technology affect the well-being of users?" and "What role do trust and privacy play in the acceptance of new digital tools?" the dissertation takes a comprehensive approach. It questions the influence of disruptive technologies on pandemic challenges

(Research Paper (RP) 1), work processes (RP2), financial behavior (RP3), event consumption (RP4), social interactions (RP5), and digital ownership (RP6). In addition to expanding technical knowledge, it addresses important ethical and social issues, such as privacy concerns (RP1, RP5, RP6) negative consequences of working from home (RP2), financial misperceptions (RP3), and the resistance towards app usage during sport events (RP4). The results provide valuable insights within the research interface of information system, consumer behavior, technology acceptance, digital well-being, privacy and trust in digital environments.

Thereby, this work makes a significant contribution to the field of information system research from the user's perspective by elucidating the requirements and consequences of these innovations. In the context of the growing pervasiveness of digital tools in daily life, it is crucial to gain insight into the motivations, concerns, and needs of the individuals who are expected to utilize these tools. This work goes beyond an analysis of the mere functionality of technologies, instead focusing on the human element, such as feelings (RP1, RP5), well-being (RP2, 5), biases (RP3), identity (RP4), and value perception (RP6).

Designed as a cumulative work, the dissertation begins with a synopsis that establishes a unified research scope for the six research papers included. Here, chapter 1.2 presents the process and structure chosen to extract results towards the overreaching research question. Chapter 1.3 embeds the six works within the research streams involved, including human-computer interaction, disruptive technology theories, and finally technology acceptance. Then, Chapter 1.4 continues with presenting the applied methods, before chapter 1.5 complements the synopsis with the overall results, implications and limitations. Chapters 2 to 7 present the six research papers constituting as core components of this dissertation.

1.2 Objectives and Structure of the Dissertation

This dissertation aims to achieve a comprehensive objective that can be summarized under the overarching concept of human-app interaction and its dual inquiry with two key areas: firstly, the expectations users have of disruptive technologies, and secondly, the effects the use of these technologies has on users. The focus of this study is on the reciprocal relationship between people and apps, which is characterized by both acceptance and the consequences of use.

A principal objective is to examine the acceptance of disruptive apps from a technological

standpoint. The objective is to identify factors that promote or hinder acceptance. This work builds upon established models such as TAM and UTAUT, extending them with contextual factors. One illustrative example is the impact of overconfidence on the acceptance of neo-broker apps (RP3), a trait that is especially pertinent in the domain of financial decision-making. The objective is to elucidate these factors in diverse application contexts, thereby enhancing the overall theoretical understanding.

Furthermore, the analysis is extended to encompass not only acceptance but also the consequences for the users. Both positive effects, such as the promotion of social well-being (e.g., through real-time social networks, RP5), and negative effects, such as technostress (e.g., through team communication platforms, RP2), will be examined. The aim is to present a differentiated picture of how disruptive technologies can enrich or burden the lives of their users.

Building on this, a further objective is to derive practical recommendations for developers and providers. The objective is to demonstrate strategies for overcoming acceptance barriers and promoting a healthy commitment. Additionally, guidance is provided for the design of user-centered innovations, with the aim of creating technologies that meet users' needs and have a positive impact on them. Finally, this analysis identifies the differences and similarities between the technologies examined, with the goal of gaining insights into disruptive apps that are relevant in different contexts.

The organization of the research papers is based on a chronological structure, with the understanding that individual users are motivated to utilize specific technologies based on the influence of their social environment and external circumstances. This arrangement is ascending according to the voluntary nature of use and the hedonistic orientation of the app. Hedonistic user motivation refers to the use of a technology that is primarily driven by the pursuit of joy, enjoyment, or emotional pleasure, as opposed to purely functional or utilitarian reasons such as increasing efficiency or solving problems (van der Heijden, 2004).

The analysis commences with contact tracing apps, which were used to track COVID-19 infection chains and whose utilization is markedly influenced by external pressures (RP1). As next, team communication platforms are commonly used in professional contexts and, for most users, therefore imposed by the employer (RP2). Neo-broker apps represent a case of mixed utilitarian and hedonistic motivations, combining the financial benefit of utilitarian apps with the excitement of investing (RP3). Smart stadium technologies (RP4) are set

up in a leisure environment but can additionally integrate rational functionalities to a certain degree, e.g., parking systems and automated payment. Social media and leisure technologies such as real-time social networks (RP5) or NFT-based collectibles (RP6) are used primarily on a voluntary basis. They focus on hedonistic motivations such as the pursuit of friendships and a passion for collecting. This arrangement also reflects the chronology of the papers, as illustrated in Figure 1-1. Beginning with the onset of the dissertation during the height of the pandemic-related lockdowns, various trends and phenomena that shaped social coexistence, from the world of work to private life, were considered.

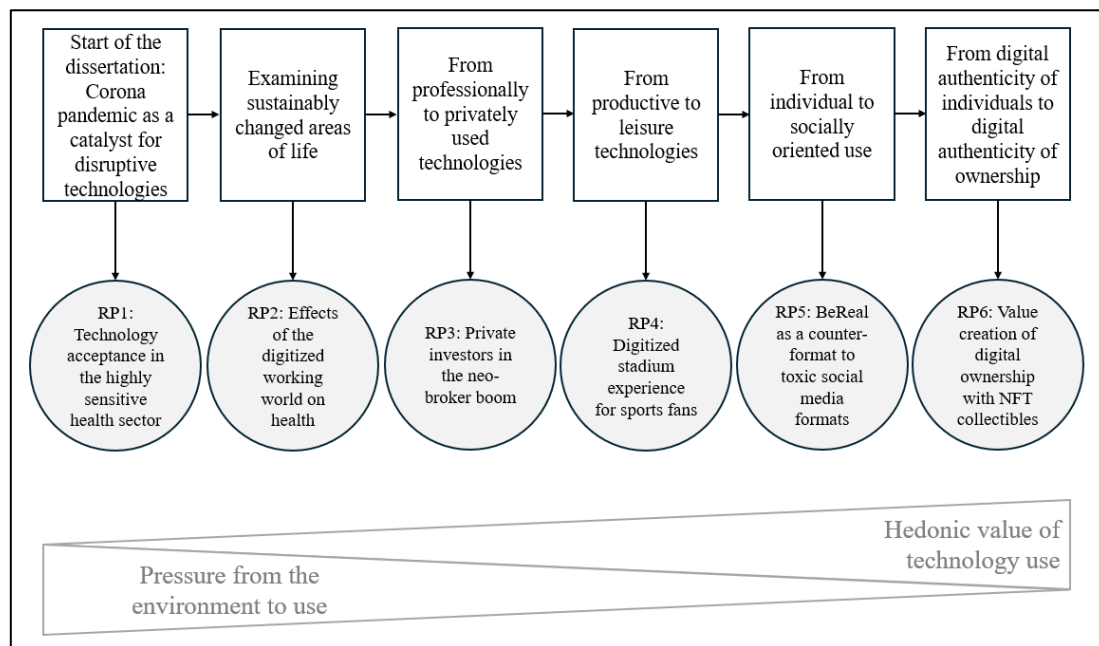


Figure 1-1. *Chronological progression of the dissertation (own illustration).*

Herein, every work addresses a specific research gap, which modifies the dissertation's overall research question regarding the technologies' specific contexts. In RP1, contact tracing apps allow new technologies to be examined for the first time in the unique environment of a pandemic. In addition, the benefits geared towards society rather than the individual are a distinguishing characteristic towards other studies on health-related technologies. The research gap of RP2 is that it is not yet clear how features of widely used team communication platforms (e.g. mobility, interruption, usefulness) act as stress-inducing factors in the context of home office. Here, the interface of an abrupt increase of technology use and its consequences in a working-from-home environment characterizes the uniqueness. RP3 justifies the research gap with the absence of acceptance research for the newest generation of finance apps that takes into account both technological features and

financial psychological factors, while these apps are becoming increasingly important among inexperienced investors. The research gap of RP4 arises from the focus on reasons for technology resistance. Here it is shown that disruptive technologies must overcome resistance from tradition-oriented user groups (in this case sport fans). In RP5, the research gap is derived by the tension between usage drivers and inhibitors of real-time social networks, in this case BeReal, such as social proximity, fear of missing out, and privacy concerns. Finally, the research gap of RP6 consists of a general lack of clarity as to how digital goods such as NFT-based collectibles create consumer benefits despite their pure digital, immaterial nature and which characteristics specifically influence hedonic and utilitarian purchasing motives.

The following Table 1-1 summarizes the research gaps of the six RPs, which will extensively be derived from literature in each paper.

Table 1-1. *Summary of the research gaps and questions.*

Identified Research Gap	Formulated Research Question
RP1: Contact Tracing Applications	
Pandemic context, societal vs. individual benefit, privacy concerns, first-time digital health tech in crisis	Which factors determine users' intention to use a mobile contact tracing application in the context of an ongoing pandemic?
RP2: Team Communication Platforms	
Work-from-home context, underexplored link between collaboration platform features and technostress	(1) How do characteristics of team communication platforms influence work-related stressors and increase the perceived strain of teleworkers? (2) Does the ability to mentally detach from work during non-working hours reduce the impact of stressors on perceived strain?
RP3: Neo-Broker Applications	
Lack of acceptance research for new-generation finance apps, tech-driven investing by laypersons	Which factors from technology acceptance and financial behavior determine the intention to use neo-broker applications?
RP4: Smart Stadium Technologies	
Innovation resistance, tradition vs. disruption in sports consumption	Which drivers, among sport fans, shape resistance against smart stadium technologies and which factors promote the intention to use them?
RP5: Real-Time Social Networks	
Authenticity vs. pressure, spontaneity, FOMO, privacy tensions in social media	Which factors determine users' intention to utilize the real-time social network "BeReal" and how does its usage affect the well-being?
RP6: NFT-Collectibles	
Value creation in digital assets, hedonic vs. utilitarian drivers, digital ownership experience	Which factors determine the purchase intention of non-fungible token-based collectibles?

1.3 Research Context and Theoretical Foundation

This chapter presents the technologies that are central for this dissertation and situates them within suitable theoretical frameworks according to the overall research contexts. The objective is to identify the distinctive characteristics and potential of each technology and to establish a robust foundation for subsequent analysis. These technologies have profoundly impacted existing structures and behavioral patterns across a range of domains, including health (RP1), work (RP2), finance (RP3), live entertainment (RP4), social networks (RP5), and digital ownership (RP6). By facilitating novel forms of use and interaction, they offer valuable insights into the acceptance and integration of disruptive innovations.

First, the central terms will be defined (chapter 1.3.1) before the six technologies investigated in the research papers will be presented in their core characteristics (chapter 1.3.2). Then, these technologies will be located within the overreaching research field of human-app interaction (chapter 1.3.3), which will be narrowed towards disruptive technologies (chapter 1.3.4), and its unique consequences for technology acceptance and impact on users (chapter 1.3.5). Figure 1-2 illustrates the localization of the research papers within the upcoming frameworks.

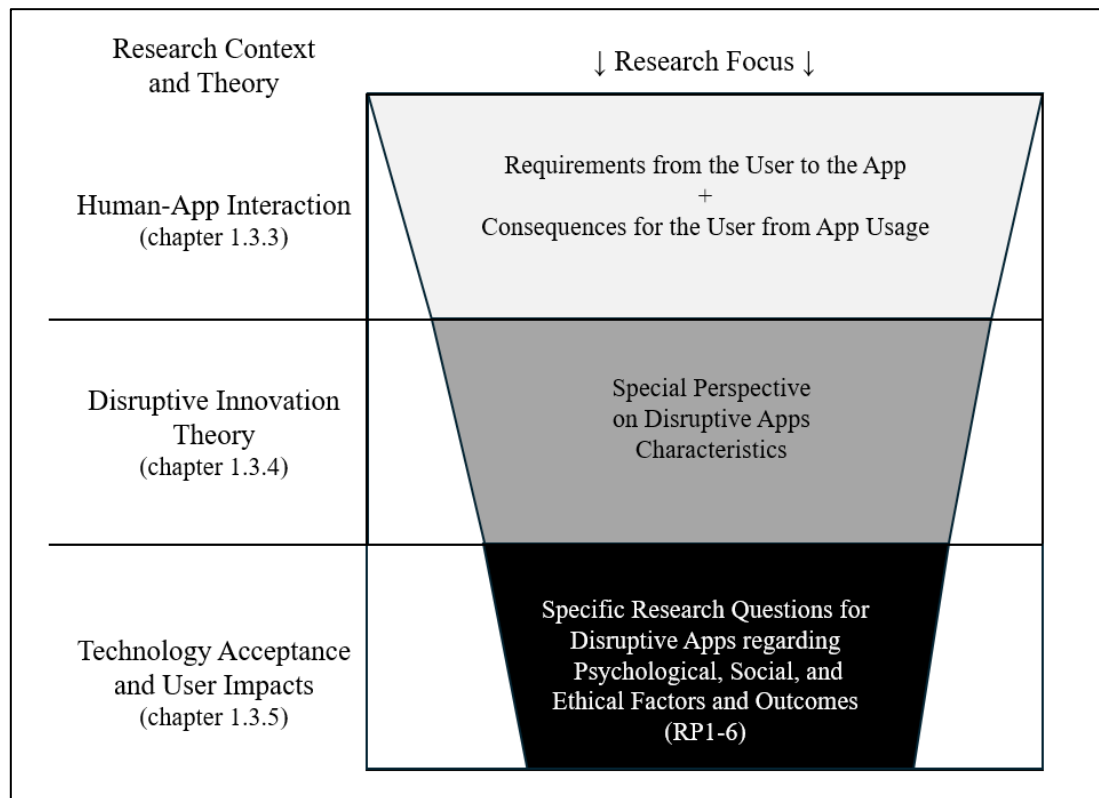


Figure 1-2. *Theoretical mapping of the dissertation (own illustration).*

1.3.1 Definition and Demarcation of Central Terms

It is first necessary to define the key terms employed throughout this dissertation. The terms “app,” “platform,” and “technology” encompass concepts that are partially overlapping in nature. However, despite this overlap, they also possess distinct roles and focuses.

As defined by De Weck (2022, p. 9), “**technology**” is “both knowledge and deliberate creation of functional objects to solve specific problems.” In the realm of computing, technology refers to the integration of hardware and software components designed to perform specific tasks or solve problems. This encompasses physical devices (hardware), such as computers and networking equipment, as well as the programs and operating information (software) that enable these devices to function effectively (Matthews & Greenspan, 2020).

The term “**app**” refers to specialized software applications that run on mobile devices such as smartphones or tablets and are designed to perform specific, often well-defined functions (Zhang & Adipat, 2005). Apps are typically designed to enable simple and targeted interaction, often with a user-friendly interface and limited functionality to create a smooth user experience (Hoehle & Venkatesh, 2015). This focus on mobility and intuition has made apps more relevant and the main interface between users and digital technologies.

In contrast to apps, “**platforms**” offer a broader infrastructure that connects multiple functions and users. As Gawer and Cusumano (2014) have observed, platforms integrate different services and applications for users with different rights, thereby promoting various forms of accesses, interaction and collaboration. One example is team communication platforms for the workplace such as Slack, which combine numerous communication and collaboration options at a central point, such as file sharing, video calls, or task-assignment (RP2).

Apps, platforms and technologies are dynamically interrelated and complementary. Usually, technologies form the basic infrastructure on which applications and platforms are built. Blockchain technology is an example of such a foundational technology, offering applications and platforms new possibilities for data security and authenticity (Matthews & Tucker, 2023), for example for NFTs in digital collections. In this interplay, each layer enhances the functionality of the other: Applications enable direct interaction with the user, platforms create connections and ecosystems, and technologies provide the technical underpinnings that enable such innovation. Generally, apps often run on platforms and are supported by technology. For example, an app may act as an interface to a platform that

integrates multiple services and bundles different usage requirements (Hoehle & Venkatesh, 2015).

1.3.2 Presentation of the Technologies from the Research Papers

This section first provides a brief overview of each innovation studied in this dissertation. By presenting their core functionalities, target groups, and market impact, this overview lays the foundation for their subsequent theoretical classification in chapters 1.3.3 to 1.3.6.

COVID-19 Contact Tracing Applications (RP1)

Contact tracing apps for the COVID-19 virus were developed and deployed in the context of the global pandemic with the objective of slowing infection spread. The principal objective was to interrupt the transmission of infection through digital tracing of physical proximity. The apps are designed for broad sections of the population, particularly those who have regular contact with others. The primary function of these apps is to register encounters via Bluetooth technology and alert users to potential infections. The technological basis is formed by decentralized protocols to guarantee data protection (Yasaka et al., 2020). These apps are disrupting the healthcare system by digitizing traditional contact tracing methods. Their distinctive feature is the combination of high reach and rigorous data protection, which represents a novel approach to healthcare solutions (Ferretti et al., 2020).

Team Communication Platforms (RP2)

The advent of team communication platforms, such as Microsoft Teams, has been driven by the aims of enhancing the efficiency and flexibility of team collaboration, particularly in the context of the growing digitalization and prevalence of remote working (McGloin et al., 2022). Such platforms fulfil the need for seamless communication, rapid information transfer, and enhanced team coordination. The target group encompasses companies, project teams and remote workers. The key features include real-time chat, video conferencing, file and screen sharing and integration with other productivity tools. Technologically, these platforms are based on cloud solutions that guarantee scalability and availability. They are disrupting the market for traditional team communication methods such as e-mail and intranet systems by creating a centralized and interactive working environment (Stich et al., 2018). Their specialty lies in their ability to bridge physical distance while promoting a productive and collaborative working culture.

Neo-Broker Applications (RP3)

The advent of the so-called “neo-broker” apps, such as German provider Trade Republic, was driven by the objectives of democratizing and simplifying access to financial markets. These apps address the necessity for straightforward, inexpensive investment management, and are particularly appealing to younger, technology-savvy users (Bitrián et al., 2021). The apps offer a range of functions, including commission-free trading, real-time data and user-friendly interfaces. Technologically, they are based on modern Application Programming Interface (API) architectures that enable fast transactions. They are challenging the traditional financial services market by questioning the role of banks and traditional brokers (Gomber et al., 2017). They focus on flawless user experience, which makes it easy for users to start investing and thus opens up new user groups.

Smart Stadium Technologies (RP4)

Live sport attendance experiences increasingly compete with advancing live-streaming formats full of entertainment and information. Therefore, event organizers introduce smart stadium technologies to enrich the live attendance (Horbel et al., 2021). The functionality encompasses mobile ticketing, real-time statistics and personalized offers. The technological foundation is constituted by Internet of Things (IoT) solutions and cloud-based platforms capable of processing vast quantities of data in real time. These technologies are transforming the event and sports market by expanding traditional forms of fan interaction (Sjöblom et al., 2020). The objective is a seamless transition between digital and physical experiences for visitors. The target demographic comprises sports enthusiasts and event attendees seeking a personalized and interactive experience.

Real-Time Social Networks (RP5)

The objective of real-time social networks, such as BeReal, is to provide a counterbalance to the prevalence of staged self-presentations on social media. The app fulfils the need for authentic interaction and is aimed at users who question social pressure and superficiality in traditional social media. Its central aim is to promote honest snapshots of everyday life. Users are asked once a day to post an unfiltered picture within a short time window. Technologically based on cloud infrastructure, real-time social networks are disrupting the social media market by challenging established norms of self-presentation with spontaneity and authenticity (Maddox, 2023).

NFT-based Collectibles (RP6)

The advent of NFT collectibles can be attributed to the increasing demand for digital ownership, particularly within the domain of collectibles. They satisfy the demand for uniqueness and authenticity in the digital domain by enabling users to possess digital content as distinctive assets (Belk et al., 2022). The intended audience includes artists, collectors and investors. NFTs are based on blockchain technology, which offers security and transparency. Key features include uniqueness verification, marketplace trading and integration into virtual environments. This technology is disrupting the art and collectibles market by rendering traditional intermediaries obsolete. Its distinctive feature is the ability to connect the digital and physical worlds and create new sources of income.

The following Table 1-2 gives a summarizing overview of the technologies and also provides a glimpse of the focus in the respective research papers.

Table 1-2. *Overview of the technologies investigated.*

User Need/Goal	Target Group	Key Features	Technology	Focus of the Research Paper
RP1: Contact Tracing Applications				
Containment of COVID-19 through contact tracing	General population	Contact registration, notifications of potential infections	Bluetooth-based protocols	Privacy and governmental influence on adoption
RP2: Team Communication Platforms				
Efficient collaboration and communication in teams	Companies, project teams, remote workers	Real-time chat, video conferencing, file and screen sharing	Cloud infrastructures	Impact of technical implementation on stressors
RP3: Neo-Broker Applications				
Democratization of access to financial markets	Tech-savvy investors, young investors	Commission-free trading, real-time data, user-friendly interfaces	API-based financial platforms	Relationship between financial heuristics and adoption
RP4: Smart Stadium Technologies				
Enhancing the stadium experience	Sports fans, event attendees	Mobile ticketing, real-time statistics, personalized offers	IoT and cloud-based platforms	Contrasting facilitators and resistance
RP5: Real-Time Social Networks				
Promoting authenticity and spontaneity in social networks	Young, socially active users	Daily spontaneous postings, unfiltered content	Cloud infrastructures	Impact of adoption on well-being
RP6: NFT-Collectibles				
Uniqueness and authenticity in the digital space	Artists, collectors, investors	Verification, NFT trading, integration into virtual environments	Blockchain technology	Value creation of digital ownership

The remainder of chapter 1.3 will first present suitable theories and frameworks to finally map these technologies from different theoretical perspectives. Thereby, the frameworks first focus on the human view on the interaction before presenting the special conditions for disruptive technologies.

1.3.3 From Human-Computer Interaction to Human-App Interaction

The context of human-computer interaction (HCI) provides a robust concept for this work and offers profound insights into the dynamic relationship between users and digital interfaces, which is a crucial aspect when analyzing various mobile apps. The field of human-computer interaction is concerned with the design and optimization of the interaction between humans and digital systems (Kim, 2015). Since the 1980s, the objective of HCI has been to develop computer systems that are oriented towards the needs and expectations of users, with the aim of enabling intuitive operation.

Today, since mobile applications have become an integral aspect of everyday life, a distinct area within HCI has emerged as a significant field of study (Gurcan et al., 2021). The term “human-app interaction” is used to describe the relationship between humans and digital applications. As described above, mobile applications are defined as specialized software applications for mobile devices (Zhang & Adipat, 2005). They provide users with access to specific functions and services and serve as the primary interface for many of the technologies discussed in this thesis. The term “interaction” encompasses not only what users expect from technology but also how technology influences users (Kim, 2015). This dual relationship is particularly evident in the context of mobile applications. On the one hand, users have specific requirements and expectations of an app, such as user-friendliness, security and efficiency (RP1-6). On the other hand, apps influence user behavior (RP6), attitudes (RP3, RP4), and even their well-being (RP2, RP5). Human-app interaction can thus be defined as the design and optimization of all two-way interactions between a human and a mobile application, taking into account both the user's needs and the application's influence on the user.

Several core principles of HCI are directly applicable to human-app interaction and are essential to understanding how users interact with the technologies studied in this dissertation. One key principle is usability. Good usability ensures that users can achieve their goals quickly and effortlessly, without being hindered by technical obstacles or confusing

interfaces (Hoehle & Venkatesh, 2015). For interaction-intensive apps such as communication platforms (RP2) or healthcare apps (RP1), usability is particularly important to ensure efficient and positive interactions. By reducing complexity to the essentials, users can focus on the core functions of the app without unnecessary distractions.

When looking at the research papers, it emerges that for instance, users of neo-broker apps (RP3) have well-defined expectations, including an intuitive user interface and transparent security functions. It is anticipated that the application will facilitate access to the financial markets in a straightforward manner, without exposing users to intricate structures. Concurrently, these apps exert an influence on user behavior, notably through the substantial alteration of investment practices (Tan, 2021). By offering complex financial products via simple interfaces, they also render investing an attractive prospect for individuals with limited experience in finance. This alteration in behavior and its impact on financial decision-making exemplifies that the interaction between people and apps is a two-way process, in which both users and apps actively shape the other part.

An additional case is real-time social networks, such as BeReal (RP5), where users anticipate authenticity and spontaneity. The app challenges the conventional norms of self-expression on social media by encouraging users to share unplanned and genuine moments. While users bring their own expectations to a social experience, the app itself shapes their behavior by influencing social norms and practices. The spontaneity of unfiltered posts challenges users and reinforces the dynamic where social recognition is earned through authentic behavior (Maddox, 2023). This two-way interaction has a strong impact on users' self-perception and social awareness, demonstrating that apps are not just passive tools to achieve a task but actively influence their users.

Overall, the concept of human-app interaction is highly relevant to embedding the various focuses of the research performed. It highlights the importance of well-designed interactions for the adoption and use of disruptive technologies. The concept of interaction demonstrates that the causal relationship between the user and the app is bidirectional: The app is influenced by the users' requirements, e.g., regarding usability. Conversely, app usage also has consequences for the user, including privacy concerns (RP1, RP5, RP6), psychological stress (RP2), financial risk-taking (RP3), social integration (RP4), and well-being (RP5).

1.3.4 Disruptive Innovations

This chapter presents a theory that provides a framework for examining the nature of innovations and their disruptive effects. Thereby, it should highlight the necessity to investigate each technology in its individual environment of user needs, competition, and regulations. The disruptive innovation theory by Christensen (2015) evaluates the impact of new technologies on existing markets and suppliers. Although focusing on the market outcomes instead of the user, the theory will later help to classify the technologies and the respective research papers, while the focus on the user perspective will narrow in the following chapter 1.3.5.

Originally developed by Clayton Christensen in 1997, the Disruptive Innovation Theory describes how innovations can challenge and ultimately displace existing markets and business models (Christensen, 2015). This theory is particularly relevant to the analysis of disruptive technologies because it explains how and why seemingly stable market structures can be profoundly changed by innovation. Disruptive innovations often do not occur directly in the main market of incumbents but start in a niche or neglected market segment. These niche markets are often overlooked because they are not initially expected to be highly competitive and may serve only a smaller, less demanding segment.

The theory builds on Schumpeter's (1934, p. 66) pioneering definition of the innovation term. Accordingly, an innovation is “the introduction of new products, the implementation of new production methods, the opening of new markets, the conquest of new sources of supply, and the establishment of new organizational structures.” An innovation is then, according to Christensen, considered disruptive if it has two key characteristics: (1) It starts in an area that established market players consider insignificant, and (2) it initially appeals to less demanding or previously untapped customer groups. Disruptive technologies are often perceived as inferior in their early stages and are initially accepted only by early adopters.

The Disruptive Innovation Theory distinguishes two types of disruptive innovation: Low-end disruptions and new-market disruptions (Christensen, 2015). Low-end disruptions target customers who are satisfied with simpler, cheaper solutions, as in the case of neo-broker simplifying investment deals (RP3). New-market disruptions create entirely new markets by attracting new customer groups and expanding market boundaries, e.g., NFTs transferring the art industry towards the digital realm (RP6). This distinction is important because

it shows that disruptive innovations not only serve existing customer needs but can also reach a broader audience. The key characteristic of a disruptive innovation is its potential to displace traditional providers over time and radically change the market structure. Meanwhile, disruptive technologies not only challenge existing offerings, but also enable new behaviors and experiences for users.

The Disruptive Innovation Theory offers a preparatory framework before the next chapters focus on its consequences for users. It highlights how even small nuances can differentiate a disruptive innovation from existing products. For instance, features like the time-limited posting window on real-time social networks (RP5) illustrate how subtle design choices can redefine user behavior and reshape market dynamics. This underscores the importance of investigating specific usage factors and their implications, as these insights provide valuable guidance for understanding and optimizing technology adoption and its consequences.

1.3.5 Technology Acceptance

Within human-app interaction, the acceptance of new technologies and the corresponding impact on the users are critical factors in the success of disruptive innovations. These fields also cover research questions from all six research papers and therefore build a robust foundation for the dissertation.

Technology acceptance refers to the process through which individuals or organizations adopt, utilize, and integrate a new technology into their daily lives or work processes (Rogers, 1962). The Technology Acceptance Model (TAM) proposed by Davis et al. (1989) provides a foundational theory to explain technology acceptance. Central to this pioneering model are perceived usefulness and perceived ease of use. The research papers in this dissertation confirm that perceived usefulness is the strongest driver of acceptance (RP1–6). The TAM was later expanded by the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al. (2003), which incorporates additional factors such as social influence. UTAUT plays a pivotal role in the technologies analyzed in this dissertation, bridging organizational technologies like team communication platforms or contact tracing apps (UTAUT1) and leisure-oriented technologies like real-time social networks or neo-broker apps (UTAUT2). Leisure technologies emphasize hedonic motivations, such as fun and enjoyment, which are explicitly integrated into UTAUT2 (Venkatesh et al., 2012).

Ethics and data privacy are additional crucial factors influencing the acceptance and engagement with disruptive technologies (Dinev et al., 2015). These issues are especially significant in technologies that process sensitive data, such as social media or contact tracing apps. The research papers highlight that users are increasingly concerned about how their data is collected, processed, and protected. Transparency and robust privacy measures are essential to building trust and overcoming barriers to adoption (Gu et al., 2017). However, ethical considerations are not only barriers; they also represent opportunities. Technologies that visibly adhere to high ethical standards can distinguish themselves from competitors and foster stronger engagement (Morey et al., 2015).

The six research papers explore not only the usage and acceptance of technologies but also their impacts on users and their responses to using these technologies. Such responses may involve cognitive (RP3), emotional (RP1, RP4) or health-related effects (RP2, RP5) and culminate in conative actions (RP6). The Self-Determination Theory (SDT) by Ryan and Deci (2000) offers valuable insights into this phenomenon. It posits that technologies should support users' psychological needs for autonomy, competence, and social relatedness to drive high levels of engagement. Real-time social networks (RP5) exemplify this, as these apps focus on fostering social authenticity and spontaneity, enhancing both user well-being and loyalty to the platform.

The interplay between technology acceptance and its consequences illustrates how psychological, social, and ethical factors are vital for the success of disruptive innovations. The research papers demonstrate how a user-centered perspective can help overcome acceptance barriers (RP4), foster positive outcomes (RP5), and mitigate negative effects such as technostress (RP2).

1.3.6 Mapping the Technologies within the Frameworks Selected

This chapter presents a categorization of the technologies discussed in the research papers in accordance with the overarching theoretical theories and concepts presented in chapters 1.3.3 to 1.3.5. For apps, the perception of innovations can be characterized in two different ways: firstly, as a ground-breaking technological advance; and secondly, as an innovative new arrangement of the user interface, which is designed with functionality in mind. While technological innovations frequently result in the transformation of existing systems, enhanced user experience, such as a more intuitive interface, can facilitate the expansion of

target groups or diffusion groups (Christensen, 2015). Both categories are closely linked to the adoption processes and assist in the categorization of innovations. Furthermore, the theory differentiates between low-end disruption, in which existing markets are challenged by simpler and cheaper solutions for existing target groups, and new-market disruption, in which entirely new markets and target groups are created that were previously unaddressed (Christensen, 2015). This distinction enables the precise characterization of the market changes initiated by the technologies under examination.

The advent of **contact tracing apps** (RP1) for the novel coronavirus has marked a significant innovation in the field of epidemiology. These digital tools offer a novel, scalable solution to the challenge of contact tracing, representing a departure from the traditional, manual methods that have been employed for decades (Robert Koch Institute, 2025). They represent a low-end disruption, replacing traditional, manual processes with a digital and cost-effective alternative.

Team communication platforms (RP2) are innovative in multiple ways. Firstly, they are highly user-friendly and seamlessly integrate into existing work environments. Secondly, they are a disruptive force in the field of communication, replacing traditional methods, such as email, phone calls, and file sharing. They facilitate real-time communication and enhance productivity, which ultimately alters traditional working structures (Zhang et al., 2019). Team communication platforms exemplify a new-market disruption, as they introduce novel approaches to work and address the needs of decentralized teams that were previously overlooked.

The advent of the so-called **neo-broker apps** (RP3) has brought about a significant shift in retail investment by enhancing the participation of a wider range of actors in the financial ecosystem, e.g., young, technology-savvy users. Neo-Brokers are already disrupting the traditional financial services industry, including established institutions such as banks and brokers. Thereby, they fulfil requirements for low-end disruptions (focus on few online banking functionalities), and new-market disruptions (opening a market for cost-saving trading) alike.

Smart stadium technologies (RP4) are innovative by integrating digital and physical experiences during live mass events like professional sport matches. Their strength lies in their adaptability to different user scenarios, for example through mobile ticketing or real-

time statistics (Sjöblom et al., 2020). They are disruptive because they revolutionize traditional event experiences and set new standards in fan interaction. These technologies may be considered a new market disruption, as they set new standards beyond pure sport consumption and thereby unlock new fan types.

The innovation of **real-time social networks**, such as the example “BeReal” from RP5, lies in its compatibility with users who are seeking authentic interactions, while the relative advantage can be seen in the move away from self-promotion. The app is a disruptive force in the social media landscape, challenging established concepts and norms and introducing new forms of social interaction (Maddox, 2023). Accordingly, BeReal represents a new market disruption, establishing novel social norms and transforming the self-presentation culture on social media.

Lastly, the advent of **NFT-based collectibles** (RP6) represents a radical innovation, as they transfer the concept of ownership to digital goods and secure it using blockchain technology (Belk et al., 2022). Users can clearly track their digital assets with guaranteed uniqueness. Their influence on the art and collectors' market is disruptive, as traditional players such as auction houses are bypassed and completely new market segments are created. NFTs create a completely new market and transform traditional art and collector models.

Figure 1-3 summarizes the technologies' classification. The y-axis classifies between the Disruptive Innovations Theory's disruption types (mentioned above). The x-axis differentiates in terms of the innovation origin. Here, the forms can be infrastructural, where a new underlying technology represents innovation, and new forms of presenting existing technologies in new interfaces.

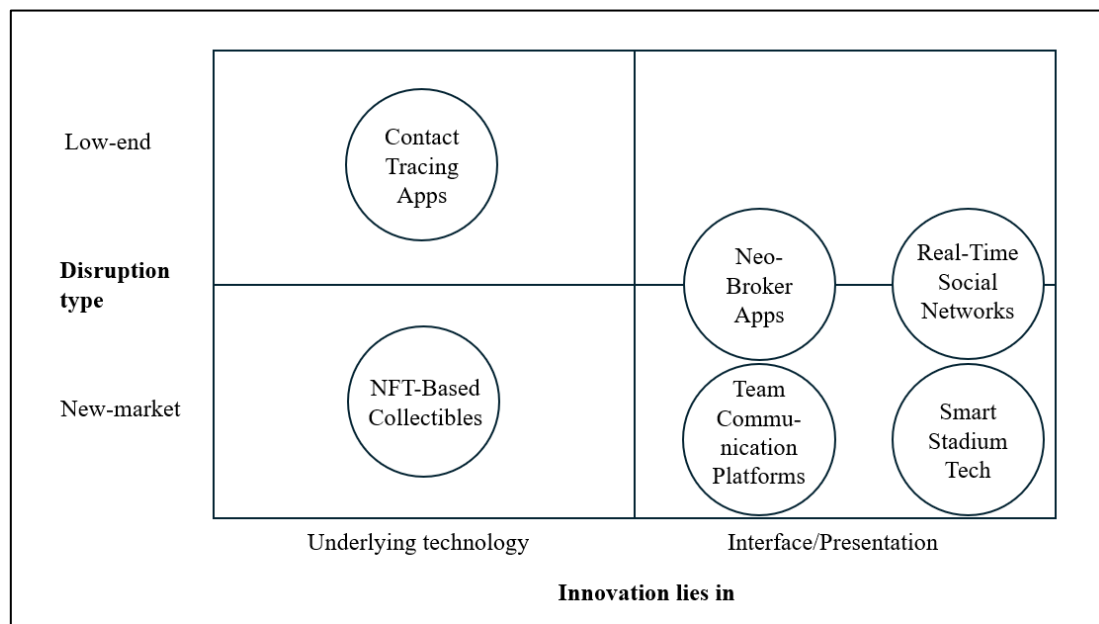


Figure 1-3. *Classification of technologies' disruptive characteristics (own illustration).*

The classification of technologies on the basis of theoretical models of technology acceptance research requires the selection of suitable characteristics that reflect both the innovation and usage aspects. According to the UTAUT and the TAM, important criteria could include the **focus on individual or socially integrative use** of technology (Davis et al., 1989). Another potential characteristic is **privacy intrusion**, as privacy concerns have increasingly been identified as a key factor (Gu et al., 2017). The **type of involvement**, i.e. whether a technology is used for fun or to fulfil a task, can also be used as a characteristic (Venkatesh et al., 2012). This concept can be found in particular in the differentiation between UTAUT1 and UTAUT2. They allow a classification along rational (e.g. productivity-oriented) and emotional (e.g. hedonistic) motivations, which is particularly useful when analyzing work (UTAUT1) and leisure technologies (UTAUT2). Based on these considerations, the technologies are finally classified within these overarching characteristics: social orientation, privacy intervention, and involvement.

The efficacy of **contact tracing apps** for the COVID-19 pandemic is contingent upon the extent of their utilization within a given community. The degree of privacy is considered severe, as the processing of sensitive data such as contact histories is undertaken (Ferretti et al., 2020). The involvement of users is characterized by a high level of emotional engagement, as the app addresses fears and concerns related to the pandemic. In contrast, **team communication platforms** have a moderate impact on privacy, as they are primarily utilized for the processing of work-related data. The act of interaction is inherently social,

as these platforms facilitate collaboration within teams (Zhang et al., 2019). The motivation for involvement is predominantly rational, driven by the desire for efficiency and productivity (Stich et al., 2018). **Neo-broker apps** integrate individual interactions with a high level of privacy, as they gather financial and behavioral data. The involvement of users in this context is multifaceted. While they respond rationally to the opportunity to reduce costs, they also do so emotionally, driven by the excitement of investing (Tan, 2021). **Smart stadium technologies** integrate individual and social interactions, facilitating the personal experience of a fan within a community. The degree of privacy intrusion is rather moderate but depends on the concrete implementation, as user data is primarily collected for personalization (Horbel et al., 2021). Involvement is predominantly emotional, as these experiences evoke a profound emotional response. **Real-time social networks** are strongly oriented toward social interactions, as they encourage sharing of genuine experiences. The level of privacy is high, as users expose personal insights. Involvement is emotional, as it is about spontaneous and authentic social interaction with friends (Maddox, 2023). **NFT-based collectibles** facilitate individual purchasing and trading digital assets. Privacy intrusion is minimal, as blockchain technology offers robust security (Belk et al., 2022). Involvement is multifaceted, as rational investment decisions are combined with emotional engagement in art and collectibles.

Figure 1-4 comprises the classification of the technologies within the chosen engagement factors.

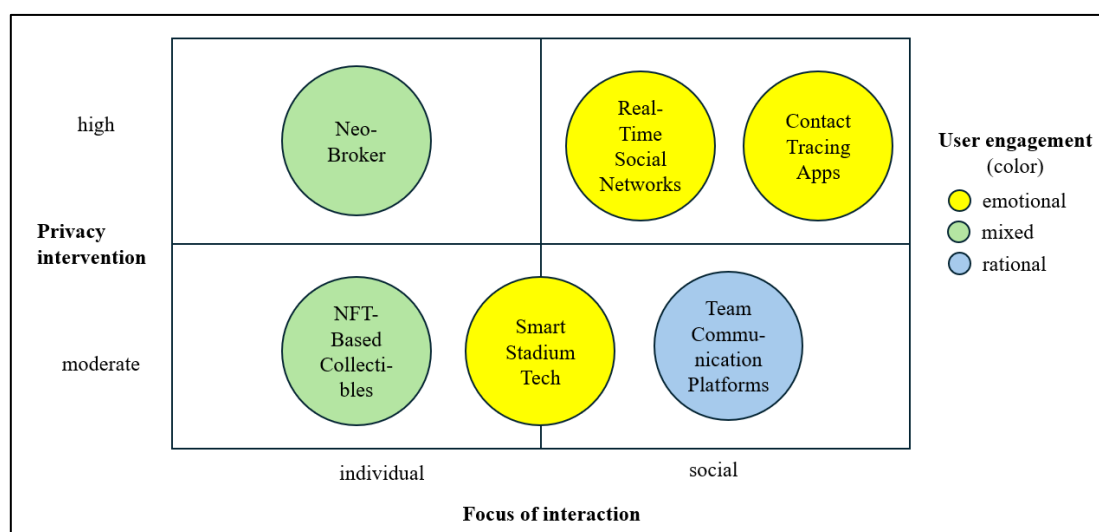


Figure 1-4. Mapping technologies based on privacy intervention, interaction focus, and user engagement (own illustration).

In summary, this chapter provides a comprehensive overview of the central technologies addressed in this thesis, situating them within the relevant theoretical frameworks. This foundation enables a systematic analysis of both the acceptance and effects of the technologies. The theoretical classifications and technological features highlight the relevance of each innovation under consideration for different areas of application.

1.4 Methodology

This dissertation follows a cumulative approach based on six independent studies. This enables a differentiated examination of disruptive technologies from different perspectives, resulting in a broader understanding of their acceptance and impact. The advantage of this design lies in the diversity of methods and contexts, which enables robust, cross-theoretical validation. It also allows to analyze different user groups in a targeted manner. All six studies in this dissertation have been published in internationally recognized outlets and have undergone rigorous, double-blind, anonymous peer review processes. Through extensive revisions, they have been published in journals and conference proceedings that are highly recognized in academic rankings (see Table 1-3). This quality assurance ensures the scientific relevance and methodological rigor of the results, making the dissertation a substantive contribution to research in the field of acceptance and use of disruptive technologies.

Within the single research papers, comprehensive data collection and statistical analysis lay the base to investigate the usage factors and their associated effects. The data were collected via online surveys using convenience sampling. Here, particular emphasis was placed on specifically reaching the respective target groups associated with the technologies under investigation. The questionnaires employed standardized Likert scales based on established and validated scales, mostly with 7-point gradation due to its wide application and legitimation (Finstad, 2010; J. C. Nunnally, 1978). Specific questions were posed for each technology, based on the theoretical foundations of the work, such as the TAM/UTAUT.

Table 1-3. Overview of research papers and outlets.

Paper number and short title <i>Outlet of publication</i>	Published	VHB	ABDC
(1) Acceptance of COVID-19 Tracing Apps <i>International Conference on Information Systems 2021</i>	Yes	A	-
(2) Technostress from Team Communication Tools <i>Management Revue Socio-Economic Studies</i>	Yes	C	-
(3) Acceptance of Neo-Broker Apps <i>International Journal of Innovation and Technology Management</i>	Yes	C	-
(4) Resistance and Acceptance of Smart Stadium Technologies <i>Hawaii International Conference on System Sciences 2025</i>	Yes	B	-
(5) Well-Being and Use of BeReal <i>International Journal of Innovation and Technology Management</i>	Yes	C	-
(6) Purchase Drivers of NFT Collectibles <i>Journal of Consumer Behaviour</i>	Yes	B	A

Note. VHB = “Verband der Hochschullehrerinnen und Hochschullehrer für Betriebswirtschaft e.V.” Publication Media Rating 2024; ABDC = Australian Business Deans Council (ABDC) Journal Quality List 2022.

The statistical analysis of the data was based on structural equation modeling (SEM). It was chosen for its ability to test complex theoretical models involving multiple interrelated variables simultaneously (Hair et al., 2019). Unlike traditional regression, SEM accommodates latent constructs, captures indirect effects, and integrates mediation and moderation. This makes it ideal for examining nuanced relationships in technology adoption, user behavior, and engagement across diverse disruptive innovations. In line with the overall research question, SEM is able to compute correlations on multiple layers at the same time, facilitating calculations of requirements towards technologies and their effects on the user in the same analysis.

SEM encompasses two fundamental approaches: covariance-based (CB) SEM and partial least squares (PLS)-based modeling. The objective of CB-SEM is to achieve the greatest possible fit between the observed data and the hypothesized model (Byrne, 2010). This method is particularly well-suited to theory-based models where data quality and sample size are high. This approach enables the precise estimation of model parameters and the evaluation of fit indices. Consequently, CB-SEM is an appropriate methodology for models

with a robust theoretical foundation, wherein precise causal relationships are to be tested (Hu & Bentler, 1999). In this dissertation, the CB-SEM approach was used to calculate the results of RP1, RP3, and RP6. Here SPSS AMOS software was utilized since the data quality and theoretical foundation necessitated an exact model fit.

In contrast, PLS-based modeling is better suited for predictive accuracy and is less reliant on distribution assumptions and sample size (Sarstedt et al., 2021). This approach is particularly well-suited to exploratory analyses or when the model incorporates latent variables with multiple indicators, yet the quality of the data is constrained. PLS is designed to maximize the explained variance (R^2). The PLS approach was conducted in RP2, RP4, and RP5 with SmartPLS for exploratory inquiries in order to achieve robust results.

The decision for either AMOS or SmartPLS was based on the degree of theoretical anchoring. AMOS was applied to confirmatory models closely aligned with established theories, while SmartPLS was preferred for more inductively developed models. In addition, SmartPLS provided enhanced usability for estimating moderation effects, which are more complex to compute in AMOS (Hair et al., 2011; Rigdon, 2016).

1.5 Discussion

1.5.1 Summary of the Results

This dissertation investigated the central research question of which factors influence the acceptance of disruptive technologies and what effects their use exerts on users. Based on a theoretical framework model that integrates functional, hedonic and psychological influencing factors, the results of the six studies provide a differentiated answer to this question. Regarding the requirements, the acceptance of disruptive technologies is shaped by a complex interplay of functional, hedonic, and psychological factors. On the outcome side, the impact of these technologies on users can be observed to encompass positive effects such as enhanced well-being (RP5) as well as negative consequences such as technostress (RP2) and financial risks (RP3).

The analysis demonstrates that traditional acceptance factors, such as perceived usefulness and ease of use, play a pivotal role in disruptive technologies. However, these factors must be complemented by context-specific elements to elucidate the distinctive characteristics of novel technologies (Venkatesh et al., 2016). For instance, neo-broker apps illustrate how

overconfidence, as a psychological factor, has a positive influence on acceptance (RP3). Another significant factor is privacy concerns: Contact tracing apps (RP1) and social media platforms (RP5) illustrate the importance of transparency regarding data usage. In the case of NFT collectibles (RP6), in particular, transparency through blockchain technology has resulted in a notable increase in acceptance, as users value the security and traceability of their transactions. RP2 shows that the ability to mentally detach from work serves as a buffer against stressors from digital communication, supporting sustainable platform use. RP4 highlights that fan identity can increase resistance to innovations.

The findings also demonstrate the beneficial consequences of disruptive technologies. First, usefulness factors were confirmed as strong acceptance factors among all studies. This result underlines how disruptive technologies, in fact, facilitate and improve processes from the user perspective, such as: infection tracing (RP1), team communication (RP2), access to financial markets (RP3), live event experiences (RP4), authentic digital connections (RP5), and digital ownership clarity (RP6). Another recurring theme is the combination of rational and fun elements, leading to a playful exploration of new subject areas. These results illustrate that consumer technologies that are enjoyable to use can also successfully make previously uninteresting areas such as financial investments (RP3) or digital collections attractive (RP6) (Hofacker et al., 2016).

While disruptive technologies offer numerous benefits, they also contribute to broader societal challenges, such as digital fatigue, burnout, and financial stress. Team communication platforms exemplify how constant availability, frequent interruptions, and the blurring of work-life boundaries lead to technostress. This mirrors trends in remote work, where digital tools intended to enhance productivity often lead to overextension and diminished mental well-being (Tarafdar et al., 2010). In the financial domain, neo-broker apps pose potential risks of overuse, where gamified interfaces and ease of access may lead to impulsive investment decisions or excessive risk-taking (Tan, 2021). Driven by psychological biases, users might overestimate their financial competence, resulting in monetary losses. These challenges highlight the importance of responsible technology design, which will be concretized in the following chapter.

1.5.2 Implications for Theory and Practice

The findings of the six research papers and this overall synopsis contribute to the theoretical development of established models like the TAM and UTAUT. Before aggregating the results, Table 1-4 summarizes the implications of the individual studies.

Table 1-4. *Summary of the theoretical and practical implications.*

RP	Theoretical Implications	Practical Implications
(1) Contact Tracing Apps	Expands UTAUT by integrating trust, privacy concerns, and anxiety as acceptance factors during crises	Highlights the need for transparency and trust-building mechanisms in public health apps
(2) Team Communication Platforms	Introduces stress-related constructs (e.g., technostress) into technology adoption models, extending it with negative outcome considerations	Suggests implementing stress-reducing features like notification management to enhance usability and reduce burnout
(3) Neo-Broker Apps	Extends UTAUT2 by incorporating financial psychology constructs, such as overconfidence and risk appetite, into technology acceptance	Recommends user education tools to mitigate financial risks and enhance trust, alongside gamification features to maintain engagement
(4) Smart Stadium Technologies	Combines TAM with Innovation Resistance Theory, highlighting the balance between hedonic motivations and resistance to distractions	Suggests user-friendly, engaging features to enhance adoption without detracting from the live experience
(5) Real-Time Social Networks	Integrates Self-Determination Theory into UTAUT2, emphasizing authenticity and spontaneity as unique motivators for social technology use	Encourages developers to design features that foster authentic user interactions and minimize pressure for constant online presence
(6) NFT-based Collectibles	Uses the SOR model to identify emotional and functional drivers of digital ownership, extending understanding of digital value perception	Recommends leveraging blockchain for transparency and developing engaging marketplaces to attract collectors, while addressing accessibility for non-technical users

Across the research papers, the dissertation demonstrates that traditional acceptance determinants, such as perceived usefulness and ease of use, remain significant. However, the studies emphasize the importance of context-specific factors:

1. Psychological traits (RP3, RP5): Overconfidence significantly influences the adoption of neo-broker apps (RP3), extending UTAUT2 by showing how cognitive biases interact with ease of use and enjoyment (Turel & Qahri-Saremi, 2016). Other examples include anxiety (RP1), fan identification (RP4), and FOMO (RP5).

2. Hedonic motivations (RP3, RP4, RP6): Technologies like neo-broker apps, smart stadium solutions, and NFT collectibles highlight the role of enjoyment and aesthetic appeal in driving adoption, particularly for leisure-focused platforms (van der Heijden, 2004).
3. Social influences (RP1, RP4, RP5): In social media, real-time social networks (RP5) demonstrate how social connectedness and FOMO extend TAM by introducing emotional and relational drivers of adoption (Przybylski et al., 2013). For smart stadium technology, it was demonstrated that usage impact the social perception of live events differ across different fan groups.
4. Privacy and trust (RP1, RP5, RP6): Trust emerged as a critical factor for COVID-19 contact tracing apps and NFTs, reinforcing the need to expand existing models with trust and transparency mechanisms to better capture adoption barriers for sensitive technologies (Morey et al., 2015).

The dissertation also integrates behavioral outcomes – both positive and negative – into technology acceptance research. The findings incorporate user well-being (RP5), technostress (RP2), financial risks (RP3), social pressure (RP4), and fear (RP1) contributing to a holistic understanding of the consequences of disruptive technologies. Models like the Stimulus-Organism-Response (SOR) framework (RP6) demonstrate how technologies influence emotional and behavioral responses, offering a theoretical bridge between acceptance and usage consequences. Overall, these advancements demonstrate the value of enriching established models with behavioral and psychological constructs, offering a more nuanced understanding of user interaction with disruptive technologies and paving the way for tailored, context-aware applications.

Referring to the dissertations structure from externally demanded to voluntary usage, the acceptance of mandatory technologies (RP1, RP2) is largely driven by perceived usefulness and institutional trust, reflecting compliance-oriented engagement shaped by external pressures. As the focus shifts to semi-voluntary technologies like neo-broker apps (RP3) and smart stadium solutions (RP4), psychological traits (e.g., overconfidence) and emotional attachment (e.g., fan identity) gain importance, bridging utilitarian and hedonic motives. Fully voluntary technologies (RP5, RP6) are predominantly influenced by intrinsic motivations, such as authenticity, well-being, and perceived digital value, illustrating a clear move toward emotionally driven, self-determined technology acceptance.

Regarding practice, the individual results of the research papers, can be aggregated towards overall implications for developers, policymakers, and businesses aiming for acceptance and minimizing negative impacts:

1. Enhancing user-centered design: Developers must focus on balancing functionality and usability. The aim of an app should be clearly reflected in its features and interface, ensuring alignment with user expectations and the technology's purpose (Kivijärvi & Pärnänen, 2023). This alignment must be supported by clear communication, particularly for technologies whose benefits may be questioned (Beldad et al., 2010). For instance, smart stadium technologies (RP4) should emphasize seamless navigation, personalized offers, and real-time information to enhance the fan experience while communicating these benefits transparently to avoid perceptions of unnecessary complexity or distraction.
2. Transparency and trust-building: Privacy and trust are critical, especially in governmental, health and finance contexts. Contact tracing apps (RP1) and NFT platforms (RP6) emphasize the importance of clear communication regarding data use, robust security protocols, and transparency dashboards (Abeler et al., 2020). Making these features visible can alleviate user concerns and foster trust, particularly in technologies that handle sensitive data.
3. Leveraging hedonic motivations: Integrating enjoyment into traditionally utilitarian contexts, such as neo-brokers (RP3) and NFT collectibles (RP6), can attract new user groups and improve engagement (Hofacker et al., 2016). Gamification, aesthetic design, and personalization options offer powerful tools to align with user preferences (Bitrián et al., 2021). However, a balanced approach is recommended, so the innovation does not overshadow original enjoyment, as it is the case for smart stadium technologies (RP4)
4. Addressing negative outcomes: Policymakers and organizations must proactively mitigate potential downsides of disruptive technologies. For example, neo-broker apps (RP3) should incorporate safeguards against overconfidence, such as educational tools or personalized investment warnings (Fernandes et al., 2014).

In conclusion, this dissertation identifies that technology acceptance is context-specific and determined by a combination of utilitarian benefits, hedonic motivations, and psychological or societal factors. Concurrently, the impact of these technologies exhibits a duality:

while they can enhance user well-being and engagement, they also present challenges such as stress, financial risks, and privacy concerns. These findings offer a nuanced understanding that is crucial for both academic and practical contexts, underscoring the necessity of developing technologies that align with user needs while mitigating potential adverse effects.

1.5.3 Limitations and Further Research

Interpreting the results, it is important to consider that this dissertation is not free of limitations. First, the use of convenience sampling may not be representative of the target population. For instance, the investigation of neo-broker apps predominantly surveyed younger users with an affinity for technology, which could restrict the generalizability of the findings to other user groups. Generally, convenience sampling is particularly likely to engage participants who already demonstrate a certain level of initiative (Etikan et al., 2016). Conversely, it can be argued that these participants' assessments should be accorded significant weight, as they offer an intrinsic expression of their opinion on the topic. A further limitation is the use of self-reported data, which may be subject to social desirability bias or inaccurate self-perception on the part of the participants (Krumpal, 2013). A supplementary analysis of objective usage data, such as log data or app interactions, could serve to mitigate these biases and enhance validity. Additionally, the dissertation was constrained to quantitative analyses, which impedes the acquisition of profound insights into the individual motivations and impediments of users. For instance, in the context of team communication platforms, a qualitative analysis, such as interviews of focus groups from different company roles, could offer deeper insights into challenges and emotional responses (Plano Clark, 2017). Consequently, a synthesis of qualitative and quantitative methodologies could provide a more comprehensive perspective.

A promising avenue for future research is the examination of migration patterns between classic and disruptive technologies. This may be a complete switch from one technology to another, or it may be parallel use of both technologies (Jeong et al. 2024). The passage of time is of central importance in this context, as users initially explore new platforms before potentially migrating entirely. One illustrative example from the dissertation is neo-brokers (RP3), demonstrating that while users continue to utilize traditional banking institutions, the simplicity of use and cost-effectiveness of the mobile apps result in parallel usage.

Within this evolving research landscape, the dissertation provides a solid foundation for further exploring the complex interplay between technologies, user behavior, and (societal) impact. By integrating theoretical advancements with practical insights, it offers valuable guidance for ethically responsible and user-centered innovation while inspiring researchers to pursue this path onwards.

2 **Research Paper 1: COVID-19 Infection Tracing with Mobile Apps: Acceptance and Privacy Concerns**

Authors: Fortagne, Marius Arved; Reith, Riccardo; Diel, Sören; Buck, Christoph; Lis, Bettina; Eymann, Thorsten

Published in: Proceedings of the 42nd International Conference on Information Systems (ICIS) 2021, Research Paper no. 10. Austin, USA.

Extended abstract:

The rapid spread of COVID-19 led governments worldwide to adopt digital solutions to contain the pandemic. Among these, mobile Contact Tracing Applications (CTA) were introduced as a key measure to track potential infections and warn exposed individuals. However, their success largely depends on public adoption, which is influenced by concerns related to privacy, trust in governmental institutions, and the perceived effectiveness of the technology. This study aims to identify the key factors that determine individuals' intention to use a CTA in Germany during the pandemic.

To provide a comprehensive explanation, the research model integrates the Unified Theory of Acceptance and Use of Technology (UTAUT) with privacy-related and psychological theories. While UTAUT identifies performance expectancy, effort expectancy, and social influence as core drivers of technology adoption, the Antecedent-Privacy Concerns-Outcomes (APCO) model highlights the role of trust in mitigating privacy concerns. Additionally, the Extended Parallel Processing Model (EPPM) suggests that anxiety can drive protective behaviors, making it particularly relevant in the context of a health crisis.

To test the proposed model, an online survey was conducted, collecting responses from 656 participants of diverse age groups, genders, and educational backgrounds. Covariance-based Structural Equation Modeling (CB-SEM) using SPSS Amos 25 was applied to assess the relationships between the constructs.

The findings reveal several key insights. Performance expectancy emerged as the strongest predictor of CTA adoption, demonstrating that individuals are more likely to install and use the app if they believe it effectively prevents the virus spread. Effort expectancy and social influence also showed significant positive effects, suggesting that ease of use and encouragement from peers contribute to acceptance. However, privacy concerns had a

strong negative impact on adoption, underlining that data security remains a major barrier. The results further indicate that trust in the government significantly reduces privacy concerns, emphasizing the importance of institutional credibility in fostering acceptance. Additionally, anxiety showed a small positive effect, indicating that fear of infection may slightly increase willingness to adopt the app. The mediation analysis confirmed that trust indirectly influences adoption through its effect on privacy concerns.

This study provides important contributions to theory and practice. From a theoretical standpoint, it extends the UTAUT model by incorporating privacy concerns and emotional factors, offering a more holistic understanding of CTA adoption. Additionally, it confirms that trust acts as an antecedent for privacy concerns, contributing to ongoing discussions in privacy research. From a practical perspective, the results offer actionable recommendations for policymakers and developers. Emphasizing the effectiveness of CTAs in communication campaigns, simplifying usability to reach broader demographics, and leveraging social influence through peer recommendations could increase adoption rates. Moreover, building trust through transparent governmental communication and proactively addressing privacy concerns are crucial for improving public confidence in digital health technologies.

Statement of Authorship: Marius Fortagne led and administered the project, contributed to the conceptualization of the research model, conducted data collection and statistical computing, and was primarily responsible for writing and revising the manuscript. Riccardo Reith developed the initial idea and contributed to the model conceptualization. Sören Diel supported the conceptualization, data collection, writing, and revision. Christoph Buck, Bettina Lis, and Thorsten Eymann provided valuable supervision throughout the research process, offering guidance and critical feedback on the manuscript.

3 **Research Paper 2: Technology-Induced Strain from Team Communication Platforms: Empirical Evidence for Working from Home**

Authors: Fortagne, Marius Arved; Stichnoth, Kaj-Johanna; Lis, Bettina

Published in: *mrev management revue Socio-Economic Studies*, 35(3), 300-327.

Extended abstract:

Technology-induced stress has become an increasingly relevant issue in modern work environments, especially with the rise of remote work. The shift towards working from home (WFH), accelerated by the COVID-19 pandemic, has led to an intensified reliance on team communication platforms (TCP) such as Microsoft Teams or Slack. While these tools facilitate collaboration, they also introduce new stressors, including constant availability and interruptions, which may negatively impact employees' well-being. This study investigates how TCP characteristics influence work-related stressors and, ultimately, perceived strain among remote workers.

Grounded in the Transaction-Based Stress Model by Lazarus and Folkman (1984) and extended through the technostress framework by Ayyagari et al. (2011), this research proposes a conceptual model linking TCP features (mobility, interruption, and usefulness) to key stressors in WFH settings: work-home conflict, work overload, and role ambiguity. The study further examines whether an individual's ability to mentally detach from work moderates the impact of these stressors on perceived strain.

To validate the proposed model, an online survey was conducted among 503 employees from various industries, all of whom regularly used TCP while working remotely. The collected data was analyzed using structural equation modeling (SEM), specifically the partial least squares (PLS-SEM) approach, which is very suitable for testing complex relationships between latent variables. Results confirm that perceived mobility and interruption significantly increase work-home conflict and work overload, while interruption also contributes to role ambiguity. In contrast, TCP usefulness slightly mitigates work overload. All three stressors were found to significantly enhance perceived strain, with work overload showing the strongest effect. Interestingly, mental detachment was found to only buffer the impact of role ambiguity, while its moderating effect on work-home conflict and work overload was not supported.

This study contributes to theory by refining the understanding of how TCP-induced technostress manifests in WFH contexts. It extends prior research by highlighting the specific mechanisms through which digital communication tools shape employee well-being. From a practical perspective, organizations should reconsider how they implement TCP to minimize strain, for example, by setting clearer boundaries for availability and offering training on efficient platform usage. Moreover, promoting psychological detachment strategies could help mitigate some of the negative consequences associated with digital work environments.

Statement of Authorship: Marius Fortagne led and administered the project, contributed to the conceptualization of the research model, conducted statistical computing, and was responsible for writing and revising the manuscript. Kaj-Johanna Stichnoth came up with the idea, supported the conceptualization of the research model and conducted the data collection. Bettina Lis provided supervision throughout the project, offering valuable guidance and constructive feedback that significantly improved the quality of the research and the manuscript.

4 **Research Paper 3: Technology Acceptance of Neo-Broker Applications – an Empirical Investigation**

Authors: Fortagne, Marius Arved; Reith, Riccardo; Nguyen, Khanh; Lis, Bettina

Published in: International Journal of Innovation and Technology Management, 20 (5), Article 2350029.

Extended abstract:

Neo-broker applications (NBAs) are changing how people invest, by offering simple and mobile access to financial markets. In contrast to traditional brokers, they use gamification and low-cost trading to make investing more attractive for a broader audience. Although NBAs are growing in popularity, there is still little research on what drives people to use them. This study aims to find out which factors influence individuals' intention to adopt NBAs, combining technology acceptance and behavioral finance approaches. The research model is based on UTAUT2 (Venkatesh et al., 2012) and extended with finance-related variables. On the technology side, we included performance expectancy, price value, habit, and hedonic motivation. From the behavioral finance perspective, we added overconfidence, risk aversion, subjective investment knowledge, and initial trust.

We collected data through an online survey with 653 participants, all with financial interest or prior investment experience. The analysis was done with CB-SEM using SPSS AMOS 25. This method is very suitable to analyze relationships between many variables. The results show that performance expectancy is the most important driver of NBA use, followed by price value and hedonic motivation. These findings suggest that people value efficient and fun investment tools with low costs. Habit and initial trust also have a positive effect. Overconfidence plays a mediating role, and is influenced by risk aversion and self-assessed investment knowledge.

The study contributes to theory by showing how financial behavior and technology acceptance are connected. NBAs are sometimes used like entertainment apps, and overconfidence can partly explain why users engage with them. From a practical point of view, providers and regulators should take care that platforms are transparent and offer basic education. Also, gamification should be used in a responsible way, so that investors make informed decisions.

Statement of Authorship: Marius Fortagne developed the initial idea, led and administered the project, contributed to the conceptualization of the research model, collected the data, conducted statistical computing, and was responsible for writing and revising the manuscript. Riccardo Reith and Khanh Nguyen supported the conceptualization of the research model. Bettina Lis provided supervision, offering strategic input and thoughtful critique that contributed meaningfully to the development and refinement of the research.

5 **Research Paper 4: Navigating Fan Reactions: The Role of Innovation Resistance and Acceptance in Smart Stadium Technology Use**

Authors: Anderski, Matthias; Fortagne, Marius Arved; Kapfer, Kevin; Lis, Bettina; Ströbel, Tim

Published in: Proceedings of the 58th Hawaii International Conference on System Sciences 2025, 4313-4322.

Extended abstract:

Smart Stadium Technologies (SST) are transforming the live sports experience by integrating digital services that enhance fan engagement. As streaming services and second-screen entertainment continue to attract sports audiences, stadium operators must innovate to maintain their competitive edge. However, the adoption of SST faces both drivers and barriers, as not all fans welcome digital enhancements. While previous research has explored the technological aspects of smart stadiums, a comprehensive, quantitative understanding of factors influencing SST acceptance and resistance in a sports context remains limited.

This study aims to identify the key drivers and barriers influencing fans' intention to use SST by integrating the Technology Acceptance Model (TAM) and Innovation Resistance Theory (IRT), while also considering the moderating role of fan identification. While the TAM suggests that perceived usefulness, ease of use, and hedonic value shape technology acceptance, IRT highlights the factors that hinder adoption, such as perceived distraction, social risks, and security concerns. Fan identification is included as a moderating variable, as highly committed fans might react differently to SST than more casual spectators.

To test the proposed research model empirically, an online survey was conducted with 504 sports fans, recruited through a newsletter of a professional ice hockey and basketball team in Germany. The data was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), allowing for a detailed examination of causal relationships between latent variables. The results confirm that perceived usefulness, ease of use, and hedonic value significantly enhance SST adoption, while distraction and social risks serve as resistance factors. Contrary to expectations, security concerns did not show a significant impact. Additionally, fan identification was found to moderate the effects, weakening the impact of hedonic value on SST adoption and strengthening the influence of social risks.

This study contributes to both theory and practice by providing empirical evidence on the dual role of acceptance and resistance factors in SST adoption. It extends existing research by integrating theories from technology acceptance and sports fandom, offering a holistic perspective on the digital innovations in stadiums. For practitioners, the findings highlight the importance of designing SST that align with different fan profiles, ensuring that digital enhancements complement rather than compete with the live event experience. The study also suggests that targeted communication strategies can help reduce resistance among highly identified fans, fostering a more seamless integration of SST in modern sports venues.

Statement of Authorship: Matthias Anderski administrated the project and contributed to writing and revision. Marius Fortagne led the project, contributed to the conceptualization of the research model, performed statistical computing, and was responsible for writing and revising the manuscript. Bettina Lis and Tim Ströbel provided supervision, offering expert guidance and constructive feedback that strengthened the theoretical foundation and clarity of the manuscript fundamentally.

6 **Research Paper 5: Do You Want to BeReal? Usage Intention and Well-Being for the Social Network BeReal**

Authors: Fortagne, Marius Arved; Brand, Benedikt; Lis, Bettina

Published in: International Journal of Innovation and Technology Management, 21(8), Article 2450056.

Extended abstract:

BeReal represents a new approach to social networking by focusing on authenticity instead of staged self-presentation. Unlike traditional platforms, it asks users to share unfiltered moments in a very short time window at a random time once a day, challenging usual social media habits. This study investigates the factors that influence the intention to use BeReal and its effect on subjective well-being. We base our research model on Self-Determination Theory (SDT) and UTAUT2, adding BeReal-specific factors like privacy concerns and fear of missing out (FOMO).

An online survey with 657 participants was used to test the model, analyzed by partial least squares structural equation modeling (PLS-SEM). The results show that autonomy, competence, and relatedness positively affect hedonic motivation, which strongly drives usage intention. Privacy concerns act as an important barrier and partially mediate how relatedness influences adoption. Also, FOMO negatively moderates the link between relatedness and the intention to use BeReal, meaning that lower FOMO strengthens the social connection aspect of the platform. The study also finds a connection between BeReal usage intention and subjective well-being, suggesting that this new type of social network might help reduce some negative mental health effects caused by traditional social media.

From a theoretical view, the research expands technology acceptance models by combining SDT with UTAUT2 in a new social networking context. From a practical perspective, providers should consider adding authenticity-focused features to support well-being, while also addressing privacy concerns to increase adoption. Given the rising interest in mental health-aware platforms, BeReal's concept may indicate future trends in social media design.

Statement of Authorship: Marius Fortagne led the project, contributed to the conceptualization of the research model, conducted data collection, and was responsible for writing

and revising the manuscript. Benedikt Brand developed the initial idea, coordinated administrative aspects, performed data analysis, and contributed to writing and revision. Bettina Lis provided supervision throughout the project, offering essential academic guidance and feedback that supported a coherent research design and a well-rounded presentation of results.

7 **Research Paper 6: Determinants of the Purchase Intention of Non-Fungible Token Collectibles**

Authors: Fortagne, Marius Arved; Lis, Bettina

Published in: Journal of Consumer Behaviour 23(2), 1032–1049.

Extended abstract:

Non-fungible tokens (NFTs) have disrupted digital ownership by offering authenticity and scarcity in the digital space, making them particularly relevant for collectibles. Despite the rapid growth of the NFT market, research on consumer purchase intention remains scarce. This study aims to address this gap by investigating the determinants of purchase intention for NFT-based collectibles (NFTC). Drawing on the Stimulus-Organism-Response (SOR) model, we analyze how product characteristics (functionality, scarcity, aesthetics, and price value) and blockchain technology features (security and privacy) shape consumer attitudes and drive purchase intentions.

Our research builds on established theories of consumer behavior and digital ownership to conceptualize a framework that integrates both utilitarian and hedonic attitudes toward NFTC. A quantitative approach was employed with an online survey targeting NFT-interested participants (N = 356). Data analysis was conducted using structural equation modeling (SEM) with SPSS Amos to test the hypothesized relationships between stimuli, attitudes, and purchase intention.

The findings confirm that perceived functionality and price value positively impact the utilitarian attitude, while security and privacy concerns related to blockchain technology also contribute to this dimension. The hedonic attitude, on the other hand, are significantly influenced by perceived functionality, scarcity, and aesthetics. Both attitudinal dimensions were found to strongly predict purchase intention, with utilitarian attitudes exhibiting a slightly stronger effect. Moreover, a mediation analysis confirmed that product and technology-related characteristics indirectly shape purchase intention through their influence on consumer attitudes.

This study provides significant contributions to both theory and practice. From a theoretical perspective, it extends the application of the SOR model to digital collectibles, demonstrating that NFTC generate consumer value through a combination of product-specific and

technological features. It also contributes to the ongoing debate on digital ownership by validating that NFTs, despite being intangible, can elicit measurable consumer engagement. From a practical standpoint, the results offer valuable insights for NFT creators, marketplaces, and investors. Emphasizing functionality and security in NFTC offerings can enhance consumer trust and drive adoption, while leveraging aesthetic appeal and scarcity may attract collectors with hedonic motivations.

Statement of Authorship:

Marius Fortagne developed the idea, led and administered the project, conceptualized the research model, conducted statistical computing, and was responsible for writing and revising the manuscript. Bettina Lis provided supervision, offering insightful academic guidance and critical feedback that ensured methodological rigor and a strong argumentative structure throughout the paper.

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