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Technology Adoption in the Digital Entertainment Industry during the COVID-19 Pandemic: An Extended UTAUT2 Model for Online Theater Streaming

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Abstract: While the digitalization of products and services in the entertainment industry has gained momentum in the last decades, online theater streaming is a relatively new phenomenon boosted by the COVID-19 restrictions, which created new market opportunities—and demand—for theaters' online presence. This study investigates a new online platform providing theater streaming services in Hungary from a customer-centric, technology acceptance point of view. The survey-based study is designed to examine which factors of the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model are—and were—relevant in the under-researched live performance art sector of the digital entertainment industry under the unprecedented, coercive conditions of pandemic lockdowns. The results of the partial least squares structural equation modeling (PLS-SEM) show that habit is the most influential factor of theater webcasting adoption (before hedonic motivations and price value), suggesting that the new habits formed during the COVID-19 lockdowns might serve as a basis of a sustainable digital business model for theatres in the post-pandemic era as well. The analysis also tested for potential generational differences between cohorts of users, finding no significant ones, which suggests that, under this specific set of social, technology and market conditions, all generations react similarly and are equally relevant for widening the customer base. Keeping in mind some limitations (self-reported and cross-sectional data), these empirical results can not only enrich the scientific body of knowledge but can also serve as the basis of future marketing and communication strategies developed by partitioners.

Keywords: technology acceptance; UTAUT 2; digital entertainment; online theater streaming; age; trust; PLS; Hungary; Central-Eastern Europe



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1. Introduction

The COVID-19 pandemic has had profound impacts on the digitalization of everyday life, including an accelerated development of the field of digital entertainment. While the availability of real-life entertainment was severely restricted due to safety measures, indoor and/or digital entertainment providers seemed to be the winners of this situation, with their customer base significantly increased and with demand for new, previously non-existent services as well. One of these nascent—or previously niche—service areas is online theater streaming. Although the increased demand for video streaming services fits into the general trend of the rise of digital entertainment, theater has some unique characteristics that distinguishes it from other sectors of the industry: (1) it is a collaborative art form, as well as a source of entertainment, and (2) it is generally performed live. Both characteristics made theaters late to adopt digitalization, but as the 2020–2021 lockdowns affected the performance arts industry heavily [1], it made webcasting a matter of survival for theaters. This paper explores whether the COVID-19 environment was the only motivation inspiring theatergoers to adopt theater webcasting technologies or whether adoption tendencies can be explained by more permanent and well-established factors of technology acceptance. If

the latter is the case, and if newly formed habits had a significant effect on continued use, this would suggest that theater streaming is here to stay.

The Unified Theory of Acceptance and Use of Technology (UTAUT) model [2] seems to be adequate for exploring theater webcasting adoption not only because this is the mainstream model of information technology (IT) adoption research (see the above 18,000 citations on Scopus [3]), but also because the extended UTAUT2 model [4] was explicitly developed in order to explore the factors of voluntary consumer technology acceptance and use. Theatre streaming is indeed a business-to-consumer technology, and the adoption situation is characterized by a certain level of voluntariness, but the coercive effect of the lockdowns exerts a unique pressure on theatergoers. This uniqueness contributes to the scientific interest in extending the UTAUT literature to include this new meaningful technology and verify whether the proposed effects of the model can be confirmed in this context.

Researchers are urged to explore the usage patterns of technologies that emerged during the COVID-19 pandemic [5]. The acceptance of live art performance streaming has not yet been extensively researched; a systematic literature search via Scopus reveals only one similar study of concert webcasting [6] and another paper on performers' technology acceptance [7], both of which explore some elements of UTAUT during the COVID-19 pandemic. None of the studies include European samples, and even concerning the general digital entertainment adoption research stream, our Hungarian study can provide a geographic contribution. In 2020, 85% of Hungarians used the internet, which corresponds to the average for the European Union and is somewhere in the middle concerning Central-Eastern Europe (81–90%), making the country a relevant target for investigating internet technology adoption in Europe [8].

While the trend of the pandemic-induced rise in video on-demand subscriptions was significant among every generation, a study in the UK shows that the rise was very high in the 55–64 age category (from 39% to 51%) and also in the 65–75 age group (from 29% to 36%) [9]. This suggests an unprecedented digital leap concerning the more senior generations, although not every study points in the same direction. In India, Mahendher et al. [10] found that elderly people did not increase their streaming habits during the pandemic, as they were not particularly comfortable with the underlying technology. This paper also contributes to the field by exploring the ambiguous effect of age on technology acceptance, as the fact that the target audience of theatre streaming is characterized by a higher average age than many new technologies on the digital entertainment market creates a unique opportunity for analysis.

Considering all of the above, the aim of this paper is to examine which factors of an extended UTAUT2 model are—and were—relevant to the new and under-researched live performance arts streaming sector of the digital entertainment industry under the unprecedented, coercive conditions of pandemic lockdowns.

2. Theoretical Foundation and Hypotheses Development

2.1. Online Streaming in Theater Entertainment

The entertainment industry consists of many different segments, including the fields of film, theater, television, radio, music, dance, fine art, literature, and gaming. While authors provide different lists of services included in the industry (see, for example, [11]), the common elements are engagement in the selling of, or otherwise profiting from, creative works and, of course, the aim to entertain an audience. Some of these segments provide live entertainment (including art and leisure such as theater, museums, or theme parks), others sell electronic forms (such as electronic media and gaming) [12], and some are available in both formats.

Due to the rapid advances in internet technology and digitalization, digital entertainment has become an emerging and ever-changing field of the entertainment industry. Some forms of entertainment have taken digital forms, including music, cinema, radio, television, games, gambling [13] and, more currently, also some performing arts. In 2015, the live

streaming of performances was the fastest growing digital trend in the performing arts sector [14], but it is still a niche market. Webcasting is defined as internet streaming [15], as the delivery of video and audio media content on the World Wide Web to internet users, including businesses and consumers. Different modes of webcasting include (1) push, (2) on-demand, (3) and live streaming.

There was already a history of live streaming from theaters before the pandemic, as the streaming of theatrical performances to cinemas has become increasingly common, serving customers who would otherwise be unable to attend the performances [16]. Some institutions in the Central European region have even offered streaming via internet directly to the homes of the viewers. The Bavarian State Opera (Bayerische Staatsoper, Munich, Germany) offered free and later on-demand videos, while the streaming of the Vienna State Opera was also available on a pay-per-view and subscription basis before 2016 [17]. Kaiser [18] hypothesized that the intermediary step of streaming to cinemas will eventually be replaced by internet-based services everywhere.

Theaters can experience the benefits of online streaming in many forms, including additional revenue streams with expanding capacity, size efficiency and price discrimination, and also in the form of the indirect benefits of audience reach and audience development [15,17]. King [17] argues that online streaming is also beneficial for users, as it provides better accessibility from a financial and geographical point of view, and the entertainment experience is valued more by viewers if the streaming is live (real-time) rather than a pre-recorded session. Some of the characteristics of online streaming theater can have controversial effects on value creation, such as [17]:

- (1) The visual experience is different via streaming, providing less choice in terms of the focus of attention while enabling close-ups;
- (2) Streaming services might diminish or widen the live audience;
- (3) Streaming services might provide an opportunity for smaller companies to reach their audience but also, at the same time, lead to large brands attracting all the demand.

The COVID-19 pandemic disrupted the live entertainment industry—which is characterized by a need for physical presence and a low level of essentiality [19]—with the unprecedented effect of closures. While there were other attempts to sustain theaters (sanitizers, social distancing, smaller audiences, outdoor performances, negatives test and vaccination pass requirements to enter), the webcasting of past or new performances also became an important part of the solution. These unusual circumstances provide an additional motivation to study this phenomenon in 2020–2021 and, in general, for the digitalization of the entertainment industry in the post-COVID world [20].

2.2. Technology Adoption in E-Commerce and the Entertainment Industry

There are some competing frameworks exploring the factors influencing individual technology adoption, such as the innovation diffusion theory, the motivation model, the uses and gratification theory or the model of PC utilization [21]; however, the most influential and widespread model is the Technology Acceptance Model (TAM) [22]. The essence of this model is very simple: prospective users' behavioral attitudes, intentions to use and their actual usage are influenced by two key variables: perceived usefulness and perceived ease of use of the system. Although the original TAM explores technology adoption in a workplace setting, the extensions of the model include the effects of voluntariness (TAM2 by [23]) or playfulness and perceived enjoyment (TAM3 by [24]), which are especially relevant in digital entertainment context.

The Unified Theory of Acceptance and Use of Technology (UTAUT) [2] was born from an attempt to synthesize the competing adoption models. In addition to the original two variables of the TAM (renamed as performance expectancy and effort expectancy), UTAUT explores the impacts of the social environment and facilitating conditions, as well as the moderating effects of age, gender, experience and voluntariness of use. Venkatesh et al. [4] extended the model (UTAUT2), explicitly considering voluntary, non-job related consumer contexts, adding three more constructs: hedonic motivation, price value and habit. This

model was shown to improve researchers' ability to explain variances in behavioral intent and usage and is more suitable for exploring entertainment-related technology acceptance.

While TAM studies, before the millennium, focused mostly on general purpose, communication, office and business technologies, the TAM model and its extensions were later tested across many industries and technologies, including digital entertainment. One of the first studies distinguishing between entertainment and work-related tasks (on the internet) was authored by Moon and Kim [25], and they found that, in an entertainment context, playfulness is a more significant factor than usefulness. More recently, Hew et al. [26] confirmed the prediction power of both original TAM factors in a mobile entertainment context, as did Sim et al. [27] in the case of mobile music adoption. Dogruel et al. [28] found that usefulness—in the form of enjoyment—is the key predictor of user acceptance of digital entertainment technologies (such as 3D cinema and computer game simulation), while perceived ease of use seems to affect attitudes as a precondition of enjoyment.

UTAUT and UTAUT2 have also been tested in the entertainment industry. Wong et al. [29] used the model in a mobile TV context and found most elements to be significant except for, interestingly, performance expectancy and price value, also showing that habit is the strongest predictor of behavioral intent. According to the study of Gao and Deng [30], both performance expectancy and effort expectancy were significant determinants of the intent to use mobile e-books, while costs and facilitating conditions had no effect. Konietzny et al. [31] found UTAUT and UTAUT2 useful in an online gambling adoption study, as did Ramírez-Correa et al. [32] concerning online gaming, highlighting the power of habit.

One of the most common extensions of TAM and UTAUT models is trust [33–35], which has been proved to have a significant effect in the case of e-commerce and e-payment technologies in many different industries, including e-health or e-government. Trust can strengthen the intention to continue using a digital service [36]. While trust has not often been studied directly in the context of entertainment technology adoption, in one of the rare exceptions, Hew et al. [26] found that trust regarding information security and payment have significant—although indirect—effects on the intent to use mobile entertainment.

Although theater is part of the entertainment industry, it is different, in terms of focal topic, from the above-introduced studies, as it is characterized by (1) live performance and (2) an artistic character at the same time. These features of theater have made it resistant to digitalization for a long time, but the pandemic has given theater streaming a significant boost, and now, stakeholders are interested in whether this new trend can survive. One way of viewing this timely question is to explore theater streaming users' motivational structure in detail and analyze the factors influencing continued user intention in this specific context.

2.3. Research Model and Hypotheses

Our model is based on UTAUT2 [4], as this unified model version considers the most factors with a potential to influence consumer technology adoption in a voluntary, entertainment-related context. While we explored all the factors of UTAUT2 and age, as a control variable, in the online theater streaming context (see Figure 1), we also added an additional factor to the model: trust.

Performance expectancy, one of the core constructs of the TAM and UTAUT models, reflects “the degree to which one's belief in using a system will assist him/her to perform certain task or function” [37] (p. 2244). There is evidence that performance expectancy is also a significant predictor of technology acceptance in the digital entertainment industry [26,27]. Although some argue that, in the case of entertainment, usefulness is perceived in the form of enjoyment [28], which would suggest the appropriateness of combining the two factors of performance expectancy and hedonic motivation, others [32] include both constructs separately in their model. We opted for this second option, as a distinction can be made between enjoyment (hedonic motivation) and the perceived effectiveness of the process used to obtain said enjoyment (performance expectancy).

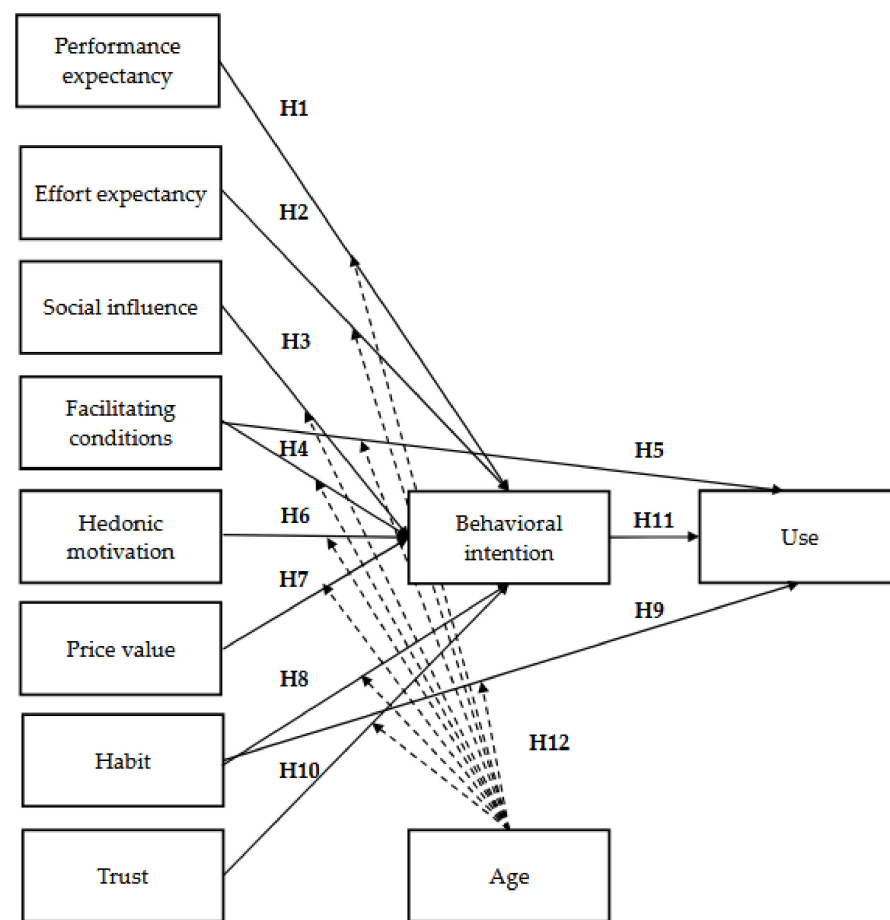


Figure 1. Research Model and Hypotheses.

Hypothesis 1 (H1). *Performance expectancy is positively related to behavioral intention in the adoption of theater streaming services.*

The concept of effort expectancy refers to the ease of use of the new technology, which is the second of the two original TAM factors. The predictive power of effort expectancy has been demonstrated by several studies in the digital entertainment realm [26,27,38,39]. The inclusion of this construct in the model is also important because some studies suggest that this might be a factor with different effects on different age groups [40].

Hypothesis 2 (H2). *Effort expectancy is positively related to behavioral intention in the adoption of theater streaming services.*

Social influence refers to the perception of individuals “that essential others think he/she should adopt a technology” [41] (p. 1895). As one of the core UTAUT and UTAUT2 constructs, social influence has been found to be a significant determinant of usage intention in entertainment contexts [32,39]. These past studies mostly focus on gaming, where the technology itself might have social characteristics and where peer influence might be strong among user groups. Art consumption is also a generally social activity, and word of mouth marketing can be influential here, too, although we must also take into account the fact that social relationships were hampered and changing during the pandemic lockdowns. To examine the impacts of these effects, we propose the following hypothesis:

Hypothesis 3 (H3). *Social influence is positively related to behavioral intention in the adoption of theater streaming services.*

The factor of facilitating conditions “refers to the situation where an individual perceives that resources are in place to facilitate one to conduct a certain behavior” [37] (p. 2245). These facilitating conditions can be material (the availability of necessary hardware or software) or related to support (technical support from application vendors or instructions on how to use the technology). Although facilitating conditions were found to be uninfluential in the case of e-book [30] and metaverse [39] adoption alike, it is still one of the most frequent extension variables in TAM research [42]. Our decision to include facilitating conditions as a factor of behavioral intention and actual use alike (just as in the original UTAUT2, for which see [4]) allows us to account for its potential effect and analyze its significance among different age groups.

Hypothesis 4 (H4). *Facilitating conditions are positively related to behavioral intention in the adoption of theater streaming services.*

Hypothesis 5 (H5). *Facilitating conditions are positively related to usage behavior in the adoption of theater streaming services.*

The construct of hedonic motivation is “conceptualized as perceived enjoyment” and was found in many cases to be a predictor of technology acceptance in IT literature [4] (p. 161). The UTAUT2 is not the only model exploring enjoyment as a factor of technology acceptance. The Value-Based Adoption Model also stresses the effect of perceived enjoyment on the intention to use [43], while the Hedonic Motivation System Adoption Model (HMSAM) [44] focuses especially on the role of joy in the adoption process of hedonically motivated systems. The pleasurable aspects of technology use have a significant positive relationship with usage intentions in gaming contexts [45], and we expect to see similar results across the entertainment industry, including the case of theater webcasting.

Hypothesis 6 (H6). *Hedonic motivation is positively related to behavioral intention in the adoption of theater streaming services.*

When the focal problem of technology acceptance is characterized by voluntariness, this also means that customers often have to pay to use the new technology (or technology-based service, as in the case of eTheater, Budapest, Hungary) and, therefore, their considerations regarding the potential costs, benefits and price value might affect their usage intentions. This effect is confirmed, for example, in the case of virtual experiences of mega sports events [38], while it is not supported concerning mobile TV acceptance [29]. Motivated by these controversial results, we also examine this hypothesized effect.

Hypothesis 7 (H7). *Price value is positively related to behavioral intention in the adoption of theater streaming services.*

The concept of habit considers two important characteristics of individuals: prior usage behavior and a certain level of automaticity of the behavior [4]. Interestingly, many studies found that, in entertainment contexts, habit—not enjoyment—is the dominant predictor of usage intention and behavior, with examples including mobile TV [29] and online gaming [32] providing strong evidence for the validity of our decision to explore the following hypotheses.

Hypothesis 8 (H8). *Habit is positively related to behavioral intention in the adoption of theater streaming services.*

Hypothesis 9 (H9). *Habit is positively related to usage behavior in the adoption of theater streaming services.*

Trust is always an issue in an impersonal, online context [46,47]. Concerning our focal geographic context, one of the distinctive characteristics of Hungarian consumers has, historically, been a low level of trust; this was one of the main reasons for the slow adoption of e-commerce in the country after the millennium [34]. Although the mainstream general models of TAM [48] and UTAUT [34] seem to be relevant for examining and explaining technology adoption in Hungary, based on these country-specific characteristics, we decided to include trust in our UTAUT2 model. As e-theater webcasting also has e-commerce, data security and e-payment elements, we hypothesize that the effect of trust may also be significant here.

Hypothesis 10 (H10). *Trust is positively related to behavioral intention in the adoption of theater streaming services.*

The basic assumption behind user acceptance models is that individuals' intentions are key predictors of their actual usage behavior, and this causal relationship has been confirmed by a wide range of IT studies [2]. As the ultimate goal is to explore the antecedents of usage as the dependent variable, we also explore this general relationship.

Hypothesis 11 (H11). *Behavioral intention is positively related to usage behavior in the adoption of theater streaming services.*

Studies show that, while internet technology is pervasive and ubiquitous, its impacts on the lives of different generations are different [49]. It seems that elderly people use the internet differently, for different purposes and with different engagement patterns [50], and still with less prevalence in some populations, partly because of the lack of need, lack of experience and the high level of anxiety concerning security issues [51]. An earlier study of internet usage by Porter and Donthu [52] showed that age negatively influences perceived ease of use and usefulness, while Yu [53] concluded that, regarding certain technologies, the influences of facilitating conditions and self-efficacy increases with age. The more elderly-focused studies identified the ease of use, cost, poor trial use, innovation attitudes, training, income and educational level as the most influential factors in older generations' ICT adoption [54,55], while additional barriers of use include inappropriate design, awareness and self-efficacy [49]. On the other hand, some studies did not find any significant relationship between age and factors of technology acceptance [56]. While adoption research focusing on older generations in an entertainment context is sparse, TAM and its extensions seem to be adequate research models. Liu et al. [57] found that perceived usefulness, ease of use and, also, perceived enjoyment seem to be significant factors of the intention to use new media entertainment among older adults. Thus, finally, regarding the effect of age as a moderating variable, we hypothesize:

Hypothesis 12 (H12). *Age will moderate the effects of performance expectancy, effort expectancy, social influence, habit, trust, hedonic motivation, price value and facilitating conditions, such that the effects will be significantly different between cohorts.*

Although the original UTAUT2 model controls for experience, as well, the respondents could not really have had many relevant theater streaming experiences before the pandemic, and while all of the participants had experiences with the platform since its launch in 2020, the platform itself is not complicated. Moreover, we did not find any relevant features of users which were not already accounted for by the factors of habit, the facilitating conditions or the usage behavior constructs.

3. Materials and Methods

The fact that the COVID-19 pandemic created a sudden rise in demand and supply for online streaming services provides an opportunity to examine the early stages of technology adoption on a large scale and in real-life context. One of the new service providers, eTheater [58], was founded in 2020 in Hungary and delivers live online streaming and on-demand theater webcasting services to customers. The founders of eTheater were planning to launch a theater streaming service for years, but the final push towards an accelerated launch was provided by the COVID-related restrictions in Hungary (starting in March 2020). After a swift development period, the service was introduced to the Hungarian market in September 2020. eTheater is not the only provider of online theater streaming services; its key competitor is SzínházTV (Budapest, Hungary) [59], with a slightly smaller service portfolio. However, both platforms provide live streaming and video on-demand services, mostly in a pay-per-view format but also as part of some form of subscription model.

In the spring of 2021, the founders of eTheater provided their customer base with an opportunity to engage in widely distributed academic research survey. The survey was created based on the proposed research model, relying heavily on robust question types and phrasings from earlier UTAUT studies (see constructs, sources and questions in a later table in Section 4.1). Note that the core set of questions were adapted from the original study of Venkatesh et al. [4] and were only slightly modified or extended to fit the context of focal technology and the addition of the construct of trust while, here again, building on the experiences of the other cited studies. These principles of survey design ensure a high level of validity of the constructs, but this aspect of the dataset was also analyzed rigorously later (see the next chapter).

Data were collected through the Qualtrics online survey between 20 March and 20 April 2021. Note that this was a time of mid-level lockdown in Hungary, with schools and theaters closed, and when there were no significant differences in lockdown regulations among the geographic regions of the country. eTheater mostly streams full theater performances and some rare musical performances, which are similar in length, meaning that the frequency of eTheater use (which is easier for respondents to provide information about) is strongly correlated with the time spent on the platform.

The sample included 200 volunteer respondents, which equates to around one quarter of the registered users of eTheater at the time of the survey. While some level of self-selection bias might characterize this type of sampling, this was mitigated by the fact that even less enthusiastic users were encouraged to participate in the survey by a random draw sweepstakes. Moreover, descriptive statistics show that respondents were characterized by highly scattered levels of current use habits; thus, the questionnaire was able to reach individuals with different levels of commitment to the platform. Most of the respondents used eTheater on a pay-per-view basis, with only a small minority (5%) opting for the subscription model. Although the sample ratios regarding gender, age and place of living (see Figure 2) do not completely represent eTheater users or the Hungarian theater visitor population, they are very similar in most regards (see Table 1), with the exception that somewhat more females, generation X and expatriates answered the survey.

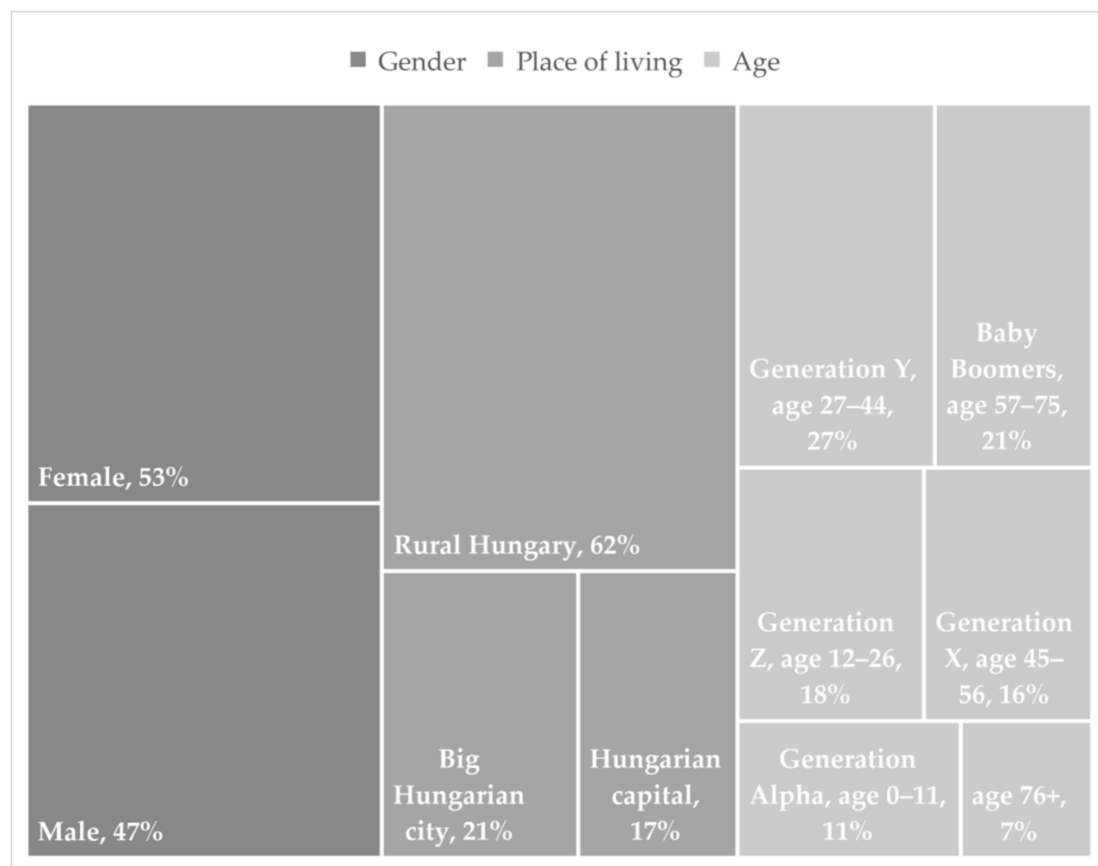


Figure 2. Sample Composition.

Table 1. Demographic Characteristics of the Sample and the Focal Population.

Demographic Characteristics		eTheater (Own Sample, 2021)	eTheater Registered Users [60]	Hungarians Who Have Visited a Theater in the Last Year (Mixed Data from 2005–2013 *)	Hungarian Population 2011 [61]
Gender	Female	78.5%	68%	62.40%	52.5%
	Male	12.5%	32%	37.60%	47.5%
	Missing	9.0%			
Place of living	Hungarian capital	42.5%	49.4%	55.9%	17.40%
	Large Hungarian city	25.5%	42.1%	44.1%	20.40%
	Rural Hungary	7.5%			62.20%
	Large city abroad	7.5%	8.5%		
	Rural area abroad	8.0%			
	Missing	9.0%			
Age	Pre-Depression Generation, age 92+	0.0%			0.2%
	Depression Generation, age 76–91	0.0%			6.5%
	Baby Boomer Generation, age 57–75	12.0%	17% (age 65–) 14% (age 55–64)	14.7% (age 60–70)	21.4%
	Generation X, age 45–56	31.5%	21% (age 45–54)	19.4% (age 40–59)	15.9%
	Generation Y, age 27–44	40.0%	40% (age 25–44)	35.7% (age 30–39)	26.8%
	Generation Z, age 12–26	7.5%	8% (age 18–24)	30.2% (age 14–29)	17.6%
	Generation Alpha, age 0–11	0.0%			11.6%
	Missing	9.0%			

* Sources: gender—[62]; place of living—[63]; age—[64].

While earlier analyses mostly used regression or linear structural relation (LISREL) models, later, partial least squares structural equation modelling (PLS-SEM or simply PLS) became a common technique for testing TAM and UTAUT relationships. To test the hypotheses, this study also implemented PLS-SEM analysis using the SmartPLS-3.2.4 software (SmartPLS GmbH, Oststeinbek, Germany) [65].

PLS is a variance-based method within the SEM model family of latent variable modelling. It uses an iterative mechanism to (1) estimate latent variables as a linear combination of manifest variables (external or measurement model) and to (2) estimate the structural equations of latent variables (internal or structural model) [66]. The advantage of the PLS method is that a normal distribution is not required for the manifest variables; it can be used with a relatively small sample size [67] and is especially effective in the case of information technology research [68]. For our model, we assumed a reflective relationship between the latent and the manifest variables, as this is common in studies on attitudes and in the TAM and UTAUT literature.

4. Results and Discussion

4.1. Descriptive Statistics, Reliability and Validity

Observing the descriptive statistics of the manifest variables, we see that the audience of eTheater consists mostly of enthusiastic and persistent e-theater enthusiasts; none of the 200 respondents disagreed totally with the statement “I intend to continue using eTheater in the future”, and on the 7-point Likert scale (where 7 reflects strong agreement), the mode is 7 and the mean is 6.215. The majority of the respondents use the online streaming service at least once per month. They were motivated to try eTheater mostly in order to be able to participate in theater experiences and support theaters (6.340 and 5.930 agreement on the 7-point scale, respectively) during the pandemic-related theater closures. Most of them stated that they find the eTheater platform to be useful and enjoyable (6.053 and 6.148 agreement on the 7-point scale, respectively). Respondents stated that eTheater is easy to use, which might be influenced by the fact that they are experienced internet users (6.428 and 6.904 agreement on the 7-point scale, respectively).

To test the reliability of the PLS measurement model, Cronbach’s alpha, rho_A and composite reliability (CR) indicators [67] were calculated. As Table 2 shows, the indicator values are all above the proposed minimum value of 0.6. The average variance extracted (AVE) value signaling convergent validity also exceeds the generally accepted 0.5 cut-off value. All in all, these measures suggest a sound reliability and validity.

Table 2. Constructs and Survey Items.

Construct	Cronbach’s Alpha	Rho_A	Composite Reliability (CR)	Average Variance Extracted (AVE)	Measurement Items (Most Questions Are Measured on a 7-Point Likert Scale, Where 1 Means Strong Disagreement and 7 Strong Agreement, Except for D1–3)
Performance expectancy [4,32,40]	0.755	0.777	0.842	0.573	PE2.1 I find eTheater useful in my daily life. PE2.3 Using eTheater saves me time. PE2.4 Using eTheater saves me energy. PE2.5 Using eTheater is flexible since I may use it anywhere. *
Effort expectancy [4,32,40]	0.897	0.919	0.928	0.763	EE1.1 Learning how to use eTheater was easy for me. EE1.2 My interaction with eTheater was clear and understandable. EE1.3 The process of buying an eTheater ticket is easy. EE1.4 The process of watching an eTheater performance is easy. EE1.5 I learn to employ new technologies easily.
Social influence [4,32,40]	0.788	0.890	0.870	0.692	SI1 People whose opinions I value think that I should use eTheater. SI2 Using eTheater is trendy. SI3 My family and friends think it is a good idea to use eTheater.

Table 2. Cont.

Construct	Cronbach's Alpha	Rho_A	Composite Reliability (CR)	Average Variance Extracted (AVE)	Measurement Items (Most Questions Are Measured on a 7-Point Likert Scale, Where 1 Means Strong Disagreement and 7 Strong Agreement, Except for D1–3)
Facilitating conditions [4,32,34]	0.674	0.781	0.788	0.573	FC1.1 eTheater is part of my everyday life. FC1.3 I have the resources necessary to use eTheater. FC1.4 I have the knowledge necessary to use eTheater. *
Hedonic motivation [4,32]	0.909	0.922	0.956	0.916	HM1.1 Using eTheater is enjoyable. HM1.2 Using eTheater is entertaining. **
Price value [4,32]	0.820	0.865	0.895	0.743	PV1.1 eTheater is reasonably priced. PV1.2 eTheater provides good value for money. PV2 I believe that eTheater is a good alternative for a live experience, when the price is maximal . . .
Habit [4,32]	0.844	0.867	0.906	0.763	HA1.1 eTheater has become natural to me. HA1.2 Using eTheater has become a habit for me. HA1.3 I am almost addicted to using eTheater.
Trust [34]	0.854	0.990	0.904	0.759	TR1.1 I trust in internet security. TR1.2 I trust in the security of the eTheater system. TR1.3 I trust in the stability of eTheater technology.
Behavioral intention [4,32,40,69]	0.867	0.875	0.918	0.790	BI1.1 I intend to continue using eTheater in the future. BI1.2 I plan to use eTheater regularly. BI1.3 I plan to use eTheater even after the reopening of theaters.
Use [4,32]					US1: How often do you use eTheater?
Demography/ moderating variables [4]					D1 Age D2 Gender D3 Place of living

* Some measurement elements—the manifest variables—were dropped based on a preliminary explorative factor analysis. ** Although three items are usually required for a construct, in the case of hedonic motivation, any wordings different from the two included here were found to be superfluous synonyms by the test respondents.

Concerning the discriminant validity, cross-loading values were examined. The indicator loadings for the individual latent variables must be above 0.7. This criterion was met, with the exception of one of the indicators of the facilitating conditions (FC1_1). At the same time, here, cross-loadings with other latent variables are mostly under 0.5, except in the case of the somewhat higher cross-loading of the behavioral intent and habit variables. The heterotrait–monotrait (HTMT) ratios show satisfying results regarding the discriminant validity in all cases. The same is true for the assessment of multicollinearity; all the calculated variance inflation factor values are under 0.5.

4.2. PLS-SEM Results

To evaluate the hypothesized relationships of the structural model, the path coefficients and R^2 were computed using the PLS-SEM algorithm. The R^2 regarding behavioral intention (to use eTheater) is satisfyingly high, 0.514, while in the case of actual use, the variance explained by the model variables is only moderate (0.164). The f^2 values, signaling effect sizes, were also calculated and evaluated considering the guidelines of Cohen [70]: we can determine a small influence above 0.02, a medium-level effect at 0.15 or above and a large effect above 0.35. Based on this criterion, habit has a medium-level effect on behavioral intention (0.223), while performance expectancy (0.031), hedonic motivation (0.063), price value (0.070) and trust (0.024) have smaller effects on it. With a bootstrapping algorithm (500 subsamples), the significance of the path coefficients was also tested. Figure 3 summarizes the results. Based on these PLS results, seven of the hypotheses (H1, H5–H9 and H11) were confirmed. This suggests that online theater streaming users are mainly motivated by expected entertainment and usefulness, value proposition and formed habits, and even somewhat by the availability of necessary resources and knowledge.

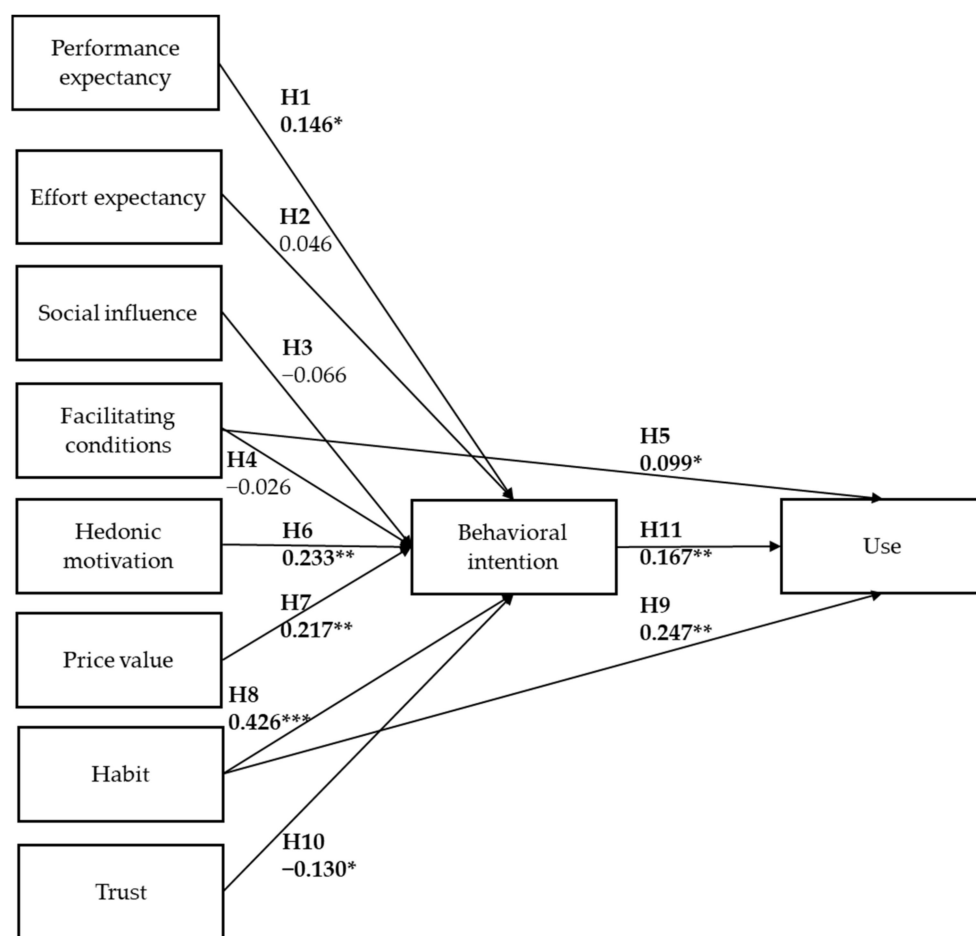


Figure 3. Results of the PLS-SEM Analysis with Bootstrapping. * $p < 0.05$; ** $p < 0.01$. *** $p < 0.001$.

The introduction of age as a moderating variable does not change the results in many ways. Age was found to have a significant moderating effect only on the relationship between trust and behavioral intention ($p = 0.002$, see also Table 3, below), only partially confirming hypothesis H12. The results indicate that the significant and somewhat counter-intuitive negative effect of trust on behavioral intention can be explained by the moderating effect of age, related to the potentially less trusting attitude of heavy users among the older generations.

4.3. Discussion

The overall results show that, while the classical UTAUT elements are not significant, or only mild, influencers of eTheater adoption, the UTAUT2 extension variables (hedonic motivation, price value and habit) are all important factors of usage behavior. Table 3 shows that many other entertainment-focused studies had similar conclusions. This confirms that, for strong a predictive power, the UTAUT model needs to be extended so as to adapt to the voluntary consumer technology context, especially in the case of digital entertainment technologies.

The significance of hedonic motivation is not surprising, considering the industry, and this study can also confirm the relevance of this UTAUT2 element in a consumer entertainment technology context. This might also be the cause of the lesser effect of performance expectancy in our model, as most of the expected usefulness of the technology is realized as entertainment value. The finding of hedonic value partially or totally replacing or outweighing the effect of performance expectancy has been shown in other studies (sampled in Table 3). While usefulness, in terms of efficiency and flexibility, is also part of the users' decision process, entertainment value seems to be more decisive.

Our results indicate that the most powerful factor influencing online theater streaming adoption is habit; the routines developed around the service influence attitudes towards actual usage and future use intentions alike. This result is similar to what we find in mobile TV and mobile gaming contexts (see Table 3) due to the pervasive usage of smartphones. However, it is interesting to note that similar levels of habituality can be reached in a very different cultural arena and on a less flexible technological platform. One explanation for this finding might be that the relatively experience-deficient environment of the lockdowns strengthened the role of habits and habituality, with long-term effects similar to those observed in psychological studies [71]. This is also a very important finding from a business perspective; with the development of a strong usage habit, theaters can count on users to continually use their service, potentially even after the pandemic. Others found some supporting evidence in similar fields of digital entertainment. A UK survey showed that 34% of respondents streamed more films and/or TV series during the lockdown, and 45% of this population intended to continue this habit post-lockdown [72].

Table 3. Path Coefficients of This Study and Comparative Results of Similar Studies in the Digital Entertainment Industry.

Hypothesis	Relationships	Theater Streaming		Live Streaming Concerts	New Media Entertainment	Online Streaming (Including Live TV)	Mobile TV	Mobile Gaming	Book Streaming
		(This Study)	(This Study with the Moderating Effect of Age)	[6]	[57]	[73]	[29]	[32]	[74]
H1 weakly supported	Performance expectancy -> behavioral intention	0.146 *	0.173 **	0.736 ***	0.446 ***	0.509 ***	0.040	0.038	0.350 ***
H2 not supported	Effort expectancy -> behavioral intention	0.046	0.101	−0.018	0.419 *	0.284	0.224 **	0.066	
H3 not supported	Social influence -> behavioral intention	−0.066	0.006	0.160 **	0.365 **		0.120 *	0.082 *	
H4 not supported	Facilitating conditions -> behavioral intention	−0.026	0.090	−0.018			0.243 **	0.052	
H5 weakly supported	Facilitating conditions -> use behavior	0.099 *	0.094					0.012	
H6 supported	Hedonic motivation -> behavioral intention	0.233 **	0.255 ***		0.322 ***		0.175 **	0.210 ***	
H7 supported	Price value -> behavioral intention	0.217 **	0.119 *		0.324 **		0.092	0.003	0.280 ***
H8 supported	Habit -> behavioral intention	0.426 ***	0.364 ***				0.410 **	0.601 ***	
H9 supported	Habit -> use behavior	0.247 ***	0.235 ***					0.529 ***	
H10 not supported	Trust -> behavioral intention	−0.130 *	0.006		0.327 **				
H11 supported	Behavioral intention -> use behavior	0.167 **	0.177 **					0.362 ***	
H12 partially supported	Age * Trust -> behavioral intention		−0.196 **						

* $p < 0.05$; ** $p < 0.01$. *** $p < 0.001$.

Price value has an effect on behavioral intentions of a similar degree as hedonic motivation, a result which is very close to what was shown by Liu et al. [57] in the case of new media entertainment. This suggests that customers tend to weigh up the costs and benefits of digital entertainment at the same time, making usage decisions based on these parallel considerations. The eTheater streaming theater tickets are currently around

50% cheaper than in-person ones, and in the online setting, one ticket offers entertainment for the whole family. As the more active users find eTheater's value proposition more attractive, this suggests that, if the relative price of online and in-person theater tickets does not change unfavorably in the future, they might opt for the virtual version even after the reopening of theaters.

Effort expectancy, one of the two original factors of TAM, does not seem to have a significant effect on behavioral intentions, which seems to be the case in similar digital entertainment environments as well. In general, eTheater is perceived to be very easy to use (the EE1.1–1.4 indicators' average is 6.402, where 7 is very easy, with a low standard deviation) and even a little bit simpler than learning to use other new online services (6.084). This suggests that the eTheater platform is perceived to be more self-explanatory than others, making the necessary condition of effortless usage uninfluential in this case. Other researchers also argued that, while effort expectancy might be a necessary condition of usage, it may not have a significant influence in the context of consumer technology adoption [75]. This seems to be the case concerning the insignificant effects of facilitating conditions as well. The average value of the three variables (FC1.1,1.3,1.4) is extremely high (6.847 on a 7-point scale, with the lowest level of standard deviation), signaling that respondents have all the knowledge and resources needed to use eTheater; thus, this does not act as a distinguishing factor. All in all, ease of use and a generally supportive environment might serve as necessary but not sufficient conditions.

Although the effect of social influence was not found to be significant in most similar studies in the industry, it is usually very small and, in our case, insignificantly small. Regarding the different reference groups, respondents stated that their friends and family seem to think highly of eTheater (SI1.3 average: 5.548), while other opinion influencers and general trends are somewhat less prevalent. However, none of these positive opinions influence the respondents' own usage intentions. This is characteristic of live performance arts, whose adoption differs from gaming or popular media adoption and where the network effects seem to be strong. Although, in the case of the Brazilian concert streaming study, Silva et al. [6] found some evidence of social influence, this might also be caused by the fact that their model did not account for the extension UTAUT2 factors.

Trust shows a weak negative effect on behavioral intentions, suggesting that respondents with lower levels of trust use the online theater streaming service more. This is counter-intuitive and a rare result, although it is not unprecedented [76]. A neutral, non-significant effect might be the fact that, in order to use eTheater, customers do not have to provide much personal data; thus, data privacy is not a significant issue. Moreover, the cost per transaction is low, so that trust regarding e-payment is also less influential. On the other hand, this weak negative relationship might be caused by the fact that the more risk-averse, less trusting users are the more prudent and conscious customers, and this characteristic of their consumer behavior has a low-level positive effect on their eTheater usage (and buyer) attitudes. A similar effect was found by Castañeda and Montoro [77], concluding that e-commerce customers with lower levels of trust and high demands regarding privacy are more likely to buy. This also leads us to the interpretation of the moderating effect of age. Thus, the same phenomenon of less trusting, more conscious and, at the same time, more purchase-ready customers is strengthened by age and is characteristic of more mature users. Users of the 55+ generation have less trust in the internet and digital services than generation X, while they are overrepresented among heavy eTheater users. As our model conceptualized and measured technology-related trust [78], we argue that mature customers with more experience might be more aware of technological risks while, at the same time, being able to live with it and make informed decisions.

On the other hand, considering the lack of other significant moderating effects of age, we can conclude that, in the case of online theater streaming services in Hungary, age is not an important factor in acceptance. While generational differences in the perceived ease of use or trust are not uncommon in the literature, the insignificance of these differences, in our case, and the fact that users of different generations think and behave in a reason-

ably similar manner concerning the use of eTheater, is interesting. Although this lack of significant effects of age might somewhat contradict the general literature narrative about the generational differences in IT usage, it fits well with the UTAUT literature. While age is commonly used as a control or moderator variable in UTAUT studies, a meta-analysis published in 2022 [79] found no significant age-related differences concerning any of the UTAUT2 factors. We argue that this lack of a significant effect is, itself, an important finding and shows that, under the right circumstances, even the elderly generations may be involved in new technology adoption, motivated by the same factors as their younger peers. In our case, possible reasons can be found in the actual simplicity of the platform and, more importantly, in the coercive effects of the contextual factors; there were no real alternatives for theater entertainment during the pandemic lockdowns. A very similar explanation was provided by Ames et al. [80] regarding the acceptance of digital communication and video chat technologies when real-life socializing with family members was impossible.

5. Conclusions

5.1. Implications for Theory and Practice

Although many forms of digital entertainment have already been researched from a technology acceptance point of view, these studies rarely focus on the artistic and/or live entertainment segment of this industry. This is one of the reasons for the importance of our novel findings, confirming the relevance of the UTAUT2 model in the context of online theater streaming. This is an encouraging result, suggesting that mainstream models such as UTAUT2 can be useful for understanding technology adoption in the more artistic segments of the entertainment industry. On the other hand, the extensions of UTAUT for voluntary consumer technology adoption seem to be absolutely necessary, as we found that, compared with the original four UTAUT variables, the extension factors (hedonic motivation, price value and habit) have significantly stronger effects.

One of the key findings of our research is the fact that habit is a fundamental element in explaining both usage intent and behavior in the case of online theater streaming. In line with this, we may advise theaters and streaming platforms to build habitual behaviors through subscription offers, season passes and other creative offers that will help them to transfer the new user habits to the post-pandemic world. At the same time, our results regarding the roles of hedonic motivation and price value suggest that competitive offers should be characterized by good entertainment value (e.g., a large selection, offers with high artistic value and a high image quality/resolution) and good value for money (including a longer time window for watching performances, discounts or coupons).

It appears that the age of users does not really matter. In fact, this kind of digital entertainment can easily target users aged 55 and above, without their adoption factors being significantly different from those of their younger peers. While this result is not fully consistent with the conclusions of earlier multigenerational technology adoption studies, we argue that the lack of age-related effects might be partly caused by the temporary coercive effects of COVID-19. Users with a strong demand for quality entertainment content and a long-standing habit of visiting theatres were strongly motivated to use the only platform available to them during the lockdowns: online theater streaming. Moreover, the facts that habit is the most influential factor in usage intention and behavior among every age group and that long lockdown periods favored the emergence of new online user habits allow us hypothesize that the newly developed user habits might be sustainable. However, this is a hypothesis which needs to be further examined in the future, when more post-pandemic data will be available.

5.2. Limitations and Directions for Future Research

While the most common limitation of TAM studies is that of self-reported usage [81], our data collection approach, focusing on a specific audience, and the mechanism of cross-checking with the subscriber database ensured that our respondent were actual users of e-theater services. Still, this research, like the majority of similar papers, is a one-time

cross-sectional study, which motivates us to extend our data collection and analysis to encompass a longitudinal view in the future. Moreover a more in-depth exploration of the somewhat counter-intuitive results regarding the role of trust requires further research, which might lead to further extensions of the model. Other extensions might include more factors concerning the users' personalities [82] or the system, service and content quality [83], which could further increase the explanatory power.

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