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BINGE WATCHING TELEVISION SHOWS: CONCEPTUALIZATION AND MEASUREMENT

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Research paper

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Abstract

In the wake of online television services, such as Netflix, Hulu, and Youku, binge watching, defined as an act of consuming several television shows in quick succession, has become a popular behavior. Yet it has received very little attention from academics. The present study seeks to model binge watching and to scrutinize its business potential. We present binge watching as a two-dimensional system usage concept, including behavioral and cognitive elements. Based on these elements, we introduce four baseline scenarios as to explore the influence of binge watching on satisfaction. We test our explorative approach with a sample of 228 respondents using Partial Least Squares modeling. Results from confirmatory factor analysis support heterogeneous and pattern-specific use of online television streaming services. Interestingly, only behavioral element influences satisfaction, albeit moderately. Our study contributes to online consumer behavior research as well as the information systems literature by investigating binge watching as a distinct form of technology use.

Keywords: Binge watching; online television service; satisfaction; system usage.

1 Introduction

Binge watching, referred as to consuming television shows[1] in quick succession (Jurgensen, 2012), represents an alternative to slow-paced viewing pattern. While some look askance at bingeing (TiVo, 2015),[2] the interest it generates shows no sign of slowing down. According to a recent global survey by ARRIS Investors (2015), 77% of the US and 84% of the Chinese respondents said they binge watch television shows. The results are broadly in line with other reports (Nielsen, 2013, Netflix, 2013, Harris Interactive, 2013), which also recognize it has become mainstream.

Binge watching is not a new phenomenon. Television networks have been but seldom air marathons of shows, and even then, people would be dependent on scheduled programming. Users may store their favorite shows on their digital video recorders and set top boxes, or binge them on DVD if only they were willing to wait until the episodes were first aired on television. Online television streaming service, such as Netflix, Hulu, and Amazon Instant Video in the US and iQiyi, Tudou, Youku in China, offer users a more feasible platform for binge watching. With unrestricted access and use of content, no episode is missed or in conflict with other shows, and very importantly, users can easily extend their sittings to their liking.

For online television streaming services, in turn, binge watching model affords a clear competitive advantage over traditional television, an outcome that puts increasing pressure on their rivals to jump on the bandwagon (Netflix, 2016). That is, without enabling bingeing their users will become dissatisfied and look elsewhere (Kastrenakes, 2015). For example, the pro-bingeing approach adopted by Netflix is said to outperform its competitors in terms of satisfaction (Spangler, 2015). Given that satisfaction has shown to predict future use, binge watching and its effect on satisfaction are key motivators of this study (Iivari, 2005, Guimaraes, Yoon & Clevenson, 1996, Chiu, Chiu & Chang, 2007).

As of today, no researcher has undertaken a study on binge watching to scrutinize its business potential. Thus, the timely question of whether online television streaming services that build their businesses on binge watching are beyond compare, have so far remained unanswered. This leads us to the goal of our paper, which is to examine the effects of binge watching on user satisfaction.

To do this, we begin from user satisfaction, which is used as a proxy for organizational impacts (Seddon, 1997). We then move into conceptualizing system usage. We select system usage as our parent domain because it offers a theoretically sound starting point for conceptualizing binge watching, which is still assuming a more complete form. Specifically, we assume two system usage characteristics of binge watching: behavioral involvement and cognitive involvement. Together, these will measure the extent to which the system is used for binge watching and cognition-in-use. The proposed two-dimensional approach is largely in debt to Burton-Jones and Straub's (2006) conceptualization of information system (IS) use. Next, we draw on these two involvement characteristics and introduce four potential baseline scenarios. Our explorative approach is then tested against 228 respondents who use advertising-based online television services. Finally, we summarize the findings and conclude with implications for future research and practice.

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[1] On a general note, bingeing can also concern the consumption of other than audiovisual content (e.g., books), provided that the content upon which viewers' attention falls is divided into two or more separate yet related sections. While we believe content is king, it is the consumption pattern of this sectioned content that lends meaning to binge watching behavior. To study this pattern, we decided to focus on televised productions (e.g., drama, comedy, documentary) due to our interest in online television streaming services and the fact that bingeing television shows is dependent on the mode of delivery. We thank the Reviewer 3 for his/her insights into the research scope.

[2] Since the term carries a negative connotation, academics and practitioners also use an alternative term 'marathoning' (Jurgensen, 2012, Perks, 2014). But when the old term substitutes for a new term, also the meaning gets modified. For example, Perks (2014) maintains that marathoning is watching a complete television show over a short period of time. To avoid any confusion further confusion, we decided to use the original term in this paper.

By taking these steps we believe our paper will advance information systems research in two ways. First, while researchers have made great strides towards understanding user satisfaction, for example Bhattacherjee (2001a) who has logically validated the link between satisfaction and continual use intention, there is relatively little research on how system usage influences user satisfaction (Petter, DeLone & McLean, 2008). Satisfaction and usage intention are both IS success factors (DeLone & McLean, 1992) but come with mixed results (Bokhari, 2005). Therefore, more research is needed. This leads us to our second implication, that is, system usage conceptualization and its potential source for inconsistency. By focusing on binge watching, we intend to give our support to system usage as an important indicator to IS success but not as a simple measure. This we do via specific operationalization, which we believe contributes to system usage domain and offers practitioners a logically solid foundation for effective decision-making.

2 Theoretical background

2.1 Satisfaction

This study examines the effects of binge watching on satisfaction. We adopt satisfaction because it has been demonstrated that it is key to retaining a loyal user base (Bhattacherjee, 2001b, Rai, Lang & Welker, 2002).

Basically, satisfaction is a summary outcome representing a level of approval that users assign to their experience. The theoretical justification for satisfaction draws typically on expectation–confirmation theory (ECT), according to which expectations represent the baseline that an experience is judged against (Oliver, 1980). When users adopt and begin to use a system, they form perceptions about its performance and outcomes, which are then compared against their expectations. If perceptions correspond to expectations, confirmation occurs, which in turn leads to satisfaction. In case of mismatch, disconfirmation occurs. Users are either satisfied or dissatisfied, depending on whether the system exceeds or falls short of the expectations.

While ECT is very much in accordance with IS continuance and success model studies (e.g., Bhattacherjee, 2001b, Seddon, 1997, DeLone & McLean, 1992), and has received extensive empirical support (for a review, see e.g., Khalifa & Liu, 2004), it has also attracted criticism particularly in the repurchase and service domains (Oliver, 1993, Patterson, Yu & de Ruyter, 2006). Westbrook and Reilly (1983), who applied value–percept disparity model (Locke, 1967), noted that what was expected, may not correspond to what is wanted or desired in that experience (p. 257). For example, users may have high expectations for action movies because they have heard that they are of great quality but may still have little desire towards them. Instead, they desire television dramas. From this perspective, desires are superior to expectations and seen as a moving force (Bagozzi, 1992), which, when met, contribute to satisfaction (Hunt, 1977).

However, since neither the desires nor expectations have to exist prior to the experience, their usage in measuring satisfaction becomes a challenge. For example, when users have no idea that an online television service will automatically queue up and play the next episode of a television show after a few seconds of waiting, they can hardly expect or even desire it. But after having experienced the feature they may be pleased it did.

Even the post-experience expectations and desires, albeit more realistic (Fazio & Zanna, 1981), may turn out too restrictive. This is because we cannot assume that users, despite being rational (Folkes, 1984), are able to recognize what expectations and desires account for satisfaction. Users may highlight that they liked the streaming quality that the online television service they use affords. The users may also mention that they were pleased with the protagonist, and the cliffhangers at the end of the episode that they just watched, but for the complexity of the experience, they may no longer remember everything they liked. It is also possible that they are unable to adequately describe their likes (McGill

& Iacobucci, 1992). Therefore, we propose a less conservative approach, which assumes that usage experience adds collectively to satisfaction.

Interestingly, a limited number of studies are available that focus on the relationship between system usage and user satisfaction (for reviews, see Petter, DeLone & McLean, 2008, Bokhari, 2005). These few extant studies present moderate or no support at all for this relationship (Chiu, Chiu & Chang, 2007, Seddon, 1997). Petter et al. (2008) believe that inconsistent results stem from the oversimplification of system usage measure, and recommend a more comprehensive conceptualization in order to better understand its influence on user satisfaction. Given this we will next focus on system usage and harness it for our purposes.

2.2 System usage for binge watching

The existing literature incorporates various usage measures (for a detailed list, see Burton-Jones, 2005), many of which have prompted criticism for being simplistic and inadequate, and, hence, producing inconsistent results (DeLone & McLean, 2003, Doll & Torkzadeh, 1998, Salovaara, Öörni & Sokura, 2013). Burton-Jones and Straub (2006) claim "this is due to the atheoretical manner in which usage measures have been chosen." (p. 230)

As a remedy that we also apply in this paper, Burton-Jones and Straub (2006) proposed and empirically validated a two-staged approach for conceptualizing system usage. The first stage concerns the system usage definition. For Burton-Jones and Straub, system usage refers to "an individual's employment of one or more features of a system to perform a task" (p. 231). The definition emphasizes three elements: a user (the subject using the system), a system (the object being used), and a task (the function being performed). The second stage recommends selecting the elements that have the best bearing for the given research setting. Once selected, the elements should be operationalized so that they relate theoretically to other constructs in its nomological network (p. 235).

In our study, we select all three elements to map binge watching with system usage. To do this, we raise *two system usage elements*: *behavioral* and *cognitive* involvement. Support for their parallel existence is drawn from prior studies, which claim system usage is a cognitive behavior (Barkin & Dickson, 1977, Barki, Titah & Boffo, 2007, Burton-Jones & Straub, 2006). First, behavioral involvement is used to capture the *instances* when the system is used for binge watching (i.e., the task). The emphasis is on usage pattern, an approach introduced in several previous studies (e.g., Lee, DeLone & Espinosa, 2006, Subramani, 2004), also including that of Burton-Jones and Straub (2006). The pattern binge watching follows is different from the traditional weekly-based *one-episode-per-sitting* pattern in that the episodes of a certain television show are consumed in bulk. Thus, the point at which system usage turns into bingeing is when the user consumes more than one episode in one sitting.[3] Second, while behavioral involvement is expected to account for a good deal of system usage, we observe that binge watching is also a cognitively engaging activity. By this we mean that the system is not just on in the background but requires users to actively exert enhanced cognitive efforts. Thus, to capture this cognitive involvement, we also include the user element, and measure the *extent* to which the user employs the system for bingeing.

[3] While our conception of binge watching may not measure up to what is typically considered as excessive viewing, we would like to remind that binge watching should not be automatically associated with the health risk discourse present in the medical domain the term *binge* was borrowed from (Wechsler, Davenport, Dowdall, Moeykens & Castillo, 1994, Wechsler & Nelson, 2001). Binge watching can but does not have to last for a significantly long period of time, just like a binge shopping does not have to last for a weekend (Wechsler & Nelson, 2001). In fact, people keep their sittings fairly moderate (an average of 2.3 episodes), indicating that they split their bingeing for several occasions (Netflix, 2013). Therefore, binge watching is here described as "all-you-want-to-eat viewing" rather than "all-you-can-eat viewing" (Chmielewski, 2013).

To relate the selected system usage elements to the theoretical context of our choice (i.e., satisfaction paradigm) we build on DeLone and McLean (1992). System usage is seen as a necessary condition without which there are no satisfied or dissatisfied users. It is further expected a user adopts a system she knows its usage satisfies her the most. This we believe applies also to the way she uses the system for watching television shows, implying the user would repeatedly select a usage pattern that correlates with her satisfaction. The satisfaction link is further substantiated by the flow theory (Csikszentmihalyi, 1991) that seeks to explain satisfaction and happiness. The theory suggests that when absorbed, a user becomes more focused on a cognitively involving experience, and will therefore be satisfied with the activity.

Unfortunately, binge watching can be more complex than that. A user who is satisfied with the system may not be absorbed by the system while binge watching television shows. In this case, it is still unlikely binge watching would arise boredom. This is because the user's attention has turned to stimuli originating from outside the system. These stimuli do not disturb users but contribute to their behavioral involvement in bingeing. The scenario gives rise to assumptions that bingeing could actually be, for example, a social activity or pastime where content is essential yet secondary to the experience. Another potential scenario is that binge watching is absorptive, and, therefore, adds to satisfaction. But due to situational factors (e.g., commitments to family, work, studies, or social activities), behavioral involvement does not correlate with satisfaction.

Finally, it is also possible that both cognitive and behavioral involvement are both irrelevant to satisfaction. Here, binge watching is not a dominant or absorptive usage pattern (or it just fails to determine satisfaction otherwise), yet users may think the features that enable this type of activity can still be beneficial. This assumption complies with attribution theory, which maintains that users come to think why they feel dissatisfied or satisfied and search for reasons beyond cognitive and behavioral involvement (Folkes, 1984, p. 398). Attention should therefore be directed back to theories on expectations and desires (Oliver & Gerald, 1981, Westbrook & Reilly, 1983) which promote system performance over system usage.

To summarize, we identified four scenarios and outline them in Table 1. Each scenario is founded on cognitive and behavioral involvement that either have high or low impact on satisfaction. The resulting model including the selected constructs is presented in Figure 1. Satisfaction is determined by system usage, which in our model translates into two elements: cognitive involvement and behavioral involvement.

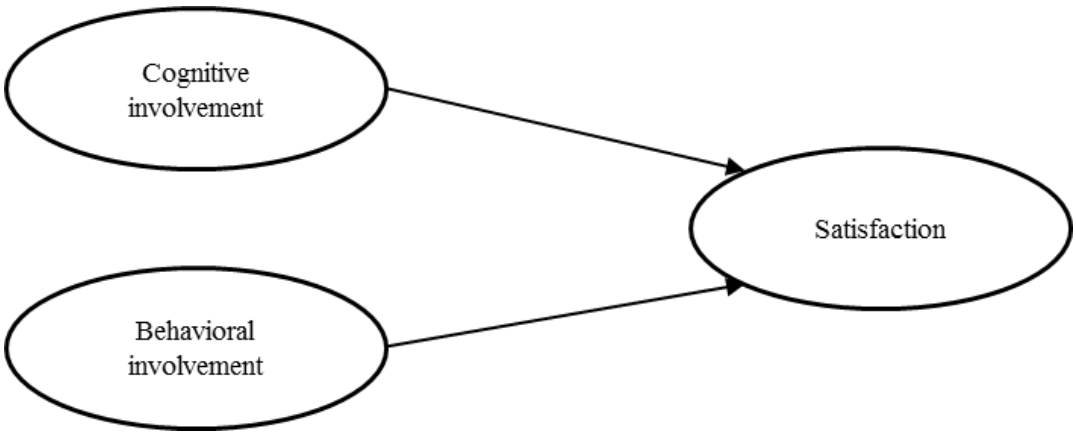

Figure 1. Research model

Scenario	*Cognitive involvement*	*Behavioral involvement*	*Description*
1.	High	Low	Bingeing, though immersive, adapts to situational preferences
2.	Low	High	Bingeing is preferred for instrumental (e.g., social) reasons
3.	High	High	Bingeing is an immersive and dominant
4.	Low	Low	Non-absorptive variable behavior

Table 1. Baseline scenarios and their descriptions

3 Empirical research

3.1 Instrument construction

The measurement items are presented in Table 2. Besides asking the respondents their background information, we asked questions on patterns in online television service usage, with a focus on binge watching and satisfaction. All constructs included in our model were assessed using five-point Likert scales. Satisfaction—which we employ to measure system usage success—is from Bhattacherjee (2001a). We preferred the overall measure of user satisfaction over other more detailed satisfaction measures because we wanted to know the extent to which bingeing, a specific pattern in system usage, explains user satisfaction. Since binge watching has not been studied before, we had to operationalize it by ourselves. Drawing on Burton-Jones and Straub (2006) we adopted cognitive absorption (Agarwal & Karahanna, 2000) to operationalize cognitive involvement. We preferred cognitive absorption over various constructs of flow since it includes a dimension, *focused immersion*, which is particularly useful for measuring cognition-in-use. Focused immersion means being engrossed in a task and refers to the intensity of focus in that task (Agarwal & Karahanna, 2000, Rothbard, 2001) While cognitive absorption contains other dimensions (control, curiosity, heightened enjoyment, temporal dissociation), we did not use them since only focused immersion measures cognition-in-use. Behavioral involvement, which captures the instances the system is used for binge watching, was formed afresh. The items of this construct were developed by the leading author, with support from a group of doctoral level students who had first-hand experience with using online television services for binge watching. We then substantiated the selected constructs using a non-random sample of 25 Chinese media students. The respondents examined the constructs and, if necessary, made remarks on the wording of each individual item. Items of uncertain nature were then reworded based on the provided feedback.

The original survey was constructed in English, according to the wording guidelines (Fowler, 1995). The survey was then translated into the target language by a qualified Chinese translator. The translation was double-checked by a group of native Chinese speakers from academia to ensure its validity. Finally, a field test was carried out, as described in the next section.

Construct	*Item*	*Source*
Cognitive involvement (CINV):	When using the streaming service to watch several episodes of the same TV show in one sitting… (1 = Completely agree – 5 = Completely disagree)	(Agarwal & Karahanna, 2000, Burton-Jones & Straub, 2006)
CINV1	...I am able to block out all other distractions	
CINV2	...I feel totally immersed in it	
CINV3	...I do not get distracted very easily	
CINV4	...My attention does not get diverted very easily	
Behavioral involvement (BINV):	When using this streaming service… (1 = Always – 5 = Never)	New scale developed for this study
BINV1	...I watch more than one episode of the same TV show at a time	
BINV2	...I watch the same TV show for several episodes in one sitting	
BINV3	...I watch multiple episodes of the same TV show without having any breaks	
Satisfaction (SAT):	My overall experience about using the streaming service for watching TV shows is…	(Bhattacherjee, 2001a)
SAT1	Very displeased (1) – Very pleased (5)	
SAT2	Very frustrated (1) – Very contented (5)	
SAT3	Absolutely terrible (1) – Very delighted (5)	

Table 2. Measurement items

3.2 Data collection

Empirical data for testing our model was collected from students of Central China Normal University (CCNU; Wuhan) via an online survey (Spring 2015). We used a student sample because students in China live typically in on-campus housing where television screens are banned but computers and mobiles permitted. In China, users can choose from a dozen of national online television services, which provide international and local content via easy-to-use web interface. Binge watching is possible either for free or with a paid subscription. However, most of the Chinese online television services gain revenue from advertisements, a model appropriate for students with little income. This however seems to agree with the fact that the young Chinese are leading the way in gradually shifting towards viewing television online (Arris Investors, 2015, ZenithOptimedia, 2014). Hence, we believe that the abovementioned factors together make these students an ideal group for examining their viewing behavior.

The students were self-selected for this study via printed handbills distributed on and around the CCNU (Central China Normal University) campus in Wuhan. Each handbill had a quick response (QR) code and website address (URL) that enabled access to our online survey with mobile device or desktop computer. Before delivering the handbill to students we briefly explained the purpose of our study, and as incentive, gave them a small candy. Multiple responses from the same IP address were not permitted.

The online survey received 287 responses. The survey results are analyzed with fully completed response (227). The average respondent was a 21-year old female student with a bachelor's degree. She watched television shows several times a week, either via Youku.com or iQiyi, both of which are major players in the Chinese online TV market. She sometimes used these services for binge watching reality and game shows. In her view, she binge watches irregularly. See Table 3 for demographics.

Measure	*Items*	*%*
Gender	Male	22.8
	Female	77.2
Age	<20	7.5
	20 – 24	59.3
	25 – 29	29.2
	30 – 34	4.4
	> 34	0.4
Education	High school graduate	23.2
	Bachelor's degree	52.2
	Master's degree	21.8
	Doctoral degree	1.8
Preferred service	Youku.com	28.8
	iQiyi	25.7
	Sohu Video	8.0
	PPTV	5.8
	Tudou	4.4
	Others	27.3

Measure	*Items*	*%*
Frequency of use	Several times a day	20.1
	About once a day	16.5
	Several times a week	43.8
	About once a week	11.6
	Less than once a week	8.5
	Don't use at all	0.4
Bingeing regularity	Very regularly	4.3
	Regularly	14.3
	Neither the one nor the other	25.7
	Irregularly	38.6
	Very irregularly	17.1
Category	Reality and games	44.0
	Drama	32.4
	Animation and cartoons	8.8
	Others	14.8

Table 3. Demographics and preferences

3.3 Analysis

We employed partial least squares (PLS) with SmartPLS M2 (Ringle, Wende & Will, 2005). We selected PLS over covariance-based structural equation modeling since PLS is particularly well-suited for exploratory research and models in early stages of theory development (Hair, Sarstedt, Ringle & Mena, 2012).

Before testing the model, we tested the convergent and discriminant validity of the measures using the criteria by Fornell and Larcker (1981). As can be seen from Table 4, the AVE values, composite reliabilities, and Cronbach's Alphas indicate good convergent validity for an explorative study. Furthermore, all item loadings except for BINV4 were greater than 0.7. With respect to discriminant validity, square root of AVE for each construct exceed the highest correlation between the construct and any other construct. Furthermore, each item loads higher on its intended construct than any other construct indicating good discriminant validity on item level. We also employed Harman's one factor test to examine common method bias (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). The test indicated that no single factor accounts for the majority of the total variance and hence the common method bias is unlikely to affect the results.

Construct	*AVE*	*Composite Reliability*	*Cronbach's Alpha*
CINV	0.715	0.909	0.873
BINV	0.603	0.818	0.692
Frequency of use	0.797	0.887	0.746
SAT	0.781	0.915	0.861

Table 4. Construct validity

Item	*CINV*	*Age*	*BINV*	*Category*	*Gender*	*Amount of use*	*SAT*
CINV 1	**0.748**	0.009	0.220	0.025	0.008	0.119	0.074
CINV 2	**0.837**	0.000	0.222	0.043	0.035	0.147	0.079
CINV 3	**0.919**	0.035	0.241	0.065	0.012	0.061	0.169
CINV 4	**0.869**	0.050	0.239	0.049	0.101	0.013	0.147
Age	0.035	1.000	0.131	0.173	0.139	0.026	0.066
BINV 2	0.264	0.108	**0.850**	0.067	0.107	0.227	0.241
BINV 3	0.172	0.083	**0.833**	0.217	0.056	0.290	0.147
BINV 4	0.168	0.124	**0.628**	0.081	0.087	0.215	0.115
Category	0.041	0.173	0.144	1.000	0.056	0.012	0.001
Frequency of use	0.134	0.013	0.281	0.020	0.114	0.905	0.205
Recency of use	0.004	0.035	0.264	0.045	0.098	0.881	0.185
SAT 2	0.119	0.037	0.275	0.008	0.001	0.168	**0.887**
SAT 3	0.133	0.061	0.200	0.011	0.089	0.227	**0.876**
SAT 4	0.157	0.081	0.127	0.006	0.007	0.185	**0.889**
Gender	0.050	0.139	0.110	0.056	1.000	0.119	0.038

Table 5. Item loadings and cross-loadings

Construct	*CINV*	*Age*	*BINV*	*Category*	*Gender*	*Frequency of use*	*SAT*
CINV	**0.846**						
Age	0.035	**n/a**					
BINV	0.271	0.131	**0.777**				
Category	0.041	0.173	0.144	**n/a**			
Gender	0.050	0.139	0.110	0.056	**n/a**		
Frequency of use	0.081	0.026	0.305	0.012	0.119	**0.893**	
SAT	0.153	0.066	0.232	0.001	0.038	0.219	**0.884**

Table 6. Inter-construct correlations

3.4 Results

The result demonstrate that after controlling for the effects of age, gender, program category, and amount of use, behavioral involvement has a statistically significant ($p<.05$) albeit weak positive effect on satisfaction. Cognitive involvement had no impact on satisfaction. Altogether, the model accounted for 9.7 per cent of the variance in satisfaction. Overall, the results show that only behavioral involvement in bingeing explains satisfaction, though very moderately.

Relationship	*Beta*	*T Statistic*	*p-value*	*sig*
CINV -> SAT	**0.090**	**1.265**	0.207	
Age -> SAT	**0.102**	**1.546**	0.124	
BINV -> SAT	**0.181**	**2.426**	0.016	*
Category -> SAT	**0.046**	**0.670**	0.503	
Gender -> SAT	**0.022**	**0.309**	0.758	
Frequency of use -> SAT	**0.161**	**2.711**	0.007	**

Table 7. Beta coefficients, T-values, P-values, and significance levels

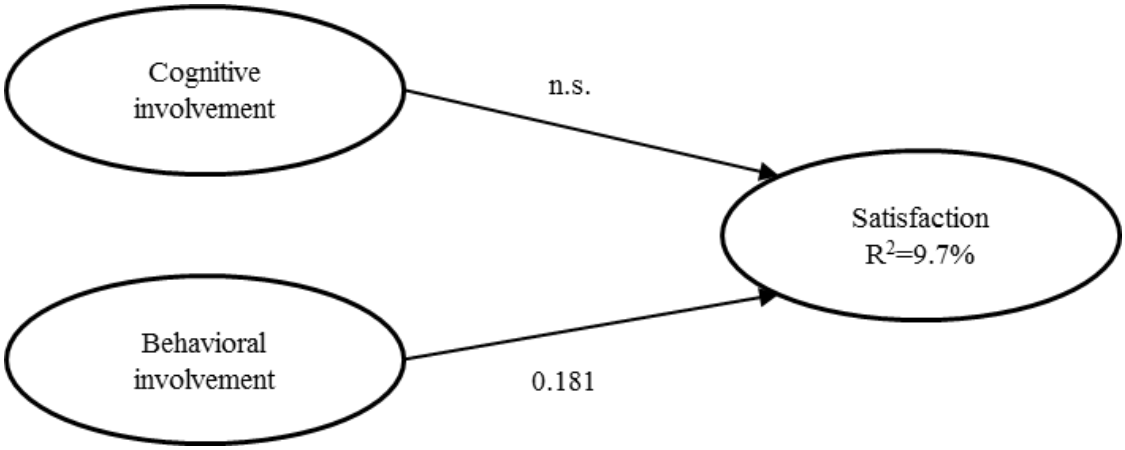

Figure 2. Structural model

4 Discussion

The primary focus of this paper has been to scrutinize the business potential of binge watching behavior by measuring its effects on satisfaction. In doing so, we conceptualized binge watching and measured it with two distinct components, cognitive and behavioral involvement. Satisfaction is then explained using these two components. Our findings contribute to both system usage and satisfaction research.

4.1 Multiformity of system usage

In line with prior literature (e.g., Petter, DeLone & McLean, 2008, Straub, Limayem & Evaristo-Karahanna, 1995), our results suggest that system usage is a complex construct that calls for its rich conceptualization in accordance with the context within which it is embedded. While past studies have greatly enriched the research on system usage (Barki, Titah & Boffo, 2007, Burton-Jones & Straub, 2006), no such conceptualization exists for binge watching. We believe that our endeavors in this matter emphasize the importance of studying specific patterns in system usage. Drawing on Burton-Jones and Straub (2006), we sought to capture binge watching by two components, behavioral and cognitive involvement, which represent the extent to which users employ a system for binge watching and the extent to which they interact with the system whilst binge watching. Via both of these components system usage is put into its context behavior, substantiating Burton-Jones and Straub's (2006) approach. Our conceptualization was empirically demonstrated by studying binge watching behavior among university students in China.

We observe the conceptualization is relevant not only for users whose binge watching revolves around the content provided by the system but also for online television streaming service operators since their decision making depends on the patterns through which the system is utilized. This is because binge watching clearly differs from what is presumed as 'common' viewing (one episode per sitting). Oftentimes, users binge watch television shows for entertainment and relaxation, just like they would if they were watching them on a weekly basis. But they may also do it for reasons beyond traditional television viewing, one being catching up on missed television shows after they were originally aired. Therefore, we infer binge watching also manifests users' efforts to use the online television services effectively (Burton-Jones & Grange, 2013).

Further, while users do not usually engage in weekend or all-night marathons but, on average, binge two to three episodes in one sitting (Netflix, 2013), the time horizon within which users devour a complete television show is presumably shorter than it would be if it was not for the online television streaming services that enable binge watching. Besides saving time, binge watching can thus help users shorten their subscriptions periods (Singer, 2015). From an online television streaming service standpoint, early cancellations are no doubt detrimental to revenues. Moreover, using the system actively for binge watching may even increase business costs as it would drive users demand for more content. Interestingly, this is what the online television streaming services are now doing. Releasing original productions in bulk rather frequently gives an advantage the traditional television finds it difficult to compete against (McAlone, 2016).

Based on our results, however, it seems that while online television streaming services lend themselves to binge watching, the pattern is not put to routine use. One explanation is that the ability to control over which episodes to watch and at what frequency is useful no matter how users utilize the system. So, even if they do not always use the system for binge watching, it would still be worth subscribing to.

Our point here is that if a common system usage measure is employed, it would assumably be impossible or at least very difficult to identify the underlying patterns in usage, which according to Subramani (2004) are characterized by distinct goals and outcomes. Take the advertisement-based online television services for an example. For them, binge watching would probably bring more revenues via increased customer base if only their users approved advertising whilst bingeing (TiVo, 2015). Without realizing this the services cannot improve their users' binge watching experience (e.g., disable advertising in return for fee or, perhaps even better, for acquiring new customers).

Taken the above, IS studies should thus go beyond general system usage measures and consider in detail the ways in which and purposes for which a system is used (cf., Salovaara, Öörni & Sokura, 2013). Future research will show whether this approach is suitable for cases where similar patterns in system usage are modeled.

4.2 System usage and satisfaction relationship

To explore the relationship between system usage and satisfaction, we identified four baseline scenarios. Of these scenarios, the results lend moderate support for non-absorptive binge watching.

Only behavioral involvement exerted a statistically significant, albeit relatively weak, influence on satisfaction (0.181). The variance explained in satisfaction was still low (9.7%). To put the results into perspective, we refer to Bokhari (2005). In his meta-analysis, the correlation between system usage and satisfaction was moderately higher (0.255) than in this study. While our results add to conceptualizations of more heterogeneous and pattern-specific system usages, we admit that system usage is a complex and variable behavior. This is exemplified via cognitive involvement, which had no effect on satisfaction. Since the results exclude the influence of different content categories from consideration (we presumed absorption may depend on what content users are binge watching) we looked at the open-ended questions about the respondents' motives for binge watching (see Table 8). The respondents said they engaged in binge watching when bored. For service providers, users regulating their

mood by binge watching television shows is of course desirable, even if cognitive involvement does not explain satisfaction. One must note that users may binge watch due to external positive stimuli, such as social pastime, through which they are able to connect with the system. However, filling time with binge watching as an antidote to boredom may also explain why binge watching has been associated with loneliness and depression (Sung, Kang & Wee, 2015, see also McIlwraith, 1998).

Category	*Original quotation*	*Translation*
Boredom	无聊的时候就会	*"Boring time"*
	没有事情做	*"Nothing to do."*
	闲	*"Idleness"*
	没有什么事情可做 比较闲	*"Nothing else to do"*
Pastime	我的时间充裕	*"I have plenty of time"*
	空闲时间多	*"Free time"*
	并且我自己有充足的时间	*"I have free time"*
Content	有趣	*"Interesting"*
	内容好看	*"Nice content"*
	节目的内容	*"Content"*
	电视节目的剧情趋使我去观看多集。	*"Drama made me watch more episodes"*

Table 8. Example motives for using online television services for binge watching

In terms of behavioral involvement, the results indicate significant albeit moderate influence on satisfaction. This is because users are not always using the system for binge watching. Binge watching takes time, which can be scarce on occasions. What happens, particularly if system usage in general is frequent as reported by our respondents, is that binge watching surrenders to other less intensive viewing patterns and becomes irregular. And when it does, it correlates poorly with satisfaction. Based on our results, which confirm that the system was mainly used irregularly for bingeing, we conclude that satisfaction is less determined by binge watching than it is by other available usage patterns. Still, we find it important. More support to our view can be drawn from other actual users. For example, had Netflix not allowed their users to binge watch television shows, its user base would probably be far smaller. Their model has also increased customer retention because, when the company started to premier television shows in bulk, it gained many satisfied customers. One can thus claim it is a long-awaited usage pattern, which not only makes customers happy random bingers but, more importantly, also subscribers: "It [the wait] has been far too long. Also, another reason not to cancel my Netflix sub[scription]." (Screenrant, 2013)

4.3 Limitations and future research

We acknowledge various limitations in our study. Sample composition is perhaps the most significant limitation of our study. First, we used Chinese university student subjects as respondents for testing our model. While the respondents had experience on using online television streaming services for binge watching they represent a limited part of the target population and, hence, the results may not be generalizable to other user groups. For future research, development, and application, it is worth considering to test our model using a sample of respondents with diverse demographics and cultural backgrounds. After all, online television streaming services, which make binge watching possible, are spread worldwide. Second, we used a self-report questionnaire. Thus, we suggest future research will validate our model using objective data. The measures for binge watching we used here can be operationalized when the data collected include information on eye-tracking and the number of consumed

episodes in rapid succession. This approach will remove the typical downsides of the self-reported questionnaires.

Third, we must point out that our study is limited to examining binge watching television shows. We encourage future research to examine system usage behaviors, which manifest similar patterns as observed in binge watching behavior, in other information system settings. For example, studies on gaming behaviors may benefit from the application of our model. Including motivational antecedents to our system usage construct is also valuable because it can provide us with more accurate information on causes and consequences of system usage (advantages: e.g., customer retention, loyalty, word of mouth; disadvantages: e.g., addiction).

Fourth, our examination of binge watching has made us realize aspects in IS usage that go beyond our involvement components. As noted above, binge watching takes place irregularly. That is, it occurs and stops at irregular intervals. While it appears it is one of binge watching's inherent characteristics, it can be linked to other IS behaviors. For example, navigation systems are used mostly when people are navigating, and many productivity tools are used only when people are at work. This makes that, on average, individual occurrences carry more weight than they would when a system is used frequently. If it happens that a user is not satisfied with the system, the user may be more willing to quit using the system, even if the system failed the user only once. Therefore, high satisfaction level can be mistaken for future business potentials. Given this it would be interesting to see what success factor irregular use should be measured against to offer practitioners the most reliable organizational performance indices.

Finally, we acknowledge behavioral involvement may not be able to accurately capture satisfaction in mandatory use contexts. When users are not employing the system for patterns to their liking, satisfaction is presumably more associated with expectations than behaviors or desires. Attention should thus be directed back to theories on expectations (Oliver & Gerald, 1981).

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