

# Improving the app experience: collaboratively co-creating through social media.

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**Abstract** | Increasingly, the involvement of people in events extends far beyond the physical realm and encompasses the digital experience - sharing through social media and mediated by mobile technology. In a bid to understand how to improve the digital and mobile experience and subsequently the user experience in an event context, this paper presents the Digital Event Experience Diagnostic and Development Framework (DEEDD). The DEEDD conceptual framework is first developed from a synthesis of the literature encompassing communications, mobile technology and event experience theories. Using a generative research approach, through the emerging technique of digital Netnography, the framework is tested in a real event context incorporating qualitative insights gained through participatory design enquiry. In view of the empirical evidence presented, further development of the conceptual model was undertaken and is incorporated in the final DEEDD model presented in this paper. In this model we posit that participatory design enquiry, through pro-active event participant engagement, creates new value and increases event satisfaction - ultimately leading to a better event experience for all users.

**Keywords** | Co-creation, mobile app, event experience, netnography, U&G theory

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## 1. Introduction

As the range, function and availability of mobile applications (apps) increases ever more rapidly (Harrison, Flood & Duce, 2013), event management teams are fundamentally challenged to adapt and engage with mobile technology. This requires individuals and event teams to collectively develop, perform and ultimately create/co-create (Campos et al., 2015) better experiences if they are to work within existing funding mechanisms (Holst Kjaer, 2011). Event success will depend on seeking new approaches to collaboration to ultimately assure sustainability (Devine & Devine, 2016). While many people, with some justification (Hutchinson, 2016), feel that mobile technologies are a distraction from the real event experience, it is hard to imagine a future scenario of an event experience, which is not reliant in some part on mobile technology. Several works seed means by which to achieve more balanced technological, organisational and environmental outcomes within tourism and events experiences, particularly through designing for mobile. Yet there is still a lack of empirical research focused on engaging experience driven co-creation as a means of user innovation (Tussyadiah, 2017). Building on this point Tussyadiah (2013) highlights the importance of capturing situational contexts in future studies, of which uses of event apps can be considered one.

Mair and Whitford (2013) predicted interesting, diverse and innovative studies adding to the growing body of events literature. Del Chiappa & Baggio (2013) highlight the necessity to innovate in order to remain competitive. This study develops a theoretical framework and subsequently, a model, that provides insight into how to manage the experiences of event goers, protecting their interests, whilst embedding mobile technology user innovation within the social paradigm as highlighted by Getz (2015).

## 2. Theoretical Framework

As the bridge to a 'dynamic ecosystem of value co-creation for consumers' (Buhalis & Foerste, 2014, p.159), mobile technology is the most appropriate starting point to assess the potential of collaborative advantage (Devine & Devine, 2016) through uses and users of event tourism technologies. Increasingly people are celebrating their involvement in events through sharing their experience via mobile technology (Getz & Page, 2015, p.619). Indeed, from an ICT perspective, consumer involvement in the experience within tourism studies, has been a major focus for some time. Only a small number of studies are focused on the use of mobile in terms of the event experience (Inversini et al., 2016).

Whilst smartphone use in general has become an accepted behaviour in everyday life, at event experiences it is often viewed negatively, as evidenced in Hutchins (2016) article, 'We don't need no stinking smartphones!'. Event participants have clearly mixed views on their use. That said, as Inversini et al (2016, p.545) note, "whilst mobile touch-points are yet to completely monopolise the consumption journey of events, our dependence on their utilities are inevitable and escalating." Thus, the synthesis of the literature review in the current paper will further focus on co-creation, collaboration and the theory of uses and gratifications in the context of mobile apps, and provide a theoretical starting point for the empirical study.

- (i) Co-creation, collaboration or co-destruction?

It is evident that to collaboratively produce better event experiences (Holst Kjaer, 2011), thought must be given to the diversity of perceived uses of mobile apps, particularly in the context of event satisfaction derived through the overall event experience. This is highlighted as critical to 'joint creation of value by the company and the

customer' (Prahalad & Ramaswamy, 2004, p.8). Through the experience typology matrix, which links technology and co-creation, Neuhofer et al. (2013) identify the impacts of the intensification of technology and/or the intensification of co-creation and the subsequent positioning of experiences as traditional or enhanced. In a subsequent paper, Neuhofer (2016, p.789) explores 'the flipside of technology' and highlights 'evidence that not all resources are value-adding but can be value-destroying, effectively leading to diminished experiences' (Neuhofer, 2016, p.780). Adding additional oversight to the argument, Gretzel (2015, p.562) highlights "privacy concerns, the effects of technology-mediated life, information overload/the value of information, trust in smart technology and enjoyment of technology-enriched experiences are only some of the many issues that need to be researched."

### (ii) Uses and Gratifications

In order to establish what is likely to be value creating, it is pertinent to look at theory which links mobile apps to their uses. As a means of exploring mobile apps in terms of meaning within an events context, Uses and Gratifications Theory (U&G) offers a motives focused approach to evaluating mobile app consumption comparatively to the technology acceptance model (TAM) which relates more to perceived ease of use and usefulness (Furner et al., 2014). Applying U&G offers an insight into perceived value of smartphones as media experience as it analyses how audiences intentionally select media, which will satisfy their needs (McQuail, 2010). Wang et al. (2012, p.2) highlight that mobile is 'often influenced by a number of factors including perceived usefulness, perceived ease of use' and argue that earlier studies of mobile use stopped short of examining how smartphone use actually shapes experience. The "U&G approach may serve as the vanguard of an eventual thorough quantitative and qualitative analysis of new media

technologies" (Ruggiero, p.24, 2000).

At its most simple, U&G focuses on people's purposive use of media, positing that users actively seek satisfaction of various needs (Katz, Blumler & Gurevitch, 1974), such which can be viewed as ritualised and/or instrumental (Rubin, 1984). Therefore, U&G looks more at motivation of media use, as opposed to TAM, which is based on 'perceived ease of use (PEOU) and perceived usefulness (PU)' (Joo & Sang, 2016, p.2513). U&G has been re-applied to the context of smartphone use in recent times (Joo & Yang, 2013). Given that event tourists 'produce data through social media activities or the use of location-based services... , often made palatable through mobile apps' (Gretzel, 2015, p.561) - these mobile interactions offer an excellent focus for empirical investigation.

### (iii) Conceptual Model

From an academic perspective, it is critical that a framework pays attention to both connection and disconnection - the needs of non-use and use as evidenced by Light, (2014). Further, Hutchins (p.430, 2016) expresses sentiment critical for satisfaction around the event experience in relation to mobile impacts, "articulated in terms of a shared investment in the team, event, and/or moment". Thus, in order to position the construct further, research on these impacts of mobile technology will be linked to Getz & Page's (2015), framework for knowledge creation around event tourism. The link is tacit to the core event phenomenon (Getz & Page 2015). The theoretical framework focusing this pilot study will draw inspiration from Uses and Gratifications Theory in the context of spectators of sports events.

Figure 1 presents the theoretical framework developed from the literature which will be further explored through a subsequent data collection stage of the study. The model is adapted to event experience contexts as a means of empirically exploring data inducted via social media. It has been specifi-

cally designed to contrast earlier unified U&G and TAMS models (Park, 2010; Joo & Sang, 2013) by focusing more on the satisfaction of users motivating needs as opposed to the precepts of technology acceptance. The implications and significance of this approach will be derived through its use (and validation) to better understand the motivations of event app

users, opportunities presented by smart technologies aiding co-creation through service personalisation (Neuhofer et al., 2016) linking social media data to enhancing the event app experience. Campos et al. (2015, p.29) highlight a research gap necessitating the “empirical investigation on the on-site experience, where strong emotions, learning, and meaningful memories emerge.”

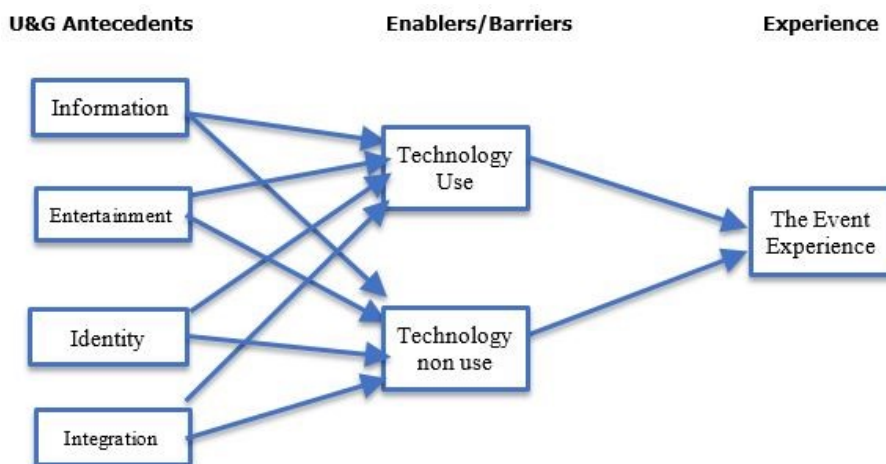


Figure 1 | Digital Event Experience Diagnostic and Development (DEED) Theoretical Framework

(iv) U&G antecedents

McQuail (1987, p.73) highlights ‘information’ as antecedent in the typology of common reasons for media use and exemplifies its character with the example of ‘finding out about relevant events and conditions in immediate surroundings, society and the world.’ Personal Identity, e.g. reinforcement of values, behaviours and through ‘valued others’ is presented with Integration and Social Interaction in our framework. Lastly, we will measure preference for entertainment as a U&G antecedent, which encompasses escapism and ‘intrinsic cultural or aesthetic enjoyment’ amongst other satisfactions. U&G posits that an (event) audiences’ media consumption choices are driven by a desire to satisfy a wide range of needs (Joo & Sang, 2013) thus the use of U&G for interpretation provides a framework and lens highlighting both ritualised

and instrumental needs (Rubin, 1984).

(v) Enablers/barriers of app use in event contexts

In order to explore the potential of mobile apps as a window into the event experience as well as to identify the enablers and barriers perceived by users, Neuhofer, Buhalis and Ladkin’s (2013) enabler barrier model (relating technology acceptance precepts) will be adapted to assess elements such as hardware, software, uses, usability, telecommunications and infrastructure. As Neuhofer (2016, p.780,) notes, “not all resources are value-adding but can be value-destroying, effectively leading to diminished experiences and value.”

(vi) Experience

Trends in events and festivals identified by Yeoman

(2013) such as mobile living (connecting), performative leisure (sharing), the accumulation of social capital (showing) as well as the pursuit of the 'everyday exceptional' (Getz & Page, 2015, p.619) are creating desires which event goers seek to fulfil through both connection and disconnection. The proposed model facilitates the examination of satisfactions and dissatisfactions of an event app as part of the event experience. Crucially adding to the research gap identified by Getz (2015) in detailing new models to understand (and create) event experiences.

### 3. Methods

This research process aims to innovatively address fundamental challenges faced by the tourism and events industries of creating and co-creating value and satisfaction enhanced by mobile technology (Neuhofer et. al, 2013). The event chosen for study is the International North West 200 road racing event in Northern Ireland. The event is one of the top three road racing events globally and attracts an over 85,000 visitors, spectators and fans of which 20% are overseas (see appendix 1).

A netnographic style approach was adopted, where accessing of online communities, provides representative qualitative data highlighting the 'explicit and implicit needs, motivations, problems, desires, attitudes, sentiments, experiences and solutions' from community members' perspectives (Stockinger, 2014, p.58). As a warrant, Getz (2015, p. 610) prescribes the use of netnography to learn how people describe, explain and assign meaning to event tourism experiences. Focused through the event's Facebook fan page, a tool was integrated to facilitate participatory design enquiry which, as a form of generative research, served to "engage users in creative opportunities to express their feelings, needs, dreams and desires, resulting in rich information for concept development" (Mar-

tin & Hannington 2012, p. 94).

The philosophical underpinnings of the research process are phenomenological in nature through an interpretive approach and as such, more reliant on subjects providing their own explanations over the situation, experience and/or their behaviour (Bolan, 2014). The analysis is focused through an online integration using app experience artefacts as personifying objects onto which tourists can project their attitudes and feelings more easily. (Tussyadiah, 2017, p.185) Tussyadiah (2013, p.252) further highlights that 'organisations that nurture relationships with consumers in social media have higher capacity to recognize, understand, and analyse consumer information for their benefit'. Thus, in applying this research approach, we seek to harness the event crowd's social and digital event integrations 'to solve design problems by facilitating behavior change through ICTs'. As such, the study highlights the potential of analysis through Tussadyiah's (2017) toolkit for technology and behavioral design, in deploying 'expressive exercises to facilitate users in articulating their thoughts, feelings, and desires' (p.185). The ICTs used were Facebook (for mediation), NVivo (for analysis) and an innovative Facebook integration called 'Poll' (for data extraction) which provides a simple and engaging interface embedded within a fan page post.

The following section will provide analysis of user responses to questions which aimed to help participants articulate the inner dialogue they experience when logging onto the event app. Like many apps, upon initiation, users are asked to provide permissions for further personalisation of their experience. Fundamentally, this process aims to explore the perceptions of users in relation to the benefits and challenges of sharing data for the purposes of a more personalised experience (Gretzel et al., 2015).

#### 4. Results

The analysis focused on examining the event app experience through the proposed DEEDD framework. Data from the 116 participatory enquiries elicited through projective reflective analyses focused on app artefacts, served through the polls API via Facebook to event fans and were coded based on U&G motivations and TAM dimensions. Some instances of a statement being anchored in more than one category of U&G motivation were acknowledged and as such were coded to those related.

The aim of this paper was to empirically test the DEEDD framework in the context of gaining better understanding of participant opt in toward co-creating the event experience (Campos et al., 2015). Significant benefits exist in terms of risk reduction in latter stage open innovation processes where idea generation, evaluation, testing or concept development is being sought. In this instance, qualitative responses were inducted relating to the experience journey of app users – using both text and image. Of 811 visitors to the fan page post, a total of 116 completed the ‘projective’ digitally mediated reflective analysis (Tussyadiah, 2017, p.185) facilitating the empirical examination of the application of the DEEDD model presented in Figure 1. The process aimed to deliver critical insights into

participant motivation, preference and expectation toward using the event app. The following are the 6 open & closed questions:

Q1. How well do you expect an app to load at the event?

Q2. What opportunities and/or challenges do you perceive location services will offer your event experience?

Q3. What opportunities and/or challenges do you perceive push notifications will offer your event experience?

Q4. What opportunities and/or challenges do you perceive enabling social features will offer your event experience?

Q5. Please rank, in order of preference, the features that would most improve your event experience.

Q6. What opportunities and/or challenges would you perceive from sharing your Facebook profile information to make your event experience more personalized?

Answers to each open question were coded to each dimension of relevance (in some instances, as previously stated, to multiple dimensions).

Dimensions	Q2	Q3	Q4	Q6	Coded
Entertainment	3	1	8	5	17
Identity	1	0	7	4	12
Information	58	51	26	23	158
Integration	14	3	51	25	93
Software Barriers	3	1	1	0	5
Hardware Barriers	5	3	0	0	8
Telecommunications Barriers	22	4	2	0	28
Usage Barriers	4	15	13	28	60
Privacy	3	0	2	23	28
Software enabler	0	0	4	0	4
Usage and Usability enabler	9	26	34	19	88
User driven ideas	13	13	6	4	36
DEEDD Challenges	14	25	16	29	84

Figure 2 | DEEDD Dimensions following initial coding

Figure 2 is a matrix of initial coding and frequency of DEEDD dimensions elicited via the Facebook Polls API using app experience artefacts (screenshots) and closed and open ended explorative questions. The following are antecedents, enablers, barriers, opportunities and challenges corroborated through data analysis.

- (i) Information: Research findings reflect the extent to which Getz (2015) and others highlight the availability for Event tourists of a considerable number of “formal and informal information sources” (p.613). It is by far the largest motivation across the range of perceived use. Of the 158 references provided, strong interest was shown into Schedule, News, Events, Locations, Directions, Travel, Weather, Amenities and Retail. The following quote from case 113 highlights the current demand for event information: “Exact location on course. Food outlets, programme sellers nearby.” (Case 113, Q2.). Further evidence of location services and augmented reality (AR) as relevant technology solutions for demand (Neuhofer, 2013).
- (ii) Entertainment: Although only referenced 17 times, the provision of photos, lives-

stream, video, commentary, social stream and personalization experience hint at the opportunity of technology enhanced event experiences of the future (Neuhofer et al., 2013). Even as far as a fully immersive experience such as “Hopefully live footage of where u are.” (Case 56, Q2.)

(iii) Integration: With 93 references from within the dataset, integration is for some a critical element of experiencing their event (Getz, 2015). Examples could be represented as directed by motivations of sharing, exploring, meeting, reaching, marking, co-creating and growing. This antecedent is one which is an obvious critical motivation to participate. The chance that it “May be possible to [meet] new friends of a like-minded view on life” (Case 116, Q6) or an immersive integration where “friends can comment and enjoy. Plus I can catch up with other fellow race goers.” (Case 89, Q6).

(iv) Identity: Identification with an event is a critical motivator for participation. Although only 12 references were coded, they point to people positioning, experiencing, being, immersing and even owning and

sharing their event eg. as presented by Case 93 suggesting “Enabling social media feature will benefit both me as an event spectator along with the overall event” (Case 93, Q4). The concept of performative leisure (Getz, 2015) is quite evidently an opportunity for event organisers to leverage participant identification and integration where a participant seeks an outcome such as “Linking my Facebook page with the North West Page, sending me info or tagging me in stuff upcoming” (Case 74, Q4).

(v) Barriers: In total, 129 barriers were coded across software, hardware, telecommunications usage and finally, fears around privacy. These factors are critical to the potential event experience if their presence produced dissatisfaction (Neuhofer, 2016) and thus are an important component of study. Barriers ranged across intrinsic and extrinsic factors which would lead to non-use of the event app and included perceptible challenges such as the expectation of Case 22 (Q3.) “Personally I think it would distract me from what’s happening..” but in the same sentence the respondent suggests “..but I would appreciate race results etc. being sent.” This hints at a digital dilemma, potentially conflicting with an aspirational level of event immersion.

(vi) Privacy: Loss of control, data security, annoyance and inconvenience are some of the barriers highlighted within the 28 coded references to this node. Often the position and dichotomy of the challenge of using social media for some users, such as in this example from Case 51, Q6 who maintains “My profile info should stay private to me.” There is certainly concerns present in the populace around co-creation practice using customer data as a starting point with the following statement from Case 77, Q6, which

presents the case for and against sharing - “Privacy could be impacted however it would again be a good way to engage and let friends and new friends know what you are doing.”

Telecommunications barriers (28 instances coded) presented the largest single technical issue perceived to interfere with the event app experience. Perceptively, there is evidence that event fans do not believe there to be utility from their data in co-creating elements of an experience and many seeing the request for opt-in as follows: “It’s too invasive. I don’t see how this app can personalise a large-scale event like this” (Case 112, Q6).

(vii) Usage and Usability Enablers: Eighty-eight references were coded to this node which makes it the highest coded TAM element. Whether this was due in part to the questions requesting feedback on opportunities firstly, as well as challenges is worthy of further examination but beyond the scope of this paper. The most common answer was a variant of “Personalised experiences are always preferable” (Case 10, Q6). Indeed, further echoing the benefits of supporting a more integrated user experience but highlighting the primary perceived challenge, Case 10, Q3. suggests “Push notifications if provided regularly will be great although the internet provision, as mentioned above, will be the greatest obstacle.”

(viii) DEEDD Challenges: The challenges (84 coded) presented were not new in terms of implementing research protocols and are stumbling points which present within many methods where communication is fundamental. Challenges ranged from quite obstinate respondents who would choose to take issue with each question raised such as Case 4 who, although with some reason,



commented negatively throughout such as “What?????? This question makes absolutely zero sense to me” (Q2). Indeed, from apathy (the most prevalent challenge), to anger and resentment – the major benefit of using the Polls API is that these representations are not public and thus are presented in a safe space less likely to explode into a significant social media spat (Neuhofer, 2016).

(ix) User Driven Ideas: Building on the findings of Tussyadiah and Zach (2013, p252) who suggest researchers measure “the actual innovation performance resulted from consumer insights through social media” the data was also coded to reveal user driven ideas which could lead to performance innovation in experience design. A total of 36 insights were coded at this node and radical app evolutions such as augmenting live race data for users through geo-notifications relating proximity to suitable viewing points. The range and wealth of data generated by participants could contribute significantly to creating a technology enhanced event experience given the alignment with professed user desires (Holst Kjaer, 2011).

## 5. Conclusions

This explorative study, through utilisation of the Poll API for Facebook, has evaluated key communications, mobile technology and the event experience through the DEEDD Theoretical Framework. Findings highlight how this method can provide greater reach, integration and understanding through engagement within social media platforms, particularly given the scale and relative ease of targeting an event’s actual or potential fan-base. In an applied sense, it does so in a cost effective and sustainable manner.

Utilised as part of the DEEDD framework, it can provide additional explorative opportunities to evaluate persons, relationships and themes within fan data (Miles, Huberman & Saldana, 2013). More importantly, it allows for further error detection and correction opportunities – where biometric data can be corroborated to some degree by exploring the online profiles of participants via Facebook.

This explorative pilot study which is part of a three-year study into technology enhanced event experiences proposes the following conceptual model as one element of a proposed framework for innovation engagement through the digital event experience.

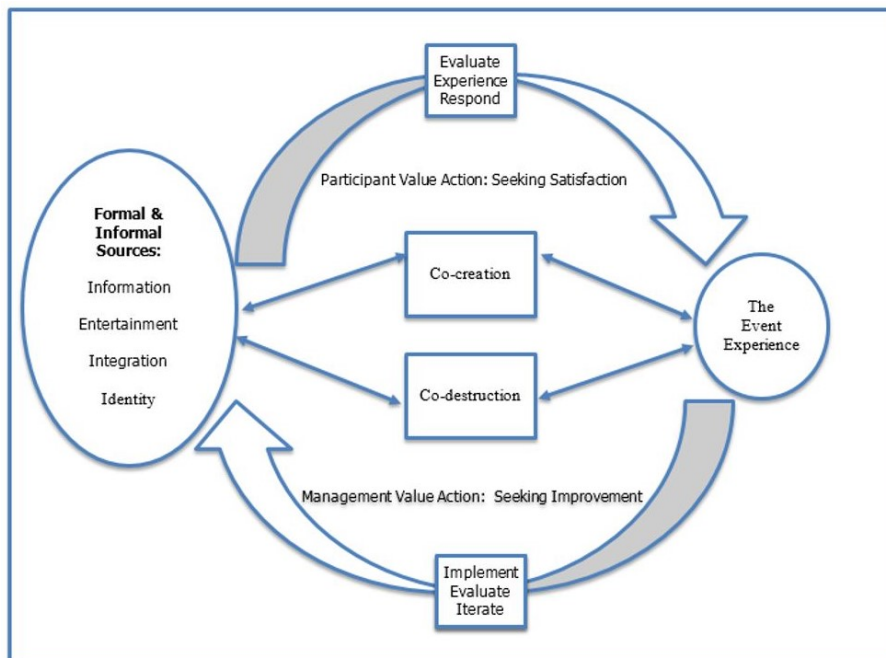


Figure 3 | Proposed DEEDD Conceptual Model

Initial analysis points to event spectators becoming less inhibited by technology and platform issues (Bolan, 2014) and this model, provides a new means to explore and investigate the ‘on-site experience, where strong emotions, learning, and meaningful memories emerge’ (Campos et al., 2015 p.29). Neuhofer (2016, p.789) posits ‘it is through technology use and application that value is contextually created or destroyed by tourists as individual actors’ and this is one key discovery empirically explored and subsequently evidenced (Privacy, DEEDD challenges, Usage Barriers) as a critical in deriving event experience satisfaction.

Another outcome of the process has been the

increase in engagement with the event app which indicates DEEDD’s potential as a vanguard to leverage connection and authentic co-creation opportunities with event fans. App-store 2016 user numbers have increased by 21.3% over 2015, which is significant after a period of decline in usage year on year since launching in 2013 (See Figure 4). Additionally, it is likely that the process will act as a catalyst for industry development (Devine & Devine, 2016) as in this instance, it has opened event organisers, through experimentation, to further innovation and co-creation possibilities.

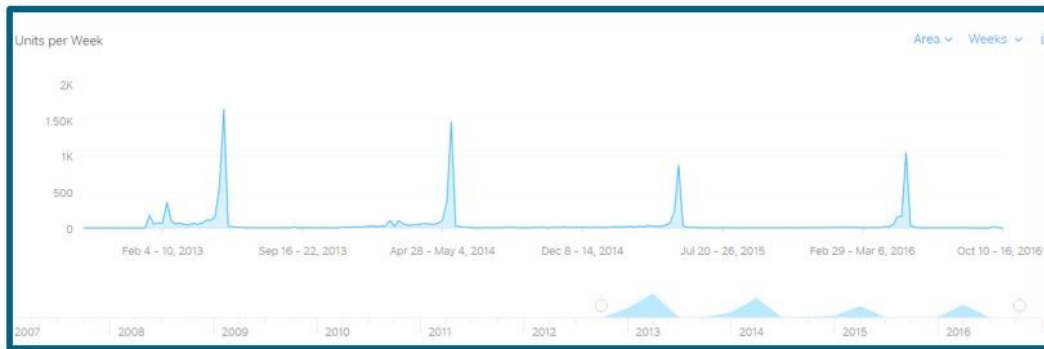


Figure 4 | Apple download for NW20 app 2013-2016

Wang et al. (2012 p.385) highlight the exploration of online communities as essential to the understanding of how mobile social networks through sharing, and instant feedback leads to new activities and the reinterpretation of the tourist experience. Having earlier highlighted the limited nature of this study – being the initial explorative phase, future studies harnessing U&G theory (as a catalyst to understanding the event app experience) may also want to quantitatively assess user motivations and experiences to obtain more detailed analysis into satisfaction and event app experience.

Importantly this paper contrasts with the findings of Hoksbergen and Insch (2016, p.95) who suggest 'the limited extent of participants actively co-creating value on this (Facebook) platform'. Contrary to their findings, in this instance and with relative ease we have found fans and 'lead users' of an event willing to actively co-create. Is it more likely the nature of the experience and peoples' familiarity with it, being a more appropriate indicator of potential to actively co-create rather than the specifics of the co-creation platform? Our findings would suggest the former. One caveat in citing this is that the study mentioned focused on a music festival and not an Event such as the North West 200, which is noted for having a more loyal fan-base than many events and additionally, an older demographic profile.

Critically, this study has found new ways to

better understand the event experience, through generative research exploring the inner dialogue of participants via online projective reflective analyses. Through digital Netnography, this paper provides an insight into a new empirical process to examine co-creating elements of event experiences through social media as a means to explore the influences of technology as experienced subjectively at events (Tussyadiah, 2017). The aim is to offer new avenues of exploration, focused on the emerging trend toward 'custom-design' of event experiences (Getz & Page, 2015, p.620). Arguably the easiest element of the event experience to customise is the digital event experience due to expanding consumption and advances toward ubiquitous connectivity. Thus, innovation in experience design -collaboratively co-created and personalised through social media platforms, which are predominantly served and consumed through mobile technologies offer significant value to both attendees and event producers as scalable personalisation.

The reach and economies of access provide positively for future research to test satisfaction of use of an event app through this method and across the multiphase event cycle, offering new potential for deeper investigation of the important 'on-site' experience (Campos et al., 2015 p.29). The Polls API would facilitate (mixed methods) study of event participants through a survey of both open and closed questioning as a means of inducting critical insights in relation to identifying

and enhancing essential, generic and event specific experience outcomes (Getz & Page, 2015). This research highlights that we are moving ever closer to the 'smart event experience' – one which could be defined as experiences created through processes of personalisation driven by people, augmented by technologies, which seek to improve event outcomes both for the individual and for the event as a whole. Thus, further conceptual focus must be applied within Event Studies on this paradigmatic evolution.

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