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SOCIAL MEDIA ANALYTICS AND THE CHANGING LANDSCAPE OF TELEVISION

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Abstract: **Beyond traditional television broadcast media, people rely on multiple streaming services and social media platforms for entertainment today. Television, as we know it, will continue to experience a drastic shift, not only impacting the way audiences enjoy television programs but also the way television companies determine ratings. In an increasingly social media dependent society, audiences have become more and more fragmented, watching programs on multiple platforms. The current review of literature about social media analytics of television programs has revealed that traditional ratings are not sufficient in gauging audience engagement, and instead, large data sets offered through social media platforms include audience dialogue and interactions as well. To add, social media engagement can impact the ratings of the shows themselves and depending on the content of social media conversations, can lead to negative outcomes such as the cancellation of TV programs. This research aims to understand the specific role social media analytics and big data have played not only in advertising TV programs, but also the way in which entertainment itself has been diversified and recategorized for today's new market.**

Keywords: **Subscription video on-demand, Social media analytics, Television, Nielsen ratings, Audience engagement.**

I. INTRODUCTION

As of 2018, Netflix and Amazon have a total of 180 million subscribers combined. Subscription video on-demand (SVOD) services like Netflix and Amazon have created a culture of binge-viewing shows where audiences can watch entire seasons of their favorite television series. There are now an absurd amount of viewing options such as traditional broadcast and cable systems as well as digital video recorders and streaming platforms. This proliferation in platforms has disrupted the television industry as a whole and with this emergence of multiple platforms, social media analytics used a form of "web scraping" in which conversations posted on a wide range of social media platforms are aggregated and classified via sophisticated algorithms. Traditional Nielsen ratings are only able to measure audience exposure, are thus outdated as social TV analytics are proving itself as more adequate and superior to traditional methods. Traditional ratings are based on small numbers of users, and social TV analytics is based off of big data. Social TV analytics are used to assess audience behavior, measure TV program success, and impact the allocation of advertising dollars across programs. Although it is unlikely that social media TV analytics will completely replace traditional ways of collecting data about shows, social media is being embraced by stakeholders for its beneficial uses in advertising and more. CBS and SyFy now use Twitter activity to determine whether or not to cancel or continue a show. The CW network has been noted to cancel a show with a higher Nielsen traditional rating than a different show which had more social media content and engagement.

II. SUBSCRIPTION VIDEO ON-DEMAND

Currently, there are multiple SVOD services. Some act as a gateway to a traditional channel, sorting upcoming content as it comes out. Others such as Netflix and Amazon function as a general portal where content is not specified and tailored to a specific audience. Instead, these companies allow for viewers to freely search for shows and movies that are geared to their own personal preferences. SVODs merge audience engagement and technological progress to create 'quality TV'. Users are able to binge watch shows on SVOD, deviating away from 'television's liveness and linear scheduling'. The popularity of SVODs such as Hulu, Amazon, and Netflix, began a trend in audiences to switch from traditional cable subscriptions to online streaming services.[1] Learning how each service can provide further insights into SVODs.

A. NETFLIX

By the year 2012, Netflix was a direct competitor to linear television channels with innovative and original works. These works included documentaries, streaming television series, and stand up comedies. Over time, Netflix as well as other Internet TV companies began to surpass linear TV in popularity.[1] Despite their success, Netflix still sees television programming as its biggest rival. Because of this, Netflix is trying to intentionally conceal branded content by removing all foreign logos from the user interface and promoting Netflix exclusive content as "Netflix-branded Originals". Despite the fact that beginning late 2015, Netflix started to allow some network logos and promotion to be shown, the company still muddles the difference between its originals and other content.[1] This in turn makes Netflix the main attraction and the focus of interest to users on the Netflix interface.

B. AMAZON

Amazon utilizes its e-tailer market to lure users to Prime Video. Amazon has created mutual relationships with television networks not only to promote their SVOD services but also its e-retail sector. Amazon has shown its trust in the ability of traditional network brand identities to attract potential buyers and increase Prime membership subscriptions through its 2014 decision to obtain a majority of HBO's content library and advertise their service as a provider of HBO-branded content.[1] An example of a development of these mutual relationships is the introduction of the 'Streaming Partners Program' in 2015, which eventually was turned into Amazon 'Channels' in 2016.

III. THE INSTITUTIONAL CHANGE OF TELEVISION

To better understand the process of institutional change as we have witnessed in with linear television to SVODs, Greenwood et al. has developed a model for understanding the stages of "institutional change," a framework on how market information regimes take hold and evolve over time (a theory used in multiple contexts).[2] They include: precipitating jolts (jolts disrupt stabilized practices), deinstitutionalization (emergence of new players and efforts at institutional entrepreneurship), pre-institutionalization (generation of new structural arrangements and formalization of these arrangements in the policies and procedures of organizations), theorization (identification of a general organizational problem for which a particular innovation is a potentially viable solution as well as justification for the innovation), diffusion (new practices are adopted), and re-institutionalization (these practices are taken for granted as the natural and appropriate arrangement).[2]

In television, the pre-institutionalization stage occurred when programmers and advertisers began to explore how to use social TV analytics in their work. This stage occurred when individual media buying firms and television networks partnered with one or more measurement firms working in this space to develop specialized performance metrics that serve their particular needs. It is also during the pre-institutionalization phase when organizations begin to evaluate the utility of this alternative approach to measuring and valuing television audiences. In the theorization stage, discussion of the connection between social TV analytics and big data. Diffusion would refer to the current state of social TV analytics.[2] The reinstitutionalization stage has not been reached yet and the final outcome is yet to be determined. It is still uncertain whether social TV analytics will become the new foothold in audience media measurement.

IV. SOCIAL TV ANALYTICS

Social TV analytics have caused a split dynamic in competition. Social TV analytics is different from traditional ratings in that is not simply the ratings itself but also includes the social media conversations surrounding the television programs.[3] Two different sets of "hits" must be measured. There would also be competing understandings of value as social TV analytics are now used to assess audience behavior and measure the success of a TV show. This new audience measurement systems provide different portraits of the size, composition, and behavioral patterns of media audiences than traditional audience measurement systems, which in the TV industry, is the Nielsen ratings.

To illustrate the difference between the two, Kosterich from Rutgers University's Department of Communication examined data gathered from Nielsen's traditional TV ratings and Nielsen's Twitter TV ratings, NTTR, a social TV analytics rating system. For this study, data on "hits" was collected from weekly ratings on the top 10 ranked shows from both information regimes for 52 weeks. NTTR provided a weekly report of the top 10 episodes 3 hours before, during, and 3 hours after the announcement of new primetime episodes. A total of 1040 data values, or slotted shows (520 from

each regime), were collected.[3] Genre performance, source diversity, and performance volatility were analyzed from the data collected and noted.

The results revealed that the "hits" produced by both traditional Nielsen ratings and social TV analytics are significantly different from one another in that the first had top programs in 13 genres and the latter had 15 genres.[3] Social TV analytics had a greater variety in genres as noted by the average number of various genres that were considered TV "hits" each week. Reality genre was statistically greater in traditional ratings than social TV analytics whereas special event genre was the opposite. There were significant differences in wrestling, drama, newsmagazine, talk, comedy and documentary as well. In addition, traditional ratings had 16 network sources while social TV analytics had 35 sources. Finally, in regards to performance volatility, 20 shows were ranked in the top for 2.74 weeks for traditional ratings whereas 39 shows were top-rated for a shorter period of 1.37 weeks for social TV analytics.[3]

Kosterich concluded that social media TV analytics is superior in all aspects than traditional rating allowing for greater competition in the industry and a wider range of information to be utilized. Therefore, social TV analytics has the potential to impact cultural production, reshaping the genre composition of TV's most watched programs.[3] Also, the increased number of sources with social TV analytics will also increase opportunities for more diverse creators. The relationship between volatility and uncertainty, however, should be examined more closely as television advertising is highly dependent on predictability, more specifically the stability of linear audiences.

V. A CASE STUDY OF TWITTER AND FACEBOOK

With the rise of social media, television ratings and social media activities can work hand in hand to provide deeper insights into audiences. Oh et al. collected and analyzed tweets and profiles from social media to understand the relationship between activity on social media and TV ratings. Account names, for instance *The Big Bang Theory*, would be placed into PHP scripts to find any relevant tweets or other profiles about the accounts. Once this social media data was downloaded, the preprocessing information would mean removing any data that was not relevant to the account or was not within a range of predefined dates.[4] Then, relevant variables would be extracted for each TV show, which included Facebook and Twitter.

Through the use of two linear regression models, different results were produced. The estimation from Model 1(Rating-All) showed that there was not a strong relationship with social media activities and ratings. The results implied that TV shows with a higher number of Twitter followers usually had higher ratings, but also TV shows with higher followings are correlated with lower ratings.[4] Model 2 (Rating-18) revealed that there is a higher social media activity and TV ratings are in fact related. In conclusion, the study has revealed that there is a positive correlation between social media activity and TV ratings in Rating-All as well as Rating-18, although Rating-18 showed a much more vivid and clear relation.[4]

The researchers also analyzed tweets and profiles from the official accounts of TV shows on Facebook and Twitter. Results confirmed that a TV show would see an increase in ratings from the demographics between 18 and 49 whenever its respective, official Twitter account was active.[4] To clarify, these are all posts whom marketers directly control, unlike word-of-mouth. Therefore, in order to maximize the number of audience members and to attract new audiences, it is highly advised to post frequently on Twitter. Also, with the knowledge that the 18-49 demographic is the main audience of most television programs, shows should specifically target the market of that demographic. To further benefit audience engagement, networks should hire Social Media Managers to make the most out of social media advertising, which can further target the proper demographic.

The noticeable impact that social media has on the ratings of TV shows suggests that someone's attraction and enthusiasm for a show is probably affected in some way by conversation they've partaken in about that show. The official accounts of TV shows themselves may be the reason behind talk on these respective shows on social media. A follow up study determining the correlation between active TW accounts and word-of-mouth would yield interesting results. All in all, networks should invest in social media and attracting their audiences online in the realm of social media to maximize engagement.

VI. SECOND SCREENS AND EMERGING TELEVISION

The world of television has found new meaning through SVODs and social media engagement. However, people's behavior towards media and television continues to evolve as new technologies are developed. With so many options,

people now watch more than one program through the means of second screens. And instead of just watching a television show, people choose to watch videos on YouTube or even via watch live streaming channels on Twitch TV. In many cases, people will choose to watch their favorite television programs while engaging in these second screen options. Therefore, companies now sponsor YouTube influencers and gaming channels instead of merely relying on television programs for commercials to gain visibility.

A. SECOND SCREENS

In his research, Guo describes social television viewing through second screen devices as the act of interacting with friends and family to discuss the show they are watching on social media. Second screen devices, such as smartphones, are now so widely used, that those who own mobile devices have gone from tech savvys to someone who has no real interest in the technology. These people had more basic perceptions of device use and were very different from those with a real passion for the tech. Social television users valued properties of mobile device use such as convenience and compatibility. This information supports a recent industry survey saying all U.S. adults are beginning to be more inclined to multitask while watching television.

One study found that two motives, interpersonal connection and arousal can predict engagement behaviors when watching social television. The reason for interpersonal connection being one of the two motives is interesting because it emphasizes the interactive nature online of watching television, through second screen devices. Underlying attributes of the use of interpersonal connection reveals that people who use supplementary applications to television content and mobile devices are motivated by a sense of belonging, acceptance, and social interaction. Social media and mobile devices are able to create conversations among viewers through features such as posting, sharing, and giving feedback online. This ultimately suggests that social television is a vessel for social interaction in regards to watching television.

Social viewing behavior has the strongest positive connection with the chances of whether one will purchase a product that has been advertised on a program's station and websites or not. Despite this fact, it is still no easy task for television managers who plan on using their online applications as a platform to make online profit because audiences tend to have a lower interest in television e-commerce.

Under the context of social television viewing through second screen devices, the audience dispositional factor, innovativeness, did not play a role in the social television viewing adoption. It might be attributed to the fact that smartphones and tablets have achieved mass-market acceptance, and mobile device ownership has progressed from leading edge and early technology adopters to those less motivated by innovative technologies. These individuals were found to have more traditional views on device use and do not necessarily adopt the same device use behavior as technology mavens (Loechner, 2013). Accordingly, in comparison to those media attributes soliciting curiosity, initiative, and demanding skills, social television viewers more value such characteristics delivered by their mobile devices as perceived ease of use, convenience, and compatible with their lifestyle. The findings here resonate with a latest industry survey, suggesting that all age groups of the U.S. adults are increasingly engaged in multitasking behavior while watching television; the growing trend is apparent across three defined categories of technology adopters based on their innovativeness (i.e., leading edge, early adopters, and proven technology) (Loechner, 2013).

This study found that two motives, i.e., interpersonal connection and arousal, are significantly predictive of social television engagement behavior. The social reason for interpersonal connection is intriguing because it highlights the socially interactive nature of television viewing facilitated by second screen devices. The underlying elements of interpersonal connection motives suggest that people who are using mobile devices and enhancement apps to be involved with television content are mainly driven by belonging, inclusion, affection, social interaction, and expressive needs. Through posting, sharing, feedback and recommendations, mobile devices and social media transcend time and space and create a space for conversations among viewers. The results again suggest social television is a means of communication and social interaction in the context of watching television or accessing television-related content, and support Askwith's (2007) and Russell, Norman, and Heckler's (2004a, 2004b) research regarding the social interaction nature of television viewing.

Overall social viewing behavior bears the strongest positive relationship with the likelihood of purchasing products that have been advertised on the program's station and network websites. As suggested by prior study (e.g., Ha & Chan-Olmsted, 2004), however, it is still challenging for television managers who plan to utilize their website and online apps as a platform to conduct e-commerce due to audiences' general lower interests and experience in television e-commerce.

B. LIVE SCREENING

Live streaming is another form of viewing that goes beyond SVODs with substantial influence over younger audiences. Twitch TV is a platform designed for professionals or amateurs to livestream where anyone in the world can watch their content. In fact, it is the leading live streaming platform in America, Europe, and Asia. Twitch is dominated by the gaming community, which has three main subcategories: casual gaming, speed running, and eSports. Although the majority of Twitch users are interested in video games, Twitch has made an effort to diversify its horizons and include more features such as cooking, performing arts, and beauty.[5] Twitch challenges traditional television studies concepts in three areas: second screens, flows, and liveness. Second screens refers to how users simultaneously use other media technologies, such as smartphones, while watching television. Flow refers to planned scheduling often seen in television shows which consists of a set number of advertisements as well. Lastly, liveness is how television disseminates both live programs and recorded content in a way that creates a sense of cohesion.[5]

Spilker et al. interviewed 12 Norweigan men aged 18-32 who use Twitch on a daily basis. The interviews revealed that the users tend to change between different content on Twitch, at times watching multiple streams at once. This is called *switching* and there are two forms: spatial and affective switching. *Spatial* refers to how the audience is either viewed as a mass audience versus a small community and *affective* refers to whether the audience is passive or active.[5] Switching between large and small streams is invaluable to the Twitch experience revealing that flexibility is a major appeal and *motivations, interests, needs and moods* affects what someone watches. At the end, the study revealed that most if not all of the interviewees had a low level of interest when using Twitch. This raises the question as to why the interviewees heavily used Twitch when their interest level was lower than expected. It was discovered that Twitch is more of a filler that is played in the background when doing other activities such as doing homework.

VII. THE CHALLENGES OF BIG DATA IN TELEVISION

Channel 4's chief executive David Abraham gave his opinion on Big Data in his keynote address at the 2014 Edinburgh Television Festival: 'Over the past few years I've been encouraging the TV industry to embrace the power of data'. He then warned, 'a TV channel without a data strategy is like a submarine without sonar.'6 Many of Abraham's industry peers have the same perspective on data as he does. After Rona Fairhead was appointed as Chair of the BBC trust in 2015, she noticed that 'when it comes to using data to understand its audiences the BBC is a long way behind the competition.'[6]

In order to provide features such as 'trending topics' on their interface, services such as Twitter use software such as Apache Storm to conduct real-time analytics. Tweets are also kept and are rendered available for retrospective analyses, which is an approach that is also known as batch processing. Basically, Twitter utilizes a complex approach to Big Data, where both real-time analysis and retrospective batch analysis are merged. This is also known as Lambda architecture, a form of data processing. Data driven services such as Netflix face a larger challenge than ratings firms and competition from traditional networks as an excess of information becomes counterproductive. Tricia Jenkins states, 'using programs such as Hadoop, Pig, Python, Cassandra, Hive, Presto, Teradata and Redshift, Netflix is able to process 10þ petabytes of data along with 400þ billion new events on a daily basis in order to learn about its users' viewing habits' (forthcoming).

The 'events' that Jenkins talks about are user generated information such as time, location, and device used to reach the service and pausing, rewinding, and other clicks. Based on the information given by Jenkins, Netflix subscribers create 2.8 trillion of these 'events' per week, which increased starting from the subscription video on demand provider's rollout in early 2016. Although Netflix produces immense amounts of data, the difficulty in accessing this information makes it hard to understand the creative process. In a recent interview, CEO Reed Hastings gave the public his opinion, suggesting that Netflix 'start[s] with the data [...] but the final call is always gut. It's informed intuition' (O'Brien, 2016). Despite the fact that Reed insists that Netflix's method is more assisted by numbers than based off numbers, the presence of big data is still strong. However, networks and early adopters should be cautious of the idea that bigger is better and be aware that excess information can be harmful.

VIII. CONCLUSION

Social TV analytics means that there is greater opportunity for a large number of shows to reach the number one spot. However, it is still too early to see if this is a pro or a con of social TV analytics.

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