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The Application of Data Analytics in the Events Industry

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Abstract

This research examined the data analytics practices used within the events industry and the value of such applications. This study consisted of an interpretive case review of current companies within the events industry. The interview process explained the current practices being used to collect and analyze data. The common themes revealed data analytics are being used to evaluate, redesign, and enhance company performance, marketing strategy, decision guidelines, and economics. The study shows data collection and analysis is mostly focused on determining what consumers want and are looking for within the industry. The findings of this study support the importance of applying data analytics within industry-related companies to be financially successful and maintain market-share. Both the results from this study and the literature used indicate the significance of data analytics and the tremendous amount of opportunity buried beneath the application of data, although there is still room for growth.

Keywords: Data, Analytics, Applications, Events, Technology

Introduction

The use of data within the events industry is expanding and setting the tone for the marketplace's next big revolution. With data at the forefront of this massive revolution, companies today are taking advantage of adopting data practices to significantly improve businesses by personalizing customer experience. Monetate Inc. (2019) found 93% of businesses with an advanced personalization strategy, either in the development stage or currently being implemented, experienced revenue growth. This up-and-coming business trend reaches all industries and enormously influences business decisions and actions, both in real time and future thinking. Data has emerged as the leading catalyst in changing how companies access information (Freeman, 2019), and is a key attribute in being classified as a major component in a worldwide panacea for all corporate ills. With the ability to provide a wealth of information related to many aspects of the life of individuals, organizations, and markets (Mayer-Schönberger & Cukier, 2013), data has given companies the tools necessary to answer and understand new insights about previously unreachable questions.

Insights generated from data analytics can provide companies a competitive edge to make decisions concerning marketing, sales, and current demands within a market; data can also transform how companies shape their business plan. For 2019, more than 2/3 of the top marketing companies that have previously invested in the collection and processing of data are increasing their investment in marketing data analytics because of the tremendous amount of opportunity data has to offer (Freeman, 2019). Data are ultimately changing the way society lives, works, and thinks (Mayer-Schönberger & Cukier, 2013) and has the power to revolutionize every aspect of life. The value of data influences society in previously immeasurable ways, which is why it is an integral part of main business tactics and strategies.

Technological advancements have greatly enhanced the accessibility of data and have allowed for tremendous growth in the business world. Collecting and gathering data today can be

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done almost instantaneously. The increasing digitization of society through the combination of devices, such as smartphones and tablets, virtually allows data to be found anywhere at any time (Verhoef, Kooge, & Walk, 2016). Specifically for the events industry, data represents the before, during, and after of each event. In 2015, the Center for Exhibition Industry Research (CEIR) conducted a study on 307 business-to-business exhibition executives, focused on the use of analytics by business-to-business exhibition organizers. This study showed how data can provide exhibition organizers with: statistics providing a better picture of the target audience, insights that help guide planning and strategizing, and translating analytics into the programming of individual records (CEIR, 2015). However, there is a lack of academic research on the applications of data analytics in the events industry. Thus, the purpose of this study was to examine common data analytics practices within the events industry and determine the value of such practices. This study can contribute to marketing research and act as a reference point for using and applying data that can enhance event marketing strategies and business tactics, while providing clarity about how data analytics are currently being used among top industry-related organizations. It also allows marketing researchers to investigate the diversity data can provide in the events industry, primarily about consumer interactions within markets and the products they consume.

Review of Literature

The Nature of Data Analytics

Data are everywhere, and today data are proliferating at an extraordinary rate (Davenport, 2013). The world relies on data every day, whether it stems from social media channels, registration platforms, site clicks, or feedback from surveys (Curran, 2019), data are constantly being collected and later reviewed and analyzed. For example, approximately 72,698 Google searches worldwide are happening this very second (Internet Live Stats, 2019). Those searches are contributing to the 2.5 quintillion bytes of data created everyday (Marr, 2019) further explaining how data are influencing the world today.

There are four dimensions to data: volume, velocity, variety, and veracity (Troester, 2012). These dimensions acknowledge the scale of data, analysis of streaming data, the different forms of data, and the uncertainty of data (Ayisi, 2014). These four dimensions offer a guide for analysts to use and follow in trying to accomplish the large task of applying data to a market. Researchers have classified the main sources of different types of data as: (1) public data, (2) private data, (3) data exhaust, (4) community data, and (5) self-quantification data (George, Haas, & Pentland, 2014). Each type of data represents a certain niche that is often combined with other sources to be used in providing some type of insight to a particular scenario, commonly known as analytics.

Data analytics represents specific techniques that examine large amounts of data to uncover hidden patterns and other insights. Data analytic techniques are situational and encompass a variety of different disciplines (Pantelis & Aija, 2013), most commonly involving statistical analysis and categorical analysis (Mariani et al., 2018). Analysis results are useful to all industries and have become necessary to produce within the world of business (Scott, 2018). The benefits of analyzing data are limitless and act as a key component in improving business decisions and maintaining the relevancy of markets (Jewoo & Jongho, 2018).

Thinking analytically is now seen as necessary for success throughout all industries (McGuire & Osborn, 2017). Having an analytical mindset is classified as an individual or group that is engrossed and perceptive to their surroundings and demonstrates the ability to think deeply and

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respond flexibly to changing circumstances (Alexander, 2014; Ku, 2009). Data-driven decisions within an organization are guiding how businesses are run, both internally and externally. The rapid growth of analytical thinking has allowed companies to better understand certainties about trends while providing more evidence for identifying areas where data can further inform one's interpretation about why trends occur (Mayer-Schönberger & Cukier, 2013). Regarding how companies are thinking and treating data, shifting from simply producing data to instead consuming data can be the difference between successful and unsuccessful marketing (Fisher, 2009). Applying data analytics within a business can heavily influence marketing strategies and provide clarity about the significance in changing such strategies.

Applications of Data Analytics

Data analytics applications act as the main players in today's data-driven world and practically any topic or question can be explored with analytics (Davenport, 2013) and has the potential to greatly impact the events industry. Essentially, such applications represent how data science gets operationalized, meaning how end-users interact with data, both big and small (Perez, 2019). There are various types of data applications that serve different purposes for data analysts including: artificial intelligence, statistics, forecasting, predictive thinking, data and text mining, optimization, and experimental design (Davenport, 2013). The integration of data analysis and applications techniques within technology is used throughout multiple sectors of the events industry including conventions and meetings, tourism and travel, and sports.

Various techniques and their accompanying results can be extremely influential in making decisions. One popular application of data analytics in the events industry is target marketing. For example, social media platforms, such as Facebook, Instagram, Snapchat, and Twitter, have created an endless stream of data through impressions, likes, and views (Hu & Zhang, 2018). Platforms like these have allowed companies to access valuable data including information about users' photos and location data (Suo & Zhang, 2015). Hence, the information provides companies with the necessary data to adjust their marketing strategies and to predict the desires of where the target audience wants to be spending their time. Data generated from social media is another key driver in successfully measuring business performance. Metrics from various social platforms can provide marketers with information that shows how users share, view, or engage with their content or profiles (Barnhart, 2018). Social media networks have now created platform tools available for content analysis such as Facebook Insights, Twitter Analytics, and Google Analytics. These tools allow brands to target current and potential customers, drive engagement and conversions, find out what content best performs and how to leverage social networks accordingly (Sears, 2019). This information is used to assess campaign performance, understand the target audience, develop creative content, report to upper management, optimize campaign performance, and measure return on investment (Barnhart, 2018). The evolution of technology has created a resource to attain endless opportunity for data usage.

Another application currently being used among the events industry, more specifically among high budgeted mega-events, is Radio Frequency Identification (RFID) wristbands. RFID wristbands have electronic chips inside them that collect and track data. Large events, such as festivals, use RFID wristbands to track attendees' actions regarding location, spending, and interests in real time (Hernandez, 2016). By collecting data and understanding the demands and needs of consumers, companies can improve business efficiency, finances, and customer satisfaction and retention (Eventbrite, 2019).

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Data applications provide event professionals the information necessary to offer more personalized experiences, by catering to specific needs. In addition, this information allows event companies the ability to better plan and structure their events. For example, data from an annual event showing the number of attendees, sales, and costs act as the foundation for predicting the next event. Having this prediction informs companies about changes that would be most beneficial to implement in the future.

Barriers and Challenges to Data Analytics Adoption

Data are constantly evolving and always being thought about and processed to develop new systems and perspectives on how to tackle the ongoing challenge of applying data effectively and efficiently. It is important to understand the complexity and challenges behind data. Data, though extremely valuable, represents a mass amount of information that can be difficult to interpret and use successfully. Technology has allowed for the digitalization of large amounts of data at an incredibly fast rate (Jewoo & Jongho, 2018). Although it is inevitable that technological advancements are going to continue to grow rapidly, issues associated with using data are also emerging alongside that growth. Data analytics can be intimidating to work with due to the influx of opportunity that lies within data. The hierarchical constraints most frequently explained in literature are (1) cost and time (Jain, Sharma, & Jayaraman, 2014), (2) correctness in conclusions (Ding & Simono, 2010), (3) combining extremely different sources of information (Bedeley & Nemati, 2014), and (4) information overload (Leeflang et al., 2014).

Data, when used correctly and effectively, can strengthen any business, but unfortunately, the limitations involved with collecting and analyzing data can be overwhelming. Two of the biggest challenges come from a lack of funding and time. It costs and takes a lot of time to find, hire, and invest in a team of data analysts that have proper knowledge of the events industry and know how to process industry-related data. Although some data comes at little to no cost, the problem still lies with finding the right people to be able to examine and highlight key insights about that data. Another major contributor in limiting companies from using data analytics to their advantage is avoiding falsifying conclusions from data. Today, more than 80% of data is unstructured (Grimes, 2018) and refers to data that simply does not fit neatly in traditional relational databases, mainly because it represents information related to multiple industries and sectors within such industries (MongoDB, 2019). The scale of unstructured data can have some complications relating to the missing values within data that can lead to data being misused and can cause false interpretations or bias results (Jewoo & Jongho, 2018). Developing a system that can combine big and small data is another issue companies face regarding data application (Ayisi, 2014).

Though valuable, the rapid proliferation of data available today makes it difficult to weed through the data and come up with a compelling narrative to share with key stakeholders within a company (Berland, 2017). This goes hand in hand with the issue of information overload caused by the unstructured nature of large volume data. Managers are faced with the demanding task of organizing and determining the best way to strategically use data as an advantage within their businesses (Saxena & Lamest, 2018). Information overload is usually characterized by feeling overwhelmed (Savolainen, 2007) by the sheer capacity of data and the paucity of time (Ayyagari et al., 2011).

The main connection among all these challenges is simple, finding value in data. To overcome these challenges, companies must investigate the purpose behind using and analyzing data. Nevertheless, companies must embrace the opportunity within data and develop a system that

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aligns with their business plan and use that as a guide for making decisions and changing business. Although several studies have investigated the impact data can have within a business, few have investigated this topic in relation to the events industry. This study specifically addresses the challenges and benefits of adopting data analytics among top industry performers.

Methods

This research adopted an interpretive case research strategy to examine how data analytics is being used within the events industry and determine the value of collecting and analyzing large quantities of data. The research was focused on addressing the strategies being used to collect data and its impact on business changes and improvements.

Industry leaders from the events, experiential marketing, tourism, travel, and sports sectors were identified to participate in the study. Due to the time-sensitive nature of this study, phone interviews allowed greater access to participants. Data collection took place between June 2018 and February 2019. An interview technique called "responsive interviewing," in which the participants' responses throughout the interview created the remaining interview guide was used for the study (Rubin & Rubin, 2012). Furthermore, the research focused on event companies that have already adopted using data and applying it to their organizations. With the event industry being highly exposed to user-generated content through websites among all sectors of the industry, such content was heavily utilized to benefit this study.

Twenty-five companies within the events industry were contacted via email and phone about participating. To qualify for this study, participants were required to be working at an industry related company currently using data analytics to directly influence their events. All participants contacted to be a part of this study are in California, however their respective employers are headquartered all over the United States of America, with various clients around the world. Participant selection was focused on industry leaders, located in California, throughout all sectors (see Table 1) related to the events industry. A total of fifteen interviews were conducted with industry leaders, who use data to improve business and make decisions. The companies contacted to participate in this study represent multiple sectors of the events industry including tourism, corporate, convention and meetings, sales, technology, weddings, wine tourism, travel, recreation, and sports (see Table 1).

Table 1. Description of Respondents & Sector Represented in the Events Industry

	Title of Interviewee	Participants Sector in the Events Industry
Case 1	Vice President of Marketing	Corporate
Case 2	Director of Field Marketing	Technology and Sales
Case 3	Senior Program Manager	Sports
Case 4	Senior Manager of Marketing Operations	Technology and Sales
Case 5	Vice President of Communications	Travel & Tourism

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Case 6	Strategic Marketing Research Consultant	Travel & Tourism
Case 7	Executive Vice President of Operations	Corporate
Case 8	President & CEO	Travel & Tourism
Case 9	Assistant General Manager	Sports
Case 10	Sector Analyst	Convention, Meetings
Case 11	Senior Event Director	Weddings
Case 12	Senior Program Director	Recreation
Case 13	Operations Manager	Travel & Tourism
Case 14	Global Director of Media Product Marketing & Management	Travel & Tourism
Case 15	Senior Account Manager	Corporate

Interviews ranged from twenty-five to forty minutes and were either in person or conducted over the phone. A series of open-ended interview questions were used as a guide to provide in-depth research regarding how data was being produced, assessed, and implemented at the time of this study.

Based on the literature reviewed, three variables were used to measure the use of data analytics within the companies involved in the study: applications, insights, and challenges. For applications, two questions addressed how companies are gathering and collecting data. For insights, four questions lead to a discussion about the value behind data and addressed how the results from the data collected was being used. For challenges, participants were asked to explain any current or potential barriers their company has faced from incorporating data analytical practices into their companies.

To ensure honesty and comfort, each interview began with an explanation of the research project. Additionally, the participants were informed that their responses would remain confidential and anonymous. The purpose of these standards was to help increase participation due to the nature of sensitive information about the companies involved. Interviews were recorded on a laptop and then coded to find patterns that emerged. The goal of coding all responses was to identify key terms, recurring themes, and ideas that were later used to build conclusions about the study.

Results

This section presents the major themes that emerged from a thematic analysis. This study follows an interpretive research design; therefore, the themes use the language of the study participants. Four themes emerged after analyzing the transcription of the interviews: (1) the overwhelming feeling about the potential of using data, (2) the marketing benefits and influences from using data in enhancing customer experience, (3) data as financial justification for event value

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and investment, and (4) the current concerns related to data type and source.

Overwhelming Feeling about the Potential of Using Data

Relatively early during the interview, participants made frequent references about feeling overwhelmed about incorporating data into their organizations. During the interview, these references amounted to a significant amount of the participants' time and were constantly being revisited. Another common trend participants spoke about was how limited resources, for example, accessibility of data, personnel, and budget, acted as main contributors to feeling overwhelmed:

> The hardest thing about the new 'data revolution' … is it's hard to figure out where to start, especially when you don't have the time or money to put into it. (Case 8, President & CEO)

This notion of feeling overwhelmed was most noticeably related to the problem of data ownership. The study revealed that most of the relevant customer-related information organizations want to access and utilize is sourced from outside organizations. This information, unstructured in nature, was deemed as the key to truly understanding what customers value and want in an event. However, participants continued to share their frustrations about attaining such valuable information:

> *How do you find the balance between finding data to use and then, in turn, using that data to influence decisions and proceed to turn into actions… it is an issue that we are still trying to solve? (Case 12, Senior Program Director)*

Despite the overwhelming feelings that participants experience, they still use a wide range of data techniques and practices throughout their organizations.

Marketing Benefits and Influences Using Data in Enhancing Customer Experience

For all the organizations involved in this study, it was clear that data reveals necessary insights, about their events and customers, that heavily influence their marketing decisions. To a large extent, participants attested to using data as the main source of monitoring their market, driving strategy and change, attaining, and retaining customers, improving financial performance, and assessing products and services. A common example mentioned was how data can represent metrics related to specific marketing campaigns. Metrics such as website page volume, social media impressions, and conversions from the event website to the selected ticketing system can be used to produce insights about the targeted audience. Essentially, participants explained how data can be incorporated into every aspect of their company's business plan and measure the overall success of an event:

> *Data is the middle ground between flying blind in understanding your market and having deep personal identifiable information that can prove what customers are looking for in their experience. (Case 1, Vice President of Marketing)*

Across case studies, participants described a core function of using data as real-time analysis. At an educational conference, for example, data is derived from scanning each attendee's badge upon entering a specific educational session. This data provides information to understand what attendees are doing in real-time. This information can add value to event planners because it can be applied to personalized messages sent to individual attendees, suggesting further sessions that relate to their interests. Real-time analysis, explained by multiple participants, allows their companies to make decisions before, during, and after their events. This contributes to creating memorable and personalized experiences for their customers, which relates to the mission of all the participants' organizations:

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> *Capturing, reviewing, and processing data is one of our main priorities in order to have a successful event. It starts with before the event by looking at how attendees respond to the schedule of planned events and what they signed up for. Then during the event, looking at whether attendees are sticking to their original plan and making changes based on that information to send them updated suggestions. After the event is over, a comparison between their original plan and what they did at the event is used to predict their behavior next time. (Case 7, Executive Vice President of Operations)*

Data as Financial Justification for Event Value and Investment

Another related theme that emerged from the interviews is that data contributed to the rationalization of various financial concerns and questions. Participants revealed that investigating quantitative data about event sales, number of attendees, and attendee actions can act as the main source for justifying the importance of an event. There was a standard among case companies explaining the financial power of data, and its ability to significantly increase companies' ability to measure return on investment. Participants also explained how event planners use data to justify the budget for an event and prove the value of having such events. For example, data showing the percent of total attendees who attended a particular speaker at a tradeshow provides valuable insights about whether investing in that speaker was advantageous:

> *We scan a barcode at all our different smaller event sessions (i.e., presentation, activity) to view attendance and be able to compare different sessions… then looking at that information and determining what sessions are necessary for the next year and what people are interested in. (Case 3, Senior Program Manager)*

Current Concerns Related to Data Type and Source

Concerning data type and source, participants expressed the difficulty of managing data, allocating resources, and remaining ethical. Participants explained how deciding what type of data collection and analysis methods they should use is a harsh reality. This is because of the large amount of effort, time, and money it takes to process data effectively and ethically. Furthermore, the cryptic nature data possesses and the unfathomable amount of data accessible was explained by participants as a difficult task to tackle and use successfully:

> *Though there is a lot of data out there, it's not all focusing on the same thing and depending on resources available within your organization you have to choose what data source/s to invest in and then try to gain the most value from the/those chosen source/s. (Case 14- Global Director of Media Product Marketing and Management)*

> *Connecting and determining whether there is any correlation between different data points and insights is not an easy task. We reference this issue as triangulation meaning if you see a spike in one data set, but not the other/s and vice versa, it is hard to pinpoint and confidently understand what is causing that change or spike. (Case 6- Strategic Marketing Research Consultant)*

Another similar topic that was frequently shared among participants was the issue of privacy associated with adopting data analytics throughout their organizations. Participants revealed the necessary caution associated with and using data legally and ethically:

> *No brand wants to be seen as insensitive in invading people's privacy in general, but especially in relation to data. This is something we are extremely careful about because we would never want to damage the relationship and trust we have built with our customers.*

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(Case 4, Senior Manager of Marketing Operations)

Though companies involved in this study revealed that client privacy is an issue on its own, participants speaking on behalf of those companies also shared that this issue has majorly contributed to some hesitation associated with the overall adoption of data analytics practices. Furthermore, participants explained how these issues have led to slow progression in taking advantage of this up-and-coming data forward approach to business.

Discussions, Limitations, and Conclusions

This study aimed to extend the existing knowledge about how data can positively impact the events industry by investigating what current data analytical practices are being used throughout the events industry and determine the value of such practices. Although previous literature has revealed the importance of using data to better understand customer expectations and behaviors (Verhoef, Kooge, & Walk, 2016), the present study found that the benefits of applying data throughout the events industry directly contribute to enhancing customer experience and improving future events. This suggests that data analytics can be used as a valuable resource for companies looking to provide their customers with memorable experiences in a more precise manner (Mayer-Schönberger & Cukier, 2013).

Data analytics, when used ethically, can directly influence, and improve how event companies make decisions and cater to customer needs and expectations (Fisher, 2009). Event planners should allocate a portion of their marketing dollars to collecting, processing, and analyzing data to act as the main source in continually improving their events. For example, venues used for events and vendors associated with events should be evaluating the attractiveness in, the interest of and why customers decide to use their venue for specific events. Another example related to vendors associated with events, specifically food vendors, is reviewing data about customer satisfaction via survey, comments, and reviews. Data produced through observing attendee actions and behaviors, such as their decision process, can be used to verify the products consumers want and provide insight about what vendors should be offering to match customer needs.

Additionally, the results of this study show how data can provide the evidence necessary to predict the success of future events and justify an event budget. This indicates that the greater number of resources devoted to developing and analyzing data, the better financial success of a business. At a large music festival, for example, stakeholders can monitor the number of attendees at each different performer's show. This information not only shows what attendees are interested in and how they are spending their time, but also provides evidence about each specific shows return on investment, sales, and other financial measures (Barnhart, 2018). Moreover, the study also revealed a few complications associated with adopting data into the participants' organizations, such as time, cost and resources needed to collect and process data (Bedeley & Nemati, 2014; Ding & Simono, 2010; Jain, Sharma, & Jayaraman, 2014; Leeflang et al., 2014). To overcome these obstacles event planners should become more educated on the subject and how other companies are successfully incorporating data analytics into everyday business (Fisher, 2009). Other ways event planners could overcome the overwhelming feeling of using data could be by attending conferences on data analytics and their applications, joining associations related to data practices, and participating in workshops showing the benefits and challenges of using data. These solutions could act as a defining factor in effectively improving the events industry. The information is out there (Davenport, 2013), it is now up to event planners and stakeholders to take advantage of it and turn it

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into useful insights that will benefit their organization.

Despite the various evaluations and assessments employed in this study, three limitations can be identified. Although this study has a diverse representation of sectors within the events industry, the size of this study cannot be generalized to a larger population. Unfortunately, the nature and scope of the events industry make finding probability samples difficult and costly. The sample size for this study must be considered with respect to the recency of this type of research regarding data analytics within the events industry. Thus, future studies should continue to examine this new topic at a larger scale and reveal the progression of this major revolution. Additionally, revealing the benefits and challenges of data analytics for smaller-scale businesses in the events industry remained uncovered since the sample of this study was restricted industry leaders. Therefore, further research focusing on smaller companies within the events industry, maybe on a state level, would be beneficial. Lastly, because of time constraints with this study the specific techniques event companies use to collect and analyze data were not explored. This includes addressing the development of incorporating data analytics into sector-specific companies and interviewing companies that own, gather, and analyze data that is then outsourced and used within hiring event companies, in more detail. Another possible research direction would be a longer study looking at the specific systems in place among event companies that are solely devoted to data analytics.

Although what we aim for is a theoretical generalization, we cannot claim for empirical generalization, as findings are context specific. Therefore, to achieve empirical generalization, the future work researching how data analytics can be applied and used within the events industry may engage in investigating case companies from other sectors and countries to explore their practices.

Despite its limitations, this study discussed the concept of applying data analytics in the context of top industry performers within the events industry and shared the findings from fifteen case studies. The industry is still learning how to properly define this tactic and is working on developing efficient, low-cost ways to gather and collect data to improve company success. The results have provided researchers and practitioners with new insight regarding the benefits, challenges and applications associated with applying data analytics to the events industry. Overall, the events industry is lacking in supporting the application of data analytics and needs to make researching this topic a higher priority.

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