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An application of the sports logistics framework: the case of the Dallas Cowboys

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ABSTRACT

Global, national and regional sport organizations heavily rely on logistics management practices in their operations. However, scientific research in sports logistics is in its infancy, with conceptualizations of the sport logistics domain proposed only recently. In response and by using a reoccurring professional sport event as a case, this study applies the Sports Logistics Framework (SLF) to systematically assess logistics activities, organizational structures, resources and components. Based on semi-structured interviews, unstructured participant observation, internal documents and additional secondary data, our findings not only provide insights into the logistics operations behind a matchday of one of the leading and most valuable sport competitions in the world, but also contextualize, illustrate and refine the logistical tasks of the SLF, thereby providing a template which can be used for further comparison and examination of logistics activities at similar sport events.

KEYWORDS

Dallas Cowboys; events; framework; logistics; sports

Introduction

Sports events worldwide have a market size of over US\$80 billion (KMPG, 2016) and have experienced growth of six per cent per year, outpacing the GDP growth in nearly every country around the globe (Collignon & Sultan, 2014). Major sports events, such as the National Football League (NFL) Super Bowl, can be regarded as one of the greatest logistical exercises and as such, they represent a significant logistical challenge for event organizers and their stakeholders. For example, during the 2019 Super Bowl in Miami, more than 6,000 workers were directly involved in preparing the event (Palotta, 2020; Wine, 2020) that attracted an audience of

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62,000 fans and a global viewership of more than 100 million people. In Miami itself, logistics including transport for an additional 200,000 visitors at the surrounding Super Bowl festival needed to be managed, and dozens of private jets need to be coordinated and executed (Brown, 2020).

Global, national and regional sport organizations heavily rely on logistics management practices in their operations, with examples ranging from the transport of the race cars in the Formula 1 tournament (Jenkins, Pasternak, & West, 2016) to coordinating volunteers in localized events (Kim, Fredline, & Cuskelly, 2018). Sport events – especially major and mega events – require sports managers to deal with logistics operations occurring at different levels and often in parallel (Minis, Paraschi, & Tzimourtas, 2006). Surprisingly though, despite the fact that sport management has become a thriving research field within management studies, sport logistics in general and aspect in sports event logistics in particular have received little scientific attention (Herold, Breitbarth, Schulenkorf, & Kummer, 2019).

The majority of available research in sports event management centers on marketing-related aspects, for example fan relationships (Marques, Nobre, & Gordon, 2018), sponsorship aspects (Olson, 2010), ticket pricing and consumer options (Sainam, Balasubramanian, & Bayus, 2010). Other studies investigate the legacy of sports events (Collins, Jones, & Munday, 2009; Doherty, 2009; Florek, Breitbarth, & Conejo, 2008; Thomson, Leopkey, Schlenker, & Schulenkorf, 2010; Thomson et al., 2019; Wilson, 2015), the destination image of sport events (Dickson, Misener, & Darcy, 2017; Milovanović et al., 2019) or the effects of sport event service quality (Jensen, Haskell, & Larson, 2018; Theodorakis, Kaplanidou, & Karabaxoglou, 2015).

As such, the examination of logistics functions and processes in delivering sport presents a significant research opportunity. Recently, Herold et al. (2019) conducted a systematic literature review to define and structure the sport logistics domain. The authors define sports logistics management as “the planning, implementing, and controlling procedures for the efficient and effective forward and reverse flow of goods, capacity, services, and related information between the point of origin and event destination in order to meet the venue organizers and athletes requirements and enlighten, celebrate, entertain or challenge the experience of a group of people” (p. 6). Also, they propose the Sports Logistics Framework (SLF) which allows to systematically assess sport logistics organizational structures, resources and processes, in particular of major sport events. However, while their conceptualization offers an important theoretical advancement, the paper lacks empirical illustrations that, on the one hand, is of immediate practical value to sport managers, and, on the other hand, offers a testing ground for its analytical validity power. Hence, this paper embraces a case study approach to provide exploratory and illustrative

insights into specific sport logistics management components against the Herold et al. (2019) proposed framework.

Against this background, the contribution of this paper is threefold. First, as far as the authors are aware, this is the first paper that provides empirical insight into a major sport event from a logistics perspective, thereby contributing to the knowledge in this under-research area in the field of sports logistics management. Second, by using the SLF, the logistics activities of Dallas Cowboys at an NFL matchday are systematically assessed which provides practical implications for sport event organizations. And third, the exploratory empirical research approach employed in this study allows us to align and substantiate the SLF to highly commercialized game operations, thereby providing a foundation which can be used for further comparison and examination of logistics activities around other NFL games and similar leagues nationally and globally.

The remainder of the study is structured as follows: In the next section, we provide an overview of existing work in sports logistics management, including associated models. A description of our study's methodology and subsequently, the analysis and the discussion of the results follows. Based on the analysis and incorporating the results, we then bring to life and adapt the logistics SLF framework for an NFL Dallas Cowboys game. We conclude with a summary of the findings, relevance to sport management practice, limitations and suggestions for future research.

Sports logistics management in professional sports

The study of sport event logistics is related to the field of sport management and event management alike (Aicher, Paule-Koba, & Newland, 2019; Allen, O'Toole, Harris, & McDonnell, 2011; Greenwell, Danzey-Bussell, & Shonk, 2014; Hall, Shibli, & Schwarz, 2010). It can be regarded as a sub-aspect of sports event management where specific logistical functions are critically discussed and analyzed. For example, the Olympic Games are often used to investigate transportation or travel processes and their implications for logistical planning and policies. Jiang (2008) used the context of the 2008 Beijing Olympic Games to examine the subway passenger flow, while Kassens-Noor (2010) and Bovy (2006) investigated transport challenges during the Olympic Games and how they impact urban transport systems. From a transportation perspective, Mulley and Moutou (2015) used the 2000 Sydney Olympics to analyze the link between tourism attractions and sport venues, while Minis, Keys, and Athanasopoulos (2006) took the 2004 Athens Olympic Games to investigate the requirements of the bus network for athlete transportation.

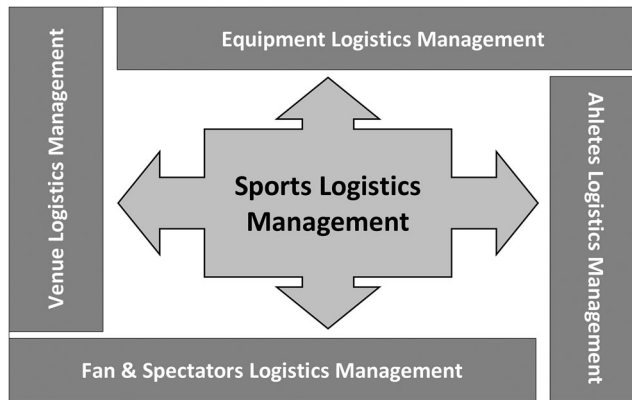


Figure 1. Sports logistics management components (adapted from Herold et al., 2019).

From a managerial perspective, sport events are increasingly used to examine logistics infrastructure regarding planning, legacy and sustainability. For instance, Drummond and Cronje (2019) conducted a case study of the FIFA 2010 World Cup Cape Town stadium to investigate logistical challenges including aspects of legacy, while Smith and Smith (2008) examined the planning characteristics for a venue in the context of the Super Bowl. They found that venue selection by the NFL for the Super Bowl is a calculated process and incorporates both tangible and intangible factors. Related research has analyzed the investments in infrastructure at the Beijing Olympic Games (Bovy, 2009), has examined the legacy characteristics of the Vancouver Olympic Games bid (Sant & Mason, 2015) or discussed the role of stakeholders in the legacy process of mega and large sports events (Preuss, 2015).

While these studies have undoubtedly made a significant contribution to logistical considerations around delivering sport services and products, especially sporting events, they do not specifically examine sport logistics processes per se; instead, they merely use sports events as a context for research. Similarly, the sport logistics research space has been lacking tailored frameworks or specific sports logistics conceptual advancements that go beyond those contributions that are merely associated with event logistics (e.g., see Emery, 2010; Haugen, 2011; Schwarz, Westerbeek, Liu, Emery, & Turner, 2017; Woratschek, Horbel, & Popp, 2014). Only recently, Herold et al. (2019) developed the Sport Logistics Framework (SLF) based on a systematic literature review in order to provide framing and guidance to investigate sports logistical activities of sport organizations, especially their events and gameday operations. Conceptually, the authors distinguish the SLF into four sport logistics components, namely venue logistics, fan & spectator logistics, athletes' logistics management, and equipment logistics (see Figure 1).

According to the SLF, *venue logistics management* can be considered as a significant part of venue operations, as major sport events are not only characterized by an extraordinary volume of demand for services to be provided in a very short period of time, but also because they require a large variety of services to support the many different customer groups and their specific demands (Beis, Loucopoulos, Pyrgiotis, & Zografos, 2006; Robinson, Wale, & Dickson, 2010). More specifically, venue logistics management include a systematic process for the planning, implementation and execution of logistics activities such as scheduling, warehousing, shipping, distribution, supply and asset management including predictive operational forecasting to anticipate and calculate demand (Minis, Paraschi, et al., 2006). Venue logistics management also includes the logistics behind security measures, which comprises not only crowd management issues, but also equipment, staffing and training (Hall, Marciani, Cooper, & Phillips, 2010; Whisenant, 2003). In addition, the existing and to be developed infrastructure and transportation systems for fans and spectators at sport events represents a considerable challenge for sports logistics managers, thus *fans & spectators logistics management* is also regarded as a key component in sports logistics management. While venue logistics management focuses on the logistics activities inside the venue, fan & spectator logistics management focuses on logistics activities outside the venue. In the context of large events, these outside logistics activities comprise mainly the topic of transportation of fans and spectators to the venue including the infrastructure of and behind transport arrangements (e.g., the planning of transport demand and supply as well as parking space) (Bovy, 2006; Currie & Shalaby, 2012; Kassens-Noor, 2010).

Herold et al. (2019) also name *athletes' logistics management* as a main component of sports logistics management. Athletes' logistics management comprises all logistics activities for athletes on- and off the field that are required (or desired) to maintain or improve the readiness of the players/athletes. This includes e.g., the provision of equipment on matchday and during training, but may also relate to the optimization of the travel schedule for professional sports teams which is considered a precondition for teams to perform effectively on the field (Huyghe, Scanlan, Dalbo, & Calleja-González, 2018). For example, travel schedules have an impact on sleeping patterns, which in turn was identified as one part of the factors that may lead to reduction of winning percentages, e.g., in the NFL (Roy & Forest, 2018). The last component of the SLF is *equipment logistics management*, which reflects the classical tasks related to transportation processes of the required equipment for athletes, venues and fans. This includes not only the freight forwarding and the customs clearances of the required goods, but also the organization of warehouses and the associated

distribution (Minis & Tsamboulas, 2008). Although equipment logistics management may be seen as a routine tasks, logistics managers at large or mega events have to deal with considerable volumes of equipment as well as with further complexity as clients often announce their requirements only days before the match (Minis, Paraschi, et al., 2006).

With the SLF providing a robust framework for empirical investigations into logistics management, the following case study inquiry sets out to conduct exploratory research in an attempt to gain empirical insights into the sport logistics management components of a significant and regular sporting event.

Methodology

The aim of this paper is to analyze the sports logistics organizational structures, resources and components on a matchday to evaluate the empirical utility of the SFL and to provide a contextualized adaptation of the SFL that aims to sharpen interested practitioners' and researchers' understanding of sports logistics. Using a matchday at the Dallas Cowboys as our case study, we seek to gain a deeper insight into the topic and to become familiar with its contextual arrangements (Dyer & Wilkins, 1991). We have chosen a single case study approach as it allows researchers to deep-dive into a particular phenomenon as it presents itself to the world (Siggelkow, 2007; Yin, 2011). Such design holds the potential to determine the concepts to be assessed in relation to the phenomenon of interest and how to discover new facets (Forza, 2002). The following sections describe the background of the case study, the data sources used for examination, and the chosen analysis approach.

Case: the Dallas Cowboys

The Dallas Cowboys are a professional American NFL team based in Dallas–Fort Worth in Texas, US. According to Forbes magazine, the Dallas Cowboys are the most valuable sports team in the world with a value of more than US\$5 billion, being highly profitable with revenue of US\$950 million and a 2018 operating income of US\$420 million (Church, 2019; Forbes, 2020; Ozanian, Badenhausen, & Settimi, 2019). The Cowboys' eight home games during the normal season take place at the AT&T Stadium, one of the largest, most technologically advanced entertainment venues worldwide. It features an expansive retractable roof and the largest retractable end zone doors in the world. The US\$1.2 billion stadium has a capacity of 105.000 seats; with an average attendance of more than 90.000 fans & spectators, it makes the Dallas Cowboys the team with the highest

attendance rate among all NFL teams (ESPN, 2020; McClung, 2019). Given their size and status within the sports and entertainment world, the Dallas Cowboys present an ideal opportunity to explore and examine the event logistics activities and organizational structures at a home game matchday.

Data sources

In order to explore and systematically assess the logistics behind a home game matchday at the Dallas Cowboys, we drew on several sources in an attempt to provide a holistic picture. First, adopting a purposive sampling strategy, we identified the key actors at the Dallas Cowboys responsible for matchday events, i.e., their selection was conducted on the basis of their experience related to the research topic (Etikan, Musa, & Alkassim, 2016). This led to two interviews with senior management staff, using semi-structured interviews as our main approach. This approach was employed because semi-structured interviews provide the opportunity for a systematic and comprehensive interviewing process within a limited time frame (Hoepfl, 1997; Patton, 2014); at the same time, they permit researchers to further explore and learn new insights around a phenomenon of interest. In our case, interviewees were asked to describe the various logistics processes before, during and after the event as well and how processes are executed. To protect the anonymity of our interviewees, in our finding and discussion section we refrained from naming individuals and their positions at the Dallas Cowboys; instead, we paraphrased their comments in text.

Second, internal documents of the Dallas Cowboys regarding logistics structures and organizations during the matchday were reviewed; these included selected nonpublic internal statistics and analyses of the event operations department as well as stadium and fan magazines. As such, the document analysis contributed to triangulation in an attempt to provide “a confluence of evidence that breeds credibility” (see Eisner, 1991, p. 110). Third, during one matchday in September 2019, the lead researcher conducted a “pilot investigation” (Slack & Rowley, 2000, p. 14) using unstructured participant observation to explore and assess the Dallas Cowboys’ logistics processes. This was done to establish strong familiarity with a phenomenon under investigation, as it helps to put data collected through other methods in context. In other words, it gives “a nuanced understanding of context that can come only from personal experience” (Mack, Woodson, Macqueen, Guest, & Namey, 2005, p. 14).

Fourth – and in an attempt to place our empirical investigation into a rich organizational context – we collected secondary data from newspapers, magazines and other academic and nonacademic literature to trace logistics information in the context of professional American football. This approach has been used successfully in previous qualitative studies,

including an analysis into logistics transformation processes (see Dobrovnik, Herold, Fürst, & Kummer, 2018). In our case, we used key terms (such as NFL logistics, Super Bowl logistics) to generate key insights and statistical numbers that assisted in contextualizing the NFL phenomenon. Overall, we created a comprehensive set of data from which we were able to identify and triangulate our findings about the matchday logistics processes and their structure, resources and components.

Data analysis

The goal of any single case study is to gain a deeper understanding of a particular phenomenon (Yin, 2014). In our case, we conducted our case study research against the backdrop of Herold et al. (2019) SLF which divides sports logistics activities into four categories, namely venue logistics, fan & spectator logistics, equipment logistics and athletes' logistics management. As such, we analyzed and systematically categorized our findings against a pre-determined set of criteria. Initially, our observation list as well as the semi-structured interviews were built around the four sports logistics components from the SLF framework not only to have a clear distinction between the components, but to identify themes within the respective components for possible further sub-categorization and interpretation (Bengtsson, 2016). To protect the anonymity of our interviewees, in our finding and discussion section we refrained from naming individuals and their positions at the Dallas Cowboys; instead, we paraphrased their comments in text. In addition, all secondary data were interpreted according to the respective components. Overall, our deductive categorization of findings was conducted with the assistance of NVIVO software, which helps researchers to integrate, index and code large amounts of qualitative data. This approach has previously been used in logistics, sport and event management research which aimed to provide empirical evidence in the context of established theoretical models and frameworks (e.g., Emery, 2010; Schulenkorf, 2010; Taks, Green, Misener, & Chalip, 2014).

Findings and discussion

In line with our exploratory research approach, the next section presents and discusses our study results against the four established logistics components of the SLF.

Venue logistics management

Venue logistics management as part of the event operations management department at the Dallas Cowboys is divided into guest services and crowd

management. As such, crowd management at match day starts well before visitors reach the AT&T stadium entrance. At the Cowboys, it begins where fans & spectators first encounter staff at the so-called secondary perimeter before reaching the gates, where bags are searched and all items are checked against the NFL bag policy (Stevenson, 2019). Next, fans pass one of the ten entrances at the AT&T stadium where the event operations department systematically assesses arrival patterns for a better visitor flow (Dallas Cowboys, 2019). In particular, a capacity assessment is undertaken that investigates the ticket scans counts and the arrival times to determine the right number of gates and staff, which may also require additional metal detectors and other equipment to be deployed.

Regarding directing fans to their seating sections, about 560 ushers inside the stadium – including frontline staff and supervisors – take care of guiding visitors to their seats, according to the interviewees. They also revealed that the span of control consists typically of one supervisor for six frontline staff (one frontline staff is mainly responsible for one aisle). The supervisor reports to a captain, who in turn reports to one coordinator from the event operations department to ensure communication flow.

The security staff and usher jobs at the AT&T stadium are outsourced to a company called “Stadium People” (Dallas Cowboys, 2019), who are trained by Dallas Cowboys staff. However, interviews revealed a relatively high attrition rate of 40 per cent of security staff and ushers, which is line with a study from Hall, Marciani, et al. (2010), who examined security management the National Collegiate Athletic Association (NCAA) Division I football events. This may well prove problematic due to crowd management issues, but also because key personnel seem to lack training in case of an emergency (see Hall, Marciani, et al., 2010). In response to the high attrition rate and the associated potential lack of training and experience, the Dallas Cowboys apply a relatively low frontline/supervisor ratio at home matches, i.e., as mentioned, one supervisor is responsible on average for six frontline staff, which is way lower than the industry standard for operations staff (Davison, 2003).

Guest services are mainly built around the logistics for concessions, i.e., food and beverage services and the logistics for the VIP suites. The concession experience is also one of the most influential and controllable as concession service providers have limited opportunities to establish a lasting relationship of high quality exchanges due to relatively brief sporting seasons (Larson & Steinman, 2009). In the NFL “you only have 10 games to make an impression on your guests” said Hans Williamson, president of the sports and entertainment group for Levy Restaurants (Cameron, 2004). Although no specific food & beverages consumption numbers of the more than 200 concessions stands were provided, the revenue behind the

concession indicates the significant logistical operations that go with it: The average NFL fan in a regular seat will spend up to US\$73 per person on food and drinks in the stadium (Jensen et al., 2018), with an estimated US\$9 billion spent annually on food & beverages (Larson & Steinman, 2009).

At the same time, the NFL VIP suites alone create an annual revenue of more than US\$2 billion (Cameron, 2004) and at a typical Dallas Cowboys game during a matchday, more than 300 suites are used according to the interviewees. There is usually one attendant for every two suites with the opportunity to hire a dedicated attendant exclusively. A major challenge for companies that provide concession services at sports events is to provide high quality food and beverages that meet fan expectations and deliver an excellent game day experience (Jensen et al., 2018). At the AT&T stadium at a Dallas Cowboys game, the concessions are outsourced and managed by “Legends Hospitality,” a nationwide company that is partially owned by Jerry Jones, the owner of the Dallas Cowboys (Dallas Cowboys, 2019). Studies show that outsourcing to a concessions service providers usually leads to more diversity in the offering of food and beverages services, higher revenue and higher fan satisfaction (Larson & Steinman, 2009) as well as “peace of mind” from a management standpoint (Steinbach, 2000).

Fan & spectator logistics management

Fan & spectator logistics management can be divided into traffic and parking management as well as providing support for the fans’ tailgating. From a traffic management perspective, arriving by car is the most preferred modal choice for a Dallas Cowboys game at the AT&T stadium, according to the interviews. In other words, given the limited bus and public transport connections available, the majority of fans & spectators arrive by car on matchday. Overall, the AT&T stadium offers 12.000 parking lots with an option of another 12.000 parking lots from the nearby Rangers ballpark, totaling the available parking lots to 24.000 (Dallas Cowboys, 2019). With an average attendance of 90.929 fans & spectators at the Dallas Cowboys games in 2019 (ESPN, 2020), parking lots cover more than one quarter of all fans.

However, internal data revealed that an average of 3 person per vehicle arrive at the game, which is in line with a study from Henao and Marshall (2013), who examined the parking patterns of major sports events in the United States. They found when parking utilization was as low, car occupancy was 2.2 persons per vehicle, but increased to 3.0 persons per vehicle when parking occupancy was high. In order to cover the remaining fans, Uber was chosen as an official partner of the Dallas Cowboys with designated pick-up and parking areas (Dallas Cowboys, 2019), and according to internal data, complaints about too less parking lots are non-existent.

Moreover, our interviews revealed that after arriving, around 60–65 staff provide a directional and security function for visitors along with the over 3,000 “wayfinding” signs.

Interestingly, research in parking can be considered an undervalued subject of study in logistics management, in particular, the parking at sport stadiums and venues. This is surprising, as millions of fans & spectators travel to watch the NFL across the United States (ESPN, 2020), with a high percentage of these visitors arriving at sports stadiums by car or parking their cars in the vicinity of the stadium (Henao & Marshall, 2013; Litman, 2018; Ruan et al., 2016). Moreover, available studies clearly show that difficulties in parking may lead to a reduction in the overall enjoyment of the event (Tomlinson, Buttle, & Moores, 2008; Wakefield & Sloan, 1995). It seems that more and better research in this space is needed, especially given that logistics managers responsible for parking have previously conducted traffic impact analyses based on several characteristics (such as trip or event vehicle traffic generation to determine the number of on-site parking lots needed), but logistical challenges have remained unanswered; in other words, studies have shown that venue managers often end up providing either too much parking or too little (FIFA, 2011; Henao & Marshall, 2013; Yeats, Schack, & Plottner, 2009).

Another significant part of fans & spectator management is tailgating, where fans unpack their drinks and barbeques. Tailgating is offered and encouraged at the Dallas Cowboys games, which begins five hours before the game at the parking lots, and represents “bustling microcosms of society where self-regulatory neighborhoods foster inter-generational community, nurture tradition and build the team’s brand” (Bradford & Sherry, 2015, p. 135). According to Paul Turner, the senior event director of the AT&T stadium, the “AT&T Stadium’s lots have perimeters of grass suitable for tailgating that do not take up other parking space” (IAVM, 2017). But more importantly from a logistics management perspective, tailgating can be considered an effective tool to dissipate the rates of arrival and departure from the AT&T stadium (Delaney, 2008; Drenten, Peters, Leigh, & Hollenbeck, 2009; Henao & Marshall, 2013).

Equipment logistics management

Equipment logistics management can be divided between a) venue equipment and b) player/football equipment. The interviewees stressed that a distinction had to be drawn between those two groups: The Dallas Cowboys football operations department is mainly responsible for the equipment that is related to players and coaches, while the Dallas Cowboys event operations department has responsibilities for the rest of the venue

and non-player related logistics activities on the field. While, for example, the event operations team, the so-called “conversion” team, is responsible for the sideline equipment on the field as well as for the benches and the cooling fans, the football operations department is responsible for the quality of the playing surface, goalposts or yard markers as well as for the equipment in the locker room such as towels or Gatorade coolers. Moreover, visiting teams receive a standardized questionnaire to plan the logistics and the materials needed, the arrival times as well as food and drink requirements.

One crucial part of the logistics operations is upholding and comply with the requirements of the NFL operations manual, a league document that contains rules designed to promote fair play and adopts policies that threaten to punish teams for undermining the competitive aspects of games (Colletti & Pullis, 2019). This NFL Football Operations manual, also called the “bible” internally, consists of nearly 200 pages of procedures and policy for the regular season games alone, including rules, training the officials, requirements for the technology and more. In other words, it is supposed to govern and standardize large parts of logistics activities.

However, from an equipment logistics perspective, the greater challenge is the transport of the equipment to away games. While planes are used, the equipment such as towels, jackets, shoes, thermals, medical supplies, collapsible training tables, communication equipment, coolers, etc. are usually trucked to away up to 48 hours before kickoff. Usually, the trucks transport between 12.000 and 18.000 pounds of equipment, in case of the Dallas Cowboys in up to seven 53-foot trailers (Archer, 2019; Campell, 2018; Gagnon, 2016).

Athletes’ logistics management

While venue logistics management as well as fan & spectator logistics management is part of the event operations, the interviewees and the data revealed that athletes’ logistics management can be regarded as a separate entity under “football operations.” The Dallas Cowboys had to travel 16.404 miles to away games in 2018 and the logistics behind it are quite complex, as the number of passengers alone averages 185 per road trip (approx. breakdown: 65 players, 30 coaches, 35 members of the front office (player personnel, PR, digital media, operations), 15 equipment staff, 12 sponsors, 8 security agents, 6 training staff, 5 members of the radio crew and 4 doctors) (Gagnon, 2016). Previous research has suggested with booking up to 200 rooms at the hotel, professional teams require basic services such as security, enough rooms for single occupancy, and smooth front-desk service (Tse & Ho, 2006). But unlike baseball and basketball teams, NFL teams require carefully controlled in-house food service and need

breakout space for team meetings with at least seven meeting rooms, including a meal room, a training room, a gathering room and rooms for position groups. Often, hotels do not fulfill these specific requirements, so the planning at the Cowboys' starts even before the season schedule is released (Boscamp, 2013; Gagnon, 2016).

The traveling and the schedule may have also profound impacts on the players' performance. The NFL schedule is considered to be drastically more complex than those of the National Basketball Association (NBA) and Major League Baseball (MLB), even though those leagues play far more games. In particular, scheduling NFL games has logistical considerations and constraints like stadium availability and broadcasting rules as well as individual team requests, with network partners often having mutually exclusive objectives seeking the most alluring matchups, especially in prime-time slots (Davis, 2019). At the Cowboys, for example, the scheduling allowed only 15 of 16 of its regular-season games televised in the major broadcaster CBS, Fox, NBC, ESPN and the NFL Network in 2019 (Dougherty, 2019).

Studies show that the scheduling has impacts on players, for example, a study from Barnwell (2012) examined the NFL away games travel schedules from 1997 to 2011 and found that NFL teams that have traveled more than 2,000 miles or more had a significant lower winning percentage than teams that traveled 1,000 miles or less. Similarly, Breech (2018) replicated the study for the seasons 2014–2017 and confirmed the teams traveling 2,000 miles or more had a winning percentage of just .398, while the winning percentage for all other was 40 points higher with at .438. Roy and Forest (2018) link these reduced winning percentages to sleeping patterns and some NFL teams hire sleep experts for scheduling, as not every flight window allows players to sleep (Orr, 2016). To address the sleep issues, the Dallas Cowboys partnered with “Sleep Well,” a provider who not only offers tailored beds, but also provides the technology to monitor heart rate, breathing and movement of players throughout the night (Ogus, 2019).

To further exercise control over scheduling, some NFL teams thought about acquiring planes to better schedule and coordinate trips to away games, with the New England Patriots as the first team to own a plane (Rovell, 2017). A typical NFL team needs an entire jet, often retrofitted for its needs, which may lead to leasing costs of up to US\$4 million a year for away trips. While the Dallas Cowboys have not yet gone as far as purchasing their own plane, they work with American Airlines, using both Boeing 767 s and 777 s, to bring the players to away games (Dorsey, 2018; Kaplan, 2018).

Substantiating the sports logistics framework for NFL games

After having systematically assessed the logistics components of a Dallas Cowboys game against an established theoretical framework, the analysis

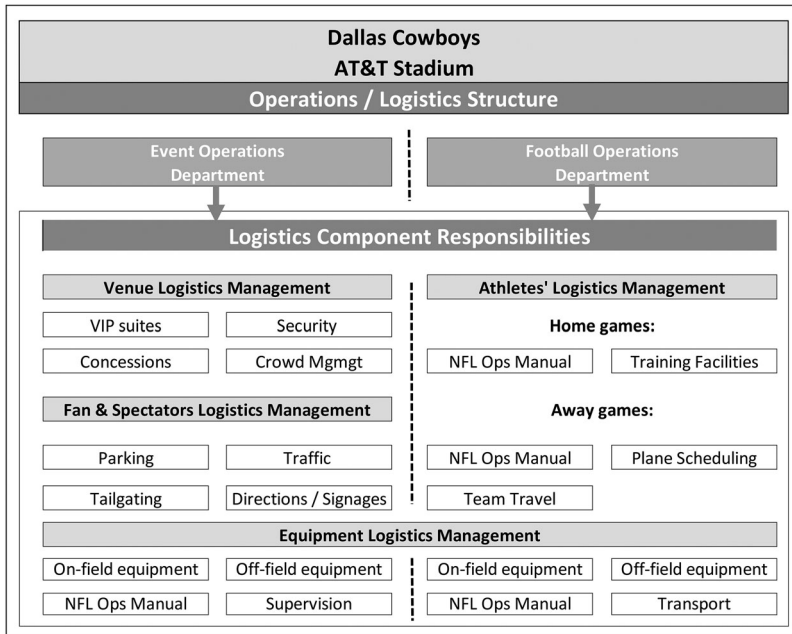


Figure 2. Match day logistics organizational structure at the Dallas Cowboys.

allows us to present an applied logistics framework of a Dallas Cowboys matchday. Based on the originally proposed SLF, this adapted framework provides an opportunity to incorporate and substantiates the findings of the very Dallas Cowboy context. This is not only to expand the understanding of logistics processes within major events, but provide a template for further comparisons between NFL games and beyond.

From the perspective of organizational structure, the Dallas Cowboys divide their logistics activities between *event operations* and *football operations*. The event operations department is responsible for all event-related activities, including guest services (e.g., crowd management/audience flow), security and parking (e.g., transport and traffic management) as well as for the equipment that is needed at the venue and the on-field (the so-called “conversion” team) which is not directly related to the players and coaches. Meanwhile, the football operations department’s logistical task is to prepare all logistics-related activities for the players and the teams as well as to follow the logistics requirements according to the NFL operations manual.

In the context of the SLF, *event operations* thus comprise the logistics components of *venue logistics management* as well as *fan & spectators logistics management*. *Football operations* relate mainly to the component of *athletes’ logistics management*. Given that equipment is needed for both the venue and the players, *equipment logistics management* relates to both, event and football operations (see Figure 2).

As the analysis shows, the main components for venue logistics management evolve around the management of VIP suites, security, concessions and crowd management at a Dallas Cowboys game. Fan & spectator logistics management mainly deals with parking and traffic management as well as tailgating on matchday. Looking at the results from the analysis from the athletes' logistics management, we found that at home games that logistics activities are mainly related to the requirements in the NFL Operations Manual. Other logistics activities include the coordination between training facilities. On away games, however, although the logistics activities have to comply with the NFL Operations Manual, the team travel planning and scheduling represents enormous challenges from a logistics standpoint. Finally, equipment logistics management is divided into event operations and football operations, with clear distinction in their tasks. Both departments have dedicated tasks to prepare and provide on-field and off-field equipment, however, while the football operations department needs to transport equipment to away games, the event operations department is responsible for the transport to and within the venue, which also includes the supervision of equipment that is used by outsourced companies.

Our analysis shows that the SLF can be applied in an empirical context. Here, this adapted framework shows specifically how sport logistics management is applied and understood in the context of the Dallas Cowboys and by inference, how it could be extended to other NFL game days. As such, the framework provides more detailed insights into the logistical processes behind stadium and event planning as well as execution. More broadly, the application of SLF and the subsequently adapted framework from a practical example demonstrate not only how the SLF can be used in a real-world environment to systematically investigate the logistics behind an sports event, but also represents the first analytical tool that can be used in practice to categorize the specific logistics components in a sports sphere.

Conclusion

A typical Dallas Cowboys game is attended by an average audience over 90,000 visitors, with approximately 5,400 staff involved on a matchday. Behind these numbers, significant logistics operations occur at different levels and often in parallel, all of which add to deliver the sport product and enable the co-production of its marketable value. Our findings provide insights into these logistics operations behind a matchday of one of the leading and most valuable sport competitions in the world.

In particular, by examining and reflecting on the organizational structures and the logistics activities of the Dallas Cowboys, this paper set out to achieve three goals. First, we provided empirical insight into an NFL

matchday from a logistics point of view, thereby expanding the applied knowledge in this under-research area in the field of sports logistics management. Here, we found that logistical challenges behind a matchday are real, significant and not yet fully understood. For example, there is a clear distinction in logistics activities between event operations and football operations.

Second, we used the established SLF to systematically assess the logistics behind a market leader in the commercialized global sport industry. As such, we provided insights into the logistics details before and during the event and discussed implications, challenges and solutions. Third, based on the SLF, we substantiated the logistical tasks in the respective logistics components which are involved in a Dallas Cowboys event, thereby providing a template which can be used for further comparison and examination of logistics activities at other NFL games and comparable league competitions.

Empirically, our case study inquiry and findings are highly contextualized. As this study represents the first attempt to empirically investigate sports logistics management organizational structures, resources and processes, the analysis as well as the explorations and descriptions may not be as comprehensive as in more mature fields of sport management and marketing research. Although the study draws on various data sources in an attempt to provide a structured and holistic picture, it does rely on a single case study which limits its generalizability to the level of analytical representation. With a field in its infancy, we encourage logistics and sports scholars to further advance research in the area of sports logistics by conducting further empirical research to create more real-world cases and opportunities for comparisons. For us, drawing on the SFL provided a useful conceptual backbone for analysis, but in-depth by investigations into a dedicated aspect within any of its four specific sports logistics components will help to further advance management practice and the sports logistics research space more generally.

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