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VALUE CREATION THROUGH DATA TRACKING TECHNOLOGIES IN THE FOOTBALL INDUSTRY OBSTACLES AND DYSFUNCTIONAL EFFECTS

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VALUE CREATION THROUGH DATA TRACKING TECHNOLOGIES IN THE FOOTBALL INDUSTRY OBSTACLES AND DYSFUNCTIONAL EFFECTS

Research full-length paper

Track N° 1

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Abstract

The use of Big Data has become an essential part of today's business. Data is present wherever you turn your head, whether looking at new innovative business opportunities, optimization and automation of existing business models, or getting rid of old habits.

Recently, different types of tracking technologies have been introduced in the professional football industry, which offers the coaches full insight into how far players run, where they run, their directional shift, pace, accelerations, and how often and how long the players stand still. This technology offers an opportunity to optimize the sporting conditions of the teams through digital transformation.

By applying the framework 'Multidimensional Value Categories', this paper contributes to practice by suggesting how tracking technologies can contribute to business value in professional football organizations, and to theory, by identifying obstacles and dysfunctional effects related to this value creation.

Keywords: Value, value drivers obstacles, tracking technologies, professional football, Dysfunctional effects

1 Introduction

Information Systems (IS) has become an essential part of the modern organization. It generally opens unprecedented opportunities for all types of businesses in various industries. Data is present wherever you turn your head, whether looking at new business opportunities, optimization and automation of existing business processes, or getting rid of old habits. The football industry is no exception to the innovative solutions that big data brings, and football organizations increasingly utilize big data (Frøkjær, 2018).

Recently, different forms and formats of tracking technology have been introduced, and many football clubs have invested in tracking technology to support and improve their performance. The data output gives the coaches full insight into how far players run, where they run, their directional shift, pace, accelerations, and how often and how long the players stand still. Thus, the technology offers an opportunity to optimize the sporting conditions of the teams (Frøkjær, 2018).

The Danish football club FC Midtjylland was the first Danish Superliga club to invest in the ZXY tracking technology, where the football players wear a GPS transmitter in a belt that tracks their movements live during matches (ChyronHego, 2018) and then uses the collected data for analysis of the players' performance. By doing so, FC Midtjylland is not just tracking their players' performance, but also helping the football club in their decision-making processes (KMD, 2018).

Until now, research has primarily focused on what tracking technology can do, rather than prescribing (Gregor, 2006) how it can actually be used for creating business value. The purpose of this paper is to identify how tracking technology can create value in professional football organisations, and to identify obstacles and dysfunctional effects related to the value creation process. This paper goes beyond statistics and technical explanation of the tracking data, and instead focuses on the dynamics in sports, and on how tracking technologies add value – in the context of a professional football club.

The above leads naturally to the following research question:

- How can tracking technologies like ZXY lead to value creation in a professional football club?
- Which obstacles are associated with this value creation?

The paper proceeds as follows: The first section provides a brief introduction to tracking technologies in the football industry, followed by insights on IS business value, and by the framework 'Multidimensional Value Categories', which serves the purpose of structuring our understanding of the value creation process (Schlichter, Svejvig and Andersen, 2014). Related to this, a short introduction of obstacles and dysfunctional effects related to value creation is also provided. This is followed by a section describing the research process and the activities undertaken to get insight into the case. We then present and discuss the findings of value types and their related dysfunctional effects. The paper concludes with implications for research and practice.

2 Theoretical Background

The first section introduces tracking technologies in the football industry. This is followed by a section explaining the concept of IS business value and presents the value categorization framework used for the study. The last section introduces the obstacles and potential dysfunctional effects that may arise from an IS investment.

2.1 Tracking Technologies in professional football

Tracking technologies have become increasingly popular in many sports, and in particular, football is recently to an increasing degree being quantified through different means of tracking technologies. Tracking technologies include optical tracking - using multiple camera semi-automatic systems, local position measurement (LPM) technology and global positioning system (GPS) technologies (Carling, Bloomfield, Nelsen, & Reilly, 2008, pp. 839–862). These tracking technologies are used in football to track player and ball movement, and then quantify this into coordinates that can then be used to measure speed, acceleration, positioning etc. in the football field (Carling et al., 2008).

One example of a tracking technology is the ZXY technology, which measures the distance, speed, acceleration and deceleration of each of the football players in the field, using GPS, giving up to 100 data points per second. The GPS fits into belts that the players wear during matches, and the data collected through this tracking can then be used for analysis of the players.

These tracking technologies generate a huge amount of data points (Big Data), which are used to perform statistical analysis to gain insights about the players' and the teams' performance. Thus, tracking technologies and business intelligence (BI) should be used in combination in order to give meaning to the data.

2.2 IS Business Value

Much research has evolved around the value of information systems (IS) (Kohler & Grover, 2008; Melville, Kraemer & Gurbaxani, 2004; Schryen, 2013; Smith & Fingar, 2003), and naturally also around how this value should be defined. Value and more specifically value of information systems (IS) could be defined as follows:

“IS business value is the impact of investments in particular IS assets on the multi-dimensional performance and capabilities of economic entities at various levels, complemented by the ultimate meaning of performance in the economic environment.”(Schryen, 2013, p. 141).

IS can create value in an organization in multiple ways. Especially, IS can redesign processes to help create more efficient and effective processes, and also to help the organization make better decisions (Brynjolfsson & Hitt, 1996); Soh & Markus, 1995). However, the value gained from an IS investment can be hard to quantify, meaning that capturing IS value can be extremely hard (Brynjolfsson & Hitt, 2000).

Even though sufficient research exists to understand the business value of IS, it does not necessarily explain how to achieve this value from an IS investment. Theory defines an IS investment as Information Technology (IT) managers and IT specialists with the purpose of creating value to the business in collaboration with complementary investments (Sharma, Mithas, & Kankanhalli, 2014). However, the results from coexisting studies covering value created through IS investment are inconclusive; this is also known as the 'productivity paradox', meaning that productivity slowed despite heavy investments in IT (Schryen, 2013). Thus, IS investments alone do not add value to an organization – the organization must also consider complementary investments to achieve full value from their IT investments (Schlichter, Svejvig, & Andersen, 2014). Big Data Analytics (BDA) has matured, but insight does not emerge just by applying tools to data, which calls for focusing on the actual value created from the process (Harford, 2014).

Technological opportunities make it possible for businesses to gain valuable information to increase the performance (Harford, 2014), which would also be the case in the professional football industry. Henceforth, the football industry needs to understand the value drivers gained from tracking data through the tracking technology. To properly do so, the professional football organization can benefit

from classifying the value drivers (Leevy, Khoshgoftaar, Bauder, & Seliya, 2018), in order to identify types of value that can be achieved and to help identifying how to harvest this value, thus reaching the full potential from the IS investment. Moreover, while tracking technology does not create value in itself, the obstacles that could potentially occur on the way should also be identified.

In the classification of value, this study builds on the value classification system proposed by Schlichter, Svejvig and Andersen (2014), which divides value into 5 categories: Strategic value, Informational value, Transactional value, Transformational value and Unplanned/Emergent value. The values and their respective definitions are outlined in the table below.

<i>Value category</i>	<i>Description</i>
Strategic value	To change the nature of how a company competes
Informational value	To provide information for decision making in the company
Transactional value	To enable cost savings and support operational management
Transformational value	To change the organizational structure of a company as a result of the implemented IT systems that provide a greater capacity for further future benefit realization. This is typically a longer term effect (lag effect)
Unplanned/emergent value	A result of a transformation or change of process

Figure 1. *Multidimensional Value Categories* (Schlichter, Svejvig and Andersen, 2014, p. 3)

2.3 Obstacles and dysfunctional effects

The section above describes how IT can deliver value to the organisation, and how tracking technologies combined with data analysis can potentially bring value to football organisations. Recently there has been a lot of hype around Big Data and business intelligence (BI), which are frequently naively presented as the solution to a lot of business problems and as the perfect tools for helping decision making (Cugueró-Escofet & Rosanas, 2017). However, it is important to realise that BI does not come without problems. Grønhøj and Bergenholtz (2016) points to the fact that having a lot of data does not necessarily mean that we get the right insights about the data, and that we may end up drawing wrong conclusions based on the data. The risk of drawing wrong conclusions based on big data analytics is also of concern for Grønhøj and Bergenholtz (2016), who address the issue of class imbalance in data analytics. Furthermore, research suggests that if an organisation is focusing too much on automatic ‘engineering’ systems with emphasis on quantitative measurements, this typically leads to dysfunctional effects and behaviours (Bogner, Littig, & Menz, 2009). Thus, big data - despite its hype, might lead to dysfunctional effects, and it is crucial for an organisation to realise this before blindly trusting BI insights.

3 Research Methodology

3.1 Research design

This study has taken a social constructivist approach. This means that we perceive the world as being created through the subjective view of individuals shaping their view of the world through interactions with other individuals. The meanings derived from interactions are formed through the individuals’ personal interpretations, and thus differ from one individual to another. Subjectivity is useful, since the answer to our research question relies on opinions and perspectives from experts concerning how football in the football industry might dramatically change as a result of increased use of technology

and data analytics. The answer to our research question relies on experts' opinions, which makes interpretivism the most appropriate epistemological approach to use.

The study further takes an inductive approach to explore the collected data in order to discover patterns and trends within the area of interest. The study will rely solely on a mono-method qualitative approach, allowing us to get in-depth knowledge and insights from the interviews, to understand the interviewee's opinions and thoughts. Furthermore, the research design is a case study of the Danish football club FC Midtjylland. An in-depth approach to the setting provides an "elucidation of the object of interest" (Grønhøj & Bergenholtz, 2016, p. 66) which gives the ability to understand complex issues and to extend experiences. Thus, a case study is associated with strong internal validity, since the lessons from the experts and players' points of view is valuable and reliable, hence increasing the quality of the results drawn from the research setting (Bell, Bryman, & Harley, 2018). Furthermore, as the findings presented in this article are prescriptive (Gregor, 2006), the results are also transferable to other football clubs, because the researchers tried to gather a holistic picture of data tracking in the football industry. However, the case studied is bound by place and time; thereby the transferability and generalization to other research settings, e.g. other football clubs can be questioned, thus leading to a potential lack of external validity (Grønhøj & Bergenholtz, 2016).

3.2 Research setting

FC Midtjylland (FCM) is a Danish football club, playing in the best Danish football league, Superligaen. Established in 1999 and with home base in Herning and Ikast, FCM won its first Danish championship title in the season 2014/2015 and again in 2017/2018. For the 2014/2015 season, FCM invested just below 10 million DKK in the ZXY technology. FCM currently mainly uses the data from this technology for tailoring the training sessions to increase the condition of the individual football players (Interview 4). With their investment in ZXY, FCM was the first Danish football club to invest in tracking technologies. FCM strives to be the Danish leader of using data analytics as an integrated part in their decision-making processes. They have signed a collaboration contract with Aarhus University, which gets all data from ZXY and in return provides FCM with insights and findings when using the data for research. As things are now, FCM has one part-time employee working with analysing the data produced by the ZXY technology.

3.3 Data collection and analysis

The primary data collection for this study consists of interviews with experts within the field of football tracking and big data. Interviewing experts has allowed the study to get the most recent and qualified insights (Bogner et al., 2009). The experts are identified during a comprehensive search online in research databases, through LinkedIn and various articles online. The semi-structured interviews have an approximate duration of 60 minutes, with a predefined interview guide (Annex A). Hence, it also allows for flexibility to go into details with specific questions, and to discover other new topics of interest (Bell et al., 2018). The questions are set out to be as exploratory as possible, in order to allow the interviewees to bring in new topics and areas of interest, and to capture as many aspects of football tracking as possible. The interview guides did not only ask questions related to the use of tracking technologies in FC Midtjylland, but also to the use of tracking technologies in the Danish Superliga in general, to obtain a broader knowledge of how tracking technologies can be used to create value in football clubs.

The interviewees are:

- Lead Product Manager, Sports Analytics, KMD (Interview 1)
- The Sports Performance Director and the Global Product Manager for Sports Products, ChyronHego (Interview 2)
- Associate Professor, Department of Public Health – Sport Science, Aarhus University (Interview 3)
- ZXY responsible, FC Midtjylland (Interview 4)

Three out of four interviews were conducted in Danish and transcribed and coded in Danish, in order to avoid bias, as the interviewees were Danish. The group interview (Interview 2) was conducted and transcribed in English.

The interviews are transcribed and coded using open coding system, where codes were developed during the research process by using the software NVIVO. This inductive approach to coding allows us to discover patterns along the coding process and make sense of the collected data. The coding process involved two coders, who agreed on the codes before continuing the process, thus ensuring that no substantial disagreement occurred. 14 codes were identified, which were subsequently merged to six primary codes, as reflected in table 1.

Code	Observations
Commercialization of Data	9
Player Scouting	11
Data Utilization	22
Obstacles	9
Risks	6
Future Perspective	17

Table 1. List of codes and observations

4 Findings

Through the explorative interviews with experts within the field of football tracking technologies, we arrived at multiple ways in which tracking technologies can bring value to the professional football organisation. The findings are divided into three steps:

1. Identification of value drivers
2. Classification of identified value drivers
3. Obstacles and dysfunctional effects

The first step includes identifying how professional football clubs can benefit from utilizing tracking technologies. Once these value drivers have been identified, they are classified using the Multidimensional Value Categories (Schlichter, Svejvig and Andersen, 2014) to show the process for how the identified value drivers deliver value to the organisation. Finally, the last step introduces obstacles and dysfunctional effects that must be managed in order to realise the full value potential of the identified value drivers.

4.1 Identification of value drivers

This section presents and explains the identified drivers of how tracking technologies can provide value to the professional football organisation. Table 2 provides a summarized overview of these.

Commercialization of Data represents the potential of selling the collected data to betting firms, or the media e.g. TV stations. Commercialization of data in the sports industry is already common practice in USA, where data is used as entertainment. The Lead Product Manager at KMD elaborates “In American sports they use the data in the sport commercially and they are good at it. We collect all these shot percentages; why not sell them to the TV stations?” (Interview 1). He argues that if the professional football clubs can utilize the data, then fans will also enjoy them, and that this could be a mutually beneficial situation for both parties: “from a business perspective, return on investment (ROI) is clearly that you can put data in a commercial context” (Interview 1). It is assumed that media and betting companies would be interested in this data to partly do some storytelling about the teams or the play-

ers, or for increasing the accuracy of the bets. The American Basketball League proves one example of how commercialization of data can lead to increased revenue for the sports organisations (Interview 1 + 2). Furthermore, the value is added when the data in the media can predict the next move from the football player or to explain why a football player is performing or underperforming. Commercialization of data raises the potential for the football clubs to increase ROI and brand equity since “media use the data for narratives and storytelling” (Interview 2).

Better Tactic in the Football Field means that when collecting and then analysing the collected data, the professional football coach should be able to use these insights for making better tactics for the team. This could i.e. be through tracking their players’ training sessions and then knowing things about their passing statistics etc. This might add value through a more informed decision-making process, as the coach would be able to identify weaknesses of his own team as well as of the opposing team “you get value from tracking data and if we do it enough times, we increase the likelihood for making goals or rescues” (Interview 1). Furthermore, the tactical decision-making process is able to guide the coaches in regulating the game and turning it in the direction they want in the given situation, as one of the representatives from ChyronHego commented: “it also blends into the tactical analysis, so that the data can be used to explore different elements of the games in terms of player positioning, visualizing the data and giving feedback to players” (Interview 2).

Optimization of Restitution and Injury Tracking means that the football organisation can use the collected data to see patterns regarding when players need restitution, thus reducing the likelihood of injuries for the players. If accurately being able to assess whether a player needs restitution or not, this may lead to less injuries and ultimately, according to some interviewees, to the team being able to save one player from the payroll (Interview 2). Furthermore, the data might prove useful for estimation of the scope of the injury: “what damage has happened, how it has happened and how long is the player out, what kind of treatment. If we have the estimated time, what is the real time that the player is out” (Interview 1).

Data Driven Player Scouting can add value by measuring characteristics of current good players and comparing those to the characteristics of the youth players. The team may be able to do better or more well-informed selection of youth players: “the academies want to sort out players who do not reach the highest level, rather than appointing someone who is good” (Interview 3). This might create value for FC Midtjylland and other professional football organisations on a long-term perspective.

Value Driver	Added value to the professional football organisation
Commercialization of Data	+ Sell data to media or betting firms + New Revenue Streams + Brand Equity increase through storytelling
Better Tactic in the Football Field	+ Utilizing data analysis to make better strategic decisions in the football field + Explore different elements of the game
Optimization of Restitution and Injury Tracking	+ Accurately assess a player’s health + Predict restitution and injuries + Estimation of injury recovery
Data-driven Player Scouting	+ Well-informed selection of youth players

Table 2. Identified value drivers

4.2 Classification of value drivers

Table 3 shows how utilizing data in a football setting adds value to the organization, illustrated by a two-dimensional structure consisting of the identified value drivers and value category. The classification of the values is elaborated below the table.

<i>Value Drivers</i> <i>Value category</i>	<i>Commercial value</i>	<i>Tactic in the game value</i>	<i>Restitution and Injury value</i>	<i>Player scouting value</i>
<i>Strategic</i>	(1)	+	+	+
<i>Informational</i>	+	+	(2)	(2)
<i>Transactional</i>	+	+	(3)	+
<i>Transformational</i>	+	(4)	+	+
<i>Unplanned/emergent</i>	+	+	+	+

Table 3. Value from utilizing data in a football setting

Strategic Value (1) can in the context of Commercialization of Data be related to a football organisation managing to sell their data to media or betting firms. This represents a new revenue stream, giving the football organisation a benefit of higher revenues than their competitors. Hence, this forms the basis of strategic value.

Informational Value (2) can be exemplified if the organisation successfully utilizes data in their Player Scouting; this means that the organisation will have a more informed basis for decision-making about player selection and scouting. Furthermore, Optimization of Restitution and Injury Tracking also adds informational value to a professional football organisation, since data may give insight about whether a player needs restitution and thus will inform the decision-making process about when exactly a player needs restitution and for how long, in order to reduce the likelihood of injuries.

Transactional Value (3) besides giving informational value, the tracking of data used to predict restitution and injuries can also be exemplified in the context of cost reduction, since injuries are cost-intensive for the football clubs. If a football team can reduce their team-size because they can predict very accurately the need for restitution and thus avoid injuries, the club should be able to save money from having one player less on the team (Interview 2).

Transformational Value (4) was shown to derive from incorporating the ZXY technology in FCM, as this technology has led to a change in the organisational structure, and to the introduction of an entirely new unit. The ZXY responsible represents a new role in the organisation, and decision-making is now done in coherence with this role. In addition, our research pointed to the importance of using data analysts in the decision-making, so that the process of setting the tactic of the game has been changed as a result of the technology. Furthermore, the football clubs need to incorporate the fact that tracking of data does not create value by itself. Tracking helps to get some predictions and information, so that the football clubs can get rid of intuitively “sensing” what decision they should make, and instead take decisions directly from the data analysis (Interview 1).

The study did not reveal examples of Unplanned/Emergent Value. Why this might be the case is further elaborated in the discussion section.

The identification and classification of the value drivers as presented shape a holistic picture of the value gained from an IS investment. Hence, the classification makes it possible to identify where and how the tracking technologies create value in the organisation, and thus gives an idea about how to harvest the full value of the IS investment.

4.3 Obstacles

The interviews on utilizing tracking data in the football industry have not only identified ways in which to create value in a professional football organisation. They have also revealed obstacles on the way to realising this value. In order to realize the full value potential from the previously mentioned value drivers, these obstacles must be managed. The following section will elaborate on which obstacles have been identified.

The obstacles identified primarily evolve around the lack of know-how and skills on how to utilize the collected data in the football clubs. A key obstacle that came up in all of the conducted interviews was the football club's lack of skills to "Ask the right questions": *"you can build all these really cool concepts – but do we actually know the questions that we want to answer [...] The challenge is to actually understand what we are trying to achieve with the data before we set out working with it"* (Interview 2).

This implies that the football clubs do not fully know what they can get out of the data, and that they do not fully know what to do with it. One interview also revealed that some football clubs might have data accessible, but as a physiotherapist is responsible for the data, this person only has limited education in what the data represents and how it could be utilized (interview 3).

The interviews further highlighted that the analysis of the data is too complex and time-consuming, meaning that many resources are necessary to obtain the value from the system, even after first having invested in the data collection technology. *"My conclusion is that this [analysing data] is really hard. And more expensive than you would think."* (Interview 3).

Our interview with the associate professor at Public Health further illustrated the fact that football can be hard to quantify, thus adding further to the complexity of obtaining the full value of football tracking data: *"Some people do some pretty advanced mathematical and statistical analysis on the tactical things in English Premier League Football[...] To me this [analysis] is extremely difficult [...]. Football is just more advanced than what can just be put numbers on"* (interview 3). This further adds to the fact that there is currently no holistic, quantifiable measure of individual football players, when using tracking technologies for player scouting, thus not giving the 'full picture' of the football player (interview 3).

Value	Obstacles
Commercialization of Data	Lack of standardization of data in Denmark Determination of data ownership Not knowing the market potential in Denmark
Better Tactic in the Football Field	Football strategy and tactics can be hard to quantify Not asking the right questions Lack of data analysis know-how/education Complexity Time and resource requirements
Optimization of Restitution and Injury Tracking	Lack of data analysis know-how/education Complexity Time and resource requirements

Data Driven Player Scouting	Not asking the right questions Lack of data analysis know-how/education Complexity Time and resource requirements Lack of quantifiable holistic picture of football players
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Table 4 Obstacles to realising identified value

In the achievement of value from commercialization of data, the primary obstacles revolve around the lack of a standardized data format from tracking technologies in the Danish Superliga (interview 1). If media or betting firms are to make use of data across the different Superliga clubs, it is necessary that the collected data is standardized. Furthermore, there are still data ownership issues that must be resolved before being able to benefit from commercialization of data (interview 1). Finally, the market potential of selling tracking data is yet to be determined, as there is no standardized price tag on the purchase of tracking data (interview 1).

4.4 Dysfunctional Effects

Despite the focus on value and obstacles associated with this value creation, our interviews also revealed that there are certain risks associated with an increasing use of tracking technologies in professional football. This risk was especially addressed by the associate professor, who highlighted a major risk associated with an increase in data driven selection of youth players. In management one often talks about “*What Gets Measured Gets Done*”, and this also represent a major concern for the scouting of youth players, according to our interviewee. He highlights that since what is currently being measured at FCM is primarily running speed, then this is what the selection of the players is based on, and to him this is a major risk of neglecting players who might be good but not fast and that these players would have to be extremely good in order to be accepted. According to this interviewee, the utilization of tracking data in youth player selection could lead to this selection being single-tracked: “*If we grow somebody who meet our data requirements, then we will all be the same*” (interview 3). This interview further points that, as things are now, he thinks that wrong decisions are being made regarding the selection of youth players: “*We do that [make wrong decisions] right now*” (interview 3).

These concerns are very much in line with the dysfunctional effects that the theoretical background section presents – namely the risks associated with blindly relying on the insights gained from big data analytics. Thus, introducing tracking technologies does not only create value, but has also some risks associated with it. It would be relevant to further research which risks might be associated with doing so, in order to get a more holistic picture of the benefits and drawbacks of introducing tracking technologies in professional football organisations.

5 Discussion

The findings identify value that can be realised from introducing tracking technologies in the professional football organisation, and the related obstacles that must be overcome in order to realise the full value potential associated with introducing these tracking technologies. However, there might still be even more value or obstacles yet to be discovered.

Furthermore, this study did not identify any unplanned or emergent values arising from introducing the ZXY technology in FCM. This could be due to FCM not accurately planning which value they expected to realise and thus not knowing which value they could expect. It could also be because the unplanned/emergent value has not emerged yet. Therefore, it would be relevant to revisit FCM after having had the technology for a longer time and to investigate whether any unplanned value has risen from using tracking technologies.

In the classification of the identified value drivers, we argued that Better Decision-Making in the Football Field should be categorized as a transformational value, since the organisation had been re-structured to include a data analyst to be a part of the decision-making process. However, all of the interviews pointed to the fact that with the more sophisticated use of AI and video tracking, the technology may at some point be semi- to fully automated (interview 1, 2, 3, 4). If this becomes the case, and sophisticated reports could be generated automatically by the system, the extra data analyst may become obsolete, as the coach would be able to get all necessary information directly from the report. In this case, the Better Decision-Making in the Football Field value should instead be categorized as an informational value.

The findings of this research are based on interviews with experts within the field of tracking technologies in football. Two of these identified experts are employed by a tracking technology vendor, which may cause them to be overly optimistic regarding the potential value that their technology can bring to a professional football organisation. However, this research has compared their opinions to the opinions of the other interviewees, in order to critically assess the credibility of their opinions.

The main purpose of this study is to open up for the discussion of value creation in sports through tracking technologies. This study is limited to looking at a single case, why it is very relevant to further research the value creation through tracking technologies on a larger scale and in other sports.

6 Conclusion

This study was set out to investigate the potential value that could be derived from introducing tracking technologies in a football organisation. Through exploratory interviews with experts within the field, four major value drivers were identified: Commercialization of Data, Better Tactic in the Football Field, Optimization of Restitution and Injury Tracking, and Data Driven Player Scouting. These value drivers were then categorized according to the category of value that they could potentially bring, using the Multidimensional Value Categories (Schlichter et al., 2014). However, the interviews also revealed that there are obstacles to fully utilizing the potential value of the technology. These obstacles include lack of know-how, skills and resources for analysing the data, just like the complexity and the time required for the data analysis may be one reason why many football clubs do not fully benefit from the data they have available. Furthermore, obstacles to commercialization of data were also identified, such as data ownership, data standardization and not knowing the market potential. Finally, a major dysfunctional effect of tracking technologies in football may arise from blindly trusting the insights generated from data analysis. This is particularly relevant in the selection of youth players, as this may lead to the selection process being single-tracked, only focusing on what gets measured, thus neglecting characteristics that cannot be measured by using tracking technologies.

Overall, there is a lot of value to be realised using tracking technologies in football organisations. This is due to new revenue streams, better performance, as well as more accurate decision-making. However, in the use of these technologies, the football organisation must not forget that the investment in the technology itself does not add value – resources must be allocated to understand and analyse the data, and as this is complex and time consuming, it may also be rather expensive. However, if these obstacles can be managed, football clubs may harvest multiple dimensions of value from the technology.

7 About the Authors

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