WAR with the VAR

The effects of time dissonance, bias, information overload, enjoyment and frustration on the acceptance of the Video Assistant Referee (VAR) in football.

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11-12-2020

Acknowledgements

In this section I would like to sincerely thank the following people for helping me with making this Master thesis a reality.

First and foremost, the representatives from the University of Twente being Dr. Jacobs and Dr. van Rompay for accompanying me during the complete research project and for their willingness to impact their knowledge. I am grateful for their guidance, effort, time and constructive feedback.

Secondly, Martin Vos, Niek Haafkes and Martijn Benjamins for sharing my article on their platforms. Because of them I was able to get a wide variety of respondents.

Furthermore, I would like to thank all respondents for their time and effort by filling in my complete survey. Without them I would not have been able to answer my research question.

Last but not least, I want to thank my family and friends for their support. The topic of this Master thesis is a hot topic in the world of football. All fans of the sports enjoy talking about it and ideas and input of my friends and family helped me out.

Abstract

Objective: A lot can be said about football and the Video Assistant Referee {VAR}. However, the academic literature did not pay attention to the acceptance of the VAR until now. This paper aims to conduct useful insights into the acceptance of the VAR among spectators. The research question of this study is: "What effects do time dissonance, bias, information overload, enjoyable experiences and frustrating experiences have on the acceptance of the VAR?". The goal is to find out how these factors influence acceptance and the underlying mechanisms.

Methods: To answer the research question an online experiment was conducted among the supporters of different football clubs in the Netherlands. The online experiment was distributed over fan forums of Eredivisie clubs and a general football forum. The 457 respondents were divided into four different scenarios. These scenarios contained short videos showing a VAR moment in a match of FC Twente versus another Eredivisie club. The videos differed in terms of the amount of time it took for the VAR to reach a conclusion, the decision being (dis)advantageous towards a certain club and the amount of information within the video. After the video, a list of closed questions based on Likert-scales for every specific factor needed to be answered. At the end of the experiment, the respondents were asked to answer one open question to indicate how they felt the VAR should be used. Lastly, they were given the opportunity to place general comments in one open box.

Results: The results show that biases and information overload have a mediated effect on the acceptance of the VAR. Enjoyable experiences influence acceptance in a positive way while frustrating experiences influences acceptance in a negative way. These effects are mediated by enjoyment and frustration. Furthermore, time dissonance did not seem to have any effect on acceptance. Additionally, respondents referred to the VAR usage in order to gain insights on how the VAR should contribute to football.

Conclusion: The findings add to a better understanding of the acceptance of the VAR and the factors that are found can be used to influence it. For fans to accept the VAR, a change seems to be needed. By making small adjustments such as making rules more clear and giving more openness about the decision-making process by the VAR, fans are more likely to accept the VAR.

Keywords: VAR, acceptance, enjoyable experiences, frustrating experiences, Time dissonance, Bias, Information overload

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1. Introduction

Technology is implemented in sports more than ever before, with the intent to increase entertainment, safety and fairness. This study is limited to the video assistant referee {VAR} in football and the way it is accepted by spectators. First of all, the VAR is an extra assistant for the referee. This assistant is able to help the referee on the pitch with technology and extra video footage of the game. According to FIFA (n. d.), this technology is implemented to make the game more fair by correcting clear and obvious mistakes. The VAR has been implemented recently and according to the KNVB (2019), statistics show that the game has become more fair. This information is based on the correct and wrong calls of the VAR. However, there is a lot of criticism on the VAR and even professionals, players, coaches and analysts, are not completely positive. Mossou (2020) states that conspiracy theories are discussed frequently, while football clubs Sevilla and Real Betis have demanded to see recorded footage of the decision-making process in the VAR-room because the clubs felt scammed. Even opinion leaders as Marco van Basten, at the beginning a big supporter of the VAR, longs to matches without the VAR (Voetbal Primeur, 2020). According to Mossou (2018), the discussion about doubtful decisions that football referees make, is far from over despite the implementation of the VAR. The discussion seems to continue, even with all the technological tools that were designed to end it.

According to Kuipers (2020, 1:11), referees cannot do their jobs without the VAR any longer; “We are still learning. We are not at the level we want to be, but the VAR can save your game. I would say the VAR can never leave football”. Kuipers is one of the referees that is leading matches in the Champions League and at multiple World cups. Kuipers does not like being corrected and interrupted by the VAR, but claims it is necessary for the fairness of football. Collins (2010) stated that the VAR seems necessary, because the people watching replays are in a better position to judge every single situation than referees and assistants, due to instant replays on a television or mobile devices. By contrast, the referee had to make a decision on the spot in less than a second without the VAR. Additionally, the media are considered to be very important in sports. One of the most important things the media does for sports is providing a broadcasting platform all over the world. According to Giles (2003), an important effect media coverage had on sports is that the use of technology for settling issues was and is being implemented. Another disadvantage in the case of football is that a match already has a lot of stoppages. With the VAR, there is an extra reason for the game to stop, and this stoppage might appear multiple times in a game. According to Giles (2003), the supporters watching television only partially see what is happening and why the game is stopped. However, these spectators do not know what the VAR and the referee are discussing exactly. The

supporters see the same images as the VAR and the referee, however supporters are unable to hear the discussion and therefore, the reasoning of the referee to make a certain decision.

The UEFA, FIFA and the national football associations are clearly struggling with the new technology. The VAR was implemented in football in 2018 at the World Cup in Russia, and ever since the VAR has been widely criticised. According to FIFA (n. d.), the VAR is implemented to assist the referee in four different scenarios. First of all, the VAR helps out when a goal is being scored. The VAR checks if there is an infringement which might lead to a recall of the awarded goal. Secondly, the VAR helps to decide if a penalty should or should not be given. Thirdly, the VAR checks if a red card is given correctly or if the referee did miss an event in which he should give a red card. Finally, the VAR checks if the right player gets a card or if identities of players are switched and a card is given to the wrong player. In all scenarios the VAR is looking for clear and obvious mistakes.

According to Shollo and Xiao (2019), the VAR requires 33 cameras and a setup of a video operations room need to be present in the stadium. This operation room includes ten screens showing different angles of the match. By having these camera's multiple points of view are added to a game of football and with this a lot of additional information is available.

Communication between the assistants and the referee goes through a headset. If the video assistant referee thinks the referee made a clear mistake the advice will be for the referee to go to the screen next to the side-lines to check the footage and to make a decision based on that particular footage. It is possible that the referee recalls his decision, but that is not always the case. This is important to be aware of, because this information might have a certain influence on time dissonance.

Time dissonance is important in this study because time management is a big point of discussion. The time it takes for the VAR to make a decision and the time the players and spectators are waiting for the match to continue are a big point of frustration for supporters. However, time dissonance is not only the amount of time it takes to make a decision, called event time, but also the time that is experienced by the spectator. Time dissonance is a clash between event time and expectations of time sequence from past, to present and future, or a clash between event time which is recreated and therefore, clashes with experiential time. So a dissonance appears if there is a clash between the expectations or experiences of a spectator and what is really happening during the game. It takes time for a referee to walk to the screen and check the footage. Spectators have certain expectations about the time these situations will last. Besides that, there might be an influence on information overload. The 33 cameras are able to show different points of view in different levels of speed. This shows a lot of information which might mean spectators become overloaded with information. These three factors might influence the enjoyment and frustration levels of spectators or have a direct influence on acceptance. Also, supporters are able to interpret all different points of

view differently due to a certain bias. The variable bias is interesting because it is possible that spectators in favour of a certain team base their acceptance on the decision the VAR proposes when their team is playing. Spectators in favour of a club could have a different acceptance towards the VAR in cases with the club they support versus cases with random clubs or rivals. The theoretical framework will explain more about time dissonance, bias and information overload, which are the independent variables in the current study. Finding out which of these factors have an influence might help enhancing the acceptance of the VAR when the information is used correctly.

The literature did not discuss how to solve the problems regarding the VAR yet. All of the research that has been done is to prove why the VAR is important or why it is unsuccessful. These studies are only focussed on pointing out the problems the VAR has, however this research is focussing on factors that have effects on the acceptance of the VAR. The current study is pointing out why people are not accepting the VAR even though the VAR is doing a good job as the statistics in Appendix A show.

The three factors mentioned before will be tested towards enjoyment and frustration. Supporters claim that the VAR is taking the passion and enjoyment out of football and are frustrated with that. This is why the variables are added to the current study. Enjoyment of the game or frustration caused by the VAR might have an influence on acceptance. This leads to the following research question: “How do time dissonance, biases, information overload, enjoyable experiences and frustrating experiences influence the acceptance of the video assistant referee?”

The first section of this report describes the factors influencing the acceptance of the VAR. The second section explains the method, including the research design, sample, procedure and measurements. Subsequently, the third section shows the results of the current study. Finally, the main findings, potential limitations, practical implications and an answer to the research question will be formulated.

2. Theoretical framework

2.1 Social perception and acceptance

According to Kassin, Fein and Markus (2016), social perception is a general term for the processes of people learning to understand each other. Individuals do have pre-set notions about different situations. These notions are called scripts, and the more experience people have in certain situations the more detail the script will contain. Scripts enable people to anticipate the goals, behaviours and outcomes that are likely to occur in different settings. Knowledge of settings provide an important context for people to understand verbal and nonverbal behaviour of others.

In the case of football, fans have seen a lot of matches and know what to expect. With the introduction of the VAR something completely new is added to the script of a match. There are new events and rules added to the setting, therefore scripts of fans are changing. Furthermore, measuring the public perception towards technology is difficult when it is new and when people do not have an attitude towards the technology yet (Siegrist, 2009). However, the VAR has been used for two years now and fans have been able to form their perception. This framework will describe the potential direct and indirect influences on the acceptance of the VAR.

As Mumford (2019) describes spectators have different ways of seeing sports events. There are the partisans and purists, both are fans of football. A partisan is a fan of a particular football team and a purist loves the sport, but has no preference for a particular team. According to Porat (2010), football fandom is a significant component of identity which means that people feel a real connection with a club and make it part of who they are. According to Gray, Sandvoss and Harrington (2017), every individual is a fan of something. This means everyone sees something, a person or thing, as a part of who they are. In the current study, fans of FC Twente (partisans) are compared to supporters of other clubs and neutral supporters (purists). By comparing these two it might be possible to find a bias. FC Twente fans are used as partisans because FC Twente will play a role in all the conditions. Fans of other clubs are seen as neutral supporters because the other clubs are not playing a role in the videos.

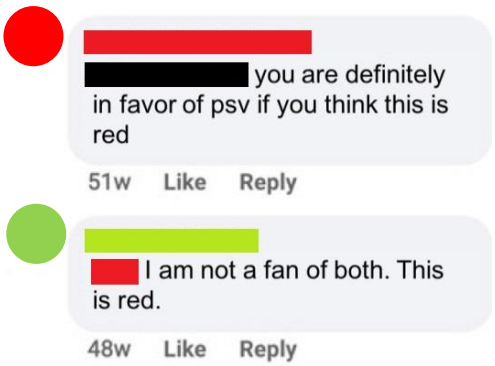

Figure 1. Attack strategy on social media from partisan at a purist (Facebook).

As figure 1 shows, people do not always have the same perception while watching the same game of football or even the same incident. A possible explanation is selective attention, which is a certain form of bias. According to Johnston and Dark (1986), selective attention refers to the "differential processing of simultaneous sources of information" (p. 44). According to Köhler and Som (2008), Perception is the way people interpret certain situations and stimuli. Different perceptions, due to selective attention, have a strong impact on new technology. This creates lot of discussion around the VAR because different perceptions lead to different attitudes. According to Allport (1935), attitudes are a mental or neural state of readiness through experience, having an influence on the individual's response to objects and situations. Zoellick, Kuhlmey, Schenk, Schindel, Blüher (2019) state that acceptance is the direct attitude towards a system. According to Cohen (1992), acceptance is a policy for reasoning. Furthermore, Cohen (1992) argues that acceptance is resulting from rules of rationality. However, supporters cope with multiple emotions during a game of football, which might influence the level of rationality. Examples are enjoyment and frustration. Supporters might enjoy themselves because their team won the game or scored a goal, while supporters of the other team are frustrated because of losing or conceding a goal due to the VAR.

Furthermore, according to Moore (1994), acceptance is context-relative. It is committed to a psychological state, which means that acceptance can be different in any context. The context with the VAR can differ because there are different situations and rules for which the VAR can be used. The current study investigates if time dissonance, biases and information overload, possibly mediated by enjoyable and frustrating experiences of the VAR, influence the level of acceptance towards the VAR.

2.2 Enjoyment versus frustration

2.2.1 Enjoyment

According to Warner (1980), there are systematic connections between enjoyment and motivation, reasons for action, beauty and metaphor. What is enjoyed is always explicitly or implicitly an experience or an activity. For example, watching a game of football. The VAR itself however is not something to enjoy. It is something within the enjoyable experience. Kimiecik and Harris (1996) state that enjoyment is a key construct for understanding and explaining motivation and experiences of sports. This could mean that enjoyment is an important factor influencing acceptance towards the VAR.

According to Wakefield and Sloan (1995), people who enjoy something are inclined to do the same thing again. Watching a game of football is a pleasurable experience for a lot of people and it is something people will do over and over again. Furthermore, Wakefield et al. (1995) state that this might seem obvious, but the importance should not be overlooked. People have experience in

watching football and keep building up experience with every game that is watched. This is related to scripts as discussed by Kassin et al. (2016). By building up experience scripts are being filled, this means that people's expectations change and knowledge grows.

However, when watching football not all games are enjoyable. For example, the teams have a boring style of play or the official playing time is short due to all kinds of interruptions. Not every encounter should be a positive one to make the spectator watch the next game, but negative encounters might have an influence on the experience and expectations people have. Relatively minor issues may play a large part in the spectators' feelings of pleasure and enjoyment of a game. The VAR makes a group of supporters dislike the game and this groups even thinks the VAR is killing the game as shown in figure 2.

Acceptance is considered a rational process. According to Fedlman-Barret and Russel (1999), emotions are able to supress or even take over rational thoughts and processes. This means that enjoyment might have an influence on experiences of supporters. Due to these emotions supporters might actually be less rational when discussing the acceptance of the VAR. Goldstein (1988) states that more intense reactions of enjoyment appear when the level of involvement of the spectator is higher. Also, objectiveness will be influenced by biases of supporters. This means that biases might have an influence on enjoyment, this will be further discussed in chapter 2.4.

Figure 2. War with the VAR on the 10th of February 2019 in Utrecht. (Facebook).

The theories above lead to the following hypothesis:

Hypothesis 1: Enjoyment has a positive effect on the acceptance of the VAR.

2.2.2 Frustration

On the opposite of enjoyment there is frustration. According to Kassin, Fein and Markus (2016), frustration is produced by interrupting a person's progress towards a certain expected goal. For frustration to appear there always needs to be a trigger. This trigger and the reaction towards this

trigger might vary from culture to culture and from person to person. If things are not going the way it is expected to go people might get frustrated. According to Bitner (1992); Snodgrass, Russell and Ward (1988), time spent on simple tasks might enhance or inhibit pleasure of a spectator. Any disruption before getting to a game and during a game may influence the overall acceptance of the VAR, this is not tested in the current study but is important to take into consideration. Furthermore, VAR disruptions during the game might lead to frustration as well. For example, the time it takes to continue playing after a VAR moment might be considered too long which leads to frustration. A VAR moment in this case is an interruption of a football game.

According to Darwin (1872), emotions are an essential part for human survival and Damasio (1994) adds that emotions are an essential component of human adaptability. Also, Goleman (1995) states that emotions are adaptive, functional and serve to assist people with identifying important information to organize cognitive activities and subsequent behaviour. This means that emotions play an important role in rational decision-making processes. When discussing rationality, feelings play an essential role when the risk of possible losses are weighted. In football, a goal could be disallowed for the team someone supports. This goal could have been the winning goal, however the VAR disallowed it. Therefore, frustration due to a VAR moment is expected to be an important factor in terms of predicting people's acceptance towards the VAR.

According to Tiffany Ito, Larsen, Smith and Cacioppo (1998), negative information tends to have a stronger effect on evaluations than comparable positive information. Which means that, if a negative experience with the VAR occurs the effects on the acceptance towards the VAR might be influenced more heavily than when a positive experience with the VAR occurs, this is called the negativity effect. Therefore it is possible for spectators to have a memory concerning the VAR that is extremely negative. Therefore, the spectator might have a negativity bias and is not able to judge the VAR rationally, which could potentially lead to a lower acceptance. For example, the VAR decided a red card was needed in a certain situation. Because of this red card the team the spectator supports lost the final of a big tournament or competition. The theories discussed above lead to the following hypothesis:

Hypothesis 2: Frustration has a negative effect on the acceptance of the VAR.

2.3 Time dissonance

According to Carlos, Ezequiel and Anton (2019), the main critic of real-time video-replay devices like the VAR is the disruption of the flow and tempo of the game. To be able to assess the footage the game needs to be stopped. Carlos et al., (2019) also state that there is an increase in the amount of stoppage time the referees add to the game after having a VAR-moment in the game. Spitz,

Wagemans, Memmert, Williams and Helsen (2020) claim the VAR protocol is restricted to match-changing incidents. Their data shows an average of 4.4 required VAR-checks per game. The median time duration was 22 seconds. However, a review with the referee going to the side-line to watch the video footage took around 62.0 seconds on average. Spitz et al., (2020) state that for a review like this the game needs to be interrupted and this has an effect on total game time and a decrease in effective playing time. It is known that an average of 52-56 minutes is active playing time in a game of 90 minutes, while the other minutes are wasted by other factors like a throw-in or a free kick. The duration of a VAR-check is relatively low in relation to the other events costing time. However, during these other events players actively re-position themselves for the next phase of the game, while during a VAR-check players are standing still waiting on the decision of the referee. Therefore, the other stoppages feel like a continuation of the game while a VAR-check does not. Spitz, et al., (2020) state that the clock is stopped in other sports to compensate for these time losses. Also, according to Wittmann and Lehnhoff (2005), the passage of time speeds up with age. This means that the older people are, the faster time seems to go in their perception.

Shollo et al. (2019) describe three different types of time: clock time, event time and experiential time as shown in figure 3. The different effects lead to decoupling of time, which triggers the time dissonance as described below. A possible dissonance is when event time is de-sequenced, and therefore clashes with expectations supporters have from the past, to present and to future. Another possible dissonance is when the event time is recreated, and therefore clashes with the experiential time. Event time can be recreated when an event, for example a goal, is disallowed due to the VAR. The event time of the goal barres no consequences for the match. People experience the time that has been recreated differently. Clashing expectations and experience with reality might be frustrating for supporters which might lead to a lower acceptance towards the VAR.

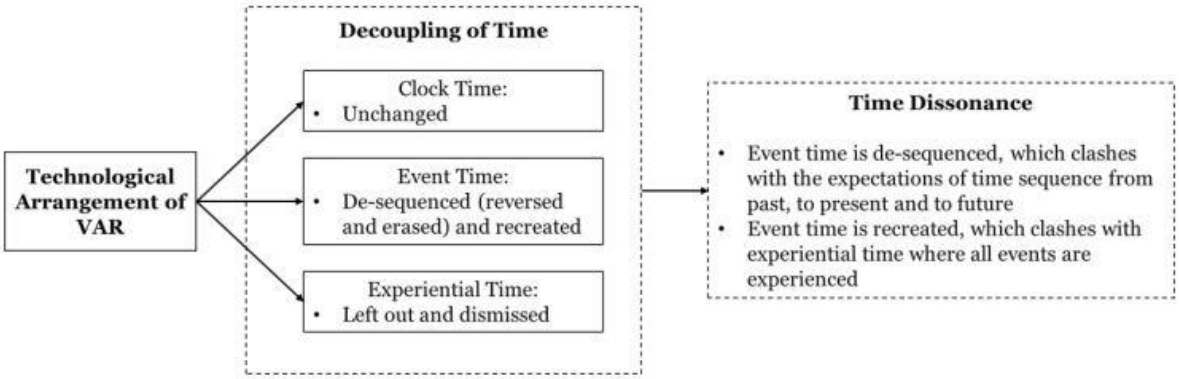

Figure 3. Time dissonance (Shollo & Xiao, 2019).

First of all, clock time is commonly used in conceptualization of time. It represents time in an objective and quantifiable manner. In a football match clock time is game time, which is 90 minutes

of playing time. However, the clock runs non-stop and to compensate the loss of time, stoppage time is added. Stoppage time compensates for the minutes that go to waste when the ball is out of play.

Secondly, event time is defined by events and their sequences. It represents the various football incidents that happen in a certain sequence and define the outcome of the match. Shollo et al. (2019) argue that events that define event time can change based on perspective. Certain events are goals, cards and injuries. Event time is the way a match progresses, for example when a card is given this will take some time within the game. First there is a foul being made, secondly a referee decides if it is a foul and both the referee and the assistants decide if a card should be awarded. Next, the VAR could come in and calls the referee to look at the screen because a mistake has been made. The referee sees the video of the situation and makes a decision. At last the referee goes to the player and delivers a certain card to the offender. This situation describes different events that all take time and are all experienced differently by spectators. These events originated from another event, the first foul. So while this event plays out, clock time remains unchanged, the clock keeps ticking. However, events happening after the earlier discussed foul might be erased from the game. Again, the clock time keeps running, but the events after the foul are not included in the 90 minutes the game takes.

Finally, experiential time is the time that is experienced by individuals. For different spectators' experiential time is shaped based on what has happened and what is expected to happen. For example, the ones who support the team that is leading might perceive the last five minutes as long, while the ones who support the team that is behind might perceive the same last five minutes as short. This is because they have different expectations and wishes for these last five minutes (biased). This experiential time is influenced by everything that happens in a game. With the implementation of the VAR some events during a match will be deleted from the final result. For example, a team scored a goal, but the VAR saw a foul a minute earlier and decides to make the game go back in time to where the foul was made and to disallow the goal and delete the event time. This example perfectly describes how an event in a game bears no (time) consequences for the timeline of that particular game anymore and a new timeline is created. This new timeline is created due to the event being erased and going back to an earlier incident. The deleted event time might be re-added with stoppage time and therefore, no consequences due to the deleted event are applicable to the 90 minutes of the game. For the fans however, this time is experienced in a certain way. This is decoupling of time, which triggers time dissonance in two ways. First of all, de-sequenced event time clashes with expectations because clock time is a total sum of all events. Secondly, the recreation of event time clashes with experiential time where all events are staggered based on the experienced time people perceive differently. Shollo et al. (2019) claimed that the three different elements of time evolve separately due to decoupling of time. Individuals trying to reconcile the

meaning of time feel tensions due to the dissonance. This dissonance shapes the experiences individuals have when they are making sense of a game. Shollo et al. (2019) claimed that fairness of the result is important for some individuals and these individuals were able to avoid time dissonance. Furthermore, Shollo et al. (2019) analysed observer's perspectives towards time dissonance based on different websites and online forums made by match observers. The analysis showed that different individuals react in different ways to events. Some observers could not make sense of the events.

Finally, the use of the VAR makes the experience of time less spontaneous and feel planned or manipulated instead. Shollo et al. (2019) believe that such perceptions of time, influence the overall experience of football matches. Based on this, it is expected that time dissonance influences the acceptance due to the different elements of time. It might be confusing for people that the referee can erase time by cancelling an event and to go back to an earlier event. Besides this, the experiential time might have an influence because every single spectator experiences the time, the different events and the total game time differently. The confusing elements might influence opinions and raise questions around the VAR.

In the current study event time will be manipulated to test the following hypothesis:

Hypothesis 3a: Time dissonance caused by a VAR moment leads to reduction in the level of enjoyment of spectators.

Hypothesis 3b: Time dissonance caused by a VAR moment leads to increased level of frustration of spectators.

Hypothesis 6a: The effect of the time dissonance on acceptance is mediated by enjoyment and frustration.

2.4 Bias

According to Pronin (2006), human judgment and decision making is influenced by an array of cognitive, perceptual and motivational biases. People recognize biases in other people's judgement, however people fail to assess their own bias. Pronin (2006) states that people tend to believe that their perceptions reflect the reality and that those who think differently about a certain subject are biased. According to Pronin (2006), this reveals a profound shortcoming in self-awareness which potentially has consequences for interpersonal and intergroup communication. Also, biases are generally conceptualized as influencers that cause individual judgements to depart from objective standards or normative criterion.

Furthermore, Pronin (2006) mentions that there are three types of biases: self-enhancement biases, self-interest biases and prejudice, and group-based biases. Self-enhancement biases are well-known and mean that people see themselves in a positive light while evidence suggests otherwise.

An example is that people tend to make themselves feel better after a negative experience, this might be by blaming the VAR when their team loses. Self-interest bias means that human behaviour is guided by judgements based on what serves their self-interest. These interests can be political or financial, but are also applicable to sports. Prejudice and group-based biases are biases based on stereotypic beliefs about in-groups and out-groups. People tend to favour in-groups over out-groups. These three types of biases are applicable to football as well. As shown in figure 1, people are attacking out-groups on social media by stereotypic beliefs. Besides this group-bias, there is also a bias in the judgement of the VAR. An example can be when a player is falling down and the referee has to decide if it is just a slip, a foul or a flopping. A slip is when a player falls down by mistake, a foul is when an opponent makes the player fall down against the rules and a flopping is when a player falls down on purpose and tries to get a free kick or penalty. A fan of this certain player will say that 'his' player would never do a flopping and calls it a slip or foul, which is self-interest bias. The fan has a certain interest in the player. When a player of the opponents would do the same thing the same person would say it is a flopping and wants to see a card because that is in his (teams) best interest. Assessing certain VAR-situations might be influenced by biases. Hansen et al., (2014) found that even when individuals recognized bias in their judgemental strategies, they tend to claim that their decisions were fairly objective, even when they were not. Recognizing a bias is a critical first step to correct it, however it is hard to make this step.

According to Pohl (2004), another type of bias is the confirmation bias. This means that the information that is searched for, is interpreted and remembered in such a way that it systematically confirms what someone hypothesised before. In this case, people try to confirm their way of thinking without looking to facts that contradict their view. In football, this might be the case when a supporter is watching the footage of a situation, where the team he supports might get a penalty. For example, the supporter sees there is contact between two players and concludes that it is a penalty for his team. With this conclusion, the supporter is not looking to the other side of the situation where it is clearly visible that a third player is pushing the opponent which makes him trip. The person only looks to the information that confirms what is positive for the team that person supports.

Biases might have an influence on supporters, but referees might have biases as well. This might be important for certain decisions the referee makes during a game. If a bias is decisive in the decision of a referee, the public might feel that this referee is not objective. Even if the VAR is in play this bias might still have influence on the final decision because decisions are still based on the way people are interpreting the information and images the VAR gives. Due to biases, the referee and supporters of different clubs might interpret the video footage differently as shown in figure 1.

Furthermore, according to Maqsood, Finegan and Walker (2004), biases have a high potential of coming into play when a decision task has a high degree of complexity, procedural uncertainty, stress and time pressure. Considering the referee has to decide within a stadium full of supporters and in a short amount of time a bias might occur. Maqsood et al. (2004) state that human information processing is complex and varies from person to person. Processing means constructing particular sorts of knowledge. These constructions are dependent on a number of factors for example, perception and recognition, cognitive styles, heuristics and biases in judgement and so on.

Finally, according to Wann, Koch, Fox, Aljubaily and Lantz (2006), people that are highly attached to a sports team (partisans) have biases about players' performance. A video experiment among 70 college students showed a difference in evaluation of the players depending on the player to be a recruit for their team or a rival. On the one hand, when the player was a potential recruit for the team the participant was supporting, the evaluations were mostly positive. On the other hand, when the player was mentioned as a recruit for a rival team the evaluation for this recruit were considerably lower. According to Wann et al. (2006), fans perceive and evaluate their favourite teams and players inaccurately positive. This can be seen as the self-interest bias. Another bias is mentioned by Wann et al. (2006), namely the self-serving bias. This means that a fan is attributing good results to internal factors, like the skills of their team but bad results are attributed to external factors like poor officiating or the VAR. When supporters identify themselves strongly to a team it might have an impact on their attitude towards the VAR as well. Did the VAR decide against the team a person supports during a game, then this person might be more critical and have a negative attitude towards the VAR. On the other hand, when the VAR decides in favour of the team, this person might be more positive. Biases are applicable in the current study on players, clubs, matches, competitions and decisions of referees. All of these separately and together might influence the acceptance of the VAR.

To reflect on bias the club choice and the decision of the referee are used. The decision of the VAR can be advantageous or disadvantageous towards a certain club. It is an advantageous decision when the VAR corrects the referee which leads to a better outcome for a certain club. For example, FC Twente getting a penalty and the defender getting a red card instead of a penalty without a card. It is disadvantageous when the referee is giving a yellow card and the VAR comes in and decides that the penalty should not be awarded and the play should continue in that same example. The theories above lead to the following hypotheses:

Hypothesis 4a: Advantageous VAR decisions have a positive effect on enjoyment.

Hypothesis 4b: Disadvantageous VAR decisions have a positive effect on frustration.

Hypothesis 6b: The effect of club choice and the decision of the VAR on acceptance is mediated by enjoyment and frustration.

2.5 Information overload

Information overload has existed for a long period of time. According to Edmunds and Morris (2000), the problem has become more widely recognised and experienced due to technological development simply because there is more information available and it is easily assessable. There is no universally agreed definition of information overload. In the current study, the definition of Feather (1998) is used. Feather (1998) describes information overload as the point where there is too much information that makes it impossible to effectively use this information.

According to Vettehen and Kleemans (2019), people have limited cognitive resources for the task of processing information as described in the theory of limited capacity model of motivated mediated message processing. Based on this model Vetthen and Kleemans (2019) found that extra images with extra information lead to a severe decrease in recognition, while extra images without extra information has no effect. This might suggest that different points of view with extra information make it too difficult for the public to recognize what is going on. Besides that, the public might not be able to understand on what image and which part of information the VAR and the referee made certain decisions. For example, on television people see a lot happening during a game. This might be a part of the explanation as to why people have discussions over different VAR moments. People expect to have seen everything that has an influence on the referee's decision, but might fail to recognize the most important argument for the referee to make that particular decision. On the other hand, the referee might fail to recognize something important as well due to the overload of footage which enlarges the possibility for mistakes.

According to Misra and Stokols (2011), the rapid growth and transmissions of information in the digital age create new challenges for individuals while coping with communications from multiple sources. Lee and Faber (2007) state that the location of brand placement in games is important for getting noticed and remembered. On television the screen is split in two parts, one of which shows the referee standing at the side-lines and the other one showing the replay. This might divide the attention of the spectator and therefore, information might be missed. Misra et al. (2011) argue an information overload scale is based on two sources being cyber-based and place-based sources. Cyber-based sources encompass information and communication transactions by technologies. For example, the internet, phones, laptops, computers and digital assistants. This includes digital transactions like emails, digital attachments, instant messages, news websites, spam and blogs. In the current age with digital development, it is not strange to watch a game of football on a phone

while getting different text messages or watching the game on television while using a phone for watching another game or other purposes at the same time. Place-based sources are stimulants that are not mediated by electronic devices, but are interactions in physical settings. This includes work places, residences and community settings. Some place-based sources are connected to cyber-based sources. For example, professional and interpersonal relationships may be maintained through electronic communications and face-to-face interactions. Place-based sources as the atmosphere within a stadium may have a different effect than people watching football alone or with friends at home.

In the current study, information overload is seen in a few possible ways. For example, a VAR moment can include one player making a foul versus a scrimmage in front of goal with multiple actors and multiple (possible) fouls. Also, the way the crowd is responding (place-based source), the discussion between the referee and the assistants (cyber-based source) and the amount (with extra information) of replays (cyber-based source) count as information and are therefore, able to cause information overload. According to York (2013), people are less likely to feel overloaded when enjoying the consumed information. Based on these theories, the following hypotheses are formulated:

Hypothesis 5a: Information overload has a negative effect on enjoyment.

Hypothesis 5b: Information overload has a positive effect on the level of frustration.

Hypothesis 6c: The effect of information overload on acceptance is mediated by enjoyment and frustration.

2.6 Research model

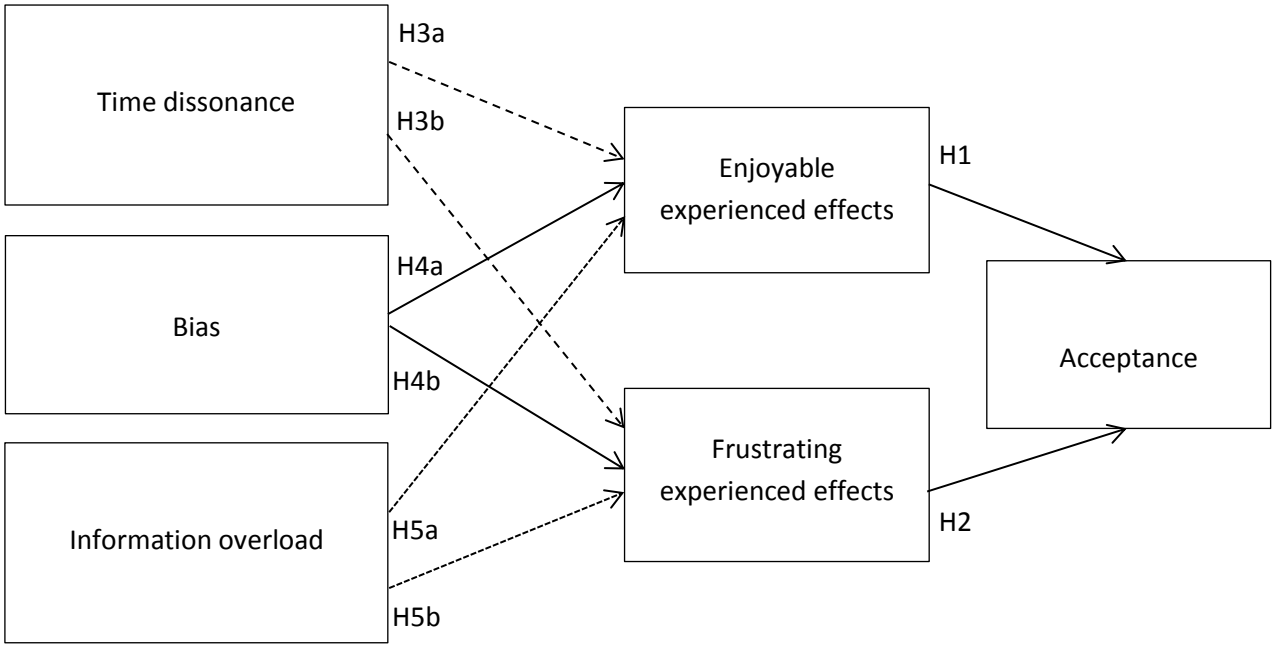

Figure 4. Research model.

Hypothesis 1:	Enjoyment has a positive effect on the acceptance of the VAR.
Hypothesis 2:	Frustration has a negative effect on the acceptance of the VAR.
Hypothesis 3a:	Time dissonance caused by a VAR moment leads to reduction in the level of enjoyment of spectators.
Hypothesis 3b:	Time dissonance caused by a VAR moment leads to increased level of frustration of spectators.
Hypothesis 4a:	Advantageous VAR decisions have a positive effect on enjoyment.
Hypothesis 4b:	Disadvantageous VAR decisions have a positive effect on frustration.
Hypothesis 5a:	Information overload has a negative effect on enjoyment.
Hypothesis 5b:	Information overload has a positive effect on the level of frustration.
Hypothesis 6a:	The effect of the time dissonance on acceptance is mediated by enjoyment and frustration.
Hypothesis 6b:	The effect of club choice and the decision of the VAR on acceptance is mediated by enjoyment and frustration.
Hypothesis 6c:	The effect of information overload on acceptance is mediated by enjoyment and frustration.

3. Methodology

3.1 Research design

In order to answer the research question and test the hypotheses, an online experiment was conducted. The main study is a 2 x 2 x 2 design, the three factors being time dissonance (long vs. short amount of time used for making VAR decisions), biases (FC Twente supporter vs. supporters of other clubs in combination with an advantageous or disadvantageous decision of the referee) and information overload (single vs. multiple situations). This study contained a quantitative design.

The experiment is implemented in a survey and conducted online. According to Saunders, Lewis, Thornhill, Booij and Verckens (2011), surveys are easy to understand for participants and can be conducted in a short amount of time. Secondly, Saunders et al. (2011) state that relations between different variables can be explained and it is possible to create models for these relations. For this study, it is important to find relationships and interaction effects between the variables.

3.2 Participants

The target group is everyone who follows the Eredivisie and has experience with the VAR in the Dutch competition. To reach supporters different Facebook pages and fan forums were approached. Football forums as Twente Insite, Ajaxfanatics, AZ Fanpage and FeyenoordPings agreed to post an article written by the researcher. This article contained a short introduction and link towards the online experiment. It was posted by more than ten different forums some of which have over 30.000 followers. An example of the article is shown in appendix E. Due to the Covid-19 outbreak an online method was the best way to reach participants safely.

The first question was answered by 1.016 participants were 12 participants responded negative to the terms and conditions of the experiment. After showing the video the participants were assigned to, there were 678 participants left. The last question was answered by 457 participants. The video seemed to influence the willingness to continue to the end. The participants were randomly assigned to the different conditions/videos and were asked to answer the questions based on the conditions they were assigned to.

The sample consists of supporters of different clubs in the Netherlands. The respondents should be aware of the rules and have a moderate knowledge of football. Therefore, the participants were approached through football forums. First of all, 88.8% of the participants were males and 9% were females. The other 2.2% were people that did not want to reveal their gender. The age range of the participants was between 11 and 78 years old with a mean of 39.3 years. Finally, 39.2% of the participants were in favour of FC Twente while 60.8% were in favour of other clubs. Table 1 shows the list of club choices, a more detailed list is shown in appendix D. Very important for the current

study, is the experience people have with watching football. Only 1.8% have been watching football for less than five years. Another 6.5% have been watching for five to ten years. Furthermore, 15.7% have ten to fifteen years of experience, 15% have fifteen to twenty years of experience and 61% had over 20 years of experience with watching football. This is important because the VAR was first implemented in 2018 and people having experience with watching football are able to compare football before the VAR with football after the VAR.

The way people are watching football is found as well. For example, 39.3% of the respondents watch football via Fox Sports NL, 37.4% in the stadium and 10.1% via live streams, while 13.2% watched a different way or used push notifications. Besides that, 82.6% of the participants watches football on television, while only 7.8% watches football on a laptop or computer and 2.4% watches football on their phones. Most participants, a total of 40.1%, watch football with their friends and 29.2% watch with family, while 27.2% watch football alone.

Table 1. Club choice participants.

Club choice	**Amount (N)**	**Sample (%)**
FC Twente	179	39.2%
AZ	142	31%
FC Utrecht	32	7.0%
Feyenoord	30	6.6%
Ajax	23	5%
No preference	9	2.0%
Other	42	9.2%
Total	457	100%

Table 2. Participants per scenario time dissonance and information overload.

	Information overload		
Time dissonance	**Low (N)**	**High (N)**	**Total (N)**
Low	119 (52,7%)	117 (50.6%)	236 (51.6%)
High	107 (47.3%)	114 (49.4%)	221 (48.4%)
Total	226 (100%)	231 (100%)	457 (100%)

Table 3. Participants per scenario decision and club choice.

Decision	Club choice FC Twente (N)	Other (N)	Total (N)
Advantage FC Twente	93 (52%)	138 (49.6%)	231 (50.5%)
Disadvantage FC Twente	86 (48%)	140 (50.4%)	226 (49.5%)
Total	179 (100%)	278 (100%)	457 (100%)

3.3 Stimuli

In the online experiment multiple stimuli were used. There were four different scenarios which were divided based on the stimuli. First, the length of a video or VAR decision was used as a condition. Based on the theory of time dissonance the length of these videos was between 48 seconds to 2:56 minutes. Secondly, the decision of the referee was different in the videos. The VAR was able to decide advantageous or disadvantageous towards FC Twente. However, the situations were not completely comparable. One video was illustrating a penalty moment which was advantageous towards FC Twente, another video was disallowing a goal because the ball was touched with the hand of a player, which was disadvantageous towards FC Twente. Two other moments were comparable because both were illustrating a moment with a red card incident. One of which was advantageous and the other one disadvantageous towards FC Twente. Lastly, the videos were divided into scenarios with a lot of information and less information. Two videos did have multiple situations and a lot of discussion of the referees while the other two videos did only have a single situation to assess with fewer points of discussion.

The videos were collected from the official KNVB YouTube account and were not cut except for the video FC Twente – Fortuna Sittard with low time dissonance and low information overload. This video was part of a game summary. Therefore, the difference with the other videos was that the discussion between the referee and the VAR could not be followed. However, this video was used because the overall fit was more complete. Furthermore, a pre-test was executed with three persons to find opinions on these videos. Important to note is that participants for this pre-test were not pushed to give an answer. Participants were asked to assess the video and to talk out loud when a thought came up. Remarks as “chaotic versus clear”, “wrong versus correct decision” and “too much time versus efficient/sufficient” were given when watching the different videos. These remarks fit together with the variables described in the theoretical framework. Based on the pre-test, four out of the five available videos on the official KNVB account were chosen for this study.

Figure 5. Video example online experiment, VAR room.

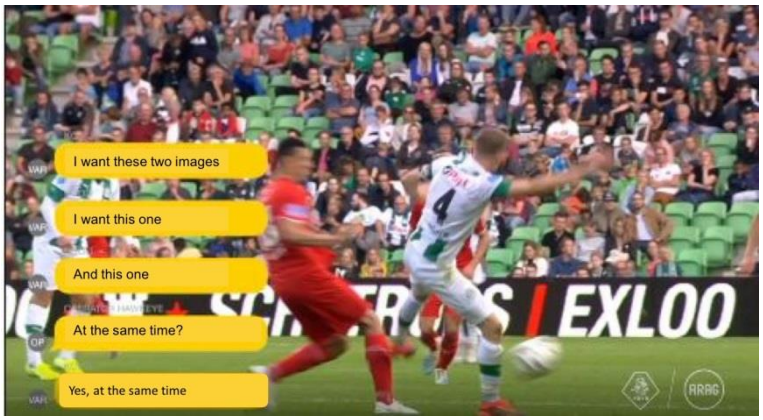

Figure 6. Video example online experiment, discussion between VAR and referee.

Table 4. Video/Condition information.

Match	Time Dissonance	Information overload	Decision towards FC Twente
Fortuna Sittard – FC Twente	0:48 (Low)	One incident (Low)	Disadvantageous
FC Groningen – FC Twente	2:40 (High)	Three incidents (High)	Advantageous
FC Twente – FC Utrecht	2:10 (Low)	One incident (Low)	Advantageous
FC Twente – Heracles	2:56 (High)	Two incidents (High)	Disadvantageous

3.4 Procedure

Before starting the study, ethical approval was obtained from the University of Twente. After that, a small pre-test was executed to find out which of the five videos would fit in the best possible way with the variables in the theoretical framework.

Before the main study took place, the purpose of the study was explained to the participants. Informed consent was obtained and privacy matters were explained before continuing to the questions. The participants were able to fill in the complete survey anonymously.

The conditions consisted of different videos illustrating time dissonance and information overload. After showing the video, questions were asked to rate experienced time dissonance, biases, experienced information overload, enjoyment, frustration and acceptance based on statements connecting to these variables.

The online experiment continued with questions about the demographics of the respondents indicating age, gender, club choice and experience with football. The late placement of these questions is chosen to have no disruptions during the study. The participants needed their full concentration at the start for the information about the VAR. Besides that, asking which club they support at the start might put the focus on their club choice too much. Finally, the participants had to answer two open questions in which additional remarks to the VAR or the experiment could be made. At the last page a word of gratitude was expressed to the participants.

Quantitative data was analysed in SPSS to test the hypothesis. After excluding all respondents that did not complete the survey (except for the open ended questions), 457 participants remained and an analysis was performed using this sample. The qualitative analysis was done by open coding and resulted into three main categories of grouped comments. There were 390 respondents making use of at least one of the open questions. A single answer can be included in all three groups if the particular answer explains elements of these groups, therefore the total of elements in the three groups together is 580. The percentages of the different clustered answers is calculated per specific group. All of this was calculated in Excel.

After dividing the comments into the three groups axial coding was used. The answers were compared and clustered and comments that were not related to any other comment within the different groups and could not be categorized into any cluster were clustered as 'other'. An example of axial coding is when a participant said the VAR should be used for penalties and red cards, both the penalties and red cards got a +1 within the specific group.

3.5 Measurements

Time dissonance

The participants first rated the time it took for the VAR and the referee to come to a final decision by indicating to what extent they agreed or disagreed with statements. The scale consists of five items according to a five-point-Likert-scale (1 = strongly agree, 5 = strongly disagree). The Cronbach's Alpha of .56 revealed that the scale was not reliable, but useful for the explorative purpose of this study. The internal consistency between the different statements was too weak to be reliable. In this scale statements as *"I think there should be a time-limit for the VAR to make a decision"* and *"I think the VAR should act a maximum amount of times in a game to make that game more fluently"* were used. Statements as *"I think the VAR needs too much time to make a correct decision in this video"*, *"I*

think the VAR in this video needs too much time to make a decision" and *"I have the feeling I need more time to access the situation in his video"* were deleted. Which resulted in a Cronbach's Alpha of .52 which is still not reliable but can be used for the explorative purpose of this study.

Bias

The participants had to answer one question about bias at the end of the experiment. The question "which club do you support?" was able to divide people over two groups. The first group was in favour of FC Twente and the second group was in favour of another club in the Netherlands or did not have any preference. Bias is then measured with the combination of club choice and the decision the referee makes within the scenario a participant is classified to. A given scenario could have two different decisions of the referee. The first one is the VAR decides advantageous towards FC Twente and the other possibility is when the VAR decides disadvantageous towards FC Twente. This variable is independent in the current study.

Information overload

The participants had to rate statements to find out how they felt about the amount of information that was given in the video on the particular situation the VAR had to judge. Misra (2011) created a scale to measure perceived information overload in daily routines. This scale is shown in Appendix A. The scale was customized to the context of the VAR and then used in the current study to measure the effect of information overload on enjoyment and frustration. The statements were based on a five-point-Likert-scale (1= strongly agree, 5 = strongly disagree). During the study it became clear that *"I understand the decision of the referee"* was not only measuring information overload. Not understanding the decision could mean that the respondent did not realize why a certain decision was made while the respondent thought of it completely different, this is not always related to information overload. Therefore, this statement is deleted. *"The video shows a situation where the VAR should act"* is deleted as well. This due to lack of evidence that it measures information overload only. This statement could mean that the respondents think the certain situation is not suited for a VAR moment. For example a situation is not a scoring chance and therefore respondents could think it should not be a VAR moment. The last item that was deleted is *"I have the feeling I need extra (more or different) replays to assess the situation in the video".* First Cronbach's Alpha reported a -.65 which meant that one statement should be coded differently. This statement measured the opposite of information overload and is therefore reversed coded. After recoding the statement Cronbach's Alpha reported .40 which is not reliable. Therefore, the statement has been deleted and this scale is based on only one statement *"I have the feeling there is too much information in the video to make a correct decision".*

Enjoyable experiences

The enjoyable experiences scale was based on five statements to find out if people were able to enjoy the football when the VAR was operating. The participants were asked to base their answers on the video they saw at the beginning of the experiment. The statements were based on the enjoyment scale developed by Mullen et al. (2011) consisting of a seven-point-Likert-type response set (1 = strongly agree, 7 = strongly disagree). Statements such as *"The VAR is easy to understand in this video"* and *"The VAR is stimulating to football"* were used. The statements combined resulted in the enjoyment scale with a Cronbach's Alpha of .86 which is reliable. However, *"The VAR is easy to understand in this video"* and *"the VAR is nice to watch in this video"* were deleted because these statements ask specifically about the video while the other statements ask for the enjoyable experiences in football as a whole. The statements for this scale were *"The VAR is stimulating football"*, *"The VAR is refreshing to football"* and *"The VAR makes me enjoy football even more when watching".* The scale was reliable with a Cronbach's Alpha of .92. During the analyses the factor will be referred to as enjoyment, this is done to make the analysis and results more clear.

Frustrating experiences

Frustrating experiences scale was measured by seven statements. This scale was used to find out the level of frustration people experienced after seeing the video at the start. The scale was based on a seven-point-Likert-scale (1 = strongly agree, 7 = strongly disagree). Participants had to answer statements such as *"I think the VAR is pushing fans away from football"* and *"I do not feel able to understand the VAR in this video".* The scale scored a Cronbach's Alpha of .88 which makes it a reliable scale. However, the statements "I think the VAR is not able to execute it's tasks in this video" and "I feel I am not able to understand the VAR in this video" are deleted to give the scale an overall nature. The scale was reliable with a Cronbach's Alpha of .86. During the analyses the factor will be referred to as frustration, this is done to make the analysis and results more clear.

Acceptance

The participants had to rate their perception of the VAR as a whole. Therefore, the acceptance scale developed by van der Laan, Heino and de Waard (1996) was used. Acceptance was measured by six statements beginning with *"The VAR is…".* The answer options were based on a five-point-scale differing for each statement (1 = Extremely useful, 5 = Not useful at all), (1 = Extremely fun, 5 = Extremely annoying). Participants were asked to answer these questions based on their overall experience with the VAR. The scale scored a Cronbach's Alpha of .44. By deleting *"The VAR is.. (1 = Completely irritating, 5 = Completely likeable)"* Cronbach's Alpha increased to .90 which is reliable, and therefore the scale could be used in the current study.

Open ended questions

One open ended question is asked and one open box for comments was put into the survey at the end, to find out in what way the VAR should operate according to the public. The following question is used to find an answer for this *"How do you think the VAR should be used?"* The second open box is for the participants to freely give any comments concerning the questionnaire or the VAR. "*If you have any other remarks concerning the questionnaire or the VAR, please post them in the text block below".*

Table 4. Survey statements.

Variable	Statements
Perceived time dissonance 5-point Likert scale	1. *I think there should be a time-limit for the VAR to make a decision.* 2. *I think the VAR should act a maximum amount of times in a game to make that game more fluently.*
Perceived information overload 5-point Information overload scale	3. *I have the feeling there is too much information in the video to make a correct decision.*
Enjoyable experiences 7-point Enjoyment scale	4. *The VAR is stimulating football.* 5. *The VAR is refreshing to football.* 6. *The VAR makes me enjoy football even more when watching.*
Frustrating experiences 7-point Frustration scale	7. *I doubt if the VAR is able to execute it's tasks the right way.* 8. *I do have the feeling the VAR is pushing supporters away from football.* 9. *I have the feeling that football is under pressure due to the VAR.* 10. *I have the feeling the VAR is pushing football in a certain direction.* 11. *I have the feeling the VAR takes the emotion out of football.*
Acceptance 5-points Acceptance scale The VAR is..	12. *Extremely useless - Extremely useful* 13. *Extremely bad - Extremely good* 14. *Extremely annoying - Extremely nice* 15. *Extremely ineffective - Effective* 16. *Extremely undesirable - Extremely desirable*
Open ended	17. *How do you think the VAR should be used?*
Open ended	18. *If you have any other remarks concerning the questionnaire or the VAR, please post them in the text block below.*

4. Results

The quantitative data yields results to answer the hypotheses. To determine significant effects of the scenarios and different variables, multiple analysis are conducted.

4.1 Manipulation check

First of all the manipulation due to the scenarios (videos in the experiment) needed to be analysed. To find out if the amount of time had an influence on the time dissonance score an univariate Anova is used, the amount of time within the scenario was used as fixed factor and the time dissonance scale was used as dependent factor. The time dissonance factor in the scenarios did not have a significant effect on the results of perceived time dissonance $F(1, 455) = 2.09$, $p = .149$. This means the time a VAR-moment took to come to a conclusion did not have a significant effect on the experienced time dissonance.

The effect of the amount of information within the scenario on the perceived information overload was tested with an univariate Anova as well. The amount of information within the scenario was a fixed factor and the perceived information overload was the dependent variable. The information overload factor in the scenarios did not have a significant effect $F(1,455) = .39$, $p = .535$. This means the amount of information within the scenarios did not have a significant influence on the perceived information overload.

4.2 Hypothesis testing

4.2.1 Hypothesis 1 and 2

Hypothesis 1 and 2 are tested by a multiple linear regression. The effect of perceived enjoyment ($\beta = .33$) and frustration ($\beta = -.15$) on acceptance are studied $F(2, 454) = 508.92$, $p < .001$, $R^2 = .69$. Which means 69% of the variance in acceptance can be explained by the perceived enjoyment and frustration. A higher level of enjoyment results in a higher level of acceptance while on the other hand a higher level of frustration leads to a lower level of acceptance. Hypothesis 1: Enjoyment has a positive effect on the acceptance of the VAR, is accepted due to a significant and positive effect on acceptance. Hypothesis2: Frustration has a negative effect on the acceptance of the VAR, is accepted due to a significant negative effect of frustration on the acceptance of the VAR.

4.2.2 Hypothesis 3 and 4

To test hypothesis 3 and 4 a Multivariate Anova model was used. The time dissonance within the scenario was used as a main effect in this model. Bias was used as the interaction between club choice and the decision of the referee being advantageous or disadvantageous towards FC Twente.

FC Twente was compared with non-FC Twente fans. Lastly, information overload within the scenario was used as a main effect. This model was built to test the effects of the given scenarios on enjoyment and frustration. The model as a whole was significant. Wilks' Lambda was equal to λ = (.03) $F(4,452) = 6352.15$, $p < .001$.

First, in this model time dissonance was tested towards enjoyment. There was no significant effect of the factor time dissonance on enjoyment $F(1,452) = 1.3$, $p = .256$. This means that there is no significant difference between the groups with a decision that took longer and the groups with a decision that took a shorter amount of time. Therefore, hypothesis 3a: time dissonance caused by a VAR moment leads to reduction in the level of enjoyment of spectators, is rejected.

The effect of the factor time dissonance in the scenarios on the level of frustration was significant $F(1,452) = 3.41$, $p = .007$ with a small effect size $\eta^2_p = .07$. The group with the lower amount of time scored higher on frustration ($M = 4.42$, $SD = 1.62$), than the group with the higher amount of time ($M = 4.15$, $SD = 1.57$). Therefore, hypothesis 3b: Time dissonance caused by a VAR moment leads to increased level of frustration of spectators, is rejected.

The interaction effect between club choice (FC Twente or other) and decision of the referee (advantageous towards FC Twente or disadvantageous) on enjoyment was significant as well. $F(1,452) = 15$, $p < .001$ with a small effect size $\eta^2_p = .06$. The enjoyment was higher when an advantageous decision towards FC Twente was made in both scenarios and the difference between the two groups of FC Twente supporters is bigger than the difference between the other supporters. FC Twente supporters with an advantageous decision towards FC Twente scored higher on the enjoyment scale ($M = 3.40$, $SD = 1.58$), than FC Twente supporters in the scenarios with a disadvantageous decision ($M = 2.41$, $SD = 1.57$). The other fans scored higher on the advantageous decision for FC Twente ($M = 3.91$, $SD = 1.81$), than the fans in the scenarios with a disadvantageous decision towards FC Twente ($M = 3.59$, $SD = 1.77$). However, the difference between the two groups in favour of FC Twente is bigger than the difference between the two groups of neutral supporters as shown in figure 7. This means that the supporters with a higher involvement to the scenario (their club was in the videos) were affected more than neutral supporters. Therefore, hypothesis 4a: Advantageous VAR decisions have a positive effect on enjoyment, is accepted.

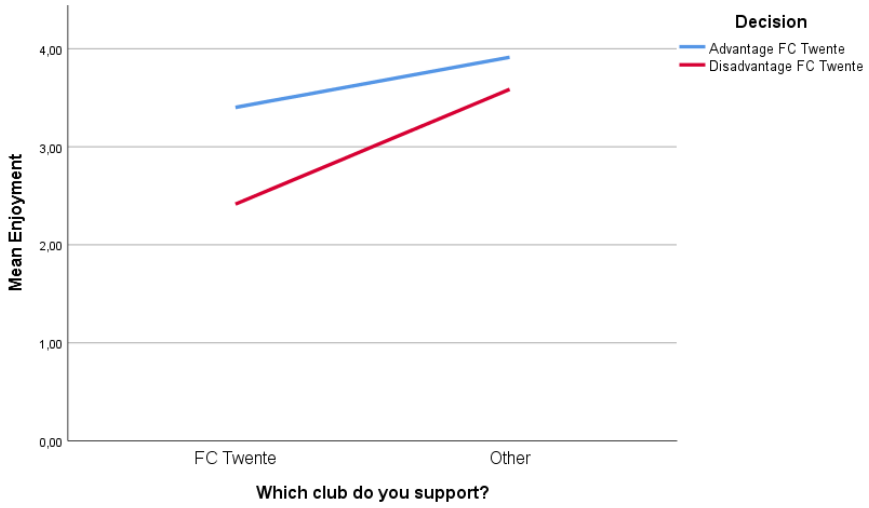

Figure 7 . Interaction effect between decision of the referee and the supported club on enjoyment.

The interaction effect between club choice (FC Twente or other) and decision of the referee (advantageous towards FC Twente or disadvantageous) on frustration was significant as well $F(1,452) = 13.93$ $p < .001$ with a small effect size of $\eta^2_p = 0.06$. FC Twente supporters scored a higher level of frustration when the decision was disadvantageous towards FC Twente ($M = 5.07$, $SD = 1.37$). FC Twente supporters with an advantageous decision towards FC Twente scored lower ($M = 4.42$, $SD = 1.42$). In both scenarios the other supporters scored lower and the difference between the groups is smaller as shown in figure 8. Neutral supporters with a disadvantageous decision scored higher ($M = 4.09$, $SD = 1.63$), than the neutral supporters with an advantageous decision towards FC Twente ($M = 3.91$, $SD = 1.42$). Therefore, hypothesis 4b: Disadvantageous VAR decisions have a positive effect on frustration, is accepted. This means that a disadvantageous decision of the referee leads to a higher level of frustration.

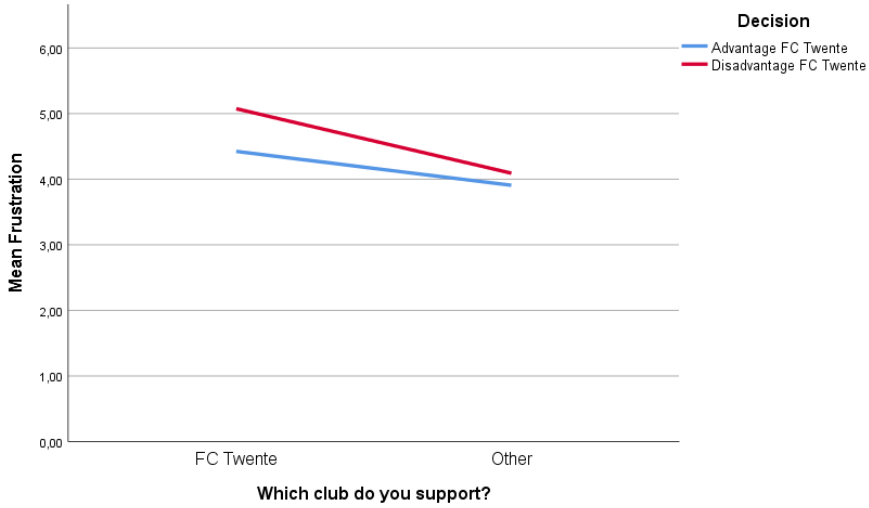

Figure 8 . Interaction effect between decision of the referee and the supported club on frustration.

The effect of information overload in the scenario did have a significant effect on enjoyment as well. $F(1, 455) = 11.82$, $p = .001$ with a small effect size $\eta^2_p = 0.03$. The group with a lower amount of information overload ($M = 3.14$, $SD = 1.79$) scored lower on enjoyment than the group with a higher amount of information overload, ($M = 3.70$, $SD = 1.79$). Therefore, hypothesis 5a: Information overload has a negative effect on enjoyment, has been rejected. The effect is the opposite of what has been hypothesised. The more information a VAR situation contained, the higher the level of enjoyment.

Also, the information overload factor in the scenario had a significant effect on frustration $F(1,455) = 5.54$, $p = .019$ with a small effect size $\eta^2_p = 0.01$. The group with the lower amount of information overload ($M = 4.47$, $SD = 1.60$) reported higher levels of frustration than the group with the higher amount of information overload ($M = 4.12$, $SD = 1.58$). Therefore, hypothesis 5b: Information overload has a positive effect on the level of frustration, has been rejected. The effect was the opposite of what was hypothesised, which means that the higher the amount of information the lower the level of frustration.

4.3 Mediation analysis

To understand the relations between the different factors a mediation analyses is conducted. Hypothesis 1 and 2 are accepted, which means that enjoyment and frustration have a significant effect on acceptance. Therefore, these hypotheses are not included in the mediation analysis. For the same reason the effect of time dissonance and information overload towards enjoyment and frustration are not discussed in the mediation analysis. However, bias (club choice) is conducted into the analyses because hypothesis 4 is tested as an interaction effect between club choice and the decision of the referee. The mediation analysis is conducted to find out if enjoyment and frustration are mediators for time dissonance, bias and information overload.

First of all, an independent two sample t-test was performed for the effect of club choice on enjoyment and frustration. FC Twente fans scored lower on enjoyment ($M = 2.93$, $SD = 1.65$) than other fans ($M = 3.75$, $SD = 1.80$), $t(455) = -5.02$, $p < .001$. Therefore, club choice had a significant effect on the perceived level of enjoyment. FC Twente fans showed lower levels of enjoyment after watching a VAR moment concerning their club than neutral supporters. FC Twente fans scored higher on frustration ($M = 4.74$, $SD = 1.43$) than other fans ($M = 4.00$, $SD = 1.64$), $t(455) = -5.08$, $p < .001$. This means club choice had a significant effect on the perceived level of frustration. Fans in favour of FC Twente felt more frustrated after watching the scenario with the VAR concerning their club than a neutral supporter.

Secondly, a multiple regression analysis is conducted to find the effects of the manipulated time dissonance, bias (club choice) and manipulated information overload towards acceptance $F(3,$

453) = 8.82, $p < .001$, $R^2 = .055$. Time dissonance β = (.80) was found not to have a significant effect on acceptance $p = .103$. Therefore, the analysis was performed again without manipulated time dissonance $F(2, 454) = 11.86$, $p < .001$, $R^2 = .05$. Which means 5% of the variance in acceptance can be explained by bias β = (.18) and manipulated information overload β = (.13).

Finally, manipulated time dissonance, bias (club choice), manipulated information overload, perceived enjoyment and frustration are tested towards perceived acceptance $F(5, 451) = 203.22$, $p < .001$, $R^2 = .693$. Which means 69.3% of the variance in acceptance can be explained by this linear regression. However, manipulated time dissonance β = (-.04) $p = .447$, bias β = (-.05) $p = .336$ and information overload β = (-.01) $p = .923$ are not significant in this regression. Enjoyment (.33) and frustration (-.15) are both significant $p < .001$.

The conclusion of the mediation analysis is that time dissonance does not have a significant effect on acceptance and that there is no mediation between manipulated time dissonance and enjoyment and between manipulated time dissonance and frustration. Therefore, hypothesis 6a: The effect of the time dissonance on acceptance is mediated by enjoyment and frustration, can be rejected. However, bias and information overload are fully mediated by enjoyment and frustration. After introducing enjoyment and frustration to the regression model, bias and information overload did not have a significant effect on acceptance anymore. Which means hypothesis 6b: The effect of club choice and the decision of the VAR on acceptance is mediated by enjoyment and frustration and hypothesis 6c: The effect of information overload on acceptance is mediated by enjoyment and frustration are both accepted.

4.4 Additional quantitative analyses

Additional results provide some valuable insights without having a direct influence on the hypotheses.

4.4.1 Interaction effect between the decision of the referee and club choice

The interaction effect between the decision of the referee and club choice is analysed on the perceived variables in the experiment being time dissonance, information overload, enjoyment, frustration and acceptance. As a whole the Manova model was significant. Wilks's Lambda was equal to λ = (.874) $F(1, 449) = 4996.26$, $p < .001$. Interesting in this model was the interaction effect on acceptance. It is found that there is a significant effect $F(3, 453) = 9.37$ $p < .001$ with a small effect size of $\eta^2_p = 0.06$. FC Twente supporters with an advantageous decision towards FC Twente scored higher ($M = 2.93$, $SD = .80$) on the acceptance scale than FC Twente supporters with a disadvantageous decision towards FC Twente ($M = 2.47$, $SD = .93$). In both scenarios the supporters in favour of other clubs scored higher on the scale of acceptance while the difference between these

two groups is smaller as shown in figure 9. The other supporters with an advantageous decision towards FC Twente scored a little higher (*M* = 3.10, *SD* = .92), than the supporters with a disadvantageous decision towards FC Twente (*M* = 2.99, *SD* = .88). This means that the effect of the decision of the referee is bigger when the supporter is in favour of the club in the scenario than when the supporter is neutral.

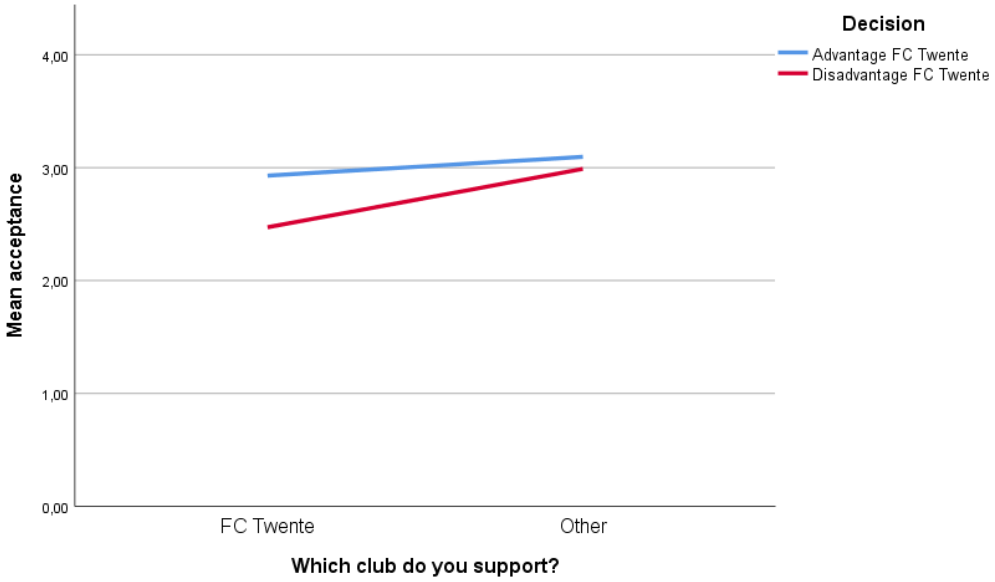

Figure 9. Interaction effect between decision of the referee and the supported club on acceptance.

4.4.2 Grading the VAR

Respondents were asked to grade the VAR based on their overall experience with the VAR which resulted in an overall score of 5.53 on a scale from 1 to 10. Club choice did have a significant effect on this score $F(1,449) = 11.4$ $p = .001$. FC Twente supporters graded the VAR as a 5 while the other supporters graded the VAR as a 6. Goldstein (1988) states that more intense reactions of enjoyment appear when the level of involvement of the spectator is higher. Also, objectiveness will be influenced by biases in professional football. However, FC Twente fans grade the VAR lower, which suggests that emotions other than enjoyment might have the upper hand when grading the VAR.

4.5 Qualitative analysis

Two options for qualitative data were included in the survey. The data gathered due to these options were used to create three different tables. Table 5 shows the way respondents think the VAR should be used. Secondly the problems the VAR has according to the respondents are shown in table 6. Finally, table 7 shows possible solutions according to the respondents. Removing the VAR from football was mentioned by 10.3% of the people responding to the open questions. Comments that mentioned the VAR should be removed were left out of the further analysis.

4.5.1 Situations the VAR should appear

Table 5 shows for what situations respondents think the VAR should be used during a game. What is clear is that supporters think the VAR should be used for correcting clear and obvious mistakes the team of referees makes during games (32.9%). This is what the VAR is intended to do according to the rules around the VAR. The most important situations according to supporters are offside (8.54%), dangerous incidents (7.9%), goals (7.3%), penalty moments (6.7%) and red cards (6.7%). Personality exchange is mentioned only once (0.6%) and is not seen as very important by supporters, while this is one of the tasks of the VAR.

Table 5. The situations the VAR should be used for.

For what situations should the VAR be used?	**N (%)**
Correct clear/obvious mistakes	54 (32.9%)
Offside	14 (8.5%)
Serious/dangerous incidents	13 (7.9%)
Goals	12 (7.3%)
Penalty	11 (6.7%)
Red cards	11 (6.7%)
Other	11 (6.7%)
Hands (intentionally)	6 (3.7%)
Bal over a line	6 (3.7%)
Decisive situations	5 (3.1%)
Violations of the rules (contact between players)	4 (2.4%)
When the teams of referees are in disagreement	4 (2.4%)
Corner or goal kick decisions	3 (1.8%)
Unclear situations (Info overload)	3 (1.8%)
Out of sight of the referee	3 (1.8%)
Always/Continuously	3 (1.8%)
Personality exchange	1 (0.6%)
Total	164

4.5.2 Problems and teething problems of the VAR

In table 6 the problems of the VAR according to the supporters are shown. Surprisingly, time is not mentioned a lot as a real problem. Only 5.5% think time is a big issue, this might have to do with the experiment already having questions focussing on time. Arbitrariness and objectivity are mentioned as problems by 29.1% of the respondents. Respondents claim that clubs at the top of the competition are favoured more often than the clubs at the middle and bottom of the rankings. Besides that, some situations comparable to others are judged by the VAR completely different. This relates to the problem of the sensitivity to interpretation which was mentioned by 10.9% of the participants. Another problem according to the fans is that the VAR takes away the emotion, charm, sensation and spontaneity from football (14.6%). Supporters mention that cheering after a goal is useless because the VAR can cancel the goal afterwards.

Another interesting group of problems is about the rules around football and the VAR. Again the sensitivity for interpretation is related to this group of problems (10.9%). Additionally, the rules are not clear or considered too strict according to 6.7% of the fans and the VAR is too precise on millimetres according to 10.9% of the fans. The participants think there are too many decisions that cause misunderstandings by supporters as mentioned by 6.7% of the participants. The rules in the current form might affect the amount of mistakes the VAR makes and 5.5% of the fans think the amount of mistakes are a real problem.

Table 6. The problems the VAR has.

What are the VAR's problems	**N**	**(%)**
Arbitrariness	29	(17.6%)
Takes away emotion, charm, sensation and spontaneity	24	(14.6%)
Objectivity is missing	19	(11.5%)
Too precise on millimetres	18	(10.9%)
Sensitive for interpretation	18	(10.9%)
Rules unclear or too strict	11	(6.7%)
Incomprehension/Misunderstanding	11	(6.7%)
Other	11	(6.7%)
Mistakes by the VAR	9	(5.5%)
Time	9	(5.5%)
Too much power to the VAR	4	(2.4%)
Difference between countries and tournaments	3	(1.8%)
Total	165	

4.5.3 Solutions according to the fans

In table 7 possible ways to improve the VAR mentioned by supporters are shown. While there are a lot of discussions on television and social media about the subject the respondents were agreeing on one thing, football should use other sports that are using technology as an example to improve the game. An overwhelming amount of 51.8% thinks that the captains or coaches should be able to ask for a challenge (as a VAR moment is called in tennis and hockey). This means that the VAR will assess a given situation when a coach or captain asks for this. The fans explained that a captain or coach should have the possibility to use a challenge once or twice per half/game. If the challenge is assessed by the VAR and the call the captain or coach made, is correct the option for challenge will stay at two, while if the challenge is wrong the captain will only able to use a challenge one more time in that particular half/game. Opinions and explanations about the amount of times a challenge should be able to be used differ from only one time to three times.

Two other interesting solutions which are mentioned by fans are adding limits to the appearances of the VAR (5.2%) or the time a single VAR-moment should consume (6.4%). By adding these limitations the frustration due to the VAR might decrease. However, by adding limitations to

the appearance or the time it may consume there is a possibility that more mistakes will be made because time pressure. And mistakes that are made while the VAR is in play, is seen as one of the problems the VAR has (5.5%).

The solutions discussed in the previous two paragraphs can be explained as being rules around the VAR which 4.4% of the people are mentioning directly. However, the example of other sports and the way they use the VAR 51.8%, time limitations 6.4%, usage limitations 5.2% and who should be leading a match (VAR 5.2% versus referee 4.4%) are in a way all changes in the process of the VAR or rules which is a total of 77.4%.

Another interesting point is the openness for spectators and stadium visitors, 6.8% of the supporters think there should be more openness to make the VAR more understandable and less 'irritating'. Again the comparison to another sport (American football) is made. Supporters (in the stadium and on television) are able to follow the discussion between the 'VAR' and the referee. By doing this the understanding of VAR situations might increase.

Table 7. Possible solutions to improve the VAR.

What are possible solutions?	**N**	**(%)**
Look at other sports (basketball, volleyball, American football, tennis and hockey)	130	(51.8%)
More openness for spectators (watching the discussion on television or screens)	17	(6.8%)
Time limit	16	(6.4%)
Other	15	(6.0%)
Usage limit	13	(5.2%)
The VAR should be leading	13	(5.2%)
The referee should be leading	11	(4.4%)
Clear rules	11	(4.4%)
Old professional players and referees should be VAR's	8	(3.2%)
Use an external party to judge the situations	4	(1.6%)
New technology to make decisions	4	(1.6%)
No usage of slow-motion footage	3	(1.2%)
Work with other federations	3	(1.2%)
Use specially educated VAR's	3	(1.2%)
Total	251	

5. Discussion

5.1 Main findings

This study was aimed at exploring the acceptance of the VAR by football supporters and the factors that influence it. This study contained three independent variables being time dissonance, information overload and bias. The first two variables were manipulated by changing the amounts of time and information respectively. The third variable consisted of the interaction between club choice and the decision a VAR made. First, the research model is shown including significant and non-significant effects.

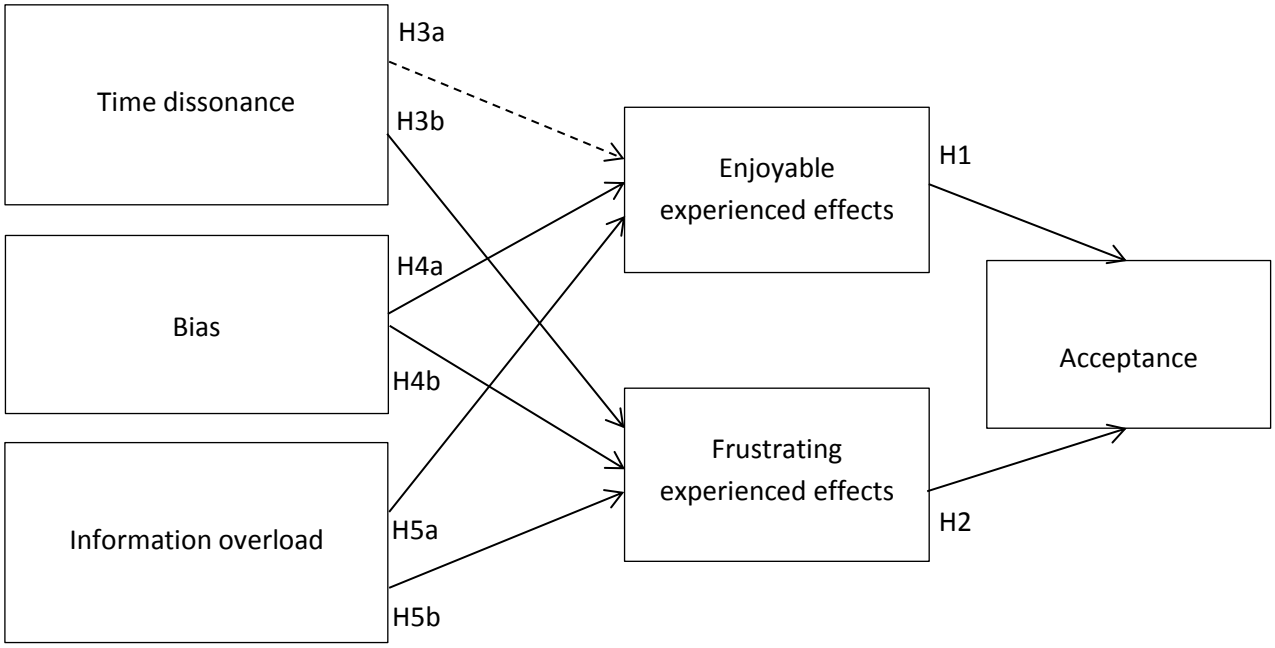

Figure 10. Significance of the research model.

First of all, the level of enjoyment positively influenced the level of acceptance. This confirms the findings of Kimiecik and Harris (1996) that enjoyment is a key construct for understanding and explaining motivation and experiences of sports. Enjoyment does have an effect on the experiences with the VAR in this case. The fact that frustration has a negative effect on acceptance means that both emotions are influencing the rationality of spectators. This is in line with the findings of Fedlman-Barret and Russel (1999) that emotions are able to supress or take over rational thoughts and processes. As Goldstein (1988) states, more intense reactions of enjoyment may appear when the level of involvement is higher. However, even when a decision was advantageous towards FC Twente, the supporters of other clubs scored higher on enjoyment in comparison to FC Twente

supporters. Acceptance might be a rational process, but it is still context-relative as Moore (1994) explains and apparently the emotions are taking over when (not) accepting the VAR. The context in the case of the VAR is a game of football which is usually watched for enjoyment and when seeing the club a person supports the level of involvement rises. As Coleman (1995) stated emotions are adaptive, functional and serve to assist people with the identification of important information to organize cognitive activities and subsequent behaviour. This means that emotions play an important role in rational decision-making processes, which explains why enjoyment and frustration have an influence on the acceptance towards the VAR.

Secondly, time dissonance did not have any effect on enjoyment. However, time dissonance did influence frustration negatively. When the amount of time a VAR situation lasted was higher the level of frustration was lower. This is unexpected because Carlos, Ezequiel and Anton (2019) state that the main critique around real-time video-replay devices is about the disruption of the flow and tempo of the game. Therefore, it was hypothesised that there would be a decrease in the level of enjoyment and an increase in the level of frustration when a VAR situation would last longer. However, Shollo et al. (2019) state that fairness of the result is important for individuals and these individuals were able to avoid time dissonance. This might be an explanation for the results in the current study. Also, time is mentioned as a problem by 5.5% of the respondents in the experiment, which is not that high when comparing it to the other problems that were found. However, this might be due to the experiment including questions about time already. In the manipulation check it was shown that the scenarios did not influence the perceived time dissonance. It might be the case that the videos were too short to create a time dissonance. The result might have been different with a full match of 90 minutes, because that is what the theory of time dissonance is based on. The last explanation might be that spectators came to the realization that the VAR really needed the time to make a decision when assessing a difficult situation. In that case the respondents understood why the VAR needed the amount of time to make a correct decision which made it easier to accept the time and the VAR.

Furthermore, the level of enjoyment increased when the decision of the VAR resulted in an advantageous situation. Fans of FC Twente enjoyed the VAR more when an advantageous decision was being made towards FC Twente. Goldstein (1988) stated that the level of involvement is of great importance for enjoyment. However, neutral fans had higher levels of enjoyment with both, a disadvantageous decision and an advantageous decision. Although, the difference between the scenarios with a disadvantageous and an advantageous decision was higher for FC Twente fans. Their level of involvement was higher than the level of involvement of other supporters which might explain why the difference in enjoyment between the groups of fans was higher. Also, the levels of frustration increased when the decision of the VAR resulted in a disadvantageous situation.

According to Kassin et al. (2016), frustration is produced by interrupting a person's progress towards a certain expected goal. The supporters want to be entertained by a game of football without disruptions. A decision due to the VAR is a disruption on that goal and the outcome of this disruption might have an influence as well. A disadvantageous decision towards FC Twente resulted in a higher level of frustration of FC Twente supporters. The same happened for neutral supporters, but the difference between the neutral supporters with advantageous decisions and disadvantageous decisions was smaller. According to Pronin (2006), biases are generally conceptualized as influencers that cause individual judgements to depart from objective standards or normative criterion. These emotions might appear just because of the positive or negative influence a decision has during the match. Although, the levels of enjoyment and frustration have an effect on the acceptance of the VAR. If the decisions of the VAR are correct and the VAR makes the game more fair, as the KNVB (2019) claims with their statistics, it is expected that the acceptance should not be influenced by these emotions, because objectively speaking the the VAR does its job correctly. However, a bias and information overload influence the emotions directly and thus influence acceptance indirectly. Hansen et al., (2014) state that even when individuals recognized bias in their judgemental strategies, they tend to claim that their decisions were fairly objective, even when they were not. This means it is very hard for individuals to combat biases even if they wanted to do so. So even when people think they are objective, it is possible that a bias is still influencing their rational thinking-process.

Finally, Vettehen and Kleemans (2019) claimed that extra footage with extra information should lead to a severe decrease of recognition. In other words, a viewer's understanding of a situation might decrease once an overload of information occurs. Therefore, it was expected that enjoyment would be negatively influenced by the amount of information and frustration would be positively influenced by extra information. In contradiction with the expectations, extra information led to higher levels of enjoyment and to lower levels of frustration. According to Feather (1998) there is a point where the amount of information is too much for a given individual to process and use, and it is possible that this point is not reached in the scenarios that should trigger information overload. However, the pre-test showed that the scenarios had more information and were seen as more chaotic than the other scenarios. Also, York (2013) states that people are less likely to feel overloaded when enjoying the consumed information which could explain why an overload of information is not triggered. Because a football match is watched for entertainment and thus enjoyment. Additionally, Lee and Faber (2007) state that brand placement is important to be remembered by the viewer. It was expected that placement might have had an influence on information overload, because within the scenarios two screens are showed to the respondents. In the case of the VAR people are focussing on the VAR moment so the placement of the footage (left

or right) might not be as important. Obviously, it is not a brand and the spectator is trying to understand what is happening and therefore, focussing on the replay of the situation. However, this was not different in the scenarios with less information. The fact that more information led to a lower level of frustration could mean that spectators understand that the VAR is needed in a situation with a certain amount of information. It might be easier to accept that the referee is not able to assess all the information in a short amount of time and therefore, the VAR is needed to help the referee to do so. Another explanation is that spectators want as much information as possible, 6.8% of the respondents said more openness was needed to be able to understand the VAR correctly. Interesting is that the effect of information overload is fully mediated by enjoyment and frustration. This means that the amount of information does influence acceptance indirectly by influencing frustration and enjoyment. However, the amount of information might not have been enough to trigger a real information overload.

5.2 Limitations

This study has several limitations. First of all, the material of the VAR in action in the Dutch Eredivisie in matches of FC Twente was scarce, while the available material needed to be divided in four different scenarios based on the two manipulated factors. There were only four different videos of the VAR in matches of FC Twente due to the VAR being implemented in the Eredivisie in season 2018/2019. In that season FC Twente came out in the second division of the Netherlands, where the VAR was not used. In the next season (2019/2020), 40 videos were posted by the KNVB, and FC Twente was taking part in four of the videos. The decision of the VAR was advantageous towards FC Twente three times and disadvantageous one time. Therefore, the material was not ideal because the decision of the referee might influence the way a supporter is interpreting and accepting the VAR. Another video of the VAR influencing a match of FC Twente was found within the highlights of FC Twente matches. A limitation of the used videos is that the difference between the shortest long video and the longest short video was only 30 seconds. The difference in the length of videos might therefore be too small. This might explain why the videos did not influence the perceived time dissonance. However, the material was small the club FC Twente was chosen as comparison to other clubs because Twente Insite offered the opportunity to reach a high amount of FC Twente supporters.

The results around time dissonance are surprising, because supporters complain about the time the VAR takes to make decisions during a match as stated by Carlos et al., (2019). However, the group with the lower amount of time scored higher on frustration than the group with the higher amount of time. An explanation might be that the study simulated a game and the data was not gathered at the actual time the game was played. Therefore, supporters might have been

able to take a closer look to the discussions the referee and the VAR had during their decision making process. Supporters might be able to understand the process while watching these videos because only a small part of the match is shown. Futhermore, time dissonance is a theory based on a whole match of 90 minutes where multiple situations happen. Another possibility is that the difference between the longer and shorter videos was too small. Also, the usage of time dissonance in the current study is incomplete. Time dissonance is described as three different types of time: clock time, event time and experiential time. Normally all of these types are changing during a game of 90 minutes and extra time. In the current study, videos were used of a few minutes showing only the VAR-moments. Therefore, a real decoupling of time and a clash of different expectations with reality is not possible on the same level. However, participants still have expectations based on what they are seeing. The time used in the videos is the amount of time a referee and his video assistant referees are taking to come to a decision. The event time is the total time the situation lasts in the video. This means the time the incident takes and the time it takes to come to a final decision. This is the time the supporters should be considering. As stated by Spitz et al., (2020), time loss due to the VAR are relatively shorter than the other situations, for example throw-ins or corners. The amount of time these situations last during a match is higher in total. In a match of 90 minutes the experience is different and it might seem to take longer due to the players standing still, while during the other situations of time loss players are actively repositioning themselves which makes it feel like a phase of the game. By showing only the VAR moment the respondents were able to get a better view on how much time a VAR situations takes. Also, the experiment was conducted in an online setting due to the Covid-19 virus. In the current setting more than half of the respondents were lost after showing the videos.

Another limitation to the current study is that the discussions around the VAR were silenced due to Covid-19. Like every sector in daily life, football was discontinued due to Covid-19. Therefore, no matches were played and the VAR did not appear. This means participants might have another view on the VAR because the VAR did not appear recently when filling in the survey. However, in a regular season supporters would be able to see the VAR every week which might have had an impact on their view because people would have had more experience and scripts as mentioned by Kassin et al. (2016) would be more detailed. On the other hand, this might have been a benefit because the scenarios shown in the videos might have become a bigger influence due to this break. Another possible advantage of the break is that people might have less memory on the used situations.

5.3 Future research

The variables were tested in a manipulated setting with short videos. However, there is a possibility that a full match of 90 minutes with VAR moments give other results due to expectations people are

building during a match. Furthermore, a crowd might have a big impact on these variables as well because of the place-based sources Misra et al. (2011) mentioned. This study focussed on spectators and showed participants a short video on a screen, while watching a match in a stadium could be a completely different experience due to the ambiance. Bitner et all., (1992) claim that even a small task could enhance or inhibit pleasure of a spectator. Emotions might be enhanced and have a stronger influence due to the different ambiance. Therefore, future research should try a research method where questions are asked during or after a match within or nearby a stadium to find out more about environmental factors.

Furthermore, future research should look into the way the football associations could influence the variables to increase the acceptance of the VAR. First of all time dissonance should be looked into. In the current study it did not have a significant effect, this might be due to the length of the videos. Perhaps the difference between the long and short videos was too small. In another setting and with other situations an effect might still be found. Bias and information overload had an indirect effect on the acceptance of the VAR due to the influence on the emotions enjoyment and frustration. This study focussed on spectators on television, this means that the amount of information can be manipulated by the associations and broadcasters. As mentioned earlier, more openness for fans could potentially lead to a better understanding of the decisions the VAR makes.

The tested variables combined were able to explain 68.7% of the variance of the acceptance of the VAR. However, there might be more variables that have an influence. The rules around the VAR might have had an influence. During the current study, multiple situations have occurred worldwide where the rules were to blame for mistakes or discussion involving the VAR. Respondents were able to give their opinion in two open questions at the end of the experiment. The situations the VAR should be used for, what problems the VAR has and what possible solutions are were mentioned by respondents. The amount of people mentioning a change in the rules was 77.4%. Therefore, future research should investigate what rules should be applied to fit the VAR and to overcome the mentioned problems. Respondents were divided on what rules to apply to the VAR and to football as a game. The current study was able to find some examples that were suggested by fans. Future research might be able to find out which rules should or should not be added to influence the variables and the acceptance of the VAR.

Other variables that were not discussed in the current study might be the place the team is ranked at the moment a VAR moment appears and the influence it has on the score, result and therefore, the ranking. Emotions might be enhanced due to the stakes and consequences of a game. Also, the position on the rankings of the opponent could be a variable. A total of 29.1% of the responses in the qualitative part of the current study, claimed the VAR was not objective and were full of arbitrariness. Mentioned with this claim was that the clubs at the top were favoured more by

the VAR than clubs at the bottom of the rankings. Only one of the participants claimed that this is because the clubs at the top of the competition are attacking more often and therefore those teams were able to profit more from the VAR. This is an interesting way of thinking, because that would mean the clubs at the top of the rankings are given even more advantage while already being at the top of the table, however this might just be a reward for an attacking style of play. Also, the amount of VAR moments in favour or against a team could be investigated. In the current study, an advantageous or disadvantageous decision of the team a person supports has a clear influence on the acceptance of the VAR. However, this was tested with only four different scenarios. It would be interesting to see the result when all VAR moments of one season would be shown to a participant to find out if the person would still show this effect. Besides that, an interesting research would be if neutral supporters with these scenarios or neutral videos would have another effect than in the current study. This could mean comparing supporters of teams at the top of the table, teams in the middle, teams at the bottom and neutral supporters would lead to different results when showing all different VAR situations of a particular team.

5.4 Practical implications

Multiple practical implications can be distinguished to anticipate on the obtained results. First of all, associations and broadcasters might be able to change the amount of information spectators are seeing. This way the information overload variable can be manipulated to get a higher rate of acceptance. For example, giving more openness during the game as 6.8% of the respondents suggest leads to more information. When the amount of information was higher the acceptance was higher as well. When a complicated VAR decision is assessed the fans should be able to understand what is happening. Fans watching on television know what is going on. However, the fans do not know what the referee and VAR are discussing exactly. The screens in the stadium show that there is a VAR check and that is all the information given. The discussions between the VAR and the referee is (sometimes) posted at the end of the day or weekend if the moment(s) are seen as “VAR moment of the week”. According to the respondents, fans should be able to hear what is discussed right away, while fans in the stadium should be able to see exactly what is checked by the VAR. The claim for openness is mentioned by 6.8% of the comments in the open questions. For television it should not be difficult to make spectators follow the discussion live which seem to be a solution people would like. It would increase the amount of information and because of it might increase the acceptance.

Furthermore, biases had an indirect influence on acceptance due to the influence on enjoyment and frustration. It is really hard to combat biases due to the high level of involvement of supporters. Bias will stay within football even if the rules are completely clear; a discussion will probably always arise after an important VAR decision. However, the qualitative results showed that

people wanted more openness (6.8%) and clear rules (4.4%), which might decrease the influence of biases. People are unsure about the objectivity (11.5%) and arbitrariness (17.6%). This might be due to their own bias which had a clear influence on enjoyment and frustration and therefore on acceptance. Also, the discussion who should be leading the match might be interesting to combat biases. If it is clear who is leading a match, the referee (4.4%) or the VAR (5.2%), fans might be able to understand and accept the decision of the VAR and referee and the procedure to come to a certain decision.

Another interesting result was that other sports were mentioned by 51.8% of the respondents. “Football has to reinvent the VAR, while tennis, hockey, volleyball, basketball and American football all have great examples on how to use the VAR”. Using other sports as example could mean different things. The VAR is able to be used all the time and come in whenever the assistant thinks it is needed. This is the current situation and seems to be unwanted by most of the supporters. The second option is that the VAR comes in when the referee and the regular assistants are in a disagreement or are not sure what to do. This would mean a change in the current rules. Lastly, the captains or coaches could be allowed to ask a certain amount of times for the VAR to check a decision that is being made. When a captain asks for a check and the referee did the right thing one of the options to ask for the VAR is gone. If the VAR corrects the referee due to the captain asking for a check the option stays. The last option seemed to be very popular under the participants. However, opinions on the amount of times a VAR-check could be used were different. This way seem to be preferred by the fans. People are fans of teams and players while the referees are known to be criticized, the mistakes referees made are one of the reasons the VAR was implemented as discussed earlier. Therefore, when the captain (a player) asks for a VAR check this VAR moment will be easier to accept as an interruption. However, the supporters of the opponents might still be frustrated by the disruption. To conclude, a better system might help out increasing the acceptance of spectators. Systems of other sports are working according to the respondents and using these sports as example for improvements to the VAR might help developing the VAR to an acceptable device.

6. Conclusion

The VAR is relatively new and the current study is one of the first studies giving attention to the VAR and the acceptance by supporters. The current explorative study revealed multiple effects on acceptance and answered the following research question “what effects do time dissonance, bias, information overload, enjoyable experiences and frustrating experiences have on the acceptance of the VAR?”. The effects of the variables bias and information overload on enjoyment and frustration revealed an indirect effect on acceptance. However, time dissonance did not seem to have a big impact on the acceptance of the VAR. Even though, in the public discussion it is clear that the time a VAR moment takes is criticized a lot. Therefore, future research should investigate if there is a certain amount of time that might influence the acceptance. Enjoyable experiences and frustrating experiences were influenced by biases and information overload. The emotions had a direct effect on acceptance. The findings should add to a better understanding of the acceptance of the VAR. For fans to accept the VAR, changes seem to be needed. By making small adjustments, for example making rules more clear and by giving more openness, fans will be able to accept the VAR easier. Communication with fans, clubs and other associations might be key. Respondents long for clear rules, open communication to the public and learning from other sports. Broadening the understanding of the VAR and the rules around the VAR might increase the acceptance towards the VAR. The current study, uncovered multiple factors influencing the acceptance of the VAR. By taking measures aimed at these factors, the acceptance of the VAR could be positively stimulated. Increasing the acceptance towards the VAR might be able to make an end to the “war with the VAR.”

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Appendices

Appendix A: VAR statistics

- 106 times the VAR gave advise
- 4.000 times the VAR considered a situation
- In one out of three games the VAR gave advise
- 73 times the referee went to the cameras to check the call
- 13 times the advice of the VAR resulted in a wrong call
- 87 calls of the VAR were right
- The other 6 times are not clear
- 15 times the VAR should have given advise while he didn’t

Appendix B: Overload scale

In the last month, how often have you felt overwhelmed with the email messages you received?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

2. In the last month, how often have you forgotten to respond to important email messages?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

3. In the last month, how often have you felt pressured to respond to email messages quickly?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

4. In the last month, how often have you received more cell phone calls than you can handle?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

5. In the last month, how often have you felt that you receive more email attachments than you can handle?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

In the last month, how often have you felt that you have had to spend too much time maintaining the various information and communication devices you own (e.g., laptops, desktop computers, personal digital assistants)?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

7. In the last month, how often have you felt pressured to manage several information and communication inputs at the same time?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

8. In the last month, how often have you felt that you have too many messages (e.g., wall postings, event notifications, personal messages, status updates, and applications) on your Facebook or

MySpace page to deal with?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

9. In the last month, how often have you felt that you receive more instant messages than you can handle?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

10. In the last month, how often have you felt that your work activities leave you too little time for recreational activities?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

11. In the last month, how often have you felt that your work demands make you less sensitive to the needs of others?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

12. In the last month, how often have you felt hassled by your commute to work?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

13. In the last month, how often have you felt that you have too many demands in your home to be able to handle comfortably?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

14. In the last month, how often have you felt that the demands on you in your work place exceed your capacity to deal with them?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

In the last month, how often have you felt that your home environment is too noisy?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

16. In the last month, how often have you felt that your work environment is too noisy?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

Table 5. *Perceived information overload scale* (Misra, 2011).

Appendix C: Frustration scale

1. I feel I'm given a lot of freedom in deciding how I do things
2. I feel I am prevented from choosing the way I carry out tasks
3. I feel completely free to make my own decisions
4. I feel forced to follow directions regarding what to do
5. I feel under pressure to follow standard procedures
6. I feel free to decide what to do
7. I feel the people I interact with really care about me
8. Sometimes, I feel a bit rejected by others
9. I feel I'm perfectly integrated into a group
10. I feel a bit alone when I'm with other people
11. On occasions, I feel people are a bit cold towards me
12. I feel very close and connected with other people
13. I doubt whether I am able to carry out my tasks properly
14. I feel I am very good at the things I do
15. Occasionally, I feel incapable of succeeding in my tasks
16. I feel highly effective at what I do
17. I feel I can accomplish even the most difficult tasks
18. I sometimes feel unable to master hard challenges

Autonomy satisfaction: 1, 3, 6.
Autonomy frustration: 2, 4, 5.
Relatedness satisfaction: 7, 9, 12.
Relatedness frustration: 8, 10, 11.
Competence satisfaction: 14, 16, 17.
Competence frustration: 13, 15, 18.
Table 6. *need satisfaction and frustration scale* (Longo, Gunz, Curtis and Farsides, 2014).

Appendix D: Demographics

Club choice	Amount	Sample %
FC Twente	179	39.2%
AZ	142	31%
FC Utrecht	32	7.0%
Feyenoord	30	6.6%
Ajax	23	5%
PSV	13	2.8%
SC Heerenveen	12	2.6%
No prefference	9	2.0%
Other, namely (Cambuur)	6	1.3%
Heracles Almelo	4	0.9%
FC Groningen	2	0.4%
ADO Den Haag	1	0.2%
FC Emmen	1	0.2%
PEC Zwolle	1	0.2%
RKC Waalwijk	1	0.2%
Vitesse	1	0.2%
Total	457	100%

Appendix E: Article to reach participants

HOME NIEUWS EERSTE ELFTAL ONDER 21 VROUWEN CLUBINFO COLOFON

EERSTE ELFTAL

Maakt de VAR het voetbal wel eerlijker? Deel jouw mening via deze enquête

Published 4 maanden ago on 15 juli 2020
By **Martin**

Foto: Pro Shots

De Video Assistant Referee (VAR) kan sinds de invoering rekenen op flinke kritiek. Op de eerste speeldag in de Premier League na de gedwongen Corona-stop, was er alweer sprake van een onverklaarbare fout. Ook in Spanje en Duitsland wordt er regelmatig gemopperd, zo heeft Voorzitter Josep Maria Bartomeu van FC Barcelona recent openlijk kritiek geuit op de VAR.

In Nederland beginnen de clubs in augustus weer met oefenwedstrijden. FC Twente oefent 10 augustus in eigen huis tegen Fortuna Sittard en reist 16 augustus af naar Rotterdam waar Feyenoord de tegenstander is. Ook komend seizoen zal de VAR pogen de eredivisiewedstrijden in goede banen te leiden.

Bjorn Kuipers gaf in gesprek met *De Telegraaf* eerder dit jaar aan dat het voetbal eerlijker wordt. "De VAR doet op heel veel momenten goed z'n werk. Maar we blijven altijd maar praten over de momenten die niet goed gaan. Dan zeggen mensen: waar was die VAR? Dat heeft vaak met interpretatie te maken."

De mening van scheidsrechter Kuipers is duidelijk, maar wat denkt u als voetbalsupporter over de VAR? In de volgende enquête heeft u de kans om uw mening over de VAR te uiten en op deze wijze wellicht te helpen aan een eerlijkere competitie.

De enquête wordt uitgevoerd door J. Post. Hij studeert Communication science aan de Universiteit van Twente. De informatie gebruikt hij voor zijn Master scriptie en is volledig anoniem.

Klik hier om deel te nemen aan de enquete.

LAATSTE NIEUWS


EERSTE ELFTAL / 11 uur ago
Bruggink ziet kanteling bij FC Twente: "De sfeer is veel beter"


EERSTE ELFTAL / 14 uur ago
Afvallen Cerny bij Tsjechië leidt tot ongeloof bij zaakwaarnemer en fans


EERSTE ELFTAL / 15 uur ago
ADO met kritische Rankovic, maar zonder Bijen tegen FC Twente


EERSTE ELFTAL / 20 uur ago
Selahi moet de speelminuten maar bij elkaar zien te sprokkelen


EERSTE ELFTAL / 20 uur ago
In vorm verkerende Cerny krijgt flinke teleurstelling te verwerken


EERSTE ELFTAL / 21 uur ago
Ebuehi geselecteerd voor twee belangrijke interlands Nigeria


EERSTE ELFTAL / 21 uur ago
Voormalig FC Twente-speler Andersen wint bij Premier League-debuut


EERSTE ELFTAL / 22 uur ago
"De norse, nukkige Stegeman mist werkelijk alles wat Jans wel heeft"


EERSTE ELFTAL / 24 uur ago
Lof voor Drommel: "Samen met Onana en Bijlow de beste van Nederland"


EERSTE ELFTAL / 2 dagen ago
Van der Gijp leeft mee met Stegeman: "Je baantje hangt af van dit soort kneuzen"