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# FANS PERCEPTIONS TOWARD THE APPLICATION OF VIDEO ASSISTANT REFEREE (VAR) IN FOOTBALL AT STADIUM KUALA LUMPUR

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This work is licensed under [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/)**Abstract:**

The Video Assistant Referee (VAR) was introduced in association football in 2018 to assist on-field officials in making potentially game-changing decisions by analysing video evidence in real time. Despite its potential benefits, VAR runs the danger of being misunderstood by fans. Therefore, the purpose of this research is to identify the factors that influence fans positive and negative perceptions of technology utilization in football at Stadium Kuala Lumpur. A total of 452 football fans aged between 18 and above involved in this study by completing a survey questionnaire. The research instrument consisted of two sections namely Section A for the demographic profile of the respondent and Section B for fans perceptions on technology in football. There are 15 items in Section B and they were measured by using the 7 Likert-Scale ranging from 1 (strongly disagree) to 7 (strongly agree). All obtained data has been further analysed by using Statistical Package for Social Science (SPSS) version 27. Descriptive statistic was utilized to determine perception of the football fans while the inferential statistic (ANOVA) was used to compare between age groups. The findings illustrate that football fans at Stadium Kuala Lumpur showed a positive perception with eight survey items by having a mean value greater than four. There are significant differences between age groups in 10 out of 15 items. Overall, the findings were positive, with younger age groups more positive towards technology than older age groups due to their generation's technology-driven nature. The study findings could enhance and contribute to the expansion of VAR technology's use and its functionality across professional football leagues. Also, provides a valuable and reliable information to the football fans understanding and acceptance.

**Keywords:**

Decision-Aid Technology, Video Assistant Referee, Football Fans, Perceptions, Age Groups

**Introduction**

Various sports have seen the advent of technology and its major impact on fans perceptions, competition environment, and decision-making accuracy (Royce, 2012). Our modern lives are loaded with new technology that makes our lives simpler in this new era. Similarly, football has adopted new generations of decision-aid technology aimed to assist and simplify the referee's analysis of the situation and making the proper judgement based on the rules.

In professional football, the video assistant referee (VAR) is a method developed by the Royal Dutch Football Association (KNVB) to assist on-the-field officials in making potentially game-changing decisions by examining video footage from multiple perspectives right after incidents have occurred. VAR usually entails several individuals stationed in the video communications room who evaluate and assist on-field referee judgements on a range of game-changing events such as goal decisions, penalty awards, red card incidents, and mistaken identity incidents. Using a headset as a communication device, the chief referee can request VAR assistance, or the VAR can tell the referee that a judgement or event requires review. The referee may investigate, accept, or reject the VAR's suggestion of the occurrence of the footage. The on-field referee makes the ultimate judgement.

The English Premier League (EPL) implemented VAR ahead of the 2019/20 season, following a testing phase in domestic tournaments, with the aim of using VAR only to correct clear and obvious errors that may warrant a red card, and situations where a player's identity was improperly mistaken (Premiere League, 2019). During that season, VAR was used in all 380 games, influencing 109 goals (Johnson, 2020), with some decisions deemed controversial (Johnson, 2020). Following three challenging penalty judgments in round 34, retired player Tim Cahill requested that a former player be included in the VAR panel to help referees better understand player movements (BBC, 2019; BBC, 2020).

In May 2016, FIFA's Quality Project has begun organising workshops to assess the effectiveness of VAR which employs immediate videos and slow-motion replays mode to improve football fairness with the referee can reviewing the incidents many times from different angles (FIFA, 2023). VAR has been developed and used to enhance competition in professional sporting events (Escamilla-Fajardo, Pomar, Ratten & Crespo, 2020). As a result, fan perception and enjoyment of technology and football games are of great commercial importance. Furthermore, VAR is regarded as a method of increasing such involvement, despite the fact that it is not risk-free (Winand, 2016).

Perception is the interpretation of an object, event, or information that is based on the interpreter's life experience. According to Irwanto (2020), perception results after individuals interact with perceived objects can be divided into two categories which is positive perceptions

and negative perceptions. Given its inconsistency, the complex and confusing processes that drive such decisions, and a lack of communication with fans, discussion about its use erupted quickly (BBC, 2019). Football fans may have a negative perceptions of technology since it might disrupt the pace of a match by lengthening the period necessary to make a choice (Bordner, 2015), as well as the satisfaction that fans get when arguing contested goals (Singh, 2012). Fans satisfactions from different age group towards VAR usage is subjective too. For instance, Winand and Fergusson (2018) and Stoney and Fletcher (2020) both mentioned age groups in their study descriptions but did not report on any differences in opinion between age groups. There has not been much research on fans perceptions of technology in football, particularly VAR usage. As a result, this study was conducted to determine factors that lead to positive and negative fans perceptions toward technology in football, as well as to investigate age differences in fans' perceptions.

## Literature Review

### *Fans Perceptions Towards Technology In Football*

Football fans develop significant emotional relationships to the things they consume. Loyal fans will spend a lot of money and time to follow their preferred sport, team, or athlete's current difficulties or news whereby ordinary fans tend to spend less cash and feel less linked to a certain organization in sports, hence the dedicated fan is more vital to sports teams (Mastromartino, Chow, & Zhang, 2017). The fan is a sports club's most important consumer; without the fans, there would be no need for sports television, jersey marketing, and other services. Sporting clubs would struggle to obtain sponsors if there was no one to buy and support their products (Da Silva & Las Casas, 2017). Understanding fan behaviour is critical for sport bodies and organisations to guarantee that the club's name may be spread globally based on the wishes and demands of sport fans (Dwyer, Lecrom, & Greenhalgh, 2016). According to Singh (2012), with the use of technology in sports the satisfaction that spectators get when arguing contested goals may be lost.

Video assistant referee has the potential to significantly impact fans perceptions with core services. Fans may be dissatisfied if the VAR stalls or reverses a game decision that negatively impacts their team. But, if the VAR overturns a decision such as cancelling a goal or issuing a direct red card to a player who commits a serious foul play in favour of the opponent players, their supporters especially for their loyal supporters, will celebrate. As a result, some supporters may have a poor opinion of VAR while others on the other team have an unsurprisingly pleasant experience.

### *Technology In Sports*

The key idea is that the VAR should only be utilized in helping the official referee when there is a clear and obvious error or an important missed incident in connection with goal awarding decision, penalty awarding, offside situation, and direct red card scenario (Ruiz, Betancor, & Armenteros, 2019). Introduced the notion of "digital referees" to emphasise the need of football referees not only having technical, managerial, and fitness competencies but also developing new digital skills and knowledge about the new digital match regulations. However, selecting the best educational teaching methodologies and training programmes for VAR usage is crucial.

Obviously, technology has proved to support or assist referees in making proper decisions in football, particularly during a critical incident judgement. This technology also has an impact on football spectators' views since it disrupts the stadium atmosphere and the flow of the game (Bordner, 2015). As a result, disruptions may reduce fan pleasure by lowering the stadium environment (Cairns, 2015). The VAR has made numerous game-changing judgements and cancelled goals since its inception.

As from the fan's perspective, they must now be cautious when celebrating scores since the ultimate decision is made by VAR officials and the referee. It will cause a delay, which will take away some of the immediate celebratory joy. Meanwhile, VAR can improve the accuracy of the referee's decisions by communicating with the referee through headset for assistance and for the decision or incident that has to be reviewed by the referee. It can improve impartiality and eliminate prejudice against teams who are not favoured by the referee. Fans who appreciate a lively atmosphere, according to the research, are more inclined to oppose VAR.



**Picture 1: The Use of Video Assistant Referee (VAR) in Football**

Source: (FIFA, 2023)

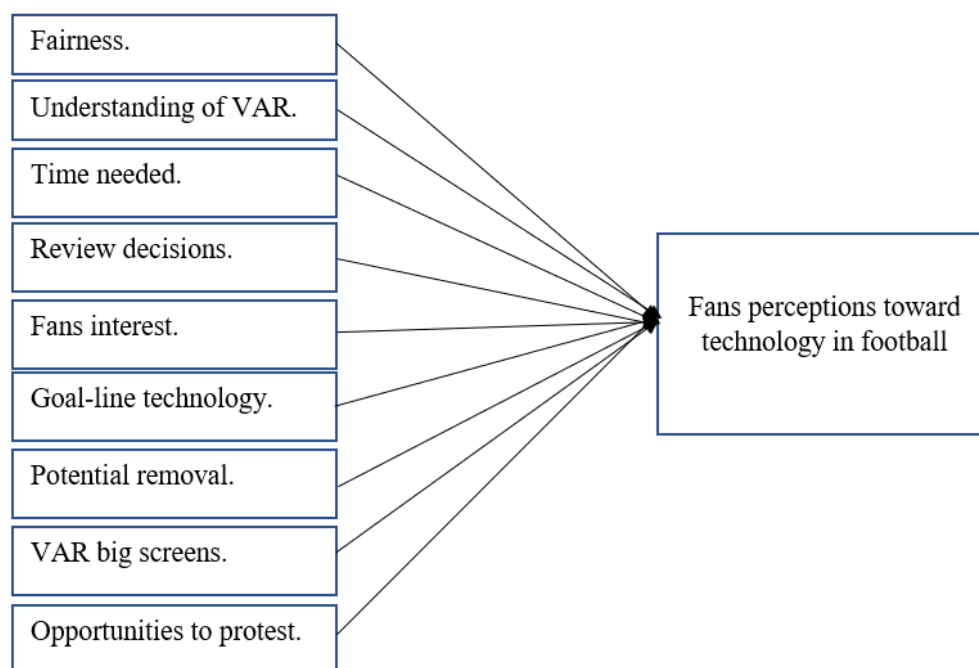
### ***Technology And Differences Between Age Groups***

Football fans' perceptions of technology that takes age groups into consideration is somewhat unusual. Winand and Fergusson (2018) and Stoney and Fletcher (2020) both included age groups in the study descriptions but found no differences in opinion across age groups. This suggests that there might be no difference in attitudes or perceptions between younger and older fans. However, scarce research to support this. One may argue that because millennials are so linked to technology, they should be more tolerant of technological developments in football (Yim, Byon, Baker, & Zhang, 2020). Young people employ a greater range of technological breakthroughs than older people (Olson, O'Brien, Rogers & Charness, 2011), but when given the chance to learn about and appreciate modern technology, older people are often tolerant (Vaportzis, Clausen & Gow, 2017). These findings are essential to consider when

discussing football technology, which may explain the reason previous research on football technology perspectives revealed no significant differences between age groups.

### ***Research Conceptual Framework***

A review of the literature and a knowledge of the independent and dependent variables are used to build the conceptual framework. In this study environment, the conceptual framework revealed a clear direct link between technology, Video Assistant Referee, fans perceptions, and discussion opportunities. This study conceptual framework revolves around the fans perceptions toward technology in football. Perceptions are divided into two namely positive perception and negative perception. The dependent variable in this study is fans perceptions towards technology in football. The purpose of this study is to determine factor that led to positive and negative perception toward technology in football as well as examining the differences between age groups.



**Figure 1: Research Conceptual Framework on Factors That Lead to Positive and Negative Perceptions and Fans Perceptions**

## **Methodology**

### ***Participants and procedure***

To achieve the research objectives, the questionnaire was distributed to football fans attending Stadium Kuala Lumpur during the final of Malaysian Football League (MFL) at the end of 2023. A total of 452 respondents were involved in this survey. A self-administered questionnaire was distributed to the respective sample by utilizing a convenience sampling technique. All data were extracted by using Statistical Package for Social Science (SPSS) version 27.

### ***Instruments***

The research instrument was adopted and adapted from existing review of literature. The questionnaire consisted of two sections namely Section A which assessed the demographic



profile of the respondents and Section B which measured the fans' perception on technology in football. Section A includes items like age, gender, number of years supporting their team and how frequently they see their team at the stadium in every season. Whereby Section B contained a total of 15 items validated by Cronbach Alpha 0.7 used to extract reliable scales for fans perceptions on technology in football. The 15 items are fairness (Q1), understanding of VAR (Q2), time needed (Q3 & Q4), different dimensions relevant to the review decisions (Q5, Q6, Q7, Q8, Q9 & Q10), impact on fans interest (Q11), supplement to goal-line technology (Q12), potential removal until perfect (Q13), the presence of a screen in stadium (Q14) and opportunity to protest the decisions based on technology (Q15). Items were rated on a 7-point Likert Scale response format with values ranging between 1 (strongly disagree) to 7 (strongly agree).

### Data Analyses

All gathered data are analysed by using the Statistical Package for Social Science (SPSS) Version 27. For this study, a descriptive analysis was conducted to provide information on respondent characteristics. To achieve the research objectives pertaining to positive and negative fans' perceptions towards technology in football, a descriptive analysis was used to determine the frequency, mean and standard deviation of each item. Meanwhile, to investigate age differences in fans' perceptions towards technology in football, a one-way ANOVAs was utilized.

### Results and Findings

Table 1 indicate the demographic profile of the respondents. It includes age, gender, number of years supporting their team and the frequency of their visit at the stadium in every season.

**Table 1: Descriptive Statistics on the Demographic Profile of the Respondent**

Items	Frequency (n)	Percentage (%)
Age		
18 – 25 years old	287	63.5
26 – 33 years old	94	20.8
34 and older	71	15.7
Gender		
Male	402	88.9
Female	50	11.1
Years supporting football team		
5 years and below	53	11.7
6 – 10 years	126	27.9
11 – 15 years	175	38.7
16 – 20 years	69	15.3
21 years and more	29	6.4
Frequency stadium attendant		
5 times and less	222	49.1
6 – 10 times	160	35.5
11 – 15 times	61	13.5
16 times and more	9	1.9

In this study, the results obtained also show that the respondents at Stadium Kuala Lumpur experience factors that lead to positive and negative fans perceptions toward technology in football. Table 2 display a total of 15 items on fans' perceptions towards technology in football. The factor includes 'the VAR team for each matchday should consist of several expert referees who are making decisions together, rather than relying on the individual interpretation of just one expert referee' which score the highest mean ( $M=6.57$ ) whereby 'the edition of VAR has made the football match less fair' which score the lowest mean ( $M=1.79$ ).

### ***Factors Lead To Positive Fans' Perceptions Towards Technology In Football And Age Differences***

The first item in Table 2 indicates that fans agree that on matchdays, an additional experienced referee should share responsibility together in the VAR room. This is in line with the concept that VAR has decreased but not eliminated referee subjectivity (Ugondo, 2019). There has been no research on how subjectivity impacts referees in the VAR room, although the phenomenon is likely to occur with officials regardless of location. The results indicate that supporters agree that the VAR room should have more than one referee. There were no significant differences in attitudes regarding using more than one expert referee to render a judgement ( $\rho=0.476$ ). The younger age groups (18-25) were more supportive of the idea of an additional one experienced referee in the VAR room than the older age groups of 26 to 33 ( $\rho=0.135$ ) and 34 and older ( $\rho=0.107$ ).

The second items show that fans feel VAR big screens must be necessary in every football stadium. Although most fans felt that large displays should be necessary, there were significant differences between age groups ( $\rho=0.000$ ), demonstrating that the 18-25 age group was substantially more favourable towards the notion of adding huge screens in football stadiums than the 34 and older age group ( $\rho=0.000$ ). Furthermore, participants aged 26-33 were substantially more positive about the proposition than people aged 34 and older ( $\rho=0.000$ ). This item's findings are compatible with Yim et al. (2020), new generations are more adept with technology than earlier generations, and they prefer to obtain sports equipment through technology. Furthermore, supporters are more unanimous in their belief that a VAR screen should be necessary at every football stadium, regardless of how and to what degree VAR is used. This demonstrates the importance of VAR screens.

The third-ranked item reveals that fans have a generally good impression of on-field referees seeing VAR information before making potentially game-changing judgements. There was no significant difference in opinion age groups ( $\rho=0.198$ ) for this item. All age groups, 18-25 ( $M=5.93$ ), 26-33 ( $M=6.10$ ), and 34 and older ( $M=5.97$ ), had generally favourable impressions of the proposal. Although these data suggest that fans prefer having the official on the field make the final decision on possibly game-changing choices, it is crucial to highlight that this could possibly result in greater time spent with VAR.

The fourth-ranked item demonstrates that fans think that VAR should be utilised if goal-line technology (GLT) fails to perform. Younger individuals agreed more strongly. For this item, there were no significant differences ( $\rho=0.216$ ) between age groups. The age group of 26-33 had the similar feelings as the age group of 18-25 ( $\rho=0.124$ ), but considerably more positive feelings than the age group of 34 and older ( $\rho=0.039$ ). These data reveal that younger fans are more accepting regarding the VAR in addition to GLT than older fans, implying that football

should utilize VAR if goal-line technology fails to perform its function if they wish to comply with younger viewers' preferences for how VAR is used.

The fifth-ranked item demonstrates that participants showed positive perception that VAR should only be used for obvious errors. This is because, during VAR's first season in the English Premier League (EPL), the actuality of VAR being utilized solely for glaring and flagrant errors was murky at best. The EPL defines simple and obvious mistakes as situations in which an on-field referee requires help because he or she did not sufficiently capture or grasp a scenario (Premiere League, 2019), including scenarios in which the referee went entirely undiscovered. The data found that fans were more inclined to agree, with no significant differences ( $p=0.095$ ) between age groups, showing that supporters embrace the present usage of VAR (Premiere League, 2019).

### ***Factors Lead To Negative Fans' Perceptions Towards Technology In Football And Age Differences***

Item 12 demonstrates that participants of all ages had an unfavourable attitude towards how difficult it is to comprehend how VAR works. These demonstrated that participants of various ages comprehend how VAR technology operates, yet there are significant differences ( $p=0.000$ ) between age groups. The football association should see supporters' understanding of how the technology works favourably since it implies that the fans have been fully educated about VAR. It should be noted that these outcomes are the consequence of technology rather than VAR judgements. Although a fan understands how VAR works to review offside, penalty, and yellow or red card occurrences, the outcome will be subjective. Even if the referee's judgment is correct, fans are difficult to accept it because they are driven to support their team by interrupting their opponents and encouraging the referee to make a decision in their favour (Wolfson et al. 2005).

Item 13 demonstrates that the adoption of VAR has not decreased fan interest in football, however there were significant differences ( $p=0.000$ ) between age groups. Age groups 26 to 33 have the same sensation as age groups 18 to 25 ( $p=0.000$ ). That is, the youngest age groups have agreed that they still like watching football games. The issue at hand now is what improvements can be made to make the use of VAR a better experience for viewers, or less frustrating, by using less of the game's permitted 90 minutes to review the evidence and make the correct decision-making the first time.

Item 14 put the participants on the spot by asking if VAR should be withdrawn until the system had been fully developed. The mean results suggest that fans are more inclined to keep VAR, however, there were significant differences ( $p=0.000$ ) present, indicating that the age group 18-25 was substantially more neutral than the age groups 26–33 ( $p=0.005$ ) and 34 and older ( $p=0.000$ ). According to these findings, the more aged the fans were, the less interested they were in removing VAR from sports. This demonstrate that, despite the issues it faces, supporters feel VAR works to some extent, else they would have asked for its removal. The acceptance of VAR by fans, and it is critical for referees to make fewer mistakes and enhance the method of review in order to ensure that fans seem more involved and informed.

Item 15 was listed last since it was the only item that did not necessitate a change or the expression of a worry, suggesting that it was of a positive character. According to the data, most fans disagreed that VAR had diminished fairness. There were significant differences



( $p=0.000$ ) between age groups. These data demonstrate that VAR has succeeded in reducing significant errors and making football more equal in the eyes of fans, and that the system works. However, because the statistics do not represent the truth, they must be supported by other proof showing VAR has made football more equitable, as they simply reflect fans' perceptions of fairness with VAR.

### ***Differences Between Age Groups***

Table 2 also indicate the result of the one-way ANOVA. It shows that there are significance differences between age groups with 10 out of 15 items (see Table 2 below with the \* symbol). The factors that showed significance differences between age groups is every football stadium should have VAR big screens. VAR should review evidence anytime during game, each team should give opportunities to protest VAR decision, VAR takes too much time to make a decision, change how VAR situations can be assesses, VAR made goal less enjoyable, difficult to understand VAR works, less interested in watching football game, VAR should be removed, and VAR made match less fair ( $p<0.05$ ). Thus, the results of the study show a significant difference between age groups of fans perceptions towards technology in football at Stadium Kuala Lumpur. In other words, the research objectives are achieved.

**Table 2: Results Sorted by Rank, Mean, Std. Deviation and Differences Between Age Groups**

Statements	Rank	Mean	Std. Deviation	Differences between age groups ( <i>p-value</i> )
The VAR team for each matchday should consist of several expert referees who are making decisions together, rather than relying on the individual interpretation of just one expert referee.	1	6.57	.859	.476
VAR screens should be mandatory in every football stadium to ensure that fans inside the stadium are thoroughly informed on why a VAR decision is made.	2	6.38	1.026	.000*
The on-field referee should always review VAR evidence when a potentially match changing decision must be made.	3	5.97	.903	.198
VAR should be used if and when there is suspicion that the goal-line technology has failed to perform its task.	4	5.90	.828	.216
VAR should be used for more than just clear and obvious error.	5	5.86	.925	.095
VAR should be able to review evidence from past situations at any time during a game and potentially penalise actors of the game who have broken the rules without being caught.	6	4.97	.756	.000*
The on-field referee should be able to review VAR evidence post-match to penalise actors of	7	4.39	.911	.051

the game who have broken the rules during a match without being caught.

Each team should be given a few opportunities per game to protest VAR decisions that have been made without the on-field referee reviewing video evidence, prompting a formal review by the on-field referee.	8	4.09	.809	.000*
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VAR situations take up too much time of a football game.	9	3.87	.892	.000*
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The football association should change how VAR assesses offside situations.	10	3.85	.870	.026*
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The introduction of VAR in football game has made goal less enjoyable due to almost every goal potentially being subjected to a VAR review.	11	3.57	.929	.000*
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I find it difficult to understand how VAR works.	12	2.30	1.243	.000*
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The introduction of VAR made me less interested in watching football match.	13	1.88	1.076	.000*
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VAR should be removed from the football competition until the system is perfected.	14	1.87	1.153	.000*
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The edition of VAR has made the football match less fair.	15	1.79	1.003	.000*
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*Note: Significant differences highlighted with\*.*

## Discussions and Conclusions

Fans interest in football games is extremely high. Therefore, VAR in football can be viewed as a technique for increasing fans interest. However, it can also have an impact on fans perceptions of technology in football, as fans perceptions differ from one another. In this study, fans' perceptions were examined by age. Although age does have a role in male and female perceptions of technology in football, this study discovered various factors that lead to positive and negative fans' perception towards technology in football. This study findings are corresponding to those of Winand and Fergusson (2018) who discovered that fans backed the use of technology in football, such as how study participants mentioned that: VAR make football match fairer, they felt more in support of VAR's ongoing use, and they had not lost their enjoyment in watching football games as a result of VAR's implementation.

There were, however, discrepancies in fan perceptions of the attributes between the surveys. According to Winand and Fergusson (2018), since technology lowered the amount of challenged rulings, fans have loved football less. Although not formally investigated, several aspects in this study assessed how VAR affects fans' experiences. The findings suggested that fans tended to be impartial. This is in contrast to how participants in Winand and Fergusson (2018) the usage of technology was viewed as reducing the frequency of disputed goal evaluations, resulting in a drop in satisfaction. Their analysis also revealed that fans were unhappy with future decision-making technology. This was not addressed in the study, but the results reveal that fans are satisfied with how VAR is employed and oppose its elimination. This implies that football fans value technology. VAR, on the other hand, has been a part of football for a few years and appears to be here to stay. As a result, rather of fighting the

technology, supporters may choose to embrace it for what it is. According to Hamsund and Scelles (2021), the majority of fans agree that big screens should be required in every football stadium for most problems relating to how and to what degree VAR should be used. This demonstrates the importance of big screens. This study found that having large screens with VAR reviews present to keep spectators fully informed of what's going on was beneficial to supporters.

Sports fans have varied needs and desires depending on the sport they follow; hence, the in-stadium atmosphere should be comparable across sports (Samra & Balwant, 2014). Winand and Fergusson (2018) and Stoney and Fletcher (2020) both found no change in views across age groups. However, Hamsund and Scelles (2021) observed an age gap in fans' opinion. Like Hamsund and Scelles (2021), this study discovered significant differences between age groups. In summary, the younger age groups were more agreeable to adopting VAR than older age groups, which is compatible with their generation's technology-driven attitude (Yim et al. 2020).

It is recommended for future research to explore demographic variations when assessing the factors that influence football fans perceptions of technology in football. In addition, it could provide guidelines and assistance to football associations to strategize and predict an intervention plan that benefit both football fans and the Malaysian football development.

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