**VIDEO ASSISTANT REFREE (VAR)**

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**(ST/CS/ND/20/352)**

**A SEMINAR REPRESENTED TO THE DEPARTMENT OF COMPUTER SCIENCE, SCHOOL OF SCIENCE AND TECHNOLOGY, FEDERAL POLYTECHNIC MUBI, ADAMAWA STATE, NIGERIA**

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**Abstract**

*The in-road of digital media technologies into football has simplified referees’ decisions on contestable goals. This paper examines the impact of the adoption of Video Assistant Referees (VAR) and Goal Line Technology (GLT) and how the interpretation of the communication between referees affects the outcome of the games. This paper is aimed at exploring the communicative frame of reference for technological and pitch-based referees. Contrary to the speculations that the diffusion of technology usually resulted to structural unemployment, the adoption of VAR and GLT has opened up opportunities for increased numbers of referees and match officials. Consequently, this paper tries to establish whether the diffusion of digital media technology into football officiating has excommunicate human errors and blunders envisaged in the era of analogue pitch and referees, thereby setting the paste for minimal errors in the contemporary phase of digital officiating.*

**Keywords:** Goal line, Video Referee, Technology, Assistant Referee.

**Introduction**

Digital media technology among sports is forever advancing thanks to the technological world of these days. This technology assists match officers to create the right call in a very game that has the potential to vary the ultimate outcome of that game/match. They used instant replay technology to observe the sport within the arena to permit the officers to be a lot of correct and additionally add another dimension to refereeing. However, this technology commands several bugs and sometimes caused delays, still as solely having the ability to review an occurrence with indisputable visual proof (Ford, Gallagher, Lacy, Birdwell, Bridwell, & Goodwin, 2016).

This technology was the birth of call review systems utilized in the fashionable day. The decisions created by a referee or umpire will have an effect on the last word outcome of a game. In some things the direction of the sport may be modified by one call. Price and Connelly noted it's not uncommon for the referee or umpire to be known because the reason behind the failing of a player or team, and to be blame for influencing the results of a game by either not implementing the principles or being biased (Price, 2016; Connelly, 2003).

Referees have to respond almost immediately to events in a game that unfold dynamically and which may have many nuances, ambiguities and uncertainties. In general, the elite level referee is required to make rapid decisions while also considering numerous sources of information (Mascarenhas, 2005).

A lot of research has been conducted in some sports to develop or enhance technologies that will act in an advisory capacity during the match, without the need to stop the match, but rather while maintaining the normal tempo of the game. For instance, in football has closely examined and tested the micro-chip of the ball, to signal a scored goal. Also, the side-line referees contact the center pitch-based referee via microphones and earpieces, without stopping play. This includes volunteering information to the referee on off-side, foul or illegal play, line calls, etc, as it occurs. If appropriate this is then assessed by the referee to determine if any action is warranted or not, without interrupting the continuity of the match. Major decision support technologies used in football include: microchip ball and signal to referee; microphone and earpieces; electronic sensors in goal posts; tracking systems for off-side play; goal-line technology and video assistant referee (Rene, 2010).

**Literature Review**

The concept of referee in sport is referred to an umpire or judge: the official who makes sure the rules are followed during a game. Each match is controlled by a referee who has full authority to enforce the Laws of the Game in connection with the match. The decisions of the referees according to the Laws of the Game (2018/19) will be made to the best of the referee`s ability according to the Laws of the Game and the ‘spirit of the game’ and will be based on the opinion of the referee who has the discretion to take appropriate action within the framework of the Laws of the Game. In the game of soccer, all matches are played on the pitch, that is the field where the competition take place. Communication on the other hand is defined as the process of sharing meanings. It could also be defined as the process of passing information from one point to the other. In this context, great deal of communication usually occurs in football match competition between the central referee and his subordinate referees on the pitch as well as those technological referees in the video room (Weston, 2019).

**Goal-Line Technology (GLT) and Video Assistant Referee (VAR) in football.**

The earliest technologies used in football according to Spagnolo, Pier, Massimiliano, Ettore, & Arcangelo (2013), were based on instant replay: in case of a controversial call about a goal event the referee (or an assistant) could stop the game and watch the images (acquired from broadcast or dedicated cameras). This would slow down the game taking away possible plays and annoying the audience. Thus attention has recently turned to technologies able to decide autonomously whether or not the ball has crossed the goal line. One of the most promising approaches uses a magnetic field to track a ball with a sensor suspended inside. Thin cables with electrical current running through them are buried in the penalty box and behind the goal line to make a grid (Spagnolo, et al., 2013).

**Goal Line Technology (GLT) and it Functional Principles**

The GLT systems may be used to verify whether a goal has been scored to support the referee’s decision. Where GLT is used, modifications to the goal frame may be permitted in accordance with the specifications stipulated in the FIFA Quality Programme for GLT and with the Laws of the Game. The use of GLT must be stipulated in the competition rules (Schneider, 2020).

**Protocol Principles, Practicalities and Procedures of Video Assistant Referee (VAR)**

Each match is controlled by a referee who has full authority to enforce the Laws of the Game in connection with the match. The VAR protocol, according to the Law of the game (2018/19) conforms to the principles and philosophy of the Laws of the Game. The use of video assistant referees (VARs) is only permitted where the match/ competition organizer has fulfilled all the VAR protocol and implementation requirements (as set out in the VAR Handbook) and has received written permission from The International Football Association Board (IFAB) and FIFA (Schneider, 2020).

According to Shah (2019), the use of VARs in football matches is based on a number of principles, all of which must apply in every match using VARs:

1. A video assistant referee (VAR) is a match official, with independent access to match footage, who may assist the referee only in the event of a ‘clear and obvious error’ or ‘serious missed incident’ in relation to: Goal/no goal; Penalty/no penalty; Direct red card (not second yellow card/caution); Mistaken identity (when the referee cautions or sends off the wrong player of the offending team).
2. The referee must always make a decision, i.e. the referee is not permitted to give ‘no decision’ and then use the VAR to make the decision; a decision to allow play to continue after an alleged offence can be reviewed.
3. The original decision given by the referee will not be changed unless the video review clearly shows that the decision was a 'clear and obvious error'.
4. Only the referee can initiate a ‘review’; the VAR (and other match officials) can only recommend a ‘review’ to the referee.
5. The final decision is always taken by the referee, either based on information from the VAR or after the referee has undertaken an ‘on-field review’ (OFR).
6. There is no time limit for the review process as accuracy is more important than speed.
7. The players and team officials must not surround the referee or attempt to influence if a decision is reviewed, the review process or the final decision.
8. The referee must remain ‘visible’ during the review process to ensure transparency.



1. If play continues after an incident which is then reviewed, any disciplinary action taken/required during the post-incident period is not cancelled, even if the original decision is changed (except a caution/sendoff for stopping a promising attack or DOGSO).
2. If play has stopped and been restarted, the referee may not undertake a ‘review’ except for a case of mistaken identity or for a potential sending-off offence relating to violent conduct, spitting, biting or extremely offensive, insulting and/or abusive gesture(s).
3. The period of play before and after an incident that can be reviewed is determined by the Laws of the Game and VAR protocol.
4. As the VAR will automatically ‘check’ every situation/decision, there is no need for coaches or players to request a ‘review’ (Shah, 2019).

Situations that calls for match review using VAR Spagnolo, Pier, Massimiliano, Ettore, & Arcangelo (2013), stressed that the referee may receive assistance from the VAR only in relation to four categories of match-changing decisions/incidents. In all these situations, the VAR is only used after the referee has made a (first/original) decision (including allowing play to continue), or if a serious incident is missed/not seen by the match officials. The referee`s original decision will not be changed unless there was a ‘clear and obvious error’ (this includes any decision made by the referee based on information from another match official e.g. offside). This was exactly what happened to the goal scored by Rahim Styling of Manchester City and was cancelled by the referee after VAR review (Spagnolo et al., 2013).

The following situations necessitated for reviewed in the event of a potential clear and obvious error or serious missed incident:

**(A)** **Goal/no goal:** Under this condition, the pitch-based referee communicative interpretation will be guided by the following considerations:

1. An offence by the team that scored the goal in the attacking phase that ended with the scoring of a goal, including
2. offence by the attacking team in the build-up to or scoring of the goal (handball, foul, etc.).
3. offside: position and offence.
4. ball out of play prior to the goal.
5. goal/no goal decisions.

**(B) Penalty kick/no penalty kick:** Here four major decisions determine the action of the referee, which include:

1. Penalty kick incorrectly awarded/ penalty kick offence not penalized
2. Location of offence (inside or outside the penalty area)
3. Offence by the attacking team in the build-up to the ball out of play prior to the incident penalty incident.
4. Offence by goalkeeper and/or encroachment by an attacker or kicker at the taking of a penalty kick defender who becomes directly involved in play if the penalty kick rebounds from the goalpost, crossbar or goalkeeper.

**(C) Direct red cards (not second yellow card/caution)**

DOGSO (especially position of offence and serious foul play (or reckless challenge) positions of other players) violent conduct, biting or spitting using offensive, insulting or abusive gestures at another person.

**Mistaken identity (red or yellow card)**

If the referee penalizes an offence and then gives the wrong player from the offending (penalized) team a yellow or red card, the identity of the offender can be reviewed; the actual offence itself cannot be reviewed unless it relates to a goal, penalty incident or direct red card (Spagnolo et al., 2013).

**Impact of GLT and VAR in football**

1. The revolution of technology in football saw the introduction of the Goal Line Technology at the 2012 FIFA Club World Cup and since then a number of leagues across the world have used the system. The English Premier League was the first national league to vote in favor of Goal Line Technology after it was successfully used at the 2013 FIFA Confederations Cup (Weston, 2019).
2. With the introduction of Goal Line Technology, the use of technology in soccer has grown from strength to strength. As a result, the International Football Association Board (IFAB) introduced the Video Assistant Referee (VAR) system as football’s first use of video technology to reach more correct decisions. IFAB, the body that determines the Laws of the Game of association football unanimously approved the use of the VAR at the 132nd Annual General Meeting in Zurich on the 3rd March 2018. This was in a bid to increase fairness and integrity in the sport (Weston, 2019).
3. The introduction of VAR in soccer is a step closer to perfection. Referees use it to change match-changing situations such as goals; close offside decisions are the most common reason for VAR being consulted after a goal has been scored, but shirt-pulling and other infringements can cause goals to be chalked off or whether there was an infringement in play before a goal is scored. Penalty decisions, a straight red card or in a case of mistaken identity. This helps to evaluate refereeing decisions that have not been seen in real time (Schang, 2015).
4. Referees are such powerful figures in the game but are not immune to the criticism on match day. The use of different types of technology has become important in recent years due to the fact that sports contain moments in which there are mistakes made by referees and officials. The introduction of technology regarding these sports in recent years has helped to bring down a number of these errors. A case of whether a ball crossing the line or not can be crucial in deciding whether a team gets maximum points in a match or earn a draw and in the long run the points dropped or earned can determine where a team finishes at the end of a season in a league (Shah, 2019).
5. Decisions in a game can have far reaching consequences and it is all in the hands of the referee who has full authority to enforce the laws of the game in connection with the match. A center referee covers approximately 11km during a match, with 900m of high-speed running and, consequently, the demands of match play represent a significant physical challenge to the individual officiating a game. All signs have shown that video technology has been needed in football. The 1966 World Cup stands out as a game that decided an entire nations fate at the big stage - England won their only World Cup courtesy of a ball that never crossed the line against bitter rivals West Germany. Geoff Hurst won the World Cup on home soil in what would be the most controversial World Cup final to date. Football or sport in general stands on three fundamental pillars – Fair Play, Respect and Transparency (Weston, 2019).
6. Fair Play has always been an applied concept. Many treatments of fair play were and still are, motivated more by the desire to use sport to teach some set of positive values, than by the goal of understanding the nature of the concept itself. It is generally agreed that sport teaches values, but the content of those values – indeed whether the values are good or ill – depends upon the way in which sport is played, taught and practiced. Fair play is often the phrase used to capture the view that sport should be used to teach positive social values, with the chosen values forming the content of the concept. On this view, fair play forms a subset of general moral or social values applied to, and taught through, sport and physical activity Football is all about fair play and players need to show this on the pitch by winning fairly and avoiding acts such as simulation or diving to get the opponent sent off or to win free kicks and penalties from the referees (Schneider, 2020).

**Conclusion**

In the soccer world, there is a great deal of communication especially between pitch based referees and digital referees who monitor technologies to reduce human errors on the pitch. A great number of problems have been managed as a result of the inroad of VAR and GLT into soccer. Soccer is the world’s most popular sport and an enormous business, and every match is currently refereed by a single person who has full authority to enforce the Laws of the Game”. So, controversies are inevitable, and the most glaring of them are usually about referee’s communications for which no interpretation is required and concern about whether the ball has completely crossed goal line or not, and whether an action (tackle) worth penalty or not.

VAR and GLT were designed and adopted to help reduce human errors in the pitch. Consequently, the interpretation of the video footage from the digital technologies and phone calls by the pitch based referees usually subject fans and spectators to puzzles. This study found that angular lens, camera perspective and the rules of the game alongside referee's prejudice are major factors that determine the decisions of the pitch based referee in contestable situations.

Substantially, the diffusion of VAR and GLT has reduce human errors envisaged in football match and increase referee's ability to officiate competition with ease. Also, the adoption of the digital media technologies into soccer and sports has open up new platforms for referees (analogue versus digital referees, analogue versus digital pitch). Be that as it may, while the diffusion and adoption of VAR and GLT has increased the numbers of referees and match officials in competitions where IFAB and FIFA are deeply involved, in Africa, there is a slow diffusion and adoption of the digital media technologies of VAR and GLT.

**Recommendations**

1. Referees should avoid sentiment and interpret video footage from VAR based on standard rules of the game.
2. VAR and GLT should be accepted and use in all international and national soccer competitions, in other to have uniformity in the game of soccer.
3. FIFA, IFAB, IMS, should liberalized VAR and GLT so that the technologies will be affordable and use in all national and international football leagues.

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