

Conference Paper

## Empowering Putra Mangun Jaya F. C. with Data Analysis from Mangunjaya Watch

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### ABSTRACT

Football is one of the most popular sports in Indonesia. The love of Indonesians for football can be seen from the many soccer clubs throughout Indonesia, ranging from clubs at the national level to clubs at the local level in every city and village, one of which is the Putra Mangun Jaya Football Club. Putra Mangun Jaya Football Club is a football team located in Kediri Regency, East Java, led by Mr. Suharyoko as the Main Director. This article summarizes the authors' activities in conducting market research on data needs for the Putra Mangun Jaya amateur football club and describes how Putra Mangun Jaya collaborated with the authors to become one of the regional amateur clubs that has data analysis as a basis for player development and policy making. The author has developed the Mangunjaya Watch digital application, which is a watch technology that can be used by football players at Putra Mangun Jaya to detect the players' physical endurance or what is called a performance record player. This technology also has the potential to make Putra Mangun Jaya branded as the only regional amateur club with digital data-based analysis. It is hoped that this will provide encouragement to Putra Mangun Jaya to develop further.

*Keywords: Football, data analysis, player development, technology*

### Introduction

Football is the most common sport throughout the world, including in Indonesia. According to a Nielsen Sports survey, football is ranked second in the list of the most popular sports in Indonesia with 68% of Indonesians liking it. The popularity of football in Indonesia is only surpassed by badminton (Puspa, 2020). Even though football is very popular and has many fans in Indonesia, its achievements are limited. Even at the local or regional team level, Indonesian football has not been able to compete at the Asian level. The best and most recent achievement was achieved by Persipura Jayapura when they managed to reach the semifinals of the 2015 AFC Cup (Adiyaksa, 2020). Another version surprisingly shows that 90.8% of the Indonesian population is familiar with the sport of football. Many of them are familiar with this, the number of football fans in Indonesia reaches 46.7%, surpassing badminton at 18.8% and volleyball at 12.4%. This data underlines the fact that football has a special place in the hearts of the average Indonesian (Pradiksa & Prianto, 2022).

It is imperative to acknowledge that football not only stands as a widely popular and culturally significant sport but also holds a pivotal role within Indonesian society. Beyond its sheer popularity, football serves as a conduit for enhancing physical fitness and nurturing social bonds, epitomized by the collective fervor observed during lively football matches, often dubbed as "Watching Together" (Ginanjar et al., 2015). Furthermore, football functions as a catalyst for promoting sports engagement and advocating for a healthier lifestyle (Prawira & Tribinuka, 2016). Nevertheless, Indonesian football

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has grappled with substantial challenges over recent decades, primarily stemming from profound financial woes and ineffective governance structures, both at national and regional levels. Presently, Indonesian football is undergoing a transformative phase aimed at reforming and fortifying its management and developmental framework. These endeavors are envisioned to resurrect Indonesian football and position it as a formidable entity on the global football stage, spanning both Asian and international arenas. A critical examination of Indonesian football's accomplishments reveals a myriad of issues, spanning management deficiencies to player quality concerns. Fakhri Husaini, former coach of the U-19 Indonesian National Team, highlights the significance of governance shortcomings in exacerbating football-related challenges in Indonesia. He advocates for comprehensive accountability among all stakeholders, stressing that the Indonesian Football Association (PSSI) alone cannot shoulder the burden (Rudi, 2020). Moreover, the issue of fanaticism among Indonesian football supporters looms large. Recent instances have demonstrated an escalation of fervent support into aggressive behaviors, posing potential threats to public infrastructure, ranging from high-value facilities to those of significant monetary worth (Setiyowati, 2013).

The fervent passion of Indonesians for football finds expression in the proliferation of football clubs across the nation, spanning both national and grassroots levels, permeating every city and village, exemplified by entities like Putra Mangun Jaya FC. Situated in Kediri Regency, East Java, and under the stewardship of Mr. Suharyoko as Managing Director, Putra Mangun Jaya FC epitomizes this widespread enthusiasm (Suryanto et al., 2023). Beyond mere sports entities, football clubs wield significant influence within the socio-economic fabric of society. Serving as sources of entertainment and communal pride for their supporters, they also represent lucrative avenues for various stakeholders within the football industry, including sponsors, entrepreneurs, and players. Moreover, football clubs play a pivotal role in fostering social cohesion and camaraderie among individuals hailing from diverse backgrounds and cultural milieus.



Figure 1. Football training in Putra Mangun Jaya

Established in 2020, Putra Mangun Jaya FC has garnered noteworthy accolades in local football, particularly in the realm of youth athletics. The club has attracted numerous young talents who have notched individual and collective triumphs. However, the onset of the pandemic heralded challenging times for Putra Mangun Jaya FC. Many players ceased training at the football academy, with key figures defecting to rival teams (Suryanto et al., 2023). This exodus can be attributed to the absence of systematic player data recording and the pressing need for enhanced professionalism and technological integration in football management amidst the contemporary landscape. Even in the present era of modern football, emerging technologies like smartwatches have been underscored as pivotal aids in training regimes (Shen et al., 2018; Alfeo et al., 2017; Sivakumar et al., 2021). This article

outlines the salient aspects of a community service initiative in collaboration with Putra Mangun Jaya FC. Recognizing the untapped potential inherent in Putra Mangun Jaya FC as a nascent yet accomplished local football club and academy, the implementing team of the community service program endeavors to bolster its development. One of the primary thrusts advocated by the program is the incorporation of smartwatches in the training regimen of Putra Mangun Jaya FC players. This utilization of smartwatches promises to confer a competitive edge upon Putra Mangun Jaya FC, distinguishing it from other local football entities. Consequently, Putra Mangun Jaya FC is poised to emerge as a vanguard local club, leveraging digital technology for player performance analysis and enhancement.

### **Material and Methods**

To achieve what has been agreed upon by the community service program implementation team and the Putra Mangun Jaya FC club management, a measurable program implementation method is needed. The program implementation methods used are 1) creating the Mangunjaya Watch application on smartwatches that will be worn by player representatives from Putra Mangun Jaya FC, 2) creating branding to provide exposure to Putra Mangun Jaya FC, and 3) evaluating activities carried out jointly by the program implementation team and management of Putra Mangun Jaya FC. With these three methods, the program has been implemented and each collaborating party can provide assessment metrics for the development of Putra Mangun Jaya FC after being given digital technology in the form of Mangunjaya Watch.

The creation of the Mangunjaya Watch application will be synchronized with a similar digital application previously developed by the program implementation team, namely Forza Watch (Suryanto et al., 2023). It can be said that Mangunjaya Watch will be a branch of the main Forza Watch application. To start building Mangunjaya Watch, visual and manual player monitoring is required. Therefore, the program implementation team has carried out field trips to monitor Putra Mangun Jaya FC players directly, accompanied by coaches. The presence of coaches is also an important factor in making the Mangunjaya Watch application, which is why coaches are also needed to play a role in determining the classification of the players. The results of monitoring and classification will then be created by a programming algorithm by the application development team. For the final stage of creation, the existing data and algorithms are then synchronized with the smartwatches that will be worn by the selected players (Suryanto et al., 2023).

After that, the program implementation team will also help create a branding concept for Putra Mangun Jaya FC. For branding which will be assisted by the program implementation team, the program implementation team and Putra Mangun Jaya FC management have agreed to focus on Instagram social media. So far the program implementation team has provided consultation regarding the development of Putra Mangun Jaya FC's Instagram. The program implementation team also emphasized that the development of social media for football clubs and football schools cannot currently be expected to become a revenue generator for clubs. Observations made by the program implementation team found that it is very difficult for a local football club which is limited in many aspects to make social media a channel for the club's income. Therefore, the branding prepared by the program implementation team is Putra Mangun Jaya FC's Instagram as a showcase for Putra Mangun Jaya FC's achievements and activities.

The final stage of implementing this community service program is program evaluation. The evaluation was carried out once in mid-2023 by the program implementation team and Putra Mangun Jaya FC administrators. Evaluation is an important stage to obtain feedback from program implementation so far. From the evaluation, each party can provide input both from the conceptual and technical side of program implementation. With evaluation, the parties can provide clarity on the sustainability of the program.



Figure 2. Bima Baraka, one of the Putra Mangun Jaya's player, wearing Mangunjaya Watch in his right hand

## Results and Discussion

In accordance with the planned and agreed implementation stages and methods, the program implementation team visited the Mangunrejo Village field in Kediri Regency to carry out manual/visual inspections or observations of the Putra Mangun Jaya FC players. Manual/visual observations were carried out on Thursday and Saturday in the afternoon following Putra Mangun Jaya FC's training schedule. This club itself has 4 (four) coaches who are present at the same time. The program implementation team always has discussions with two coaches who are assigned to observe the players from the edge of the field, while two other coaches lead club training in the middle of the field. Observations and discussions between the trainer and the program implementation team ultimately gave rise to 9 (nine) classification variables that will be created by a digital algorithm in Mangunjaya Watch, namely stamina, speed (running speed), pace (running range), power, agility, shooting (kicking ability), ball), dribble (dribble skill), control (ability to hold the ball), and heading (ability to head the ball). These nine variables will be entered into the digital smartwatch system and synchronized with the Mangunjaya Watch application (Suryanto et al., 2023). These nine variables can also be summarized in the performance or player performance menu.

After making two direct observations in the field, the program implementation team began to focus on piloting Mangunjaya Watch dashboard synchronization. Before becoming a separate system, currently Mangunjaya Watch is integrated with Forza Watch to have the same function. To use the Forza Watch application, then access Mangunjaya Watch data, users need to create an account, or can log in as administrator for the development teams and club coaches whose data is entered in the application. This is necessary so that Mangunjaya Watch can become public consumption so that the technology developed is not only consumed by certain groups.

After integrating with Forza Watch, the program implementation team then started inputting digital data on Putra Mangun Jaya FC players. The input is done by entering the admin dashboard for the Putra Mangun Jaya FC account. The program implementation team has tested the intended data input by including several players from the Putra Mangun Jaya FC football school.

By entering some existing digital data into the Forza Watch system, the initial stages of synchronization with Mangunjaya Watch can be continued until all data is entered into the system. However, there is digital data that cannot be entered properly, including 9 performance indicators for

Putra Mangun Jaya players, which programmically has its own complexity so it takes longer to enter the data.

After the stages of entering digital data and carrying out initial digital synchronization, the program implementation team also helped Putra Mangun Jaya FC to brand their football club. In building a branding, of course there needs to be talent who will later become the personification of Putra Mangun Jaya FC. The coaches and program implementation team agreed to take player Bima Baraka as a talent from Putra Mangun Jaya FC which will be published via social media Instagram. Therefore, the initial Mangunjaya Watch trial also took Bima Baraka as the first user of the Putra Mangun Jaya FC smartwatch (Suryanto et al., 2023).

The program implementation team together with the Putra Mangun Jaya FC management will still collect the data needed to be able to upload content on social media. The posts planned by the executive team and club management will also be a means of branding for Putra Mangun Jaya FC. The branding that is being built is Putra Mangun Jaya FC as a football club and football school that uses digital analysis to monitor and evaluate its players. With this branding, it is hoped that more attention will be paid to Putra Mangun Jaya and will further popularize sports supported by technological advances.

## **Conclusion**

The team implementing the community service program has succeeded in developing a prototype application for a smartwatch that can be used to analyze the abilities of soccer players. Mangunjaya Watch is a digital application which is the result of collaboration between the program implementation team and Putra Mangun Jaya FC in Kediri Regency. This digital technology will later be able to provide information about the performance of Putra Mangun Jaya FC players who use smartwatches that are equipped with the Mangunjaya Watch application. Through this program, Putra Mangun Jaya FC is assisted in developing digital technology that can be applied to their football clubs and schools.

However, there were conceptual obstacles encountered by the program implementation team related to efforts to brand Putra Mangun Jaya FC as a football club and school that relies on digital analysis. Based on the observations and literature studies carried out by the program implementation team, it will be very difficult for local football clubs and schools to be able to cultivate information on Putra Mangun Jaya FC branding. Not many football clubs' Instagram social media can be utilized as a revenue generator. World football clubs such as Barcelona, Real Madrid and Manchester United also do not hard sell all their posts on social media. Football clubs' social media is generally used to reach their fans and supporters and to carry out soft selling. Football clubs in Indonesia also generally have income from sponsorships, match ticket sales and merchandise sales. Therefore, we feel that Putra Mangun Jaya FC is still difficult to reach the level of income obtained by other professional local clubs that have been around for a long time. Putra Mangun Jaya FC actually still has opportunities to grow and develop. However, with the digital technology branding that will be built, Putra Mangun Jaya FC must be serious about continuing to develop this branding and also be consistent in it. Putra Mangun Jaya can take advantage of the achievements that have been achieved by the club to look for sponsors so that they can continue to spur development, especially in terms of the technology used.

The program implementation team feels that the idea of combining football with digital technology based on smartwatches is a good innovation to be carried out at the local level. This will encourage the penetration of digital technology to reach more people, especially in districts and rural areas. However, of course the implementation of this community service program is still not perfect. The program implementation team still feels that there are many shortcomings in this program, including the long duration of socialization and limited funding for Putra Mangun Jaya FC to develop their digital technology. We feel that the socialization of this program also requires more time because the application of digital technology in football is something that is unusual for residents in the region.

Therefore, we also encourage collaboration with other stakeholders to jointly advance sports, especially football, at the local regional level.

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