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What are the match-level factors behind arena occupancy in FIBA Women's basketball qualification competitions?

Master's thesis

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List of abbreviations and acronyms

1. **CC** - Continental Cup
2. **FIBA** - Fédération Internationale de Basketball
3. **OLS** - Ordinary Least Squares
4. **OQT** - Olympic Qualifying tournament
5. **WCQT** - World Cup Qualifying Tournament
6. **WC** - World Cup
7. **WNBA** - Women's National Basketball Association
8. **WWC** - Women's World Cup

Glossary

Arena Occupancy — The percentage of available seats filled during a given game, used in this study as the dependent variable to measure spectator attendance.

Competitive Balance — The degree of equality between two competing teams, measured in this study by the difference in FIBA world rankings between opposing teams.

Host Nation Effect — The tendency for games involving the home nation to attract significantly higher attendance compared to neutral games.

OLS Regression — A statistical method used to estimate the relationship between one dependent variable and multiple independent variables

Superstar Effect — The phenomenon whereby the presence of a WNBA player drives higher spectator demand.

Team Quality — A measure of a team's competitive level, calculated in this study using FIBA world rankings.

Weekday Scheduling — Hosting games on weekdays (Monday to Friday) as opposed to weekend fixtures.

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1. Introduction

Basketball is one of the most popular sports in the world. In 2024, the number of people playing basketball at least twice a month was over 610 million (FIBA, 2024). Women's basketball has experienced rapid growth in visibility and commercial relevance in the recent years. However, structural inequalities continue to shape the environment in which women's sport develops. UNESCO has repeatedly highlighted that women's sport receives only a small share of total global sports media coverage, which limits the ability to convert general interest into attendance. As a result, despite going in the right direction, there still is a lack of academic literature on women's basketball.

The final tournaments, in this case the Women's Basketball World Cup and the Olympic Games, naturally attract most of the attention in the media but also in the sports literature. The qualification competition that precede them have not been analysed that much, hence this study deliberately focuses on this part. Much of the existing research on spectator demand and attendance has concentrated on one-off mega-events such as World Cups or on domestic national leagues (Siewertsen et al., 2025), leaving qualification systems largely overlooked in the literature. There are several reasons why this gap is worth addressing. First, qualification competitions represent a largely understudied aspect of the sport demand literature. Most of the existing research concentrates on contexts where attendance figures are typically high and already well studied.

Second, qualification events offer a more varied and analytically rich environment. The games happen in multiple continents, are hosted in a wider range of venues, involve nations at different levels of basketball development and levels, and take place under different competitive pressure. This diversity makes them particularly well suited for identifying which match-level factors are most strongly associated with higher arena occupancy.

Lastly, understanding attendance at qualification level carries direct practical relevance, not only for FIBA in designing its competition formats, but particularly for the national federations that host these events. Knowing what drives people to

attend qualification games is valuable information for federations, especially in markets where women's basketball is still growing.

The Women's Basketball World Cup qualification system has undergone continuous change since the 2018 World Cup. For the 2018 World Cup, qualification was mostly based on Continental Cups held across regions. This marked the starting point of the current era of structural evolution in women's basketball. Following the 2018 World Cup cycle, the qualification system expanded by introducing Qualifying Tournaments as an additional stage within the pathway for the 2022 World Cup. The teams first competed in their Continental Cups before the best placed teams advanced to the newly added Qualifying Tournaments. For the 2026 edition, the number of national teams involved has further increased, with the addition of Pre-Qualifying Tournaments designed to give more nations a pathway to the final competition. In this study, the word cycle is used to express the time period from the start of the qualification pathway until the final tournament.

Alongside this World Cup qualification evolution, the Olympic Qualification pathway developed in parallel, with Olympic Qualifying Tournaments having existed since 2008 as a single tournament (Olympics). For the Tokyo 2020 cycle, the format expanded significantly to 16 teams and originally planned to be spread across four host cities, but the tournament in China had to be cancelled. Therefore Serbia hosted two groups. For the Paris 2024 cycle, the format was finally completed and included four host cities, continuing the trend of increasing geographic reach and the number of meaningful games (Olympics, 2024). While structurally they are similar to the World Cup qualification pathway, the OQTs represent a distinct and equally significant dimension of women's basketball. The lowered number of available spots adds a different kind of pressure, and the unique prestige attached to the Olympic Games creates a completely different atmosphere. These differences offer valuable points of comparison in terms of spectator interest and attendance dynamics. Including the OQTs in this analysis broadens the scope of the thesis beyond a single competition pathway. This provides a more comprehensive understanding of how attendance evolves across the full landscape of women's basketball qualification.

Despite these major developments in women’s basketball, the determinants of spectator turnout remain insufficiently explained in the sport demand literature.

Specifically, it is still unclear which match-level factors are most strongly associated with higher arena occupancy rates in qualification matches, and whether these relationships differ across tournaments and continents.

Although the evolution of the qualification system to the World Cups can be traced back to the WC18 cycle, this latter one is not included in the analysis due to an unavailability of attendance data. Same applies for the Continental Cups in 2021. They will still be included in the descriptive discussion to allow for a better understanding and contextualization of structural changes. The regression analysis will be used for the games which have sufficient match-level data.

Schreyer and Ansari (2022) similarly observe in their scoping review on stadium attendance that there is a lack of studies using data generated in women's sports and in emerging markets, both of which are central to this thesis. To quote the authors:

"Naturally, it would, for instance, be highly interesting to see whether there are significant differences between the effectiveness of certain determinants (e.g., match outcome uncertainty, player talent/stars, and the weather) across not only men's and women's sports but also across different tournament formats."

Accordingly, this thesis addresses the following research problem: **"Which match-level factors are associated with higher arena occupancy in FIBA women's basketball competitions held between 2020 and 2026, and how do these associations vary across different competition types and continental contexts?"**

The overall goal of this study is to provide empirical evidence on what drives spectator attendance in women's basketball qualification competitions, and to offer actionable insights for National Federations and FIBA in the organisation and promotion of these events. In order to address this research question, three objectives were established:

Objective 1: To review the existing literature on spectator attendance determinants in sport and identify which match-level factors are most relevant to women's basketball qualification competitions.

Objective 2: To examine whether the associations between match-level factors and arena occupancy vary across different continental contexts in FIBA women's basketball.

Objective 3: To analyse whether the type and stakes of the competition moderate the relationship between match-level factors and arena occupancy.

Women's Basketball World Cup qualification has shifted more towards event-like, centralized tournament phases. This places strong emphasis on the ability of the hosts and National Federations to convert interest into actual attendance. Understanding these dynamics contributes to the sport demand literature but also to broader discussions about the structural conditions shaping the commercial and social development of women's sport. It is important to note that this thesis does not cover the actual final tournaments, but the qualification pathways to them. It will focus on the key phases of the qualification cycles by only analysing matches from the continental cups and different qualifying competitions. Earlier qualifiers for the continental cups are excluded to keep the scope manageable but to also ensure that there is a consistent basis for comparing spectator trends across the different cycles.

For the unit of analysis, this thesis examines match attendance in women's basketball qualification-phase games over the period 2020–2026 using a match-level dataset of 333 games. A match-level approach is appropriate because attendance is realized for a specific fixture on a specific date, and several relevant determinants vary from game to game even within the same team and season. In this setting, factors such as tip-off time and day of the week, matchups, and competitive context change at the match level and can create meaningful short-run variation in demand. If attendance were aggregated to the season or team level, this within-season variation would be averaged out, making it difficult to estimate match-specific effects and increasing the risk of aggregation bias. Because this thesis uses match-level factors, the data is disaggregated, meaning that each observation corresponds to a single match during a specific competition and continent rather than an average.

This thesis is structured in 3 main parts. The first part will be the theoretical analysis which will include a literature review based on the first three objectives. In this section, the most current literature surrounding spectator determinants will be reviewed. This part is crucial in order to understand where in the literature there is consensus on the topic and where there are differing results.

The second part is dedicated to the methodological framework of this study. It will start with the presentation of the theoretical foundation for this study, based on previous literature on spectator demand. An illustration of the theoretical model has been included to provide clearer visualisation of the structure. The section then proceeds with the presentation of the different variables, each grounded in existing literature, and from which the five hypotheses are derived. The OLS regression method is then explained, alongside the different models and the diagnostic plots to assess whether the data fits the model in question.

The third and final part presents the results and discussion of this research paper. It opens with the descriptive statistics to provide an overall picture of the data, followed by the results of the diagnostic plots to determine whether the data meets the assumptions of the model. The regression results are then presented and discussed across all eight models, revealing the key determinants of arena occupancy in international women's basketball. This part is key as it addresses the central research question and offers insights that can benefit the broader sport management community, particularly within the women's sport industry. The section concludes with a discussion of the limitations of this study and recommendations for future research and practice.

1.1 Background

The path to the FIBA Women's Basketball World Cup is a long and complicated process, and the same applies to the Olympics. Over 200 National Federations have the possibility to compete and earn their place in the final tournaments organised by FIBA. Understanding the structure of these qualification systems is essential for this study, as the format of each competition, the number of teams involved, the number of games played, the host locations, and the stakes attached to each stage, directly shapes attendances at games. Without a clear understanding of how these systems work, it would be difficult to interpret why occupancy rates may differ across competition types, stakes, and continents. In order to better understand the determinants of arena occupancy across World Cup and Olympic cycles, each cycle will be presented alongside the structural changes introduced, as this study covers

a six-year longitudinal period during which the qualification landscape has seen major changes.

FIBA organises its member National Federations across five regional offices: Africa, Americas, Europe, Asia and Oceania. For competition purposes however, Asia and Oceania are combined into a single confederation, meaning that four continental competitions form the backbone of the World Cup qualification pathway. For all cycles, Continental Cups from Europe (EuroBasket), Americas (AmeriCup) and Asia/Oceania (Asia Cup Division A) were included in this analysis. While the aim was to include all the continents, competitions in Africa could not be included due to unavailable attendance data. As mentioned before in the introduction, emerging markets are understudied in the literature (Schreyer et Ansari., 2022), and this thesis will help to better understand those markets and fill this gap. The absence of data from Africa represents a limitation that future research should seek to address. The next sections will present each format and highlight the key structural differences that form the core for the attendance analysis conducted in this study.

The events analysed in this study are organised into three cycles. Each cycle either includes World Cup qualification tournaments or the Olympic qualification tournaments or both which fall within a close time period. The two routes run in parallel and share the same pool of competing nations which is reflecting the natural rhythm of the international women's basketball calendar, where both overlap and influence one another. The first cycle starts from 2020 until 2022. It includes the Olympic Qualifying Tournaments 2020 for the Tokyo Olympics and the WWC2022 Qualification Tournaments.

The second cycle covers 2023 to 2024. This one is mainly focused on the Olympic Qualification pathway for Paris 2024, as the Continental Cups 2023 actually determined which teams would qualify for the Olympic Qualifying Tournaments in 2024. For the WWC26, newly added World Cup Pre-Qualifying Tournaments 2024 were also part of this cycle.

Cycle 3 spans from 2025 to 2026 focusing on the full World Cup qualification pathway. It included the Continental Cups 2025 and the World Cup Qualifying Tournaments 2026.

Before presenting the three cycles, it is worth briefly outlining the WC2018 qualification structure, as it marks the starting point of the evolving format that this study examines. The path to the Women's World Cup 2018 hosted by Spain was based entirely on Continental Cup performance, with no additional qualifying tournaments. The best teams from each Continental Cup (2017) earned their place at the World Cup 2018.

In total, 136 games were played throughout this qualification cycle in the respective regions. As attendance data for this period was unavailable, it is not included in the analysis. It is presented here solely to provide context for the structural changes that followed in subsequent cycles.

Cycle 1 — World Cup 2022 and Olympics 2020

The first cycle covers the period between 2020 and 2022, grouping together two qualification pathways that ran in parallel during this window. The Continental Cups 2021 served as the gateway to the WC2022 Qualifying Tournaments, with the winners of those QTs earning their place at the Women's World Cup 2022. Alongside this, the Olympic Qualifying Tournaments in 2020 determined which nations would compete at the Tokyo 2020 Olympics. Both pathways drew from the same pool of competing nations within the same international calendar window, making it natural to treat them as part of the same cycle.

Olympic Qualifying Tournaments 2020

The OQTs for the Tokyo 2020 Olympics were held across three host cities: Belgrade (Serbia), Bourges (France), and Ostend (Belgium). The 16 participating teams were distributed across four groups based on the following criteria:

- FIBA Women's EuroBasket 2019: 6 highest placed teams
- FIBA Women's AmeriCup Pre-Qualifying Tournament 2019: 4 highest placed teams
- FIBA Women's Asia Pre-Qualifying Tournament 2019: 4 highest placed teams
- FIBA Women's AfroBasket Pre-Qualifying Tournament 2019: 2 highest placed teams

From these OQTs, the top 3 from each group qualified for the Olympics, awarding 12 spots in total. Japan as the host and the USA as the previous winners of WC hold automatic qualification spots which meant that only the top 2 teams from their respective groups qualified in addition. Nonetheless, both nations still participated in the tournaments normally.

World Cup Qualifying Tournaments 2022

The WWCQT2022 qualification introduced a new format with the first addition of Qualifying Tournaments. Four tournaments were held across three host cities: Belgrade (Serbia, 2 groups), Osaka (Japan) and Washington (USA).

The best teams from each Continental Cup (2021) made their way to the WC22 Qualifying Tournaments based on the following criteria:

- FIBA Women's AfroBasket 2021: 2 highest placed teams
- FIBA Women's Asia Cup 2021: 4 teams that include 3 best placed teams + host (Australia)
- FIBA Women's AmeriCup 2021: 4 highest placed teams that include 3 best placed teams + Olympic winners (USA)
- FIBA Women's EuroBasket 2021: 6 highest placed teams

The Qualifying Tournaments consisted of a total of 16 teams qualified from their respective Continental Cups (2021). The Continental Cups were also subjected to minor changes in competition format, leading to fewer games compared to prior editions due to the addition of QTs. From these QTs, the top 3 from each group (12 teams) qualified to the WC22. It is important to note that the host (Australia) and the previous Olympic (2020) tournament winner automatically had a spot in the final tournament, meaning only the top 2 teams from their respective groups qualified in addition. Nonetheless, they still participated in the QTs normally. There were some changes with the qualified countries in the World Cup due to different reasons, which is why Russia and Nigeria were replaced by Puerto Rico and Mali.

Cycle 2 — Olympics 2024 (2023–2024)

The second cycle covers the period between 2023 and 2024 and is centred on the qualification pathway for the Paris 2024 Olympics. The Continental Cups 2023 played a different role compared to earlier editions. While they did not directly contribute to World Cup qualification, 14 of the best teams that competed in the OQTs 2024 earned their place through their performance at the Continental Cups 2023. From the OQTs 2024, 12 teams then qualified for the Paris Olympics. It is worth noting that two additional teams reached the OQTs 2024 through Olympic Pre-Qualifying Tournaments. These two teams are not included in the analysis due to unavailable data.

Continental Cups 2023

The Continental Cups 2023 were held across Europe, the Americas, and Asia/Oceania. While these competitions did not serve as direct qualification events for the Women's World Cup 2026, their results determined which 14 teams would advance to the OQTs 2024, making them an integral part of the Olympic qualification pathway for Paris 2024.

Olympic Qualifying Tournaments 2024

The OQTs for the Paris 2024 Olympics were held across four host cities: Xi’an (China), Antwerp (Belgium), Sopron (Hungary) and Belém (Brazil). The 16 participating teams were distributed across four groups based on the following criteria:

- FIBA Women's AfroBasket 2023: 2 highest placed teams
- FIBA Women's EuroBasket 2023: 6 highest placed teams
- FIBA Women's Asia Cup 2023: 4 highest placed teams
- FIBA Women's AmeriCup 2023: winner
- FIBA Women's Americas Pre-Qualifying Olympic Qualifying Tournament: 2 highest placed teams through the Americas Pre-Qualifying Tournament, as the Americas required an extra filter stage. Unlike other continents, where continental championship results were sufficient to determine OQT participants directly, the Americas had more eligible

teams than available OQT places, leading FIBA to introduce a regional pre-qualifying round to determine which teams advanced

From these OQTs, the top 3 from each group qualified for the Olympics, awarding 12 spots in total. France and the USA holding automatic berths meant that only the top 2 teams from their respective groups qualified in addition. Nonetheless, both nations still participated in the tournaments normally.

Cycle 3 — World Cup 2026 (2024–2026)

The third and current cycle covers the period between 2024 and 2026 and is centred on the qualification pathway for the Women's World Cup 2026 in Germany. This cycle was the most developed one when it came to the amount of tournaments and different participating teams. The cycle included the newly introduced Pre-Qualifying Tournaments, the Continental Cups 2025, and the WC Qualifying Tournaments, all of which form a sequential qualification path toward the final tournament.

World Cup Pre-Qualifying Tournaments 2024

The WC Pre-Qualifying Tournaments were introduced as part of a broader expansion aimed at including as many National Federations as possible and providing additional meaningful games. Two tournaments were held in Rwanda and Mexico, open to teams that had not advanced from the OQTs 2024, plus the 12 next best-placed teams from the FIBA Women's Continental Cups (2023). The winners of each Pre-Qualifying Tournament earned a place in the WC2026 Qualifying Tournaments.

World Cup Qualifying Tournaments 2026

The best teams from each Continental Cup (2025) made their way to the WC26 Qualifying Tournaments based on the following criteria:

- FIBA Women's AfroBasket 2025: 4 highest placed teams
- FIBA Women's Asia Cup 2025: 6 highest placed teams
- FIBA Women's AmeriCup 2025: 6 highest placed teams

- FIBA Women's EuroBasket 2025: 8 teams that include the 5 best placed teams + host (Germany) + 2 winners of WWC Pre-Qualifying Tournaments. Winners are deducted from the number of available spots in their region.

  From these QTs, 16 teams will qualify to the WC26. The host (Germany) and the previous Continental Cup winners automatically have a spot in the final tournament. With one continental champion in each tournament, three spots will be contested in three tournaments, and two in the tournament containing Germany. Nonetheless, all teams will still participate in the tournaments normally.

2. Theoretical analysis

2.1 Overview

Sports, as we know of today, is one of the most popular forms of entertainment. At the core of it all lies the spectators investing their time, money and emotions to support their teams and enjoy the game. Sport and spectatorship are mutually reinforcing themselves: sport enables the creation of the event, while spectators bring the meaning, the demand and create the atmosphere where the athletes can shine. This has led sport clubs to evolve more and more into commercial organizations, which meant that attracting crowds on site for the games became one of the most important parts of the strategy.

Attendance no longer is a sign of strong fan and cultural presence. It is the backbone of financial sustainability, a sign that the team is doing well and is healthy which will then in return attract investors and sponsors. This is crucial for the daily operations, and especially important for teams trying to improve the product over time. From a market-based perspective, empty stands and weak turn out can be interpreted as a signal that the product has no appeal in the market. If left unsolved, this can lead to bigger problems down the line. For National Federations, ticketing revenue is one of the most important streams of revenue, therefore it should be their main priority to fill the arenas. Similarly, it is equally important for the sponsors to have higher attendance numbers as empty stands on camera will reduce their visibility and undermine the value of their investments made.

Although revenue coming from ticketing has declined in terms of significance for the clubs relative to the media rights, maximizing revenue from arena attendance still remains crucial. To achieve this, federations must understand the determinants behind the different spectator trends. However, due to a vast amount of reasons and variables behind the choice of purchasing a ticket and going to the game, understanding this effect can prove to be difficult. This is why so much attention has been dedicated to understanding and identifying the different factors and determinants behind arena attendance.

Although pricing of the tickets is recognized as a crucial determinant for driving attendances, this study will not be looking into this determinant as it is already one

of the most researched determinants in the literature and also the author was unable to gather this information. Therefore this paper will discuss ticketing prices in the literature review but will not use it as a factor in the data analysis. Other important factors found in the previous literature will be discussed but not used as determinants in the data analysis due to the availability of data and time constraints.

2.2 Spectator demand: concepts and theoretical foundation

2.2.1 Defining spectator demand

Research on attendance has significantly expanded over the period of a few decades (Chmait et al., 2019; Jane, 2016; Krumer et Goller, 2020; Schreyer & Ansari, 2022; Valenti et al., 2020). This showcases the importance in understanding the motives behind spectators' willingness to go watch games live.

In order to understand the motives to go watch sport, it is important firstly to understand the product in hand. Spectators go watch professional sport, which the core of it consists of a contest between two teams (Sutton et Parret, 1992). Then again, in sport the product is not limited to a single game but rather to a broader competition structure like a league or tournament.

Previous literature often analyses spectator demand from a broader perspective, meaning that the focus is not solely on live attendance. It can be understood also as media consumption or purchases done through different channels. This is important as sport creates not only direct demand through attending fans but also derived demand through broadcasters and sponsors. As a result, demand is relevant not only to spectators themselves, but also to a wider set of stakeholders involved in the sport industry.

Rottenberg (1956) was one of the first ones to explain the demand behind sport, in this case in baseball players' labor market. He found out that the factors associated most with attendance demand were the price of the ticket, potential substitutes, population size, competitive balance and team quality. These findings founded the uncertainty of outcome hypothesis, which implies that tighter sporting contests lead

to higher interest and more spectators at the arena. This was the start for the attendance literature. Since then, many researchers have tried to test his theories and expand them to different sports. Today there exists a massive amount of empirical literature on those and different factors potentially relating to spectator demand in different sports.

Borland and Macdonald (2003) proposed these five categories for demand factors for attendance at sporting events: consumer preferences, economic variables, quality of viewing, characteristics of sporting contests and supply capacity. The latter one is not relevant to this study as it draws on women's basketball games where there is often a surplus in capacity of the stadium. Borland and Macdonald (2003) argue that these categories provide a comprehensive framework for analysing spectator demand, as they capture both the economic and experiential determinants that influence fans' decisions to attend sporting events. Consequently, many empirical studies on sport attendance adopt variables from these categories when modelling spectator demand (Wills et al., 2023).

2.3 Determinants of attendance

In this section of the literature review, the determinants of attendance mostly found in prior research will be analysed and highlighted. This will help validate and choose the right determinants for the data analysis later in the paper.

2.3.1 Uncertainty of outcome

Most research on uncertainty of outcome is based on the Rottenberg (1956) hypothesis (UOH). It implies that spectators value games with the outcome being uncertain. Lower uncertainty is associated with lower attendance (Rascher et al., 2007). It is considered vital for the sport in order for the interest to be maintained (Frick et al., 2023). It provides the excitement towards the surprising result which makes the sport so special (Csurilla et al., 2022) and will also boost the ticketing revenues if the game is more evenly tied. Although the home team having better chances of winning should attract more spectators, having a higher uncertainty of outcome to a certain degree can be more beneficial (Rottenberg, 1956). This means that maximum uncertainty does not automatically mean fuller stadiums. Borland

and Macdonald (2003) reviewed 18 empirical studies based on match level attendance. The results were mixed, as only four of them found clear positive influence of greater uncertainty on attendance, rest were either mixed or negative influences. Forrest and Simmons (2002) also did not find any significant relationship between match attendance and uncertainty of outcome.

There have been many different ways authors have measured uncertainty. The logarithm of the differences between league positions or official power rankings have been used many times. Cairn (1990) argues that although uncertainty of outcome is a very important factor, sometimes it can be overlooked during games. According to Cairns, a majority of the studies using uncertainty of outcome as a variable ignore factors like home advantage, performance of the team or current form. This makes it harder to distinguish individually the effects of each variable on the actual uncertainty.

Betting predictions has been one of the main approaches to measure the probability of winning for the teams. The reason why this approach is so popular is because the prediction includes all the variables: current form, injuries, home advantage etc. This makes it a great tool to be used in order to assess the uncertainty of outcome for the game.

It is believed that the higher the uncertainty of outcome, the more spectators will want to come watch the game. This is not always the case, as Buraimo (2008) showcased this with the study on the English Premier League. Higher uncertainty of outcome meant a lower gate attendance. According to the author, this could have been due to the home fans wanting an easier opponent to win at their own stadium, making it a more entertaining match rather than the game ending in a tie or a loss. Another aspect found that the fans preferred to come watch a game with either a very high probability of winning or losing at home. This is due to the rare possibility of winning against a superior team, in which the fans want to be present in case it happens.

For Borland and Macdonald (2003), the match-level uncertainty of outcome is weak. They argue that much of the previous literature shows mixed results in terms of attendance. Some studies find that having a winning probability of over two-thirds would have a negative effect on attendance. A majority of them find no

significant relation or, contradictory to the previous, that attendance is increased when the home team has a higher chance of winning.

Another important aspect is season uncertainty. What this implies is that during certain periods, the uncertainty surrounding the team that will qualify to European competition for example will play an important role in the attendances. A study found significant results when it was uncertain which teams would qualify for the better competitions or play-offs during the season (Besters et al., 2019). Similar results were found when it was about the teams that would face relegation to the lower division for the next season. This seems to imply that uncertainty related to changes in the competition for next season would have a bigger importance for the spectators rather than just on one single game.

2.3.2 Competitive balance

Competitive balance is crucial for sport leagues to maintain interest and attendance numbers throughout the season. However, previous literature shows that there is no single understanding on what it implies or how it should be measured (Bognar et al., 2024). It can be understood as a structure where there are relatively equal playing strengths between the different members (Forrest et Simmons., 2002), or simply as the uncertainty of who will ultimately win the competition. When the same team constantly wins, with no variation of champions, the league becomes too predictable and balance is considered poor (Rascher et al., 2007).

This is reflected in the different mechanisms leagues around the world have adopted to promote it. In North American sports, leagues employ hard or soft salary caps to regulate the spending of the clubs, whereby they either cannot exceed the spending limit or face financial penalties for doing so. In Spanish and English football, half of the television rights revenues are shared equally between clubs, while the remaining half is distributed based on sporting merit. In the National Football League (NFL), revenues from broadcasting are distributed in roughly equal shares among all teams. These contrasting approaches showcase that there is no single consensus on competitive balance, but rather everyone understands it differently and adopts a system based on the league's structure and culture.

Another interesting point was analysed in a study (Frick et al., 2023) about the effects of revenue earned through competitions on domestic league competitive balance. With the rise of broadcasting and commercial rights, teams will earn more revenues and therefore will have more purchasing power for domestic leagues. The results showed that participation and the monetary returns did not necessarily lead to an increase in competitive imbalance. Factors that contribute more to it are the revenue-sharing mechanisms and promotion/relegation system that play a more critical role in determining the competitive balance of the league.

2.3.3 Team quality

Team quality is one of the main determinants for attendance. The quality of the game lies within the teams competing against each other. As the teams always change, it is important to understand what constitutes the quality of the product for the spectators, what makes them want to come see the two teams.

A study found that team characteristics, in particular the quality of teams and the cumulative surprise, played an important role in determining the attendances (Besters et al., 2019). More specifically, the quality of the teams based on the bookmakers odds, which in this study was defined as the expected points in the previous 34 games. These odds are a great way to determine team quality, as they include all the aspects that determine the quality of the team at the current moment. The authors argue that it is not correct to assume the team's quality based on one single match. Therefore, the use of odds from 34 previous games will include for example home and away games, stronger and weaker opponents, meaning that there won't be any biases towards one way. Another important factor that was taken into account was the cumulative surprise, which implies that a team may actually perform better than expected measured with the bookmaker's odds. This was included with a variable that was calculated with the sum of the differences between actual number of points obtained and expected number of points based on the bookmakers odds.

2.3.4 Superstar effect

Superstars have always been a key reason for the spectators to attend the games. Superstar is a status reached when you possess outstanding talent (Rosen, 1981) but also another important aspect to the status is the popularity (Adler, 1985). The star players can alone have the effect of bringing more gate revenues both by their talent on the field but also by their popularity (Mullin et al., 2002). This is very evident in team based sports such as basketball with the case of Michael Jordan (Rascher et al., 2007), widely regarded as the best basketball player of all time, being one of the most important drivers of spectators in the NBA during the season 2001/2002. This is even more evident with solo sports such as tennis. Chmait et al. (2019) found that having super star players had a strong positive impact on ticketing sales during Australian Open in 2015 and 2018. The distinction between nationwide superstars and local superstars is also very evident. While nationwide super star status reaches far beyond their home country, local ones' attraction typically only stays within the country (Benz et al., 2009). In women's basketball, there is wide debate whether there are any players truly with a superstar status. According to Gnagey et al. (2026), Caitlin Clark might be the first true superstar player in women's basketball. This statement is backed up with the fact that she generates additionally 7900 and 6400 fans for home and away games. This effect surpasses prior estimates for male athletes in basketball, such as Michael Jordan (Rascher et al., 2007).

2.3.5 Venue characteristics

An important gap to fill is to understand the role and effect of venue characteristics to drive more attendance. Quansah (2024) emphasizes the importance of emerging markets in his research and that the quality of the venues plays an important role in attracting more attendance.

Recent research highlights just how important different venue characteristics are in shaping spectator's experiences. Venues with smart technologies and interactive design features enhance spectator satisfaction. This can influence positively their choices in attending the event (Zhang et al., 2025). Additionally, different attributes like comfortable seats, visibility and lighting are associated with higher spectator outcomes across live events. These findings indicate that venue standards and

quality are crucial components in understanding spectator behavior in sport events. Another important venue characteristic is the “honeymoon effect” or the “novelty effect”. The honeymoon effect implies that the venues see an increase in attendance numbers when they are new or renovated, but with time this effect wears off and attendance trends decrease back to basic figures (McEvoy, et al., 2005) . As for the latter one, it implies that the actual arenas themselves are the reason why spectators go there. An interesting study was done by Coates and Humphreys (2003) where they analyzed the effects on spectator attendances when professional sport clubs moved to a new venue between the years of 1969 and 2001. Their findings suggested that there was a clear increase in attendance, but that attendance varied between different sporting disciplines. They also mentioned the honeymoon effect and the wearing off which was evident in their research.

2.3.6 Scheduling of the games

The scheduling of the match plays has been identified as an important determinant of spectator attendance. Weekends and holidays have been found to be the best days to host games in terms of attendance (Forrest et Simmons, 2002).

A study by Krumer and Goller (2020) analyzed over 10 000 football games to determine the effects of playing on non-frequent days, meaning days when there are usually no games played. This could be understood as weekday and weekend games. Across the games, there could be a significant decrease in attendance during non-frequent days. The study also found out that weaker teams often received fewer home games on non-frequent matchdays, while stronger teams played away more often on those days.

Buraimo (2008) showcases in his paper that scheduling games during public holidays boosts attendances if the match in question is not televised. This indicates that, in this case English football, is consumed more during leisure time. Games during the week also showed a decrease in attendance, which was in line with Krumer’s study previously.

Scheduling is also a relevant factor in the context of international tournaments. Siewertsen et al. (2025) found that at the 2023 FIBA Basketball World Cup, the timing of when schedules and ticketing information were made available to the public had a direct impact on attendance. When fans find out too late, there is simply

not enough time to arrange travel, accommodation and time off work. This is a particular problem for National Federations in smaller or developing markets, where information often takes longer to reach fans through local channels. Early and clear communication around scheduling is therefore not just a logistical matter but something that can directly affect how many people walk through the door on matchday.

2.3.7 Ticket prices

The emphasis on maximising arena attendance has become one of the key aspects of sport. Having fuller arenas means more gate revenues but also it plays a vital role in the atmosphere inside, for the visibility of sponsors, and looks better for the cameras which in turn makes it look successful. Ticketing price is one of the main factors contributing to attendance. Much of the prior research has been revolving around this determinant (Siewertsen et al., 2025, Choi et al., 2025). In the economic theory, the market demand is a sum of individual demands for a given good. The *law of demand* says that as the price of a good increases, quantity demanded decreases, and vice versa (Mazurek et al., 2019). In sport, this implies that that prices of tickets shape directly the demand. That is why understanding this dynamic is crucial for teams wanting to optimize both ticketing revenues and arena occupancy. The variable of ticket price has often been used to examine how other factors shape pricing decisions. Much of the prior research confirms the basics of the law of demand, finding that higher ticket prices tend to reduce attendance (Choi et al., 2025). That said, results can vary depending on the league and market context. A regression analysis of game occupancy at the FIBA World Cup 2023 co-hosted between Japan, Indonesia and the Philippines found that ticket price had no significant effect on attendance in Japan and Indonesia, meaning that price changes in those markets neither pushed fans away nor drew them in. In the Philippines, a small positive relationship was found, as games already expected to draw bigger crowds were priced higher, rather than higher prices themselves driving more attendance (Siewertsen et al., 2025). These findings suggest that pricing behaviour depends on the maturity of the market and on the culture of the sport in question.

A more recent factor has been found in the literature, which is the dynamic pricing of the tickets. Historically speaking, sport organizations have used fixed prices or

location-based pricing strategies, but due to increasing costs this has driven a shift towards dynamic pricing. In 2009, the San Francisco Giants became the first professional sports team to experiment with dynamic ticket pricing (Drayer et al., 2012). This meant that ticket prices fluctuated based on different factors like team performance, player performance and weather. In 2010, the same team saw an increase of 7 percentage points in ticket revenue, showcasing a positive change due to the dynamic strategy.

2.4 Spectator attendances in women's sport

2.4.1 General overview

Women's sport has seen exponential growth over the recent years. This can be seen in multiple ways: increased participation, global media reach, financial investments, gender equality etc. The Summer Olympic Games Paris 2024 reached a milestone having a full parity between men and women athletes (Olympics, 2024), and the Winter Olympic Games Milano Cortina 2026 continued on this journey as the most gender-balanced Winter Olympics until today (Olympics, 2026).

Global media was taken to another level during major tournaments such as the FIBA World Cup 2022 which reached an unprecedented amount of broadcast audiences of 216 million globally (FIBA, 2022). FIFA World Cup 2023 also made big impacts as it had a following of nearly 2 billion people worldwide (FIFA, 2023), reflecting a truly global change in women's sport. These are examples of the steps that women's sport has done, which can only be expected to grow even faster with this rate.

While it seems that a lot of progress has been done, the bigger picture does showcase still that there are disparities in research. A scoping review (Staley, 2025) found that no articles published in the Journal of Sports Economics focused solely on women's sport, highlighting that while women's sport has been studied in the academic literature, the focus has predominantly been within social sciences rather than sports economics. More recently, Schreyer and Ansari (2021) still noticed a lack of studies in women's sport literature. In the United States, more have been done in terms of the development of women's sport. The use of feminist themes in

marketing have been used in order to bring to light the work that has been done on the marketing side of women's football. Even though the national team of the US has seen great success globally and the leagues there have been established for over two decades, there still exist many gaps in the research of women's sport even in the United States (Henderson et al., 2019).

In English football, a study found that attendance figures for women's club level top quality football at the domestic level are inconsistent and relatively low (Valenti et al., 2020). These findings are aligned with UEFA's perspective, impacting game revenue. This highlights one of the main problems: to turn fandom into higher matchday attendances which is one of the biggest growth opportunities in women's football but also other sports.

2.4.2 Spectator determinants

Recent literature has shown that the determinants of spectator demand may not have the same effect in women's sport as in men's sport, and that these effects can also change depending on the competition format. Schreyer and Ansari (2022) highlight factors such as match outcome uncertainty, team quality, star players, and some other external conditions like weather which may influence attendance differently across different contexts. In women's sport, these differences are particularly important to study, as the spectator market is still in the midst of development and may respond differently to traditional demand factors. For example, the importance of uncertainty of outcome or team strength may depend on whether the competition follows a league format or a knockout tournament. Therefore, analysing these determinants specifically in the context of women's sport is necessary to better understand what drives attendance and how competitions can be structured to maximize spectator interest.

Only recently have studies examining the effect of ticket pricing on attendance in women's sport been published. According to a study (Popp et al., 2025), contrary to the law of demand, an increase of ticket pricing increased attendance to a certain point. This pattern follows an inverted U-shaped demand curve, whereby demand initially rises with price before declining beyond a certain threshold. Analysing women's college basketball games in the US showed exactly that beyond a price

threshold of $20, the increase of prices had a negative effect on attendance. This confirms the previous statement that while higher prices suggest higher quality and can attract more fans, there is an upper limit beyond which attendance will decrease.

An additional determinant found in the literature is the spillover effect from men's football on women's match attendance. Valenti et al. (2020) found that the recent performance of the home men's team had a significant influence on attendance at women's matches, even after controlling for club-level factors. This implies that many sport clubs operate effectively as multiproduct organisations, which relates to a broader distinction in how women's clubs are structured organisationally. Valenti (2019) identifies two predominant forms of club organisation in the European context. Firstly the notion of independent clubs, which manage a women's team on an autonomous basis. Secondly, the integrated clubs, which are linked to a larger entity or franchise whose original purpose was to run a men's team. The increasing investment of men's clubs in the women's game has contributed to the growth of the landscape of women's club football. The implication is that investment and performance on the men's side can indirectly benefit the women's team through increased spectator interest, and whether a club is independent or integrated may determine how strongly this spillover operates, as integrated clubs are better positioned to convert existing fanbases into women's match attendees.

The effects of major international tournaments have also been understood to carry the effects beyond simply the tournament itself but actually into the domestic league’s attendance numbers. With the case of the Women’s Super League in England, Valenti et al. (2020) found that England’s victory at the European Championship resulted in a noticeable rise in the attendances in the league during the next season. These findings suggest that national team success can attract more fans toward the club and also the games. Similar trends were seen after FIFA Women’s World Cups, where the huge impact of the event in terms of public interest and media coverage had a short term impact on domestic competitions. This is often referred as tournament legacy effect in the previous literature, which points out the fact that the visibility and impact created by these major competitions can have a measurable impact on the attendances in the next months to follow, rather than the “hype” and “buzz” of the event simply vanishing right after the end of the competition.

Taken together, the literature on women's sport attendance points to a picture that is still taking shape. While some traditional determinants such as team quality, outcome uncertainty and scheduling carry over from men's sport, others behave differently or are unique to the women's context, including the spillover from men's teams, organisational structure and the legacy of major tournaments. What is certain is that the women's spectator market operates under its own set of conditions and needs to be analysed from a different perspective from men's sport research. Given that much of the existing work remains concentrated on football and North American basketball, there is still a need for empirical studies covering a wider range of competitions and contexts. This study aims to contribute to that gap by analysing attendance determinants specifically within women's sport.

In summary, the prior literature has identified multiple determinants behind arena attendance, including outcome uncertainty, competitive balance, team quality, star players, venue characteristics, scheduling and ticket pricing. However, most of this research has been mainly focusing on men's sport, particularly in football, in North American Leagues or European domestic leagues in already well established sporting markets. Women's sport on the other hand, has received less attention when it comes to research on arena attendance. International tournament contexts, emerging markets and the specific dynamics of women's basketball remain underexplored. This study aims to contribute to filling this gap by examining attendance determinants across three FIBA Women's Basketball qualification competitions, covering multiple continents and competition formats. In doing so, it seeks to shed light on what drives spectator attendance in a context that the existing literature has largely overlooked.

3. Methodology

3.1 Theoretical framework

This study's theoretical framework is based on the body of research on spectator demand in sport economics and sport management. Rottenberg (1956) laid the early theoretical groundwork by proposing that a number of factors, such as ticket prices, team quality, population size, and competitive balance, affect attendance at sporting events. The uncertainty of outcome hypothesis (UOH), which implies that spectators are more drawn to games where the outcome is uncertain, was developed as a result of his work.

These concepts have been extended to other sports and situations by later studies, which have found a wide range of factors that could affect spectators' decision to attend live events. In particular, Borland and Macdonald (2003) proposed a comprehensive framework that groups attendance determinants into several categories, including consumer preferences, economic variables, quality of viewing, characteristics of sporting contests and supply capacity. This framework has since been widely used in the analysis of spectator demand, as it captures both economic and contextual factors that shape spectators' attendance decisions.

Building on these theoretical perspectives, later empirical studies have examined a variety of specific determinants of spectator demand, including competitive balance, team quality, the presence of superstars, venue characteristics and match scheduling. However, not all determinants identified in the literature are applicable to the present study. Due to data availability and the specific context of international women's basketball qualification tournaments, only a subset of these determinants is included in the empirical analysis. The variables selected for this study are therefore derived from the broader spectator demand literature while being adapted to the characteristics of the available dataset.

What is important to note from the recent research is that the determinants of spectator demand may affect differently in women's sport compared to men's competitions, as the spectator market for women is still on the course of development and responds differently to traditional demand factors. The theoretical framework guiding this study links the determinants identified in previous literature

with the empirical analysis of arena occupancy in international women's basketball qualification tournaments.

3.2 Theoretical model

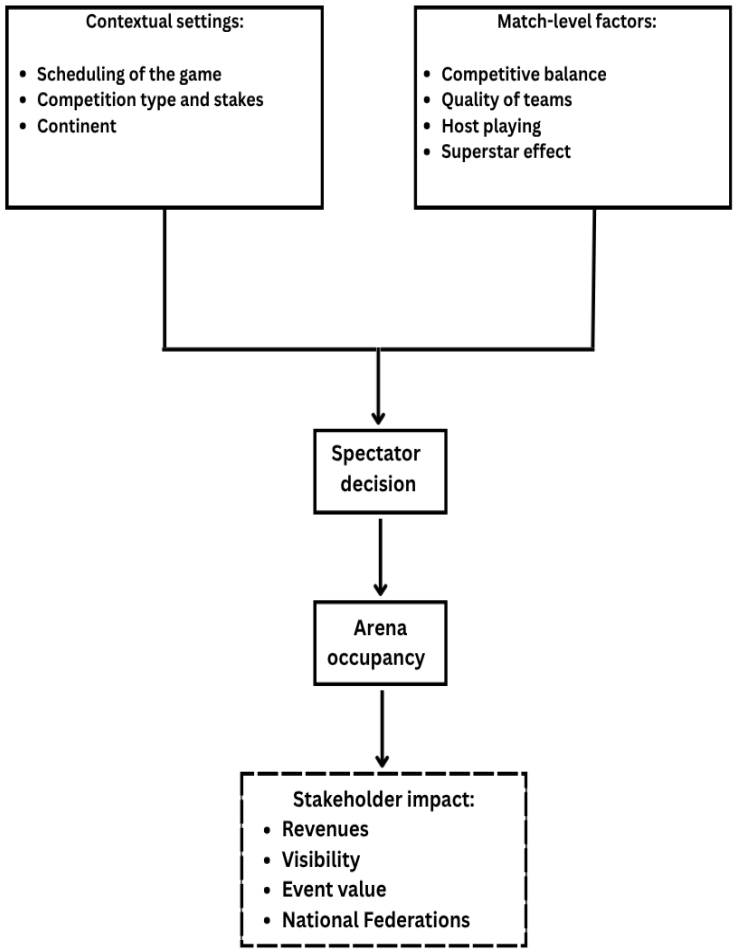

Fig. 1 Conceptual model of spectator attendance determinants

The conceptual model (figure 1) will be used as a guidance for the empirical analysis. It is based on the previous spectator attendance literature, drawing determinants from multiple papers. Attendance is assumed to be influenced by a set of different determinants. Firstly, we have the contextual determinants which refer to external factors surrounding the game or the event. These include the scheduling of the event (weekday or weekend, early or late tip-off), competition phase (Continental Cup/ Qualifying tournament), continent/region and venue quality (modern or not). Secondly, we have the match-level factors that are the main determinants used in previous literature. These include determinants such as

competitive balance, quality of teams, presence of host team and having a superstar player.

3.3 Research hypotheses

Building on the existing literature on attendance determinants and taking into account the specific context of FIBA Women's international basketball competitions, the following hypotheses were developed:

H1: A lower competitive balance value will be positively associated with arena occupancy, as smaller ranking gaps indicate more closely contested matches which are expected to generate greater spectator interest.

H2: Lower team quality values will be positively associated with arena occupancy, as matches featuring higher ranked nations (indicated by lower ranking values) are expected to attract larger crowds than those involving weaker opponents.

H3: The presence of star players is not expected to have a significant effect on arena occupancy, as women's basketball players generally have lower levels of global recognition.

H4: Matches involving the host nation will be positively associated with higher arena occupancy, as local support and national pride are expected to drive greater attendance.

H5: Scheduling is expected to have a significant effect on arena occupancy, with matches played on weekdays and during early tip-off times anticipated to attract lower crowds compared to weekend and evening tip-off games.

3.4 Data description

The data used in this thesis is drawn from FIBA Map, an internal platform used by FIBA to manage competition logistics and operational details. The platform provides various information such as attendances, specific information on venues, game schedules and player information. This study looks at a sample of 333 games

over a period of 6 years from 2020 until 2026. Data was drawn from these competitions:

Tournament	Continents	Sample size
Olympic qualifying Tournaments 2020	**Europe**	**N=24**
World Cup Qualifying Tournaments 2022	**Europe, Asia and Americas**	**N=20**
Continental Cups 2023	**Asia, Americas and Europe**	**N=73**
World Cup Pre-Qualifying Tournament 2024	**Americas and Africa**	**N=30**
Olympic Qualifying Tournaments 2024	**Asia, Americas and Europe**	**N=24**
Continental Cups 2025	**Asia, Americas and Europe.**	**N= 88**
World Cup Qualifying Tournaments 2026	**Asia, Americas and Europe.**	**N=60**

It is important to note that the dataset presents some limitations in terms of data completeness. As mentioned previously, for certain tournaments attendance figures were unavailable. Therefore they could not be included in the analysis. Additionally, for the AmeriCup 2023 and Asia Cup 2023, tickets were sold in two separate sessions rather than on a per-game basis: one session covering the two early tip-off games and another covering the two late tip-off games. As a result, only aggregated attendance figures were available for each session, and the average was calculated and used as a proxy for individual game attendance. While this approach introduces a degree of approximation, these tournaments were retained in the dataset for two reasons. First, excluding them entirely would reduce the geographic and competitive coverage of the analysis, particularly given that this study aims to capture attendance dynamics across multiple continents and competition formats. Second, the aggregated figures still provide meaningful information about the general attendance level at those events, even if game-level variation cannot be observed. Where relevant, the use of aggregated data is acknowledged as a limitation in the interpretation of results.

3.5 Model specification

3.5.1 Dependent and independent variables

The determinant of arena occupancy in percentages was chosen as the dependent variable as it has been used in previous studies (Siewertsen et al., 2025). Having raw attendance data alone would not allow for proper comparison across the different venues, as they vary considerably from continent to continent and competition to competition. By expressing attendance as a percentage of capacity, the dependent variable is standardized across venues of varying sizes which makes cross-continental and cross-competition comparisons more feasible. This is particularly important in this study as it spans over multiple continents and different competitions. The study therefore captures how well each competition fills the available capacity in the arena, which is arguably a better indicator of spectator demand in a heterogeneous dataset such as this one.

Competitive balance was chosen as one of the match-level factors to be analysed as it has been previously identified in various studies (Schreyer et Ansari., 2022). This determinant was calculated as the absolute difference between the two competing teams' FIBA world rankings at the time of the competition. A lower value therefore indicates a more evenly matched contest, while a higher value reflects a greater disparity in team level. As the raw difference in rankings can produce a skewed distribution due to the wide range of ranking values across competing nations, a logarithmic transformation was applied to this variable. This helped approximate a more normal distribution, reduced the influence of extreme values, and improves the interpretability of the resulting coefficients. It should be noted however that while FIBA rankings provide a consistent and objective measure of team level with regular updates, they may not fully capture the true competitive balance of every individual match.

Team quality was included as an independent variable as stronger teams have consistently been associated with higher attendance in the sport demand literature (Besters et al., 2019). This variable was calculated as the mean of the two competing teams' FIBA world rankings at the time of the competition. A lower value therefore indicates a higher overall quality match, as a lower ranking number reflects a stronger team in the FIBA system. As with competitive balance, a logarithmic transformation was applied to this variable to reduce skewness and the influence of extreme ranking values, resulting in a more normally distributed variable and more interpretable coefficients. It is expected that matches featuring higher ranked teams will be associated with greater arena occupancy, as spectators are more likely to attend games involving stronger and more recognisable nations.

The presence of the host nation's team was included as a binary independent variable, as home advantage and local support have been widely recognised as significant drivers of attendance in the literature (Siewertsen et al., 2025). This variable takes a value of 1 when the host country's national team is participating in the game and 0 otherwise. It is expected that matches involving the host nation will be associated with higher arena occupancy, as local fans are more likely to attend games featuring their own national team, driven by national pride and geographic proximity.

The scheduling of a game on a weekday versus a weekend was included as a binary independent variable, as the timing of a match relative to working hours has been identified as a factor affecting spectator attendance in previous studies (Krumer et Goller., 2020). This variable takes a value of 1 when the game is played on a weekday and 0 when played on a weekend. It is expected that weekday games will be associated with lower arena occupancy compared to weekend games, as working and school commitments reduce the ability of potential spectators to attend matches during the week.

The tip off time of the game was included as a binary independent variable to capture the effect of scheduling within a given day on spectator attendance. This variable takes a value of 1 when the game starts before 19:00 local time and 0 otherwise. It is expected that early tip off games will be associated with lower arena occupancy than evening games, as matches starting before 19:00 are less accessible for spectators who are unable to attend during working or school hours. This variable complements the weekday game variable by capturing intra-day scheduling effects independently of the day of the week. This time was also chosen based on all the games in the data set.

Lastly, Superstar presence was included as a binary independent variable. Previous literature has identified the presence of high-profile players, in this case called superstar players, as a significant driver of attendance in the sport demand literature. This is especially the case in men's sport, with studies on NBA players demonstrating significant impact on increasing arena occupancy, most notably in the case of Michael Jordan during his playing career (Rascher et al., 2007). The question of whether a comparable effect exists in women's basketball is however less straightforward. The WNBA has grown considerably in recent years in terms of both viewership and attendance, with the league breaking its single-season attendance record in 2025 by surpassing 2.5 million fans across 226 games, exceeding the previous record of approximately 2.4 million set in 2002 with a larger number of teams and more games played (Reuters, 2025). This showcases the power of the WNBA for women's basketball globally. The use of WNBA status as a proxy for superstar presence is further justified by the fact that the league attracts the best players from across the world. Players competing at WNBA level can therefore reasonably be considered among the most recognisable and high-profile individuals in women's basketball worldwide.

However, whether the presence of a single WNBA-level player in a national team squad is sufficient to meaningfully influence attendance at an international qualification game remains uncertain, particularly given that qualification events receive considerably less media coverage and public attention than domestic league games. In this study, a game is considered to feature superstar presence when at least one active WNBA player is present in either competing team at the time of the competition, taking a value of 1 and 0 otherwise. Given the specific context of women's international qualification basketball and the comparatively lower levels of global recognition of players in the women's game, the effect of superstar presence is not expected to be as strong or as consistent as that observed in men's basketball literature.

3.5.2 OLS regression model

The model used for studying the effects of arena occupancy is the Ordinary Least Squares (OLS) regression model. There is a broad consensus in the prior literature on it being the most efficient way of studying the impacts of different determinants on arena occupancy, with one study having found over 40 cases of OLS being used for stadium attendance analysis (Villar et Guerrero., 2009). By using the OLS regression analysis, the study seeks to find out which variables have a significant effect on arena occupancy.

In order to analyse the data, the study employs an OLS linear regression model with arena occupancy expressed as a percentage as the dependent variable. The independent variables include competitive balance, team quality, presence of superstar players, the presence of the host country playing, weekday games and tip-off time (fig. 2). The analysis was conducted in three stages, resulting in a total of eight regression models.

Variable	Description	Measure	Source
Attendance	Number of spectators at the game	Attendance	FIBA Map
Arena capacity	Number of spectators the arena can host for basketball games	Arena capacity for basketball games	FIBA Map
Arena occupancy %	Percentage of arena occupancy	Attendance x capacity	
Weekday game	Whether the game is played between monday and friday.	Dummy: 1= weekday 0=weekend	Fiba.basketball
Early tip-off(<19.00)	Whether the game is played before 19:00 local time	Dummy: 1=before 19:00 0=after 19:00	Fiba.basketball
Host playing	Whether the host of the competition is playing	Dummy: 1= host country is playing 0= neutral venue	Fiba.basketball
Team quality	The overall quality of the two competing teams	Mean of the two teams FIBA ranking at the time	https://www.fiba.basketball/en/ranking/women
Competitive balance	The difference in level between the two competing teams	Absolute difference between teams' FIBA ranking at the time.	https://www.fiba.basketball/en/ranking/women
Superstar presence	Presence of at least one player from WNBA	Dummy: 1= at least one WNBA player 0= none	Fiba.basketball
Continental Cup	Whether the game is played at a Continental Cup	Dummy: 1= game belongs to respective competition type 0= other competition	Fiba.basketball
WC Qualifying tournament	Whether the game is played at a WC Qualifying tournament	Dummy: 1= game belongs to respective competition type 0= other competition	Fiba.basketball
Pre-qualifiers	Whether the game is played at a Pre-qualifiers	Dummy: 1= game belongs to respective competition type 0= other competition	Fiba.basketball
Olympic Qualifying Tournament	Whether the game is played at a Olympic Qualifying Tournament	Dummy: 1= game belongs to respective competition type 0= other competition	Fiba.basketball
Americas	Whether the game is played in the continent of Americas	Dummy: 1= game is played in the respective continent 0= other continent	Fiba.basketball
Asia	Whether the game is played in the continent of Asia	Dummy: 1= game is played in the respective continent 0= other continent	Fiba.basketball
Europe	Whether the game is played in the continent of Europe	Dummy: 1= game is played in the respective continent 0= other continent	Fiba.basketball
Africa	Whether the game is played in the continent of Africa	Dummy: 1= game is played in the respective continent 0= other continent	Fiba.basketball

Fig. 2 Description of variables

It should be noted that arena occupancy is a bounded percentage variable, constrained between 0 and 100, which technically violates the assumption of an unbounded dependent variable in OLS regression. While OLS is used here as a pragmatic linear approximation, consistent with its widespread use in the prior

attendance literature (Villar et Guerrero., 2009), the skewed nature of the dependent variable is acknowledged as a limitation. Future research should consider fractional response models or beta regression as more appropriate alternatives to verify whether the direction and significance of the main predictors remain stable.

Model 1 — Pooled regression

The first model consists of a pooled OLS regression estimated on the full dataset of 330 games. 3 games had unavailable data, which is why the number is lower than originally. The model includes the main explanatory variables related to team quality, competitive balance, superstar presence, host nation participation, and scheduling factors. The pooled regression provides an overall picture of the match-level determinants of arena occupancy across all competitions and continents, serving as the baseline model against which the subsequent models are compared. The pooled regression equation is specified as follows:

$$\mathbf{Occupancy}_{ij} = \beta_0 + \beta_1 \mathbf{TeamQuality}_{ij} + \beta_2 \ln(\mathbf{CompBalance}_{ij}) + \beta_3 \mathbf{Superstar}_{ij} + \beta_4 \mathbf{Host}_{ij} + \beta_5 \mathbf{Weekday}_{ij} + \beta_6 \mathbf{EarlyTipOff}_{ij} + \varepsilon_{ij}$$

Models 2 to 4 — Region-specific regressions

The second stage consists of three region-specific OLS regressions estimated separately for Europe, the Americas, and Asia. Each model is estimated on a subsample of the full dataset, restricted to games played within the respective continent. This results in three independent regression samples. The region-specific regression equation is specified as follows:

$$\mathbf{Occupancy}_{ij} = \beta_0 + \beta_1\ \mathbf{TeamQuality}_{ij} + \beta_2\ \ln(\mathbf{CompBalance}_{ij}) + \beta_3\ \mathbf{Superstar}_{ij} + \beta_4\ \mathbf{Host}_{ij} + \beta_5\ \mathbf{Weekday}_{ij} + \beta_6\ \mathbf{EarlyTipOff}_{ij} + \varepsilon_{ij}$$

This equation is estimated three times, once for each region, allowing for an examination of whether the associations between match-level factors and arena occupancy differ across continents, directly addressing one of the central dimensions of the research question.

Models 5 to 8 — Competition-specific regressions

The third stage consists of four competition-specific OLS regressions estimated separately for Continental Cups, Qualifying Tournaments, Olympic Qualifying

Tournaments and Pre-qualifying Tournaments. The competition-specific regression equation is specified as follows:

$$\mathbf{Occupancy_{ij} = \beta_0 + \beta_1 TeamQuality_{ij} + \beta_2 ln(CompBalance_{ij}) + \beta_3 Superstar_{ij} + \beta_4 Host_{ij} + \beta_5 Weekday_{ij} + \beta_6 EarlyTipOff_{ij} + \varepsilon_{ij}}$$

This equation is estimated four times, once for each competition type. It should be noted that the Olympic Qualifying Tournament and Pre-qualifying Tournament models are estimated on relatively small samples of 47 and 29 games respectively. While the general rule of thumb of ten observations per variable (Harrell et al., 1996) suggests a minimum of 60 observations for a six-variable model, smaller sample sizes have been used in previous sport demand studies and the results of these models should therefore be interpreted with appropriate caution. This limitation is further acknowledged in the limitations section of this study. Estimating competition-specific models allows for an examination of whether the determinants of arena occupancy operate differently across competition formats, capturing the variation in stakes, structure and competitive context that distinguishes each competition type.

3.6 Diagnostic plots explanations

3.6.1 Linearity and Homoscedasticity

Linearity assumes that the dependent variable, in this case the arena occupancy, and the independent variables have a linear relationship. If this assumption is violated, the model will misestimate the dependent variable and will provide unreliable data. As for homoscedasticity, it is necessary for the variance of the residuals to remain constant across all predicted values. If violated, it can affect the validity of the results.

A standardised residual plot (ZRESID vs ZPRED) was used to assess the two key assumptions for the OLS model. This will allow both to be evaluated visually.

3.6.2 Multicollinearity

Multicollinearity can happen when multiple variables are highly correlated with each other. This can make it harder to analyse and isolate the individual effect of each variable on arena occupancy and therefore produce unstable coefficient estimates. According to Hair et al. (2019), a common cut-off threshold is a tolerance value of VIF 10. It does depend on the sample size, but with over 300 observations and 6 variables, this assumption will not be problematic for this thesis.

3.6.3 Normality of residuals

The assumption for the normality of residuals requires that they are normally distributed. This is necessary in order to validate the significance of the tests. The normality of residuals was evaluated using a Normal Q-Q plot. It observes quantiles of the residuals against the expected distribution.

3.6.4 Log transformation of competitive balance variable

Before the analysis, the distribution of each variable was examined. The competitive balance variable, which is measured as the absolute difference in FIBA rankings, was found to be significantly skewed due to some occasional extreme ranking gaps between the teams. To tackle this issue, a logarithmic transformation (LN + 1) was applied. This change also makes sense theoretically, as it reflects the assumption of diminishing fan sensitivity to competitive imbalance. What this means is that differences with competitive balance matter more to fans when the games are already closely matched compared to when they have a clear winner.

4. Results

This chapter presents the empirical findings of the study. Descriptive statistics are first presented to get a general overview of the key characteristics. This is then followed by a series of OLS diagnostic tests conducted to verify that the underlying assumptions were satisfied. The regression results are then reported and interpreted in relation to the five research hypotheses.

A few methodological notes are worth mentioning before proceeding further. Eight sub-models were estimated across the analysis, which increases the probability of finding significant results by chance. Only findings that replicate consistently across models are given more weight than isolated results from individual sub-samples. Where continental and competition-specific sub-models are presented, differences in coefficient size across models should be interpreted descriptively rather than as statistically confirmed differences, as formal testing would require interaction terms in the pooled model. Additionally, several sub-models operate on smaller sample sizes, which reduces statistical power and warrants additional caution in interpretation. All data analysis was conducted using IBM SPSS Statistics.

4.1 Descriptive statistics

The table of descriptive statistics (fig. 3) shows a general overview of the dataset. It includes 333 games, of which 330 are valid, across 6 different tournaments in 4 different continents. As can be seen, the dependent variable of arena occupancy rate shows a mean of 25.14% with a standard deviation of 27.32%. This implies that on average only roughly a quarter of the venues' available capacity was filled across all the games from the dataset.

This can further be inferred with the wide range from 0.22% to 99.60% and the positive skewness of 1.150 which suggests considerable variation in occupancy rates. This implies that most games attract relatively low crowds reflected in the mean attendance figure of 1783 per game across all venues with an average capacity of 7909 seats. These descriptive results raise a strategic question for event

organisers: whether venue capacity should be more closely matched to realistic demand forecasts in order to improve atmosphere, broadcast presentation and perceived event quality.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Attendance	330	15	13700	1783.88	2367.405	2.220	.134
Capacity	333	2900	18500	7908.73	4078.009	.476	.134
Arena occupancy %	330	0.22%	99.60%	25.1420%	27.32441%	1.150	.134
Team quality	333	2.50	62.50	19.1141	10.83288	.952	.134
Competitive balance	333	1	4761	440.55	639.018	2.643	.134
Host playing	333	0	1	.28	.451	.972	.134
Superstar presence (WNBA)	333	0	1	.27	.446	1.022	.134
Weekday game	333	0	1	.59	.492	-.374	.134
Early tip-off time	333	0	1	.69	.464	-.814	.134
Valid N (listwise)	330						

Fig. 3 Table of descriptive statistics for the pooled data

Regarding the independent variables, the mean for team rankings was 19.11, indicating a relatively high level of competition, as lower FIBA ranking value corresponds to a stronger nation. However, the range from 2.5 to 62.5 showcases the diversity of the levels of the teams in the different competitions. This variation is expected, as the dataset includes both early-stage qualification tournaments and final-stage competitions involving some of the world's highest-ranked national teams. Competitive balance was heavily skewed, with a value of 2.643. As the acceptable threshold for skewness is +1 (Hair et al., 2019), the independent variable of competitive balance was transformed to a natural log.

The binary variables showcased that 28% of the games featured the host nation and that similarly 27% had a roster with at least one WNBA player. The majority of the games were played during the weekdays (59%) and during early tip-off times, meaning before 19.00 local time. This reflects the typical scheduling structures that FIBA have for international competitions. Most of the games will be played during the week but the finals are almost always during the weekend.

4.2 Diagnostic plots results

4.2.1 Linearity and Homoscedasticity

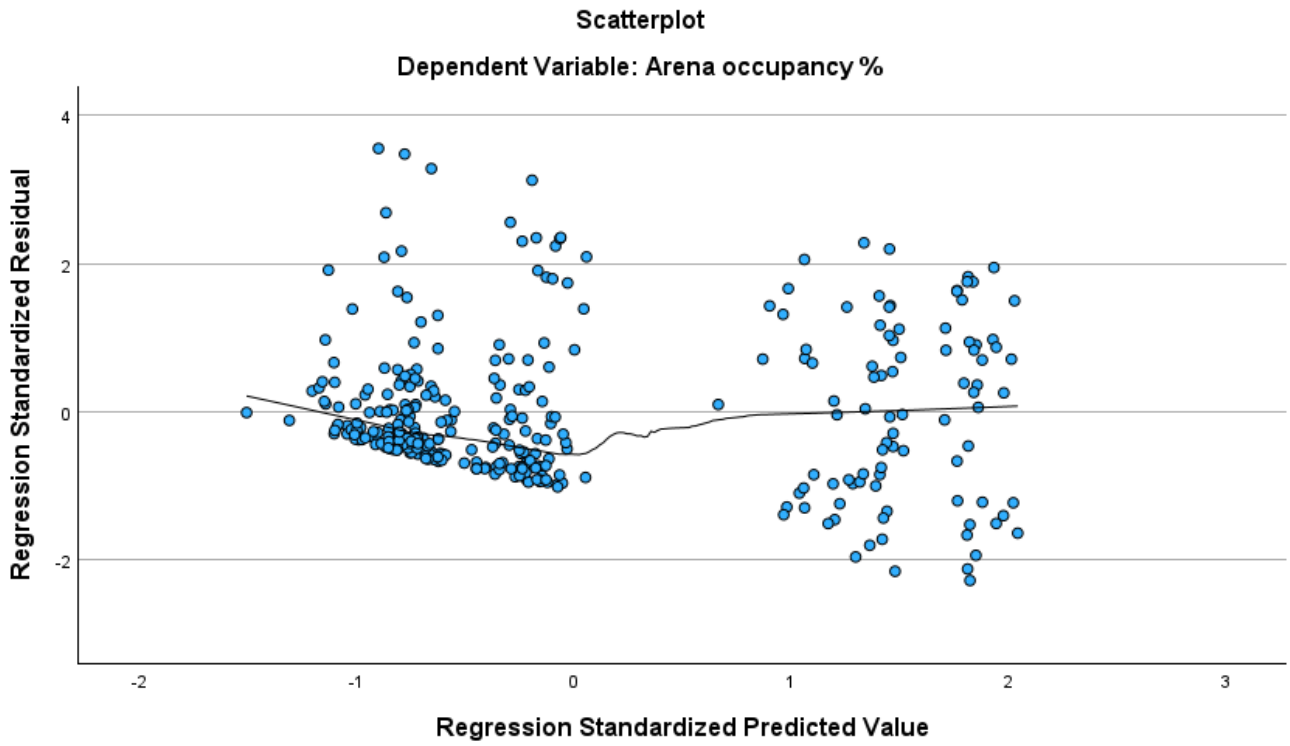

Fig. 4 Scatterplot with all variables

Figure 4 presents the standardised residual plot for the full model including all variables. Two clusters are visible in the plot, which is expected when binary predictors are present, as they naturally produce grouped fitted values. This clustering should not be interpreted as a violation of linearity. The more important question is whether residual variance appears systematically larger or smaller across fitted values. Visually the plot suggests the presence of mild heteroscedasticity, as

residual spread is not entirely constant across the range of fitted values. This is acknowledged as a limitation of the model.

4.2.2 Multicollinearity

The Variance Inflation Factor (VIF) values for all independent variables are reported in figure 5. All values fall below the threshold of 10 established by Hair et al. (2019), ranging from 1.038 to 1.480, indicating that the independent variables are not strongly correlated with one another. Multicollinearity is therefore not considered a concern in this model and the assumption is fully satisfied.

4.2.3 Normality of residuals

Variables	VIF
Team Quality	1.463
LN Comp Balance	1.289
Weekday game	1.038
Tip Off time	1.496
Host playing	1.480
Superstar presence	1.151

Fig. 5 Coefficients for VIF

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.122	330	<.001	.935	330	<.001

a. Lilliefors Significance Correction

Fig. 6 Shapiro-Wilk test

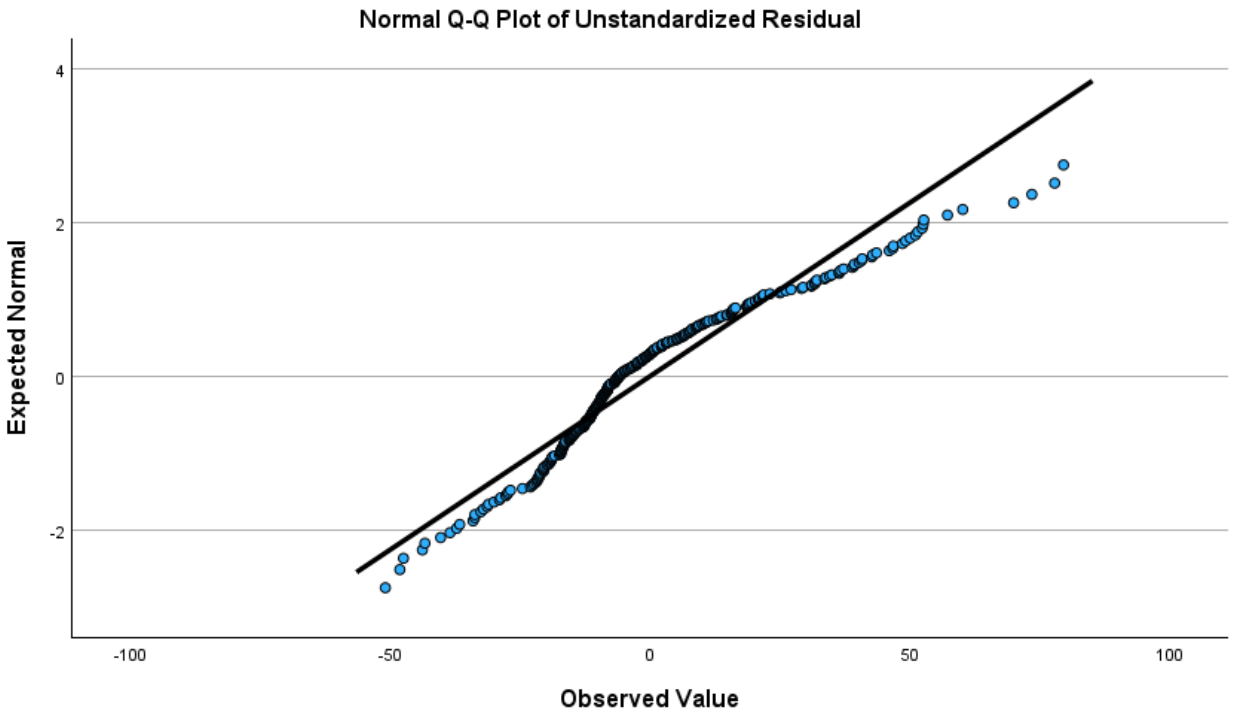

Fig. 7 Normal Q-Q Plot

The normality of the residuals was assessed using the Normal Q-Q Plot and the Shapiro-Wilk test, presented in figures 6 and 7. The Q-Q plot shows the residuals following the diagonal line reasonably well, with some deviation on both tails suggesting mild departures from normality. The Shapiro-Wilk test confirms this, returning a statistic of 0.935 and a p-value of <.001, meaning the normality assumption is formally rejected.

However, normality of residuals is not required for OLS coefficients to be unbiased as it is usually the case in smaller samples. With 333 observations, the impact of this violation is considered limited, as larger sample sizes generally reduce the sensitivity of regression results to departures from normality (Hair et al., 2019). Inference is further supported by the reporting of 95% confidence intervals throughout the regression results. This departure from normality is nonetheless acknowledged as a limitation of the model.

4.3 OLS regression model 1: pooled data

Now that the study has established the validity, the limitations of the model and the fit of the data for OLS regression analysis assumptions, the study will proceed with the OLS regression analysis.

Model 1
Dependent variable: Arena occupancy %

Variable	B	Std. Error	Beta	t	p	CI Lower	CI Upper
Team quality	-0.242	0.138	-0.096	-1.758	0.080	-0.512	0.029
LN_CompBalance	0.678	0.810	0.043	0.836	0.404	-0.917	2.272
Weekday game	-8.660***	2.554	-0.156	-3.391	<.001	-13.685	-3.636
Early tip-off time	-1.719	3.245	-0.029	-0.530	0.597	-8.104	4.665
Host playing	31.904***	3.333	0.526	9.572	<.001	25.347	38.461
Superstar presence	1.052	2.969	0.017	0.354	0.723	-4.789	6.893
R^2	0.341						
Adjusted R^2	0.328						
F	27.810***						
N	330						

*Note: * p<.05, ** p<.01, *** p<.001*

Fig. 8 OLS regression model 1: pooled data

The regression analysis revealed statistical significance for the full sample (F=27.810***). This implies that the independent variables of this study explain together a significant portion of the variance in arena occupancy. However, the

model accounted for 34.1% (R^2 = .341) of the variance in arena occupancy, with the adjusted R^2 of 32.8% after accounting for the predictors. This suggests that there are other variables influencing arena occupancy in women's basketball that are not being captured by the model.

The model shows that out of all the independent variables, only the variables for weekday game and host playing were statistically significant. They both had a p value of <.001, meaning the association is statistically significant at the $p < .001$ level. This implies that the associations between weekday scheduling and host nation participation with arena occupancy are considered statistically reliable and unlikely to be the result of random variation in the data.

Going back to our five hypotheses, the first one predicted that lower competitive balance values, reflecting closer match ups, would be positively associated with arena occupancy. The natural log transformation of the variable (LN_CompBalance) returned a positive but non-significant coefficient (B=0.678, p=.404, 95% CI [-0.917, 2.272]). The wide confidence interval crossing zero indicates that the model cannot determine whether competitive balance has a positive or negative effect on arena occupancy. This implies that there is insufficient evidence that ranking gaps are associated with attendance in the pooled sample. This is inconsistent with H1 and with previous literature on competitive balance in sports attendance, and H1 is therefore not supported.

The second hypothesis predicted that lower team quality values would be positively associated with arena occupancy. The variable returned a negative coefficient (B=-0.242, p=.080, 95% CI [-0.512, 0.029]). Although the result does not meet conventional significance thresholds, the confidence interval is almost entirely in the negative range with the upper bound only marginally crossing zero, suggesting a possible negative relationship consistent with H2 that may warrant further investigation with a larger sample. H2 is therefore not supported.

The presence of superstar players from WNBA teams did not have a significant impact on attendance (B=1.052, p=.723, 95% CI [-4.789, 6.893]). The wide confidence interval crossing zero confirms that the model cannot rule out either a negative or positive effect of superstar presence on arena occupancy, reflecting uncertainty around it. H3 is therefore supported, indicating that this proxy for

individual stars in women's basketball may currently have a limited impact on spectator demand on a global scale.

Matches involving host nations produced the largest coefficient in the model (B=31.904, p<.001, 95% CI [25.347, 38.461]). The narrow confidence interval being completely in the positive range confirms that games featuring the host nation are associated with a reliable increase of between approximately 25 and 38 percentage points in arena occupancy compared to games not involving the host. This strongly supports H4 and highlights the dominant role of local fan support in driving attendance in women's basketball.

The fifth hypothesis predicted that scheduling factors would significantly influence arena occupancy. The weekday game variable reached statistical significance with a negative coefficient (B=-8.660, p<.001, 95% CI [-13.685, -3.636]), with the confidence interval entirely in the negative range. This confirms that weekday games are associated with lower occupancy compared to weekend games. This is consistent with H5. However, early tip-off time did not reach significance (B=-1.719, p=.597, 95% CI [-8.104, 4.665]), with the wide confidence interval crossing zero indicating considerable uncertainty about the direction of this effect. H5 is therefore only partially supported for the variable of the day of the week.

As mentioned previously, this study has the purpose to analyse if the variables affecting arena occupancy are constant between the different continents and competition types. The following sections will be the results of the other OLS regression models.

4.4 OLS Regression models per continent

4.4.1 Model Europe

The second model (Fig. 9) is limited to all the games from different competitions hosted in Europe. When compared to the full dataset, Europe shows a stronger fit for the model explaining approximately 41% of the variance in arena occupancy. However, the only independent variable with statistical significance is host playing (B=42.017, p<.001, 95% CI [32.701, 51.334]), with the effect actually being

stronger than in the pooled model. The narrow confidence interval entirely in the positive range confirms a strong and reliable host nation effect. This is consistent with well-established basketball fan culture in Europe where local support tends to drive higher attendance.

Model 2
Dependent variable: Arena occupancy %

Variable	B	Std. Error	Beta	t	p	CI Lower	CI Upper
Team quality	-0.479	0.313	-0.121	-1.529	0.128	-1.099	0.140
LN_CompBalance	0.897	1.357	0.049	0.661	0.510	-1.786	3.580
Weekday game	-4.81	4.011	-0.077	-1.199	0.232	-12.738	3.118
Early tip-off time	2.475	4.691	0.038	0.528	0.599	-6.797	11.747
Host playing	42.017***	4.714	0.626	8.914	<.001	32.701	51.334
Superstar presence	3.181	4.383	0.050	0.726	0.469	-5.483	11.845
R^2	0.409						
Adjusted R^2	0.384						
F	16.585***						
N	151						

*Note: * p<.05, ** p<.01, *** p<.001*

Fig. 9 OLS regression model 2: Europe

Interestingly, the significant variable of weekday games in the full model was not present in the European sub-model (B=-4.810, p=.232, 95% CI [-12.738, 3.118]). The confidence interval crossing zero confirms the absence of a reliable scheduling effect in this context, suggesting that scheduling constraints affect attendance differently in a European context. All remaining variables were non-significant, with wide confidence intervals crossing zero, indicating that the model cannot determine the direction of their effects in the European context.

4.4.2 Model Asia

Model 3
Dependent variable: Arena occupancy %

Variable	B	Std. Error	Beta	t	p	CI Lower	CI Upper
Team quality	-0.285	0.237	-0.138	-1.203	0.234	-0.759	0.189
LN_CompBalance	-1.260	1.441	-0.090	-0.875	0.385	-4.146	1.625
Weekday game	-13.446**	4.847	-0.260	-2.774	0.007	-23.152	-3.740
Early tip-off time	-13.259	7.041	-0.246	-1.883	0.065	-27.359	0.841
Host playing	18.500*	7.270	0.344	2.545	0.014	3.942	33.058
Superstar presence	3.284	7.952	0.041	0.413	0.681	-12.640	19.208
R^2	0.554						
Adjusted R^2	0.507						
F	11.813***						
N	64						

*Note: * p<.05, ** p<.01, *** p<.001*

Fig. 10 OLS regression model 3: Asia

The third model examines the games played at tournaments hosted in Asia for all the different competitions (N=64). The small sample size in relation to the number of variables is acknowledged as a minor limitation, as a larger sample would provide more accurate estimates. The model shows a strong fit (R^2=.554, Adjusted R^2=.507, F=11.813, p<.001), explaining approximately 55% of the variance in arena occupancy.

Two variables reached statistical significance. Host playing remained significant (B=18.500, p=.014, 95% CI [3.942, 33.058]), although the effect is notably weaker than in Europe. The wider confidence interval compared to the European model reflects the smaller sample size and greater uncertainty around this estimate.

Weekday game was also significant (B=-13.446, p=.007, 95% CI [-23.152, -3.740]), with the confidence interval entirely in the negative range confirming a reliable scheduling effect.

An interesting point to note is competitive balance, which although non-significant (B=-1.260, p=.385, 95% CI [-4.146, 1.625]), returned a negative coefficient for the first time across all models, suggesting that as games become less balanced, occupancy decreases slightly in the Asian context. However the wide confidence interval crossing zero means this finding cannot be treated as conclusive. This finding is somewhat unexpected given the well-known popularity of basketball in Asia. All remaining variables were non-significant with wide confidence intervals crossing zero.

4.4.3 Model Americas

The last continental model shows some contradicting information compared to the other two previous continents. With over 100 games for the Americas dataset, it actually demonstrated the weakest fit out of all the sub-models (R^2=.211, Adjusted R^2=.161, F=4.199, p<.001), explaining only 21% of the variance in arena occupancy — considerably lower than Europe and Asia.

The independent variable of host playing lost its significance (B=9.558, p=.169, 95% CI [-4.125, 23.240]). The confidence interval crossing zero confirms the absence of a reliable host nation effect in the Americas, with the true effect potentially ranging from slightly negative to moderately positive. This suggests that host nation support does not translate into significantly higher attendance in the Americas context.

Model 4
Dependent variable: Arena occupancy %

Variable	B	Std. Error	Beta	t	p	CI Lower	CI Upper
Team quality	-0.137	0.230	-0.670	-0.597	0.552	-0.594	0.320
LN_CompBalance	2.142	1.325	0.160	1.616	0.109	-0.489	4.773
Weekday game	-12.718**	4.239	-0.279	-3.000	0.003	-21.134	-4.302
Early tip-off time	-9.866	6.295	-0.196	-1.567	0.120	-22.364	2.632
Host playing	9.558	6.891	0.178	1.387	0.169	-4.125	23.240
Superstar presence	-4.294	5.152	-0.085	-0.834	0.407	-14.523	5.934
R^2	0.211						
Adjusted R^2	0.161						
F	4.199***						
N	101						

*Note: * p<.05, ** p<.01, *** p<.001*

Fig. 11 OLS regression model 4: Americas

The only significant variable was weekday game (B=-12.718, p=.003, 95% CI [-21.134, -4.302]). The confidence interval entirely in the negative range confirms a reliable and strong scheduling effect, with the true effect estimated between approximately 4 and 21 percentage points lower occupancy on weekdays compared to weekends. All remaining variables were non-significant with wide confidence intervals crossing zero.

4.5 OLS Regression models per competition

Having examined the different effects in match-level determinants of arena occupancy across the different continental contexts, the analysis now focuses on the different competition types as a further dimension of comparison. The dataset comprises four distinct competition formats: the Continental Cup, the Qualifying Tournament, the Olympic Qualifying Tournament and the Pre-Qualifying Tournament. The following sub-models examine whether the associations identified in the full sample model hold consistently across these different competition formats, or whether the type and stakes of the competition moderate the relationship between match-level factors and arena occupancy.

4.5.1 Continental Cups

The first competition sub-model examines the Continental Cups held across Europe, Asia and the Americas (N=174). The model was statistically significant (R^2=.295, Adjusted R^2=.270, F=11.664, p<.001), explaining approximately 30% of the variance in arena occupancy, which is in line with the full model.

Host playing remained strongly significant and consistent across all models (B=33.011, p<.001, 95% CI [23.622, 42.400]). The narrow confidence interval entirely in the positive range confirms a reliable host nation effect, with the true effect estimated between approximately 24 and 42 percentage points. The magnitude is comparable to the full model, suggesting that host playing is not particularly amplified or diminished in Continental Cup competitions.

Weekday game also retained significance (B=-8.383, p=.023, 95% CI [-15.619, -1.147]), with the confidence interval entirely in the negative range confirming a reliable scheduling effect consistent with the full model. All remaining variables were non-significant with wide confidence intervals crossing zero, indicating that Continental Cup competitions do not unlock new attendance drivers beyond those identified in the full model.

Model 5
Dependent variable: Arena occupancy %

Variable	B	Std. Error	Beta	t	p	CI Lower	CI Upper
Team quality	-0.290	0.185	-0.116	-1.570	0.118	-0.656	0.075
LN_CompBalance	0.435	1.073	0.029	0.406	0.686	-1.683	2.554
Weekday game	-8.383*	3.665	-0.150	-2.287	0.023	-15.619	-1.147
Early tip-off time	-1.127	4.352	-0.019	-0.259	0.796	-9.719	7.465
Host playing	33.011***	4.756	0.501	6.941	<.001	23.622	42.400
Superstar presence	3.620	4.564	0.053	0.793	0.429	-5.391	12.631
R^2	0.295						
Adjusted R^2	0.27						
F	11.664***						
N	174						

*Note: * p<.05, ** p<.01, *** p<.001*

Fig. 12 OLS regression model 5: Continental Cup

4.5.2 Qualifying Tournament

This model examined games from the World Cup Qualifying Tournaments with a sample size of 80 games. This is within the appropriate range with 6 variables. The model showed a relatively strong explanatory power (R^2=.526, Adjusted R^2=.487, F=13.509, p<.001), explaining 53% of the variance in arena occupancy which is the second strongest fit out of all the models.

This tournament also had the same significant variable of host playing, although much weaker than the previous models (B=18.220, p=.018, 95% CI [3.283, 33.157]). The wide confidence interval, while not crossing zero, ranges from approximately 3 to 33 percentage points, reflecting greater uncertainty in this estimate compared to previous models. This could be linked to the relatively small

sample size, although within the appropriate range. This is further supported by the elevated VIF value of 5.001 noted for this variable.

Weekday game variable also lost its significance in this competition model (B=-4.239, p=.197, 95% CI [-10.721, 2.244]), with the confidence interval crossing zero confirming the absence of a reliable scheduling effect in qualifying tournaments. All remaining variables were non-significant with wide confidence intervals crossing zero.

Model 6
Dependent variable: Arena occupancy %

Variable	B	Std. Error	Beta	t	p	CI Lower	CI Upper
Team quality	-0.036	0.319	-0.140	-0.113	0.91	-0.671	0.599
LN_CompBalance	0.303	1.307	0.025	0.232	0.817	-2.302	2.909
Weekday game	-4.239	3.253	-0.107	-1.303	0.197	-10.721	2.244
Early tip-off time	-11.529	7.593	-0.272	-1.518	0.133	-26.661	3.603
Host playing	18.220*	7.495	0.438	2.431	0.018	3.283	33.157
Superstar presence	5.282	3.880	0.133	1.361	0.178	-2.451	13.016
R^2	0.526						
Adjusted R^2	0.487						
F	13.509***						
N	80						

*Note: * p<.05, ** p<.01, *** p<.001*

Fig. 13 OLS regression model 6: World Cup Qualifying Tournament

4.5.3 World Cup Pre-Qualifying Tournament

The Pre-Qualifying Tournament model has the smallest sample size with 29 games. With 5 variables, as there were no superstar players in any of the teams, the recommended minimum of ten observations per predictor (Hair et al., 2019) is not

attained. Therefore the variable of superstar presence is excluded and that the results will be interpreted with caution.

Despite the small sample size, the model showed the strongest fit until now (R^2 = .726, F = 12.158, p < .001), which explains around 73% of the variance in arena occupancy. This high explanatory power suggests that the variables included capture the key drivers of attendance particularly well in this specific tournament context.

Model 7
Dependent variable: Arena occupancy %

Variable	B	Std. Error	Beta	t	p	CI Lower	CI Upper
Team quality	0.928*	0.359	0.516	2.587	0.016	0.186	1.671
LN_CompBalance	3.608	2.236	0.268	1.613	0.12	-1.018	8.235
Weekday game	-27.319***	6.471	-0.510	-4.222	<.001	-40.705	-13.933
Early tip-off time	8.431	9.378	0.180	0.899	0.378	-10.97	27.831
Host playing	12.450	10.788	0.257	1.154	0.26	-9.868	34.767
Superstar presence	-	-	-	-	-	-	-
R^2	0.726						
Adjusted R^2	0.666						
F	12.158***						
N	29						

*Note: * p<.05, ** p<.01, *** p<.001*

Fig. 14 OLS regression model 7: World Cup Pre-Qualifying Tournament

What is contradicting in this model is that host playing did not reach statistical significance for the first time(B=12.450, p=.260, 95% CI [-9.868, 34.767]). The wide confidence interval crossing zero and spanning from nearly -10 to +35 percentage points reflects the high uncertainty around this estimate. This is consistent with the small sample size. Weekday game retained significance, producing the strongest negative scheduling effect observed across all models (B=-

27.319, p<.001, 95% CI [-40.705, -13.933]). The confidence interval entirely in the negative range confirms this as a robust finding despite the small sample size.

However, this model found a new variable to be a significant predictor for the first time. Team Quality emerged with a positive coefficient (B=0.928, p=.016, 95% CI [0.186, 1.671]), which directly contradicts the second hypothesis. The confidence interval entirely in the positive range confirms this finding that higher ranking values, indicating weaker teams, are reliably associated with higher arena occupancy in this sub-sample. This can likely be explained by the specific hosting context of the pre-qualifying tournaments. The two host nations were simultaneously the lowest ranked teams, creating a pattern where higher ranking values were associated with higher occupancy driven by home support rather than team quality preference. The elevated VIF values for team quality (3.337) and host playing (4.144) suggest overlapping effects between these two variables, further supporting this interpretation. Given the small sample size, these findings are treated as exploratory rather than conclusive.

4.5.4 Olympic Qualifying Tournament

For the final model, the analysis is on the Olympic Qualifying games with a dataset of 47 games. This model is also analysed with caution due to a small sample size. The fit of the model doesn't change from previous models (R^2=.446, Adjusted R^2=.363, F=5.373, p<.001), explaining roughly 45% of the variance in arena occupancy.

Host playing was the only statistically significant variable and the strongest effect observed across all models (B=35.233, p<.001, 95% CI [18.946, 51.521]). The narrow confidence interval being entirely in the positive range confirms a strong host nation effect. Due to the specific context of Olympic games and its stakes, this could be linked to the unique opportunity of representing the country at the Olympic level.

Weekday game variable lost its significance (B=-4.562, p=.522, 95% CI [-18.845, 9.722]), with the confidence interval crossing zero confirming the absence of a reliable scheduling effect. This suggests that the day of the week does not matter to fans when Olympic qualification is at stake.

For the first time, superstar presence returned a negative coefficient, although not significant (B=-5.803, p=.472, 95% CI [-21.970, 10.365]). The wide confidence interval crossing zero indicates that the model cannot determine whether superstar presence has a positive or negative effect, reflecting uncertainty around the variable. All remaining variables were non-significant with wide confidence intervals crossing zero.

Model 8
Dependent variable: Arena occupancy %

Variable	B	Std. Error	Beta	t	p	CI Lower	CI Upper
Team quality	-0.709	0.746	-0.149	-0.95	0.348	-2.217	0.8
LN_CompBalance	1.164	2.942	0.058	0.396	0.695	-4.783	7.11
Weekday game	-4.562	7.067	-0.078	-0.645	0.522	-18.845	9.722
Early tip-off time	-3.147	8.540	-0.052	-0.368	0.714	-20.407	14.113
Host playing	35.233***	8.059	0.600	4.372	<.001	18.946	51.521
Superstar presence	-5.803	7.999	-0.099	-0.725	0.472	-21.97	10.365
R^2	0.446						
Adjusted R^2	0.363						
F	5.373***						
N	47						

*Note: * p<.05, ** p<.01, *** p<.001*

Fig. 15 OLS regression model 8: Olympic Qualifying Tournament

Across the eight regression models, host nation participation variable emerged as the most consistent positive predictor of arena occupancy, while weekday scheduling was the most consistent negative predictor. Competitive balance, team quality, superstar presence and early tip-off time showed limited or inconsistent effects with arena occupancy. These findings suggest that, in FIBA women's basketball qualification games, attendance is driven less by abstract sporting quality indicators and more by local identification and practical accessibility.

5. Discussion

This next part will discuss the different findings of the regression models for the three different categories. This study analysed match-level factors during FIBA Women's competitions between 2020 and 2026 using quantitative data analysis to determine the determinants affecting arena occupancy. The hypotheses were already discussed briefly in the results section but will be gone through in more detail in this chapter. The aim is to determine whether the hypotheses are met in which sub-models and the reasons behind these differences. Each hypothesis will be gone separately and will be analysed for all the models. While all eight models were significant statistically speaking, only a few of them explained the variations. Two variables emerged as meaningful across the different models. The rest of the variables showed limited or non-significant association with arena occupancy.

5.1 Hypothesis 1

H1: *A lower competitive balance value will be positively associated with arena occupancy, as smaller ranking gaps indicate more closely contested matches which are expected to generate greater spectator interest.*

Competitive balance, transformed to a natural logarithm, was not found significant in any of the models. What is still worthwhile to note is the only negative coefficient resulting from the model from Asia (fig. 10), while the rest of the models came back with a positive coefficient. This finding contradicts the hypothesis and also challenges the uncertainty of outcome hypothesis of Rottenberg (1956), which has long been considered a cornerstone of attendance demand research.

The positive coefficients observed across all models except one hint at a different dynamic, where fans may be slightly more responsive to uneven match ups where there might be a clear winner already. However, the negative coefficient in the Asian model is more in accordance with the hypothesis and Rottenberg's hypothesis on uncertainty of outcome. Given the absence of statistical significance across all models, these findings should be interpreted with caution and without taking any conclusive takes.

5.2 Hypothesis 2

H2: *Lower team quality values will be positively associated with arena occupancy, as matches featuring higher ranked nations (indicated by lower ranking values) are expected to attract larger crowds than those involving weaker opponents.*

Team Quality was found to be significant in only one model, which consisted of the games for the World Cup Pre-Qualifying Tournament. Contrary to the first hypothesis, all of the coefficients were negative except for the same model mentioned above (fig. 14). What this implies for the competition type in question is that teams with higher FIBA ranking values, meaning weaker nations, actually attracted more spectators. This suggests that fans in that context did not place particular emphasis on team quality when deciding to attend. As the other models are not significant, while pointing in the correct direction as predicted by the hypothesis, they remain inconclusive. The results are further limited by the relatively small number of games available in this sub-model.
It is also interesting to note that team quality generally does not play a significant role in arena occupancy in women's basketball. In women's football, better quality of both home and away teams have been positively associated with arena occupancy (Valenti et al., 2024). This suggests that the relationship between team quality and spectator demand may operate differently across women's team sports.

5.3 Hypothesis 3

H3: *The presence of star players is not expected to have a significant effect on arena occupancy, as women's basketball players generally have lower levels of global recognition.*

Superstar presence was not found to be significant in any of the eight models, and H3 is therefore supported. The proxy used for this variable was the status of a WNBA player, defined as a player competing in the top professional division in the United States. This data suggests that in the context of international women's basketball, the idea of a superstar effect does not yet translate into attendance gains. While a handful of players have acquired global recognition, most players simply do not yet have the attraction to bring people simply to see them play. This corresponds with the recent work of Gnagey et al. (2026), who argue that women's

basketball today has only one player who can truly be considered a global superstar. This study confirms that women's basketball is still in the process of building the kind of star culture that drives people to the arenas on a global level.

5.4 Hypothesis 4

H4: *Matches involving the host nation will be positively associated with higher arena occupancy, as local support and national pride are expected to drive greater attendance.*

Host nation participation emerged as the strongest and most consistent variable for arena occupancy across the eight models. H4 is therefore supported. In the pooled model, games featuring the host nation were associated with an increase of around 32 percentage points in arena occupancy (fig. 8), which is a substantial effect by any measure. This confirms the effect of the host nation playing in front of the home crowd and the significance it can have on the occupancy. Local pride and national identity are powerful forces, and the findings reflect that very clearly.

What makes this particularly interesting is how much the effects are changing between the three continents. In Europe, the host nation boost is very present with occupancy increasing by over 42 percentage points on average (fig.9) . This makes sense when you consider that women's basketball has a much longer and more established tradition in Europe, with stronger national teams, more experienced fan bases and a deeper cultural connection to the sport.

This is unfortunately not the same case with Asia and Americas (fig. 10 and 11), where the host nation effect does not reach statistical significance, despite the coefficients still pointing in the right direction. This does not mean local support is absent in these regions, it just means it is not yet consistent or strong enough to reliably drive occupancy. Women's basketball is still finding its feet in many of these markets, national teams are generally ranked lower than their European counterparts, and the fan culture around the sport is very varied across the countries. In that context, it is perhaps not surprising that simply hosting a tournament does not automatically translate into packed arenas.

Looking at the competition-specific models, the pattern becomes even clearer. The host nation effect is significant in the Continental Cup (fig. 12), the World Cup

Qualifying Tournament (fig. 13) and the Olympic Qualifying Tournament (fig. 15), all competitions where something meaningful is at stake and qualification for a major tournament is happening. When spectators know that their team is fighting for a spot at the World Cup or the Olympics, the motivation to attend goes up considerably. The one exception is the World Cup Pre-Qualifying Tournament (fig. 14), where the effect falls short of significance. This is the first stage of the qualification pathway, typically featuring weaker teams competing to enter the main qualifying rounds. With less at stake and generally lower team quality, the need to go to the arena decreases with the fanbases.

5.5 Hypothesis 5

H5: *Scheduling is expected to have a significant effect on arena occupancy, with matches played on weekdays and during early tip-off times anticipated to attract lower crowds compared to weekend and evening tip-off games.*

Scheduling emerged as a partially supported predictor of arena occupancy, with results varying considerably depending on which aspect of scheduling is examined and in which context. H5 is therefore partially supported.

When it comes to games being played during the week, the variable was found to be one of the more consistent findings across the models. In the pooled model (fig. 8), games played on weekdays were associated with a decrease of approximately 9 percentage points in arena occupancy, meaning that games played during the week resulted in the variable to be a meaningful determinant of spectator attendance. This is consistent with existing literature on scheduling effects in sport attendance, which broadly finds that weekday fixtures are associated with lower crowd figures.

The regional models reveal a different relationship. The negative effect of weekday scheduling is especially present and statistically significant in Asia and the Americas (fig. 10 and 11), where the associated drop in occupancy is notably larger than the overall average. This may be due to differences in working culture or simply the relatively limited fan base that women's basketball has built in these markets so far. In Europe, the coefficient is negative but does not reach statistical significance, which in turn indicates a more committed fan base that is less sensitive

to the scheduling constraints (fig. 9). It could also be due to European tournaments being scheduled on more favourable days.

Across the competition-specific models, the weekday effect is most present in the World Cup Pre-Qualifying Tournament (fig. 14), where weekday games are associated with a decrease of over 27 percentage points in occupancy. This is the largest scheduling effect observed across all models and is likely due to the combination of lower competitive stakes of the tournament but also having the less developed basketball markets. In this sense, any additional barrier to attendance such as a weekday fixture can significantly reduce the likelihood of spectator turnout. The effect is also significant in the Continental Cup (fig. 12), while it falls short of significance in the World Cup Qualifying (fig. 13) and Olympic Qualifying tournaments (fig. 15). This pattern suggests that the more the stakes go high, the more scheduling constraints may become less of a barrier for committed spectators.

Early tip-off time, in contrast, did not reach statistical significance in any of the eight models, despite the coefficients pointing largely in the anticipated negative direction. This suggests that in the context of international women's basketball tournaments, tip-off time does not constitute a meaningful barrier to attendance.

Overall, the scheduling findings highlight that the day of the week is a relevant and actionable determinant of arena occupancy, particularly in continents and competition formats where women's basketball is still developing its audience base. The absence of a significant tip-off time effect, however, suggests that not all scheduling factors carry equal weight in this context. For sport event organisers, these findings reinforce the importance of scheduling the game during the most favorable time slots, especially with markets more sensitive to changes and where there is not yet a deep fan culture.

5.6 Limitations

The first limitation is the sample size of certain sub-models. While the full dataset of 333 games provides a great basis for the pooled model, some of the sub-models have considerably smaller samples, most notably the World Cup Pre-Qualifying

Tournament with only 29 observations. Small sample sizes reduce statistical power and therefore should be interpreted with more caution.

A second limitation relates to the multiple testing problem. Eight sub-models were estimated across this study, which increases the probability of finding at least one statistically significant result by chance. The most reliable findings are those that are replicated consistently across multiple models rather than isolated significant results observed in individual sub-samples.

A third limitation relates to the measurement of the superstar presence variable. It was operationalised as a binary indicator of WNBA player status which does not fully capture the complexity of individual player recognition and marketability. Not all WNBA players carry the same level of public profile. What this means is that not all WNBA have a superstatus outside of the sport (Adler, 1985). A more nuanced measure of superstar status could yield more precise results in future research.

A fourth limitation concerns the data collection process. For some games, attendance data was unavailable due to insufficient reporting from the respective hosts, which required certain figures to be aggregated or estimated. This introduces some imprecision affecting the accuracy of the dependent variable and is therefore acknowledged here.

The time period covered by the dataset also represents a notable limitation. The study includes games played between 2020 and 2026, a period significantly affected by the COVID-19 pandemic. While competitions were not subject to formal capacity restrictions, attendance during this period was likely influenced by health concerns and individual reluctance to attend large indoor gatherings. This could have played a role in the attendance figures which can not be controlled in the models.

The presence of some heteroskedasticity in the models represents another limitation, as it suggests that the variance of the residuals is not entirely constant across observations. This means that certain results should be interpreted with additional caution. However, Hair et al. (2019) note that regression analysis is generally considered robust to violations of normality when the sample size exceeds

200 observations. With 333 observations in the current dataset, the impact of this violation on the validity of the regression results is therefore considered limited.

A further limitation concerns the capacity of the venues. For some games, NFs may not have opened their full capacity to the public for the venues. This gives the impression of having a fuller venue to the public, meaning that the actual number of available seats could be lower than the total capacity of the venue used to calculate arena occupancy. This information was not available and is acknowledged as a limitation.

Lastly, a methodological limitation concerns the nature of the dependent variable mentioned previously. Arena occupancy is a bounded percentage variable ranging from 0 to 100, which OLS does not formally account for. The results should therefore be interpreted as linear approximations. A robustness check using a fractional logit or beta regression model would strengthen confidence in the findings and is recommended for future versions of this analysis.

6. Conclusions

Objective 1: Identifying match-level factors associated with arena occupancy

This study set out to identify which match-level factors are associated with arena occupancy in FIBA women's basketball qualification competitions. Out of the six variables examined using OLS regression analysis across a dataset of 333 games over a six-year period, host nation participation and weekday scheduling emerged as the most consistent and meaningful determinants. The remaining variables — competitive balance, team quality, superstar presence and early tip-off time — remained largely non-significant across all models, with the exception of team quality in the Pre-Qualifying sub-model, which is treated as exploratory given the small sample size. These findings suggest that attendance is driven less by abstract sporting quality indicators and more by local identification and practical accessibility.

Objective 2: Continental differences

Notable regional differences were observed across the continental sub-models. Europe showed the strongest host nation effect, reflecting the longer-standing tradition of basketball and a more established fan culture. In contrast, Asia and the Americas, despite having a basketball culture, were not able to translate this consistently into arena occupancy. Weekday scheduling was significant in Asia and the Americas but not in Europe, suggesting that European fans are less sensitive to scheduling constraints. These differences highlight that the determinants of arena occupancy do not operate uniformly across continental contexts.

Objective 3: Competition type and stakes

Across competition types, the host nation effect was significant in the Continental Cup, World Cup Qualifying and Olympic Qualifying tournaments, while falling short of significance in the Pre-Qualifying Tournament, which featured lower stakes and generally weaker teams. The weekday scheduling effect was most pronounced in the Pre-Qualifying Tournament and largely absent in the Olympic Qualifying, suggesting that higher competitive stakes reduce the sensitivity of fans to scheduling constraints. This confirms that the type and stakes of the competition do moderate the relationship between match-level factors and arena occupancy.

Based on these three objectives, the following practical implications for future research were proposed. From a practical standpoint, National Federations hosting games should prioritise weekend scheduling where possible, particularly in markets where women's basketball is still developing its audience base. Additionally, given that the mean arena occupancy across all games was only 25%, there is a strong case for hosting games in smaller, more intimate venues that can be filled more reliably. This would improve the atmosphere and experience for both fans and players, and is consistent with the recommendations of Valenti et al. (2024). Understanding how these variables operate differently across regions is also valuable for FIBA in tailoring its support to the specific needs of each market.

Future research should seek to include games from Africa and Oceania to provide a more complete global picture of women's basketball attendance. The inclusion of ticket pricing data would also add an important economic dimension to the analysis. Finally, while superstar presence was not significant in this study, a more nuanced measurement beyond binary WNBA status could yield different results and is worth exploring in future work.

This study represents one of the first systematic attempts to analyse arena occupancy across multiple continents and competition formats in women's basketball qualification competitions. As women's basketball continues to grow globally, understanding what drives fans to attend games becomes increasingly important for National Federations, sponsors and the broader development of the sport. In doing so, this study contributes empirical evidence that can support more informed decisions in the organisation of women's basketball qualification competitions.

7. Recommendations

For the National Federations hosting games, weekend scheduling should be prioritised whenever possible, especially in regions where women's basketball is still developing. The findings consistently show that weekday fixtures are associated with lower occupancy. Where it is possible to allow flexibility, moving games to weekends can meaningfully improve attendance.

Choosing the correct venue is equally important. With a mean occupancy of only 25% across all 333 games, the data strongly suggests that many federations are choosing venues that are too large for their current fanbase. Playing in smaller venues that can be better filled would create a better atmosphere for fans and players alike, improve the visual presentation of the event for broadcasters and sponsors, and signal a healthier product to external stakeholders. While it is understandable to want to use the biggest venues due to them usually being more modern and in generally better condition, it is worth rethinking this approach.

The regional differences identified in this study suggest that a one-size-fits-all approach to competition organisation may not be optimal. The host nation effect is strong and reliable in Europe but inconsistent in Asia and the Americas, meaning that support and development strategies should be tailored to each region's specific context and level of basketball development.

Ultimately, these recommendations aim to help National Federations and FIBA make more informed decisions that support the long-term growth of women's basketball at all levels.

This research idea was presented on 8th of May to be a part of a basketball collective book organised by the Loughborough University. This project invited collaborators all over Europe to present research projects on basketball with the aim of working together on various topics and further on the line to publish a research book.

8. Summary

This study analyses the match-level determinants of arena occupancy in FIBA Women's Basketball qualification competitions between 2020 and 2026. Using OLS regression analysis across eight different models and a dataset of 333 games, host nation participation and weekday scheduling emerged as the two most consistent predictors of arena occupancy. Continental and competition-type differences were observed, with the host nation effect being strongest in Europe and in higher-stakes tournaments. Competitive balance, team quality, superstar presence and early tip-off time showed no consistent significant effects. This study's findings offer practical implications for National Federations and FIBA in the organisation and promotion of women's basketball qualification competitions.

Šis tyrimas analizuoja arenos užimtumo rodiklius rungtynių lygmeniu FIBA moterų krepšinio atrankos varžybose 2020–2026 metų laikotarpiu. Naudojant OLS regresinę analizę aštuoniuose skirtinguose modeliuose ir duomenų rinkinyje, apimančiame 333 rungtynes, šeimininkės šalies dalyvavimas ir tvarkaraštis darbo dienomis išryškėjo kaip du nuosekliausi arenos užimtumo prediktoriai. Buvo stebimi žemyniniai ir varžybų tipo skirtumai — šeimininkės šalies efektas buvo stipriausias Europoje ir aukštesnių lažybų turnyruose. Konkurencinė pusiausvyra, komandos kokybė, žvaigždžių buvimas ir ankstyvas pradžios laikas neparodė nuoseklių reikšmingų efektų. Šio tyrimo išvados turi praktinių implikacijų nacionalinėms federacijoms ir FIBA organizuojant bei skatinant moterų krepšinio atrankos varžybas.

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