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# A Value Modeling Approach to Analyzing Major League Soccer Expansion

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**Abstract:** The purpose of this study is to provide a means of ranking a pool of potential markets competing for Major League Soccer (MLS) expansion franchise bids. The MLS is currently undergoing a period of high levels of growth and plans to expand their number of franchises from 24 to 28 teams and is considering 12 potential markets for these expansion bids. This study produces a recommended ranking of the potential markets through the use of systems decision making tools including stakeholder analysis, value hierarchy, data collection, and total weighted value scoring. This study creates quantifiable metrics for evaluation of these expansion franchise bids. These metrics combine to form a total value model that is weighted based on the value measures that are most closely correlated to success rates of previous expansion franchises. The result is a weighted value model that numerically ranks the 12 potential markets. This model also provides recommendation to Major League Soccer and other professional sport leagues concerning which metrics are most important to consider in professional sport expansions.

*Keywords:* Major League Soccer, Systems Decision Making, Value Model

## 1. Introduction and Review of Literature

Playing their inaugural season in 1996, Major League Soccer experienced varying levels of success over their first two decades of existence. Between 1996 and 2006, the number of teams in the MLS fluctuated between 10 and 12 as professional soccer struggled to maintain a strong footing in the American sports marketplace (Strutner, Parish, & Nauright, 2014). However, after 2006 the league gained an increased following and expanded from 12 franchises to their present day number of 24 (23 franchises with Miami already awarded a franchise to begin play in 2020). Currently, Major League Soccer is undergoing their most recent round of expansion with plans to add four additional teams to bring the league total to 28 teams by 2020. Major League Soccer's pending expansion is representative of the recent growth of popularity of professional soccer in the United States, which traditionally lagged far behind the rest of the world in soccer interest. This transitional period gives the MLS a chance to expand their growing presence and solidify itself as one of the premier professional sports leagues along with the "Big Four" North American professional leagues, the National Football League, National Basketball Association, National Hockey League, and Major League Baseball. Selecting the optimal cities and franchises for expansion is critical to Major League Soccer's future growth. Although adding additional franchises offers a chance for the league to expand their presence, selecting an unsuccessful franchise and market could cost the MLS a large portion of their revenue and set the league back in growth and national prominence.

In December 2016, Major League Soccer (MLS) announced their plans to add an additional four franchises to the league to expand from 24 to 28 teams by 2022 (Couch, 2016). Two months later the league announced that 12 markets submitted formal bids for the four possible expansion slots. These markets are Charlotte, Cincinnati, Detroit, Indianapolis, Nashville, Phoenix, Raleigh/Durham, St. Louis, San Antonio, San Diego, and Tampa Bay/St. Petersburg (Borg, 2017). MLS Commissioner Don Garber, along with a selection committee formed of other league officials and five owners from existing franchises, is tasked with evaluating and comparing these markets before making the final decision on which four potential cities will be awarded a franchise. Although this is not Major League Soccer's first round of expansion, it could potentially be the most important as the league becomes increasingly more competitive with other North American major professional sports leagues. To address this critical concern, this study provides a means to rank pool of prospective markets competing for an expansion Major League Soccer franchise.

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## 2. Stakeholder Analysis and Derivation of Value Measures

A combination of stakeholder analysis and research of literature was utilized in order to derive value measures for the model. In a December 2016 press release, MLS Commissioner outlined specific criteria that the selection committee will focus on when considering the candidate cities for possible expansion franchises. The three criteria Garber mentioned are: 1. A committed local ownership group that has a passion for the sport, a deep belief in Major League Soccer and the resources to invest in the infrastructure to build the sport in their respective market, 2. A market that has a history of strong fan support for soccer matches and other sporting events, is located in a desirable geographic location and is attractive to corporate sponsors and television partners, and 3. A comprehensive stadium plan that ensures the club will have a proper home for their fans and players while also serving as a destination for the sport in the community (Couch, 2016). This information provided from these stakeholders and experts directly corresponds to the value hierarchy in Figure 1, which will be explained further in the methodology section.

To refine the measures utilized in the value model, multiple interviews were conducted with members of the MLS media as well as a General Manager from one of the 12 franchises that submitted a formal bid for expansion. In an interview with Chad Smith, a beat writer who covers Sporting Kansas City and MLS expansion, he outlined quantifiable measures which according to his belief, the MLS will base their decision. These measures included a soccer-specific stadium plan, media market size, fan interest in soccer and in MLS specifically, youth soccer participation rates, the size and depth of the corporate market, and support from local government (Smith, 2017). In an interview with Curt Johnson, President and General Manager of the Raleigh/Durham candidate franchise, North Carolina Football Club, he offered valuable insight on other measures the league will take into account. Johnson stated that in conversations with the league office they emphasized the importance of a soccer-specific stadium plan, a young, emerging market, a market with soccer interest, and a dedicated ownership group (Johnson, 2017).

### 2.1 Value Hierarchy and Data Collection

Through stakeholder analysis and research four main value measures were identified: Market Strength, Stadium Plan, Ownership Strength, and Soccer Interest. These four main measures were subdivided into quantifiable value metrics to create a single value hierarchy. Next, through data collection each value metric receives a raw data score. Next, in order for these scores to be compared amongst categories they are entered into a respective value function.

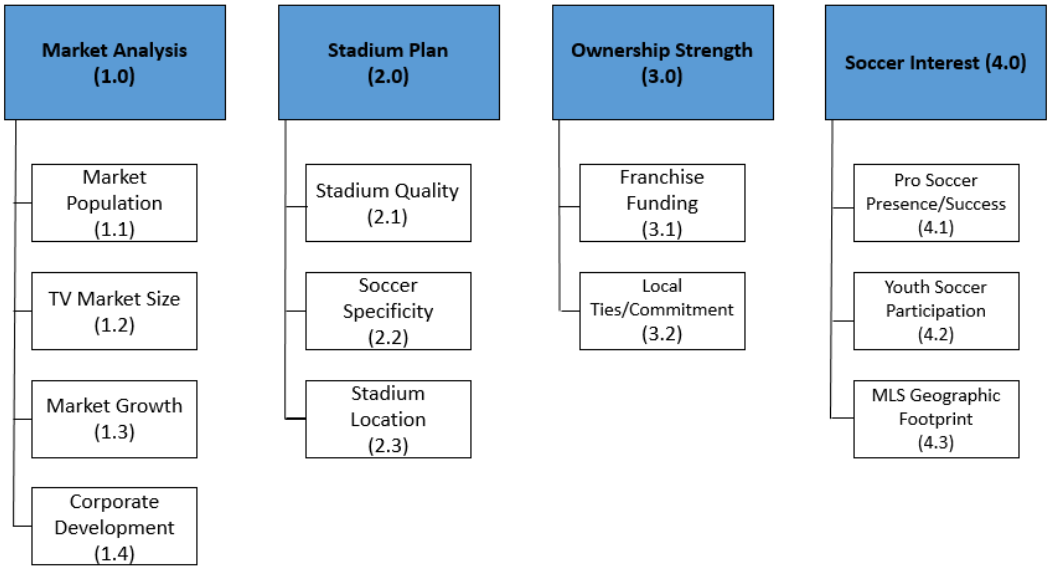


**Figure 1.** Value hierarchy for MLS Expansion model.

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## 3. Methodology

The method used to compare candidate markets for optimal selection of the expansion franchises is the additive value model. The governing mathematical equation for the additive value model used to compute the total value for each candidate is given by:

$$v(x) = \sum_{i=1}^{n} w_i v_i(x_i) \quad (1)$$

Where $v(x)$ is the total value of a candidate solution, $i = 1\ to\ n$ for the number of value measures, $x_i$ is the score of the candidate solution on the $i$th value measure, and $w_i$ is the measure weight or normalized swing weight (Parnell, Driscoll, & Henderson, 2011).

Several steps are taken before developing the total value scores to utilize for comparison between each candidate market. First, through data collection, each value metric receives a raw data score based on existing data for that specific metric. For example, value metric 1.1, Market Population Base, is a measure of each potential market's population size as reported in the 2016 United States Census. Next, in order for these scores to be compared amongst categories they are entered into a respective value function, which is a method that converts candidate raw data scores to a standard unit (Parnell, Driscoll, & Henderson, 2011). For this model, the value functions convert each value measure to a score between 1 and 5. Additionally, linear interpolation is utilized in the value functions in order to return more exact values. After developing a value score for each metric, the metrics for each high level value measure are averaged in order to develop a value measure score. These four high level scores were then averaged for each candidate to develop a total value score.

Next, it is necessary to weigh the four value measures to arrive at a more accurate value score for each candidate solution. In order to develop appropriate weights for each value measure, the model was applied to multiple previous expansion franchises.

### 3.1 Explanation of Value Metrics

#### 3.1.1 Market Strength

The importance of selecting a strong market is integral to the success of any professional sports franchise. MLS Commissioner Don Garber described an ideal market as, "A market with a history of strong fan support for soccer matches and other sporting events, is located in a desirable geographic location, and is attractive to corporate sponsors and television partners" (Couch, 2016). The quantifiable metrics utilized to rate market strength are: Market Population Base (1.1), Media Market Size (1.2), Market Growth (1.3), and Business Development (1.4). The raw data scores are presented in Table 1.

**Table 1. Market Strength (1.0) Data for Each Candidate City**

| Candidates | US Metro Population Ranking | US TV Market Ranking | Market Growth (US Ranking) | Business Development (% Change b/w 2010 and 2016 |
|---|---|---|---|---|
| Charlotte | 22 | 22 | 11.6% (32) | 3.40% |
| Cincinatti | 28 | 36 | 2.4% (235) | 2.50% |
| Detriot | 14 | 13 | 0% (296) | 2.10% |
| Indianapolis | 34 | 27 | 6.2% (116) | 2.10% |
| Nashville | 36 | 29 | 11.6% (31) | 3.40% |
| Phoenix | 12 | 12 | 11.2% (37) | 2.60% |
| Raleigh | 43 | 24 | 15.3% (8) | 5.30% |
| Sacramento | 27 | 20 | 6.9% (99) | 4.00% |
| San Antonio | 24 | 31 | 13.4% (20) | 3.10% |
| San Diego | 17 | 28 | 7.2% (90) | 0.30% |
| St. Louis | 20 | 21 | .7% (281) | 0.80% |
| Tampa Bay | 18 | 11 | 8.9% (59) | 4.20% |

#### 3.1.2 Stadium Plan

A comprehensive stadium plan is another key component to a successful candidate bid. Don Garber stated, "A comprehensive stadium plan that ensures that the club will have a proper home for its fans and players while also serving as a destination for the sport in the community" (Couch, 2016). The MLS also made clear their desire for a soccer specific stadium, meaning the stadium is built for soccer and not a multi-purpose venue. Although the MLS averaged 22,106 fans per

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game in the 2017 season, these numbers would be far too low to ever hope filling the massive NFL and college football stadiums that most teams occupied during the first decade of the league's existence (2017 MLS Attendance, 2017).

For this model, the metrics used to analyze the candidate stadium plans are: Stadium Quality (2.1), Soccer Specificity (2.2), and Stadium Location (2.3). Stadium quality is a measure of the planned stadium capacity compared to average attendance numbers for MLS teams in the 2017 season. Soccer specificity is simply a measure if the candidate ownership group plans on building a stadium solely for the use of the potential MLS franchise. Finally, Stadium Location is a measure of distance in miles of the potential stadium location to the urban core of the metro area.

### 3.1.3 Ownership Strength

A strong ownership group is another criteria the MLS is evaluating when considering the expansion candidates. In his press release Commissioner Garber stated, "A committed local ownership group with a passion for the sport, a deep belief in Major League Soccer, and the resources to invest in the infrastructure to build the sport in their respective market" (Couch, 2016). A unique aspect of Major League Soccer is that it operates as a single-entity structure. This is defined as, "a for-profit league that owns and controls all member clubs. Investors then purchase shares in the league overall. This means that each investor purchases an equal stake in the performance of each member club" (Edelman, 2008). However, the leagues rapid growth in its second decade of existence is largely due to the influx of diverse and committed local ownership (Parker, 2014). For example, the league's two most recent expansion franchises, Atlanta and Minnesota United, are led by ownership groups who own other local pro sports franchises, in these cases the NFL's Atlanta Falcons and MLB's Minnesota Twins, and possess committed local business ties (Sattler, Warren, & Achen, 2017).

Although this value measure includes inherent subjectivity, two value metrics identified are Franchise Funding (3.1) and Strength of Local Network (3.2). Franchise funding is largely based on the ownership group's progress in funding their stadium plans as well as the known franchise fee of $150 million dollars. This metric represents a commitment to the growth of soccer in their respective market. The Strength of Local Network metric is based on the ownership group's ties to local businesses and other local professional sports franchises. Recent expansion MLS franchises that possess these strong local ties and a commitment to grow the game of soccer have proven successful in markets like Portland, Minnesota, and Atlanta (Parker, 2014; Straus, 2014).

### 3.1.4 Soccer Interest

Finally, the value measure of soccer interest is included in the model to attempt to quantify a candidate market's receptiveness to a professional soccer franchise. The metrics included in this measure are Professional Soccer Presence/Success (4.1), Youth Soccer Participation (4.2), and the MLS Geographic Footprint (4.3).

Although the league does not require the existence of a lower-level professional soccer franchise, a market with an established lower tier team that produces above average attendance numbers is a strong indicator of the importance of soccer to a community (Sattler, Warren, & Achen, 2017). This phenomenon is quantified in value metric 4.1 which rewards the presence of a high level soccer franchise that produced above average attendance numbers in the 2017 season. Similarly, youth soccer participation serves an indicator of the popularity of soccer in the market and an opportunity for a long-lasting fan base. Value metric 4.2 measures the number and quality of youth soccer clubs within the radius as reported by US Youth Soccer database. Finally, value metric 4.3 is included to quantify how well the potential market will fit the existing MLS geographic footprint. This is a desire that Commissioner Don Garber has brought up on multiple instances, and the league's 12 candidate selections clearly target untapped markets in the US Midwest and Southeast (Couch, 2016). To quantify this trait, value metric 4.3 generates scores based on distance from existing MLS franchises where the greater the distance corresponds to a higher score.

## 3.2 Value Functions and Scoring

For this model, the value functions convert each value measure to a score between 1 and 5. Additionally, interpolation is utilized in the value functions in order to return more exact values. After developing a value score for each metric, the metrics for each high level value measure are combined in order to develop a value measure score. These four high level scores were then averaged for each candidate to develop a total value score.

Given in Table 2 and Table 3 are examples of how value metric 1.2, Media Market Size, is converted from raw data to respective value scores through the use of a value function. The unweighted total value scores for each value measure are scaled by a multiple of five so that a perfect score for one of the four value measures is 25, and the perfect total value score is 100.

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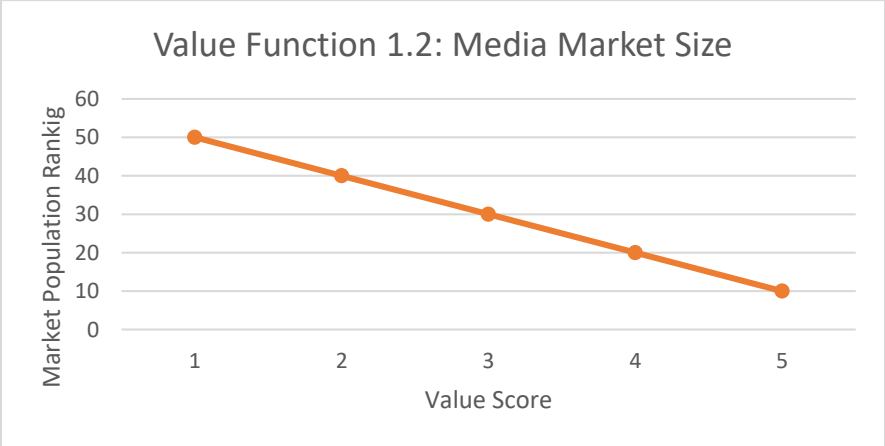


**Table 2.** Value function scale for value metric 1.2.

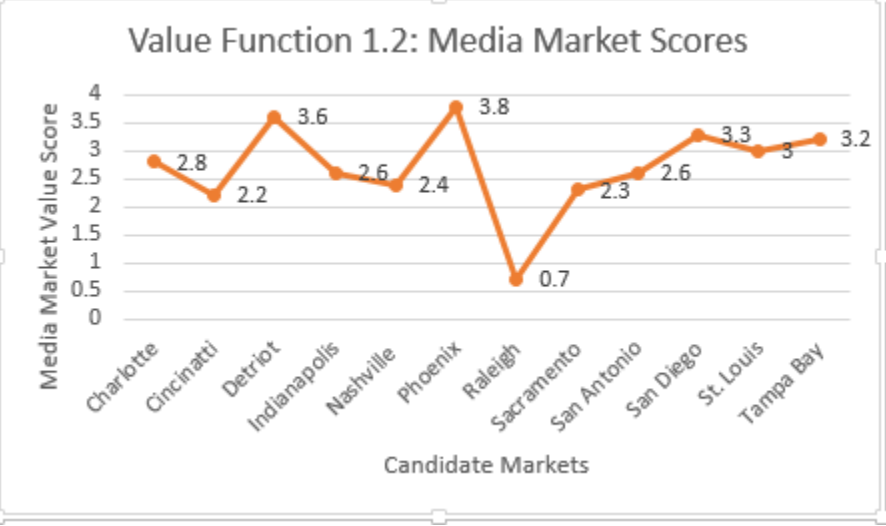


**Table 3.** Resultant value scores for each candidate market.

### 3.3 Weighing the Value Model

To increase model accuracy it is necessary to weigh the four value measures to arrive at a more accurate value score for each candidate solution. In order to develop appropriate weights for each value measure, the model was applied to multiple previous expansion franchises. The selected franchises to analyze were the Seattle Sounders, Philadelphia Union, and Portland Timbers. Although these three franchises all played their inaugural seasons between 2008 and 2010, Seattle and Portland are ranked by Forbes magazine as the number 2 and 6 most valuable franchises by in the league respectively, while Philadelphia is ranked as the 18th (Smith, 2017). This disparity despite similar expansion timelines provides accurate indicators of success for the model. To measure the success of these four franchises, a total success score is generated as a combination of 2017 franchise values and average attendance rankings from the past five seasons, 2013 to 2017. Next, each of the four franchises are put through the model while utilizing data from the year of their expansion so that they can be compared to the current expansion bids. The Seattle, Portland, and Philadelphia franchises and their respective total success rankings are given in Table 4. These rankings are based on the aforementioned value of these cities' franchises. Of note, these total success scores produce the same ranking for these franchises as the aforementioned Forbes magazine evaluation.

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| Franchise | Market Strength (1.0) | Stadium Plan (2.0) | Ownership Strength (3.0) | Soccer Interest (4.0) | Total Success Score |
|---|---|---|---|---|---|
| Seattle | 20.1 | 18.3 | 15.0 | 18.5 | 42.8 |
| Portland | 18.4 | 18.3 | 15.0 | 15.5 | 29.6 |
| Philadelphia | 15.9 | 13.3 | 12.5 | 9.7 | 20.9 |

**Table 4.** Recent expansion franchise model results compared to success since expansion.

Finally, the value measure scores for each franchise are compared to their level of success and tested for correlation coefficients. Table 4 shows the value measure scores compared to total success score for the three franchises. Table 5 lists the corresponding correlations to success for each value measure, and the resulting global weight that will be assigned to each value measure for the weighted model. The global weight values correspond with the very high correlation for Market Strength (1.0) followed by Soccer Interest (4.0). The Stadium Plan (2.0) and Ownership Strength (3.0) value measures suggest a much weaker correlation to success. Despite the weaker correlation strength, the Ownership Strength (3.0) and Stadium Plan (2.0) measures are still included because of their stated importance to the league office in their decision making process and the possibility for these parameters to be modified or strengthened post-decision.

| Value Measure | Correlation to Success | Global Weight |
|---|---|---|
| Market Strength (1.0) | 0.977 | 0.325 |
| Soccer Interest (4.0) | 0.956 | 0.300 |
| Ownership Strength (3.0) | 0.803 | 0.188 |
| Stadium Plan (2.0) | 0.803 | 0.188 |

**Table 5.** Value measures' correlation to success and assigned global weights.

### 3.4 Total Weighted Value Scoring

After applying the global weights to each value measure, the resulting rankings of the candidates are given in Table 6.

| Ranking | Candidate City | Market Strength (1.0) | Stadium Plan (2.0) | Ownership Strength (3.0) | Soccer Interest (4.0) | Total Weighted Value Score |
|---|---|---|---|---|---|---|
| 1 | Phoenix | 5.96 | 3.75 | 3.05 | 6.24 | 19.00 |
| 2 | Nashville | 5.09 | 4.38 | 3.52 | 4.56 | 17.55 |
| 3 | Sacramento | 4.90 | 4.38 | 3.75 | 4.05 | 17.07 |
| 4 | Raleigh | 5.57 | 4.06 | 2.58 | 4.06 | 16.28 |
| 5 | San Antonio | 4.86 | 3.44 | 4.22 | 3.58 | 16.09 |
| 6 | Tampa Bay | 5.63 | 3.44 | 2.81 | 3.39 | 15.27 |
| 7 | Cincinatti | 2.87 | 3.44 | 3.05 | 5.57 | 14.92 |
| 8 | Detriot | 3.82 | 2.81 | 3.28 | 4.58 | 14.49 |
| 9 | Indianapolis | 3.85 | 2.81 | 2.58 | 4.86 | 14.10 |
| 10 | St. Louis | 2.84 | 4.06 | 2.34 | 3.92 | 13.16 |
| 11 | San Diego | 3.53 | 3.75 | 2.34 | 3.16 | 12.78 |
| 12 | Charlotte | 5.54 | 2.19 | 1.88 | 2.95 | 12.55 |

**Table 6.** Total weighted value scores and rankings for the 12 candidate bids.

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## 4. Results

Based on the weighted value model, the candidate bids that the MLS should reward an expansion franchise are Phoenix, Nashville, Sacramento, and Raleigh/Durham. The addition of global weights to value measures based on success of recent expansion franchises resulted in a few significant changes to the rankings. Most notably, Raleigh moved ahead of San Antonio to the fourth ranking and potential last expansion slot. This move is a result of Raleigh's strengths; a high level of soccer interest and a young, emerging market, similar to qualities of the Seattle and Portland franchises. Even after the addition of the global weights, the top three candidates remained the same with Phoenix generating a significantly higher score than the other candidate bids. The results of the model also suggest markets like Charlotte, San Diego, and St. Louis are significantly weaker than the others and can likely be eliminated from contention for this round of expansion.

## 5. Conclusion and Recommendations for Future Study

### 5.1 Conclusions

In their current round of expansion, this value model suggests that Major League Soccer should select Phoenix, Nashville, Sacramento, and Raleigh/Durham with their four expansion franchises. These results are based on quantifying the criteria that the league office is evaluating for an expansion franchise. In an attempt to increase model accuracy, recent expansion franchises were evaluated under the same criteria. This criterion was then compared to the success level of these franchises in order to calculate which value measures are most closely correlated to successful expansion franchises. This analysis revealed a strong correlation of market strength and community soccer interest to expansion franchise success. Although the MLS has not explicitly stated their prioritization of values, this study suggests that a young, emerging, corporate-friendly market and an area with a proven dedication to the sport of soccer should be points of focus for the expansion committee. Additionally, this model offers the potential for the league office to objectively weigh their evaluation criteria based on the success of existing franchises.

### 5.2 Recommendations for Future Study

This model contain contains a significant number of assumptions due to the difficulty in quantifying criteria like the strength of an ownership group or the quality of a stadium that is still in the planning or approval phase. This is an inherent risk that Major League Soccer must take when selecting expansion franchises, and likely suggests that they focus their attention on the value measures that are more directly measurable and essential to focus on during the pre-decision phase. For example, criteria like the quality of a stadium can simply be given a threshold that every potential franchise must achieve to be considered. Although measures like strength of ownership group are inherently subjective, these measures may just need additional inputs or value metrics. Extending the model to include more detailed value metrics will likely increase accuracy and validity. Additionally, the derivation of global weights based on expansion franchise success only takes into account the performance of three franchises. This is a very small sample size due to the low number of recent expansion franchises that existed long enough to produce a significant amount of measurable data. I recommend that future research focus on a larger pool of expansion franchises, possibly analyzing these measures in other major professional sports leagues with a larger amount of franchises and a longer existence.

## 6. References

A History of Rave Green- Seattle Souders FC. (2018, February 5). Retrieved from https://www.soundersfc.com/post/2018/02/05/history-rave-green

Couch, B. (2016, December 15). MLS announces expansion process and timeline. MLSSoccer.com. Retrieved from https://www. mlssoccer.com/post/2016/12/15/mls-announces-expansion-process-and-timeline

Club Directory Home-US Youth Soccer. (2018). Retrieved from http://www.usyouthsoccer.org/ClubDirectoryHome/

Edelman, M. (2008, April 28). Single-entity status must pass legal test. *Street & Smith's SportsBusiness Journal*. Retrieved from http://www.sportsbusinessdaily.com/Journal/Issues/2008/04/20080428/Opinion/Single-Entity-Status-Must-Pass-Legal-Test.aspx

Johnson, C. (2017, September). Personal Interview.

ISBN: 97819384961-2-7

Local Television Market Universe Estimates. (2018). Retrived from http://www.nielsen.com/content/dam/corporate/us/en/public%20factsheets/tv/2017-18%20TV%20DMA%20Ranks.pdf

Love, A., Kavazis, A. N., Morse, A., & Mayer Jr., K. C. (2013). Soccer-Specific Stadiums and Attendance in Major League Soccer: Investigating the Novelty Effect. *Journal Of Applied Sport Management*, *5*(2), 32-46.

MLS attendance (2017, February 19). Retrieved from https://soccerstadiumdigest.com/2017-mls-attendance

Parnell, G., Driscoll, P., Henderson, D. (2011). *Decision Making in Systems Engineering and Management*. Hoboken, NJ: John Wiley & Sons, Inc.

Philadelphia Union Club History. (2017). Retrieved from https://www.philadelphiaunion.com/club/history

Sattler, L. A., Warren, C., & Achen, R. M. (2017). Conducting a Market-Demand Analysis: A Case Study of Major League Soccer Expansion. *Case Studies Sport Management (2167-2458)*, *6*(1), 61-70.

Smith, C. (2017, August 16). Major League Soccer's Most Valuable Teams. Forbes.com. Retrieved from https://www.forbes.com/sites/chrissmith/2017/08/16/major-league-soccers-most-valuable-teams-2/2/#29e5961c199c

Smith, C. (2017, December 8). Personal Interview.

Straus, B. (2016, December 21). MLS expansion: An in-depth look at the many bids for the league's next four clubs. Si.com. Retrieved from https://www.si.com/planet-futbol/mls-expansion-prospective-cities-bids-28-teams

Strutner, M., Parrish, C., & Nauright, J. (2014). Making Soccer "Major League" in the USA and Beyond: Major League Soccer's First Decade. *Sport History Review*, *45*(1), 23-36. doi:10.1123/shr.2012-0017

Timbers soccer history. (2017, February 25). Retrieved from https://www.timbers.com/club/timbers-soccer-history

United States Census Bureau. (2016). Metropolitan and Micropolitan Statistical Areas: 2010-2016. Retrieved from https://www.census.gov/data/tables/2016/demo/popest/total-metro-and-micro-statistical-areas.html.

United State Department of Commerce- Bureau of Economic Analysis. (2016). Gross Domestic Product by Metropolitan Area. Retrieved from https://www.bea.gov/newsreleases/regional/gdp_metro/gdpmaann_glance.htm

ISBN: 97819384961-2-7