

2010 FIFA World Cup stadium investment: Does the post-event usage justify the expenditure?

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Abstract

This paper provides an *ex-post* analysis of the utilisation of the stadiums that were built for the 2010 FIFA World Cup. The South African government invested approximately US\$1.57 billion and US\$523 million into the development of new stadiums and upgrades to existing stadiums, respectively. This paper determines whether the substantial investments into the stadiums' infrastructure are justified by the utilisation of the stadiums after the 2010 FIFA World Cup event. A utilisation rate and a stadium usage index were used to analyse the utilisation benefits derived from the stadiums. Generally, the results suggest that there has been a significant decline in the utilisation of stadiums following the 2010 FIFA World Cup. Furthermore, the results indicate that the exorbitant costs of the stadiums for the 2010 FIFA World Cup were significant in relation to the underutilisation of the stadiums in the wake of the event. The 2010 FIFA World Cup has left the country with an expenditure legacy of an oversupply of stadiums, thus making some of the stadiums unsustainable. The results of this study appear to be in line with existing empirical research, which suggests that stadiums tend to be underutilised and pose a financial burden for a host nation, subsequent to a mega-event.

Keywords: 2010 FIFA World Cup; Stadium investment; Utilisation

1. Introduction

Mega-events are significant national or global competitions that produce extensive levels of participation and media coverage (Mills and Rosentraub, 2013). The countries that host mega-events, such as the FIFA World Cup (WC) or the Olympic Games, require large public investments into both event infrastructure, such as stadium development, as well as general infrastructure. Host countries are willing put this investment forward as they seek to gain a potential positive net benefit (Mills and Rosentraub, 2013). According to Du Plessis and Maennig (2007), the benefits of hosting a FIFA WC are seen to be multidimensional. The potential benefits range from foreign investment, media coverage, expenditure by tourists, to possible longer term benefits, such as technology, transportation, infrastructure and the construction of new sporting facilities (Du Plessis and Maennig, 2007; Allmers and Maennig, 2008). Bohlmann and van Heerden (2005) conducted an *ex ante* computable general equilibrium (CGE) based econometric forecast of the likely impact of the WC on the South African economy. The study found that the WC would have a positive impact of 0.94% on gross domestic product (GDP) and the creation of approximately 50 000 jobs. However, other existing research (Baade and Matheson, 2004; Allmers and Maennig, 2009) suggested that the economic implications of hosting a WC are unclear. Comparisons of pre-event estimates of the economic impacts and the actual impacts have been shown to differ substantially. Some studies claim that mega sporting events provide a substantial boost to the host economy (Blake, 2005; Bohlmann and van Heerden, 2005; Agha, 2013). On the contrary, various other economic impact studies have shown that the majority of academic research in this area was found to have non-positive effects on income or employment for the host nation (Baade and Dye, 1990; Baade and Matheson, 2004; Baade, 1996; Noll and Zimbalist, 1997; Coates and Humphreys, 1999; Santo, 2005; Allmers and Maennig, 2009). Baade *et al.* (2008) stated that many of the studies have been biased and suggested three specific reasons for this: the substitution effect, 'crowding out' and leakages. Vigor *et al.* (2004) noted that there might be a discrepancy between the projected optimistic benefits and the actual induced impact of the sporting events on the local economy.

Other authors believe that the non-pecuniary benefits associated with mega-events outweigh the pecuniary benefits (Walton *et al.*, 2008; Kavetsos and Szymanski, 2010; Groothuis and Rotthoff, 2014). Non-pecuniary benefits include the 'feel-good' factor, 'novelty effect,' 'architectural legacy' and the country's public image (Quirk and Fort, 1997; Feddersen *et al.*, 2006, Du

Plessis and Maennig, 2007; Atkinson *et al.*, 2008; Ahlfeldt and Maennig, 2010; Kavetsos and Szymanski, 2010).

On 15 May 2004, Fédération Internationale de Football Association (FIFA) awarded South Africa the hosting rights for the 2010 FIFA WC. This was seen as a significant achievement as South Africa was the first country in Africa to host this prestigious event (Borchers and Maboda, 2011). According to former president, Thabo Mbeki, the competition was a milestone for the entire continent, 'sending ripple effects of confidence from Cape to Cairo' (Bearak, 2010, p.1). The event also gave the country global exposure, as South Africa had the world's attention during the tournament (Pillay and Bass, 2008). South Africa hosted a successful WC and managed to achieve the third highest overall attendance in history, with an average attendance of 49 670 spectators at each match (CBC, 2012).

Hosting a WC requires large amounts of investment into facilities specific to the FIFA WC, such as stadiums, that have the potential to become architectural landmarks or may become 'white elephants' (Whitson *et al.*, 2006; Varrel and Kennedy, 2011). South Africa hosted the Rugby WC in 1995, where upgrades were made to various existing stadiums. However, in order to meet FIFA requirements, South Africa needed to make significant advancements to their stadiums¹. The FIFA Inspection Group in 2004 suggested that three stadiums in South Africa would be suitable for the 2010 FIFA WC, *viz.* the DHL Newlands Stadium in Cape Town, the Ellis Park Stadium in Johannesburg and the King's Park Stadium in Durban; and five stadiums would have to undergo partial refurbishment to qualify as 2010 FIFA WC venues² (FIFA, 2004). However, South Africa chose to make significant renovations to one stadium, First National Bank Stadium (Soccer City) in Johannesburg and construct five new stadiums (Nelson Mandela Bay Stadium in Port Elizabeth, Moses Mabhida Stadium in Durban, Mbombela Stadium in Nelspruit, Cape Town Stadium in Cape Town and the Peter Mokaba Stadium in Polokwane), despite what the Inspection Group suggested. Minor upgrades were also done to existing stadiums (Ellis Park Stadium, Royal Bafokeng Stadium, Free State Stadium and Loftus Versfeld Stadium). Possible explanations as to why South Africa constructed more

1 FIFA requires a net capacity of 80 000 for the opening and final matches. At least 40 000 seats are required for group stages, last 16 and quarterfinals, while at least 60 000 are required for semi-finals (FIFA, 2010).

2 These venues were Bloemfontein (Free Park Stadium), Pretoria (Loftus Versfeld Stadium), Rustenburg (Royal Bafokeng Sports Palace), Orkney (Oppenheimer Stadium) and Johannesburg (Soccer City Stadium).

stadiums than originally required could be due to pressure from FIFA, political interferences, as well as hoping to host a WC comparable to the impressive 2006 Germany WC (Alegi, 2008). Bohlmann and van Heerden (2005) suggested that, given the high level of infrastructure that would be in place after the 2010 FIFA WC, costs would not have to be repeated when hosting future mega-events. They further suggested that possible future events could include South Africa's bid to host the 2011 IRB World Cup and the 2016 Olympic Games.

The construction and upgrades to the stadiums ultimately cost the country US\$2.12 billion³ (Alm *et al.*, 2012). Alm *et al.* (2012) noted that all the stadiums are publicly owned, which implies that the public sector was the main funder for the construction costs and renovations. According to Geyde (2013), the tenders for the construction of the stadium bids were rigged by a cartel, which consisted of South Africa's largest construction companies. This demonstrates that, even before the stadiums were built, they were subjected to controversy.

However, Fourie and Santana-Gallego (2011) suggested that one of the greatest benefits the host nation receives from hosting a mega-event is the legacy that is left after the tournament. Furthermore, Menezes (2010) stated that the economic impact a mega-event has on a country is characterised by the sustainability of the stadiums, which is seen as a long-term benefit. In South Africa's case, many of the stadiums have been underutilised since the 2010 FIFA WC and continue to be a fiscal burden (Allmers and Maennig, 2008).

Therefore, this paper will investigate the utilisation of the stadiums built for the 2010 FIFA WC subsequent to the event. This will ultimately determine whether South Africa has contributed to an oversupply of stadiums and is now having to deal with the difficulties of the under-use of the stadiums in the aftermath of the tournament.

2. Literature review

The impact that mega sporting events have on the host nations has been widely studied. Much academic effort has been invested in the development of methods and models in attempts to measure the economic impacts (Groothuis and Rothhoff, 2014). These methods include local economic impact models dealing with the effects on economic growth, employment and aggregate income effects, contingent valuation models, cost-benefit models, gravity models, input-output

³ It is to be noted that throughout the paper, unless explicitly stated, all amounts are expressed in the 2010 yearly average exchange rate for the Rand/US Dollar. The exchange rate used was 7.638 R/US\$.

(I-O) models as well as stadium utilisation indices. Agha (2013) stated that sport stadiums are seen to be economic catalysts and, therefore, should theoretically, lead to positive economic impacts on local economies. However, on the contrary, past academic research has shown that the impact sport stadiums have on economies is not in alignment with the theory (Baade and Dye, 1990; Baade and Matheson, 2004; Hagn and Maennig 2008a, 2008b; Allmers and Maennig, 2009; Groothuis and Rotthoff, 2014).

An *ex-post* cost-benefit analysis was conducted by Du Plessis and Maennig (2007)⁴, on the 2006 Germany FIFA WC. On the cost side, the study found that Germany spent US\$1.9 billion on the construction and upgrades on their 12 stadiums (4 newly built stadiums). South Korea and Japan, for the 2002 WC, constructed 17 new stadiums while only three were upgraded at a cost of US\$2 billion and US\$4 billion, respectively. In contrast to spending billions of US\$ on the construction costs and upgrades to stadiums, France, who hosted the WC in 1998, only spent US\$500 million (Du Plessis and Maennig, 2007). As opposed to Germany, South Korea and Japan, France only built one new stadium; ‘Stade de France’ (Szymanski, 2002). The French focused on renovating existing stadiums, in order to meet FIFA requirements, rather than constructing new stadiums. Although the construction of stadiums comes at a huge expense to the host nation, stadium costs should not be attributed solely to the FIFA WC, as the stadiums would provide long term benefits (Bohlmann and van Heerden, 2005; Allmers and Maennig, 2008; Du Plessis and Maennig, 2011).

A number of studies have been conducted to determine the change in local economic activity due to the presence of a sports team and/or stadium, within a specific metropolitan area. Baade and Dye (1990) conducted a study to determine the impact a franchise had on retail sales and aggregate income. They found a small increase in the manufacturing industry with a new or renovated stadium; however, the economic benefits were not great enough to justify the stadium subsidies. Baade (1996) sought to determine the change in aggregate income due to the presence of a sports team or a stadium, within a specific metropolitan area. The study concluded that there was a negative relationship. Similarly, Noll and Zimbalist (1997) sought to determine the effect of a sports stadium on local economic growth and employment. They found that the subsidy for the new stadium exceeded the financial benefits. Several authors have made use of taxable sales when determining the economic impact of stadiums, teams and

⁴ The costs of the following stadia were taken directly from Du Plessis and Maennig (2007). The exchange rates used were 1.329 US\$/€, 0.139 US\$/R as of March 23, 2007.

large sporting events (Porter *et al.*, 1999; Baade and Matheson, 2001; Coates, 2007; Baade *et al.*, 2008). Baade *et al.* (2008) used a detailed regression analysis of taxable sales in Florida between 1980 and 2005. The study found that new stadiums and mega-events do not have a positive economic impact on local economies. Moreover, new stadiums and mega-events appear to reduce taxable sales, rather than increase them.

Previous studies found that the benefits of hosting a WC are not seen as pecuniary benefits, but rather as intangible benefits. Kavetsos and Szymanski (2010) found that the host nation experiences a positive impact on national well-being or the 'feel good' factor in the short-term; however, they found little evidence for longer-term benefits. Allmers and Maennig (2008) proposed that new stadium structures built for WCs engender a 'novelty effect.' Studies conducted by Quirk and Fort (1997) and Feddersen *et al.* (2006) also suggested that the construction of new stadiums have a 'novelty effect,' as they both found that the average number of spectators increased when a new stadium was constructed. Noll (1974), however, reported that 'novelty effects' gradually wore off and found a gradual linear decline in the attendance generated by a new stadium. This was also evident in the study by Kavetsos and Szymanski (2010).

Alm *et al.* (2012) conducted a study to determine the sustainability of stadiums that were built for mega-events. The study investigated 75 stadiums, which had been built around the world for specific mega-events. They then sought to derive a 'world stadium index.' This was done by dividing the attendance figures of each stadium in 2010 with the respective stadium's capacity, in order to determine the utilisation of the stadium. In South Africa, they found that the country had contributed to an oversupply of stadiums.

3. Research approach

The theoretical framework this paper addresses falls under the sports and infrastructure economics field of research. The study uses two measures to determine if the legacy of the stadiums is positive or negative; each stadium is assessed in terms of the utilisation of the stadium following the 2010 FIFA WC tournament. The stadiums which will be analysed in this paper are the

Nelson Mandela Bay Stadium⁵, Mbombela Stadium⁶, Cape Town Stadium⁷, Soccer City Stadium⁸ and Loftus Versfeld Stadium⁹. A diverse range of stadium characteristics⁹ were selected in order to determine potential patterns or trends.

The utilisation of the stadiums are determined by using two different approaches. In the first approach, the utilisation rate of each stadium is determined. This is achieved by comparing the average attendance figures per annum with the stadium capacity, expressed as a percentage. It is calculated by dividing the stadium's average attendance figures per annum, with the stadium's total capacity. For example, if a stadium has an average attendance figure of 30 000 per annum and a stadium capacity of 50 000, the utilisation rate would be 60% per annum. Therefore, the utilisation rate represents the relationship between the number of spectators per year and the stadium's capacity. The second approach focuses on the total stadium attendance figures per annum and the stadium's capacity, to determine a 'stadium usage index.' This method is similar to that of Alm *et al.* (2012), who sought to determine a 'world stadium index.' This approach determines the number of times that a specific stadium is theoretically filled to its maximum capacity per annum. It is calculated by taking the stadium's total attendance figures per annum, divided by the stadium's capacity. For example, if a stadium has a total attendance figure of 500 000 per annum and a capacity of 55 000, the stadium usage index would be 9.

The two different approaches are chosen as they reflect different aspects in the usage of the stadiums, in relation to their capacity. For example, if a stadium has a high utilisation rate, this suggests that the attendance figures for events held at the stadium are high. However, if the stadium usage index is lower than the total number of events held per annum, this suggests that the attendance figures at events are low as the stadium is only theoretically filled to its maximum capacity fewer times than the number of events held. Thus, by using a combination of the two approaches, this study can determine the usage of the stadia for events and the attendance at the events.

5 The Nelson Mandela Bay Stadium was selected for the study due to Port Elizabeth previously not having a suitable stadium within the city before the 2010 FIFA WC.

6 The Mbombela Stadium was selected for the study, as it was the cheapest stadium to construct and has the lowest total capacity. Furthermore, it is home to the Puma's Rugby Club who only compete in domestic rugby union competitions.

7 The Cape Town Stadium was selected for the study due it being the most expensive stadium in the study, and because Cape Town had existing stadia within the city that potentially could have been used for the 2010 FIFA WC.

8 Soccer City was selected for the study due to it being South Africa's largest and most notable stadium.

9 Loftus Versfeld Stadium was selected for the study as it was an existing stadium and was not newly built for the 2010 FIFA WC.

There are two possible limitations in the study. Firstly, the study only takes into account events that took place on the pitch, e.g. sporting events, concerts, and/or any other mega-events. Events, such as weddings and stadium tours, are not considered. This is due to the nature of the data provided by the relevant stadiums. Secondly, there are no benchmarks concerning the number of events or utilisation rates with which to compare each stadium.

4. Results

The results in table 1 illustrate each stadium's figures per annum of the number of events held, the utilisation rate, as well the stadium usage. The results suggest that the number of events held at each stadium in 2010 are relatively lower than the years following the 2010 WC event¹⁰, except Loftus Versfeld, which was the only existing stadium used in the study. Loftus Versfeld and Soccer City hosted the greatest number of events over the five-year period, hosting 127 and 128 events respectively. This is relatively high in comparison to the Cape Town Stadium and the Mbombela Stadium, which only hosted 96 and 98 events respectively.

The utilisation rate of each stadium in 2010 is relatively high compared to the years following the 2010 WC event. This is due to the high attendance figures at the FIFA WC matches. In the post-WC years, Loftus Versfeld Stadium and Soccer City Stadium generally had relatively higher utilisation rates ranging from 24.55% to 42.39% per annum. This being compared to the Mbombela Stadium whose utilisation rates ranged from only 9.8% to 29.76% per annum. The Nelson Mandela Bay and the Cape Town Stadiums' utilisation rates were also relatively lower, averaging around 30% and 25% per annum, respectively. Overall, the utilisation rate results for the majority of the stadiums are relatively low, suggesting that average crowd attendance figures for post-WC events are generally low.

10 It is to be noted that the number of events held in 2014 are likely to be deflated for all stadia due to data only being collected for half of the 2014 year.

TABLE 1. WORLD CUP STADIUM ANALYSIS, 2010 - 2014

	Number of Events	Utilisation Rate (%)	Stadium Usage Index
Nelson Mandela Bay Stadium			
2010	17	48.40	8.23
2011	30	26.91	8.07
2012	27	23.85	6.44
2013	21	42.32	8.89
2014	9	25.23	2.27
Total	104		33.90
Loftus Versfeld Stadium			
2010	28	51.87	14.52
2011	27	36.27	9.79
2012	22	42.39	9.33
2013	32	30.46	9.75
2014	18	33.11	5.96
Total	127		49.35
Cape Town Stadium			
2010	14	81.57	11.42
2011	20	26.31	5.26
2012	28	20.84	5.84
2013	24	25.78	6.19
2014	10	26.72	2.67
Total	96		31.38
Soccer City Stadium			
2010	23	65.91	15.16
2011	28	34.86	9.76
2012	26	24.55	6.38
2013	34	36.39	12.37
2014	17	29.00	4.93
Total	128		48.61

Table 1 continued

Mbombela Stadium			
2010	11	52.01	5.72
2011	20	29.76	5.95
2012	18	15.48	2.79
2013	34	21.90	7.44
2014	15	9.80	1.47
Total	98		23.37

The total stadium usage index exhibited relatively high results for Loftus Versfeld Stadium of 49.35 and Soccer City Stadium of 48.61, while the results were relatively lower for the Cape Town Stadium, Nelson Mandela Bay Stadium and the Mbombela Stadium. However, if we compare the stadium usage index to the number of events for even the most successful stadium (Loftus Versfeld), the results suggest that out of 127 events, the stadium was only theoretically filled approximately 50 times over the five year period.

5. Discussion

Generally, the results suggest that the utilisation of all stadiums used in the study is relatively low. Low average attendance figures may be one of the main reasons why some stadiums face financial difficulties and why the stadiums are deemed to have negative sporting legacies, as well as an increase in long-term debt (Alm *et al.*, 2012; Coakley and Souza, 2013). Generally, the utilisation rate and stadium usage index of all the stadiums decreased significantly during the post-WC years.

The Cape Town Stadium, which was the most expensive stadium at a cost of US\$576 million (Independent Online, 2010)¹¹, had the highest utilisation rate of 81.57% in 2010. However, this high utilisation rate was inflated due to the high attendance figures for the WC and the relatively low number of events. In 2010, 14 matches were played, which eight of them were WC matches. The stadium had a usage index of 11.42, which is relatively high, considering the stadium hosted only 14 fixtures that year. However, the results suggest that the utilisation

11 According to Phakathi (2014), this stadium has been running at an annual loss of roughly US\$5.2 million. It has also been struggling to host events, largely due to the high hiring costs.

rates and stadium usage indices in post-WC years were significantly lower than in 2010. In 2012, the Cape Town Stadium hosted the greatest number of events, yet, the events in that year received the lowest utilisation rates. In 2011 and 2013, the stadium attained relatively higher utilisation rates. A possible explanation for this was due to the number of concerts held in those years, which were well attended (Black *et al.*, 2007)¹². Although the utilisation rates were relatively high, the results suggest that the stadium was theoretically filled only five to six times per year, despite the stadium holding 44 events in 2011 and 2013 combined. The 66 000 seat stadium was built due to the pressures from FIFA and the South African government, as local authorities had initially planned to upgrade the existing Athlone Stadium in Cape Town (Dunmore, 2010). Cape Town, in fact, had another stadium, which could have been used. The DHL Newlands Stadium is a 51 900 seat stadium and owned by the Stormers Rugby Club, which would have required only minor upgrades in order to meet FIFA's requirements (Allmers and Maennig, 2008). These upgrades could have been done at a fraction of the cost of the new stadium¹³, which would have reduced the amount of spending significantly (Dunmore, 2010)¹⁴. Efforts have been made by the Cape Town City Council Union to move the Stormers Rugby Club from their current DHL Newlands Stadium to the Cape Town Stadium. This would potentially increase the number of events and the utilisation rate of the WC stadium. Saunders (2012: p.1) stated that the 'Cape Town Stadium is fairly well utilised already, but that the move of Western Province Rugby to the stadium would significantly improve this, making the stadium highly utilised, operating at breakeven and probably at a surplus'. Although the Cape Town Stadium has a larger capacity, it only has 100 corporate suites, compared to that of the DHL Newlands Stadium's 315 suites (Independent Online, 2010).

Soccer City is South Africa's most notable and largest stadium with a total capacity of 94 736. This stadium was built at a cost of US\$432 million and hosted eight WC matches, including the final WC match. The stadium is seen to be the most successful newly built stadium in this study, due to its relatively high utilisation rates in relation to the number of events held. However, Soccer City's

12 Concerts held in 2011 included U2, Neil Diamond and Coldplay. While in 2013, concerts held were Red Hot Chilli Peppers, Bon Jovi, Justin Bieber and Rihanna.

13 Cape Town Stadium cost US\$576 million to build, compared with an estimated US\$144 million to re-ramp the DHL Newlands Stadium or US\$223 million to extend the Athlone Stadium (Brümmer, 2010).

14 Similarly, Durban has the existing Kings Park Stadium which has a total capacity of over 50 000. This stadium underwent major renovations for the 1995 Rugby WC. However, the South African government constructed the US\$446 million Moses Mabhida Stadium, which is located adjacent to Kings Park. Du Plessis and Maennig (2009), however, state that the Moses Mabhida Stadium was not only constructed for the intention of the FIFA WC, but also for the application of the 2020 Summer Olympics and 2022 Commonwealth Games.

highest post-WC utilisation rate of 36.39% and a stadium usage index of 12.37 for 34 events in 2013 is still a low average attendance figure. The stadium's main anchor tenant is the Kaiser Chiefs Football Club. According to Alm *et al.* (2012), this team has the highest average attendance figures in the Premier Soccer League (PSL). This is a possible explanation as to why Soccer City attained one of the best post-WC utilisation rates, relative to the other stadiums (Markerink and Santini, 2004). However, the size of the stadium may be a factor, which potentially deflates its utilisation rates. For example, if Soccer City has a utilisation rate of 50%, the crowd attendance would be 47 368. Whereas, if the Nelson Mandela Bay Stadium, whose total capacity is 46 082, achieved a 50% utilisation rate, the crowd attendance would be only 23 041. Moreover, 50% of Soccer City's capacity is greater than 100% of Nelson Mandela Bay Stadium's capacity. Therefore, the results for the Soccer City Stadium are seen to be adequate, in relation to the size of the stadium. Much like the Cape Town Stadium, Soccer City has also hosted a noticeable number of concerts that were well attended. This ultimately has contributed to the relatively high utilisation rate and to the stadium usage index.

Loftus Versfeld was the only existing stadium used in this study. An amount of US\$19 million was spent on minor upgrades for the WC, in order to meet FIFA requirements. The results suggest that Loftus Versfeld was the most successful stadium as it had the highest average post-WC utilisation rates. Loftus Versfeld is primarily used as a rugby stadium as it is home to the Vodacom Blue Bulls. The stadium, however, is also home to the Mamelodi Sundowns Football Club. The stadium's most successful year, post-WC, was in 2012, with a utilisation rate of 42.39% and a stadium usage index of 9.33 for the 22 events held that year. Between them, the two clubs attract relatively large crowds, especially when these local teams play their respective derbies, where one can expect the stadium to be close to full capacity. However, in saying that, some of the Vodacom Blue Bulls and Mamelodi Sundowns' events against other mediocre sides, have often only drawn smaller crowds of only a few thousand spectators.

In contrast to the relatively successful Loftus Versfeld and Soccer City stadiums, the Mbombela Stadium, which cost the country US\$137 million, hosted the least number of events over the years, except in 2013 when South Africa hosted the African Cup of Nations (AFCON). The Mbombela Stadium was used for this event. The stadium also achieved the lowest average utilisation rate per annum, relative to the other stadiums. In 2014, the stadium attained a utilisation rate of 9.8%. This suggests that, of the 15 events the stadium hosted in 2014, on average, the crowd attendance was less than 10%. Moreover, the stadium usage index suggests that, theoretically, the stadium had only been

filled to its total capacity roughly one and a half times. This stadium is home to the Steval Pumas Rugby Club who play in the ABSA Currie Cup Premier Division, as well as in the Vodacom Cup, which are domestic rugby union competitions (Alm *et al.*, 2012). The home crowd attendance figures for the Steval Pumas are particularly low. In 2013, they played 12 home fixtures and attained an average crowd attendance of 2 579 spectators, in a stadium whose total capacity is 43 589. This is an improvement from the 2012 season where 10 matches were played with an average crowd attendance of 1 268 spectators. The results suggest that the Steval Puma's have had trouble attracting large crowds. Another possible explanation to consider is whether this WC venue is too large in relation to the local needs. A similar argument can be put forward concerning the Soccer City Stadium.

The Nelson Mandela Bay Stadium cost the country US\$268 million. In contrast to this expenditure, the results show relatively low utilisation rates. The stadium attained the lowest 2010 utilisation figure of 48.4%, compared to that of the other stadiums. The attendance figures for the eight WC matches played at the stadium were relatively high. This suggests that the other events which had taken place at the stadium in 2010 were poorly attended, and deflated the 2010 utilisation rate. The 46 082 seat stadium has the Eastern Province (EP) Kings as their main tenants. The EP Kings currently play in the ABSA Currie Cup Premier Division and the in Vodacom Cup. The results suggest that the crowd attendance figures for these matches are relatively low. In 2012, the stadium had a utilisation rate of 23.85%. However, in 2013 the Southern Kings¹⁵ were promoted to the international Super Rugby competition. From the results, the Nelson Mandela Bay Stadium's utilisation rate in 2013 rose to 42.32%. The figures suggest that the Super Rugby competition was well attended, which had a significant impact on the utilisation results for 2013. The EP Rugby Union President Cheeky Watson stated that, 'the Eastern Cape and the amazing crowds that attended the Super Rugby games at the Nelson Mandela Bay Stadium this year have shown that this is the case, with the Southern Kings securing the third highest crowd attendances of the fifteen teams taking part in the competition' (Rugby365, 2013: p.1). However, the Southern Kings were demoted after 2013. The demotion of the Southern Kings had a direct effect on the utilisation rate, as it decreased from 42.32% in 2013 to 25.23% in 2014. Moreover, in 2014, only 9 events had taken place, with the majority of them being friendly matches and one international match between South Africa and Scotland. This drew a crowd of 40 793 spectators. The stadium usage index of 2.27 for 2014, suggests that the stadium has been theoretically filled just over twice, in nine events, with one of events being the well-attended international rugby test match.

15 The franchise name of the team that competed in the Super Rugby competition.

6. Conclusion

Ultimately, the results from a utilisation point of view, suggest that the 2010 FIFA WC has contributed to an oversupply of stadiums in South Africa. Subsequently, this has led to the under-use of the stadiums in the aftermath of the tournament. Academics argue that it is in the spirit of the event to construct large and expensive architectural landmarks, however, many do not realise the potential long-term implications (Preuss, 2007). South Africa is now faced with the challenge of trying to attract larger crowds to the majority of the new stadiums, in order for them to be economically sustainable. South Africa potentially could have hosted a successful WC without the construction of the Cape Town Stadium, Moses Mabhida Stadium, the Peter Mokaba Stadium and the Mbombela Stadium, and spent a fraction of the cost on upgrading the existing stadiums¹⁶. South Africa could have saved over US\$1.1 billion by taking this option. Furthermore, it is a paradox that the only existing venue used in this study (Loftus Versfeld), attained higher utilisation rates compared to the newly built WC venues. This suggests that the local tenant of a stadium plays a crucial role in the usage of the stadiums, as well as the utilisation rates for the specific events.

The size of the stadiums, in terms of capacity, are often seen as being too large for local use. Therefore, it would be better for countries, in terms of sustainability, to build stadiums in accordance with their national and local sporting needs. This is not suggesting that FIFA should lower their standards, but rather reduce their requirements for capacity. This would partly contribute to the utilisation of the stadiums after the event. A control mechanism, which is based on experience from previous events and not on FIFA requirements, overly optimistic expectations and a lack of realistic data, is required. This will provide countries that wish to hold future mega-events with some assistance when determining the number of stadiums required, so they are not left with a long-term legacy challenge (Alm *et al.*, 2012). Moreover, the host country should be aware of the long-term legacies attached to such an event and should not be caught up in the eagerness of the event and neglect the potential negative consequences.

¹⁶ Existing stadiums include the DHL Newlands Stadium, Kings Park Stadium, Ellis Park Stadium and the Athlone Stadium, to name a few.

Biographical Notes

Luke Humphrey is a Masters student in the Department of Economics and Economic History at Rhodes University. He currently holds a BCom (Hons) degree in economics and will be submitting his Master of Commerce dissertation shortly. He has broad research interests in the fields of microeconomics, sports economics and environmental economics. This paper is the result of his Honours degree research project.

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