

Can the Olympic Games be a sustainable event?: Trends in academic research

Abstract

Governance of the Olympics Games involves the International Olympic Committee (IOC) and the National Olympic Committee (NOC) of the host community. In recent years the focus has been on sustainability of the Olympic Games. As such, these organizations have been challenged to adopt strategies to achieve the goal of sustainability. The purpose of this project is to assess how the concept of culturally, economically, environmentally and socially sustainable Olympics games has been addressed in academic literature during the period of time January 1994 to May 2014 in a variety of academic journals in the areas of business, hospitality, tourism and sports management. There is a need for future research to address more quantitative, interdisciplinary approaches to the governance of the Olympics through ethical strategic planning before, during and after the event with a focus on the environmental and cultural impact.

Key words: Olympic Games, impact, sustainability

INTRODUCTION

Mega sports events are of international significance due to their potential to attract large numbers people, to improve the economy, to gain the attention of the international media and to entice investment from investors and sponsors (Roche, 1994, Coates and Humphreys, 1999, Roche, 2000, Horne & Manzenreiter, 2006). As a consequence of mega sports events, the economy of the host cities is further stimulated by attracting sports fans, boosting tourism including hotels and restaurants, creating temporary and permanent jobs as well as providing funds for development/improvement of infrastructure.

Beginning in 1994, the concept of a sustainable Olympic game was introduced as governance and considered to be one of the possible legacies of the games (International Olympic Committee (IOC), 1996).

“No Games should ever pass through a city without leaving a lasting impression. The benefits can and should always outweigh the impacts and costs. But that does not happen simply as a matter of right. Successful host cities have a clear vision and sense of purpose. They also leave nothing to chance and they make sure they have covered all the essentials. Sustainability is one of those essentials.” (International Olympic Committee (IOC), 2013, p9)

Global interest in the hosting of major sports events has created a steady and growing awareness of sports tourism research. The emerging research in event planning (such as Olympic event planning) includes: 1) the environmental, economic and socio-cultural impacts of events; 2) the policies and planning of events as well as 3) the business and management of events (Getz, 1998).

Although the body of literature on the sustainability of mega sports events has grown, most of it focuses on the economic impact (Baade & Matheson, 2004; Preuss, 2004) and social impact (Lensky, 2002; Kim & Petrick, 2005) as opposed to the environmental impacts. However, the impact on the environment has become an important issue (Collins, Jones & Munday, 2009; VanWaynsberghe, Derom & Maurer 2012).

The purpose of this research is to determine how well academic research has addressed the need of how to make the Olympics more sustainable. To achieve this goal, we assessed the body of research that supports and informs the efforts to make the Olympic games more sustainable- economically, environmentally, socially and culturally during the period 1994-2013.

REVIEW OF LITERATURE

The Legacy

In the process of evaluating the governance in hosting the Olympic games, the terms “impact” and “legacy” are often used (Homma & Masumoto, 2013). Impact is often associated with the effect of a policy, program or project on the environmental, social or economic system and is often considered to be more immediate. However, use of the term “legacy” suggests effects that have a more lasting duration and are typically presenting a more positive effect. In addition, the Olympic Games Impact Guide classifies legacies as tangible and intangible. Of course, tangible legacies can be visualized in infrastructure, facilities and transportation while intangible legacies include improved policies, national pride, education, healthy lifestyle and environment. According to the governance of the International Olympic Committee, legacies can be classified in five (5) categories- sporting, social, environmental, urban and economic.

The legacy of the Olympic games can range from economic boost to environmental development to societal displacement. In many instances, improvement projects are already in place prior to winning the Olympic bid and it is not clear just “how much” difference winning the bid makes (David & Thornley, 2010). The inability to clearly define “legacy” with any accuracy results in many overstated claims about the impact of the Olympic games (Thornley, 2012).

Positive Legacy

Mega events guarantee that the destination is recognized in the global market with world attention given to the economic, social and cultural characteristics of the place where the events occur (Dolles & Soderman, 2008). Matheson and Baade (2004) further suggest that these events show to the world the political, cultural and economic power of the host country.

Research well documents the positive legacies of hosting the Olympic games such as: 1) increased tourist flow (Hall, 1998; Getz, 1998; Roche, 2000; Ingerson, 2001); 2) urban regeneration and renewal of spaces (Botela, 1995; Toohey & Veal, 2007); 3) robust employment generation (Essex, 1998; Horne & Manzenreiter, 2013; Avison Young, 2003); 4) financial support brought by the media and the sponsors (Whitson & MacIntosh, 1996); and 5) improvement of the standards of the host city (Eitzen, 1996; Lenski, 2000). Brunet (1995) pointed out positive impacts realized through the Barcelona Olympics such as: expanded space for commercial offices, increased real estate valuation and improved transportation with reduced congestion reduction. Preuss (2004) has a positive view of the impact on the Olympics with respect to urban regeneration, economic development and wider social benefits.

Negative Legacy

It is also well documented, however, that hosting the Olympics can generate negative externalities such as air pollution, vandalism, accidents of various kinds, increase product prices, speculation, dispossession, marginalization of communities increased prostitution, crime and noise . It is for these reasons that the positive effects can be nullified and result in negative effect on the image of the city (Ritchie 1988, Ohmann Jones & Wilkes, 2006) .

Economic Impacts of the Olympic Games

The body of literature on the sustainability of the Olympic has increased in recent years, however, most of the literature focuses on the economic impact followed by social impacts. Elkington (1999), Chernushenko et al (2001), Preuss (2004), Masterman (2004), Sherwood, Jago and Deere (2005) suggest there is a significant gap between the optimism and the reality of hosting Olympic games, fueled by heightened political will, that often results in an underestimation of the actual costs associated with mega events.

Cities compete aggressively to host the Olympics based on the desire to be perceived as a world class city; to improve the image; to stimulate the economy and to improve infrastructure. Hosting the Olympics presents opportunities for government funding, international attention and corporate investment (VanWaynsberghe, Derom & Maurer, 2012). However, research on economic impact of the Olympics is not conclusively positive. After many years of touting that hosting the Olympics would have a positive impact on a city's economy, recent attention has shown that these mega sports events are "short term events with long term consequences." In some instances, cities earn revenue while in others situations, taxpayers are paying off debts up to 30 years after hosting the games.

Social Impacts of the Olympic Games

Although research shows that hosting the Olympic games is a golden opportunity for economic development and urban renewal, there is little research done on the social-cultural impacts on residents and environmental impacts (Konstantaki & Wickens, 2010). The social benefits of hosting the Games can be both positive and negative (Chen, Qu, Spaan, 2013). Positive impacts include enhanced confidence, community pride, self esteem, empowerment of disadvantaged groups with income and employment. In 1992 the Barcelona

Olympics introduced the “Barcelona model” wherein they addressed community participation and housing for low-income groups (Chen, Qu, Spaan 2013). Negative social impacts include inequities in housing and employment, evictions from high profile areas, redevelopment and negative economic impact. According to Minnaert (2014), demand for labor is not always equitable and often favors people in “stronger socio-economic positions. In many instances, the increased employment is short term, part time and there is not enough time to hire and train employees for a two week event.

Schimmel (1995) and Hiller (2000) have drawn attention to the temporary nature and low pay scale of generated jobs. Pyo et al (1988) and Kang & Perdue (1994) argue that in the short term, the tourist flow tends to return to normal. Hall and Hodges (1998) showed that local population were adversely affected by the relocation of housing and land speculation which leads to increased rent and land use issues. Horin (1998), Beaty (1999) and Lensky (2000) and Ruthheiser (2000) discuss the lack of political commitment to the population living below the poverty line. Residents attitudes about hosting the Olympics can range from excitement and a sense of pride to extremely negative with a focus on pollution, traffic congestion, lack of parking, and dislocation of residents from their homes (Konstantaki & Wickens, 2010).

Preuss (1998) suggests that there is difficulty in objectively evaluating the often intangible and easy to be manipulated social aspects of mega sports events. According to Preuss (2004) , every mega event generates positive and negative impacts for the host cities. Virtually every action has its upside and its downside. It is the responsibility of governments to invest in actions that maximize the positive and mitigate the negative and it is society's responsibility to assure a positive legacy from the mega event.

Lybbert and Thilmany (1999) took steps to assess the social/cultural legacy of hosting the Olympics by applying Greenwood (1991) disequilibrium-driven migration model to calculate

employment growth in Lake Placid (1980), Los Angeles (1984), Calgary, Canada (1988) and Atlanta (1996). They found employment growth to be significantly associated with net migration of people to a region. However, they also found that even though there was employment growth, there was a negative impact on per capita income growth. The impacts on migration occur at the time of the announcement of the award of the games and continue only through the year of the games.

Environmental Impact of the Olympic Games

As long ago as 1964, Tokyo citizens were voicing their concerns about the water quality and pollution impact of hosting the Tokyo Olympics. In 1974 Denver residents refused to host the games due to environmental issues. However, in 1987, the issue of environmental impact on development was addressed by the United National World Commission on Environment and Development (WCED) with the publication of Our Common Future, also known as the Brundtland Report. In 1992 United National Conference on Environment and Development Earth Summit in Rio de Janeiro the focus on environment was moved to the forefront with a key outcome of the conference being Agenda 21 which outlined guidelines for managing development and the environment in the 21st century.

Even before the Olympic Games Impact Study (OGI) was established in 2003 to help host cities measure the impact of the Olympic Games, Lillehammer, Norway -1994 and Sydney, Australia- 2000 were pioneer cities that contributed to the focus on environmental protection for energy and water use, waste reduction, and pollution. The environment became the third pillar of the Olympic Movement in Lillehammer, Norway (1994). This action was appropriate as Norwegians have a strong historical connection to nature. In fact, 67% of the city population was polled and found to determine that their highest priority for the Games was the environment in lieu of more jobs, better roads and more Gold Medals. The greening of the 1994 event was led

by volunteer environmental organizations, environmental authorities and Olympic Games organizers. The Sydney games demonstrated their commitment to being environmentally sustainable through the use of solar power for street lighting, water heating and air conditioning. Water was treated and recycled. A ban was placed on the use of environmentally harmful gases in air conditioning and refrigeration (Holden, MacKenzie, & VanWynsberghe. 2008).

Salt Lake City (2002) followed with the planting of 100,000 trees and recycled energy. Athens (2004) incorporated environmentally friendly transportation and building materials as well as planting millions of bushes and trees. Turin (2006) formalized their commitment to effective environmental management by earning two international certifications as well as investing in renewable energy and reforestation projects. Beijing (2008) used environmentally sustainable building materials and implemented improved waste management. Vancouver (2010) not only received LEED Platinum rating, but also used the Olympic venue as a community center after the games. London (2012) set the standard high with systematic focus on environmental issues during construction, staging and after the Games.

The focus on the environment was stronger in the most recent London Olympic Games where London implemented the 2012 Sustainability Plan based on five themes: climate change, waste, biodiversity, inclusion and healthy living. They implemented these points in three stages: construction, staging and post Games. On the other hand, the Sochi Games (2014) were the most expensive games and did not meet the environmental or social objectives (Table 1).

Insert Table 1 about here

Overview

Over the years, winning the bid to host the Olympics has been a coveted goal for all of the positive impacts to the host city and the subsequent legacy that will remain after the Olympics.

Davis & Thornley (2010) suggest that term “Olympic legacy has a variety of meanings to various stakeholders and is difficult to clearly define. The term “legacy” may be positive or negative depending on the perspectives of the host city stakeholders as can be seen in the cases of Athens, London, Beijing and Sydney.

Although the Athens games were considered to leave an economic legacy, the Olympics in London (2012) were classified as "a step forward" socially by Vieira (2012). Since they occurred during the European crisis, there was a strong focus on providing employment. In the Beijing Olympics (2008), a portion of the legacy for the city and its population was installation of wireless networks, transmissions digital information and extensive use of intelligent technology. The Sydney Olympics (2000) were characterized by their sustainability in that the International Olympic Committee (IOC) developed 150 indicators known as Olympic Games Impact Study (OGIS), which measured the impact of the games by comparing the state of the host cities at three points in the process 1) before, 2) during and 3) after the event. Research has demonstrated that there has been a lack of strategic planning of Olympic events. In 2010, Ma, Eagan, Rotherham & Ma introduced a monitoring framework for evaluating the planning for the Olympics through the various stages. They also surveyed host residents and interviewed other stakeholders regarding their perceptions of the potential impacts of the Olympics.

METHODOLOGY

Through our extensive review of relevant literature, we plan to determine the gaps in theory, knowledge and application in assuring the sustainability of the January 1994- May 2014 Olympic Games: before, during and after the event. We conducted a review of academic, peer-reviewed literature related to the sustainability of Olympic games using the Scopus comprehensive bibliographic database with over 21,000 titles from 5,000 publishers. Scopus includes abstracts

and citations for academic articles covering 20,000 academic journals and is the largest abstract and citation database of peer-reviewed articles in the areas of social science including the arts and humanities, technical; medical and scientific journals. We used the following keywords “Olympics”, “Olympic games”, “cultural”, “economic”, “environmental” “social”, “planning”, “model”, “strategy” and “sustainable” in an Advanced Scopus Search of the top 10 business journals and the top 10 hospitality, tourism and sports journals between 1994-2014. The initial search of the top 10 business journals resulted in no articles. We expanded our search further by adding journals in the social sciences. In addition to the Scopus search, a Google search was conducted using the same key words

Following the Scopus and Google article searches, we had a database of 197 relevant articles. The final article database included theses, conference papers and conference proceedings. It did not include newspapers articles. Internet sources were not referenced with their electronic address due to the short-lived nature of those addresses.

At this point, we read and coded each article based on the following criteria: name of author; sustainable dimensions addressed; year of publication; nationality of authors; key words cited; attributes of the research as qualitative/quantitative or descriptive/prescriptive; the methodological approach; whether the research was conducted before the Olympic event discussed or following the event; whether the research was about one Olympic event over time (longitudinal study) or about information or perception gathered during a short period of time (cross sectional study).

We evaluated and coded each of the 131 selected articles¹ in an Excel database using the criteria found in Table 2.

¹ *Database of 131 articles published between January 1994 and May 201 and used in this review of relevant publications is available upon request.*

Insert Table 2 about here

RESULTS

The focus of research on the impact of the Olympics has evolved over the years with most research being on economic impact. It has only been since the 1990's that there has been more interest in social, cultural and environmental impact. In our database of articles (Figure 1) during the period January 1994 to May 2014, two of the articles (3.5%) were focused on culture as it relates to the Olympics while only 7.6% (n= 10) focused on the environment. 9.9% (n=13) addressed the issue of the economic sustainability of the Olympics and 7.6% (n=10) focused on environmental issues. For the purposes of this research, we were examining environmental management strategies as opposed to basic science of environment. Social issues were addressed in 15.3% (n=20) of the articles. Only 26.7% (n=35) of the articles simultaneously addressed culture, economic, environment, and social.

Insert Figure 1 about here

A review of the date of publication year of relevant journal articles reviewed in this study (Table 3) demonstrates that there has been an increase in the number of publications as more interest has been directed at the Olympics in recent years particularly with Beijing (2008), London (2012), and Rio de Janeiro (2016) being the sites selected. Very few research studies were conducted on the Olympics between 1994 and 2007. The rapid increase in number of research studies began in 2008 and has increased significantly during the period 2010-2014.

Insert Table 3 about here

In some instances authors of the research papers were from a variety of different countries (Figure 2). However, most of the publications were from UK (26%, n=34), United States (12.2%, n=16) and China (9.2%, n=12).

Insert Figure 2 about here

Most of the research articles (52%, n=75) were qualitative in nature where was only 32% (n=42) used quantitative measures. A small percentage 6.8% (n=9) used both qualitative and quantitative measures (Figure 3).

Insert Figure 3 about here

Descriptive articles are those that describe aspects of the Olympics whereas prescriptive are those that suggest a process or a plan of action for the Olympics. In this review of literature, a majority of the articles 77.9% (n=102) described an Olympic event as opposed to 7.6% (n= 10) prescribed process or plans of action. Among the articles, 14.5% (n=19) were both describing aspects and suggesting a process or plan of action in the planning and hosting of the Olympics.

Insert Table 4 about here

With regard to the research methodologies used in our sample of articles, most of the articles used secondary data (n=25) followed by essays (n=23) and case studies (n=22). Interviews (n=19) and survey/questionnaires (n=19) were used equally. Models for planning and assessment of the impact were incorporated in 18 of the research papers. Less frequently used methods were

reviews of literature (n=9) and regression analysis (n=9) followed by analysis of variance (ANOVA) (n=4), content analysis (n=3), and cluster analysis (n=1).

Most of the articles in this review (61%, n=80) researched an event *after* (post) the event whereas 22% (n=29) researched an event *before* its occurrence. On the other hand, 15.3% (n= 20) address the event *both before* and *after* it occurrence. Only 1.5% (n=2) addressed the event in a more general way. The research articles tended to take the perspective of either 1) describing a situation at a particular time (cross sectional) or 2) discussing the planning for Olympics over a period of time (longitudinal). Fifty-four percent (n=71) of the articles in this review were cross-sectional where as 43 % (n=56) were longitudinal. A small percentage (1.5%, n=2) discussed both perspectives- cross sectional and longitudinal while 1.5% (n=2) addressed neither perspective.

In general, a majority (73.3%, n=96) of the research articles focused on one particular city where an Olympic event was being held as opposed to only 26% (n=34) articles that discussed several cities where the Olympic events were held. One article was more general and did not specifically refer to any host city.

CONCLUSIONS

Based on the results of this study, it is clear to see that there is an increasing interest in research into the impact of the Olympic Games even though it is more focused on the economic and social aspects. Increasing numbers of academic articles are more interdisciplinary in that they are considering culture, economic, environmental and social issues simultaneously. The increase in academic publications is clearly evident starting in 2007-2008 and continues through the publication of this document.

Most of the articles were found in specialized journals (economics, marketing, sports management) with partial approaches to the concept of a sustainability: cultural, economic,

environmental and social. Only 26.7% of the papers addressed all four dimensions of sustainability suggesting the need for more interdisciplinary studies done by researchers from different fields working together. Of the articles published, most are descriptive in nature and are based on secondary data that has been collected by other resources and are often opinion papers (essays) and based on case studies. Primary data is often collected via interviews as well as surveys and questionnaires. A few models have been developed and quantitatively tested to assess the planning before, during and following the Olympics. A majority of the articles reported “after the fact” and were descriptive as opposed to prescriptive. Academic articles were more likely to have been written about the event in a particular city as opposed to several cities.

This review of academic literature gives insight into the governance of the Olympics that is in the domain of responsibility of International Olympic Committee and host cities. More research should focus on the environmental and cultural impacts of the Olympics on their host communities. There is a need for more quantitative research based on primary data collection with less emphasis on qualitative, descriptive, case studies of the experience of specific host cities. Although there has been some model testing in the academic literature, there is a need for more development in this area. In addition, future studies should use the Technical Manual on International Olympic Games 5th edition which specifically outlines guidelines for environmental, socio-cultural and economic areas in need of academic research. Using the IOG framework as a guide for academic research would validate and support the ability of the IOC and host communities to develop quantitative benchmarks for the future sustainable Olympic Games.

REFERENCES

Avison Young. 2003. ***Olympic Impacts: Vancouver 2010 and the Industrial Real Estate Market***. Vancouver: Avison Young.

Beaty, A. 1999. The homeless Olympics? In: ***Homeliness: the Unfinished Agenda*** (James, C., South, J., Beeston,, Long, D. (Eds.)). Sydney: University of Sydney Press.

Botella, J. 1995. The political games: agents and strategies in the 1992 Barcelona Olympic Games. In ***The Keys to success: The social, sporting, economic, and communication impact of Barcelona, 92***.

Brunet, F. 1995. ***An Economic Analysis of the Barcelona 92 Olympic Games: Resources, Financing and Impact***. Barcelona: Centre d'Estudis Olímpics de l'Esport.

Chen Y., Qu, L., & Spaans, M. (2013). Framing the Long-Term Impact of Mega-Event Strategies on the Development of Olympic Host Cities. ***Planning Practice & Research***, 28(3), 340-359.

Chernushenko, D., van der Kamp, A., & Stubb, D. 2001. ***Sustainable sport management: Running an environmentally, social an economically responsible organization***. Nairobi, Kenya: United Nations Environment Programme.

Coates, D., & Humpreys, B. 1999. The Grow Effects of Sport Franchises, Stadia and Arenas. ***Journal of Policy Analysis and Management***, V.18: 4, p. 601-624.

Collins, A., Jones, C., & Munday, M. (2009). Assessing the environmental impacts of mega sporting events: two options?. ***Tourism Management***, 30(6), 828-837.

Davis, J., & Thornley, A. 2010. Urban Regeneration For The London 2012 Olympics: Issues Of Land Acquisition And Legacy. ***City, Culture and society***, 1(2), 89-98.

Dolles, H., & Soderman, S. 2008. Mega-Sporting Events in Asia - Impacts on Society, Business and Management: an Introduction. ***Asian Business and Management*** ,V. 7. Palgrave Macmillan.

Eitzen, D. S. 1996. Classism in sport: the powerless bear the burden. ***Journal of Sport and Social Issues***, v. 20, n.1, p.95-105.

Elkington, J. 1999. ***Cannibals with Forks: The Triple Bottom Line of 21st Century Business***. Oxford: Capstone.

Essex, S., & Chalkly, B. 1998. Olympic Games-catalyst of urban change. ***Leisure Studies***, 17, n. 3, p.187-206.

Getz, D. 1998. Event tourism: Definition, evaluation and research. ***Tourism Management*** 29, 403-428.

Hall,C. M. ad Hodges, J. 1998. The politics of place and identity in the Sydney 2000 Olympics: Sharing the spirit of corporation. In Roche M.((ed)). Meyer and Meyer Verlag, ***Sport, Culture and Identity*** : Aachen.

- Hiller, H. H. 2000. Mega-events, urban boosting, and growth strategies: an analysis of the objectives and legitimations of the Cape Town 2004 Olympic bid. *International Journal of Urban and Regional Research*, v. 24, n.2, p. 439-458.
- Holden, M., MacKenzie, J., & VanWynsberghe, R. 2008. Vancouver's promise of the world's first sustainable Olympic Games. *Environment and planning. C, Government & policy* 26.5 : 882.
- Homma, K., & N. Masumoto. 2013. A Theoretical Approach for the Olympic Legacy Study Focusing on Sustainable Sport Legacy, *The International Journal of the History of Sport*, 30:12, 1455-1471.
- Horin, A. 1998. Budget hotels balk at rooms for homeless during Games. *Sydney Morning Herald*, 15 sept., 12.
- Horne, J., & Manzenreiter, W. (2006). An introduction to the sociology of sports mega-events. *The Sociological Review*, 54(s2), 1-24.
- Horne, J., & Manzenreiter, W. 2013. Japan, Korea and the 2002 World Cup. *International Academy of Sports Science and Technology*.
- Ingerson, L. 2001. A comparison of the economic contribution of hallmark sporting and performing events. In *Sport and the City: the Role of Sport in Economic and Social Generation* (Gratton, G, & Henry, I.(eds)) London: Routledge.
- International Olympic Committee. (IOC). 2013. *2022 Candidature Acceptance Procedure*. Lausanne, Switzerland: IOC.
- International Olympic Committee (IOC). 2010. *Technical Manual On Olympic Games Impact Study: Post Vancouver Games*, 5th edition.
- Kang, S., & Perdue, R. 1994. Long-term impact of a mega-event on international tourism to the host country: a conceptual model and the case of the 1988 Seoul Olympics. *The Journal of International Consumer Marketing*, 6, n. ¾, p. 205-225.
- Kim, S. S., & J. F. Petrick. 2005. Residents' perceptions on impacts of the FIFA 2002 World Cup: the case of Seoul as a host city. *Tourism Management* 26.1: 25-38.
- Konstantaki, M., & Wickens, E. 2010. Residents' Perceptions of Environmental and Security Issues at The 2012 London Olympic Games. *Journal of Sport & Tourism*, 15(4), 337-357.
- Lensky, J. H. J. 2000. *Inside the Olympic Industry: Power, Politics and Activism*. Albany: State of New York University Press.
- Lybbert, T. J., & Thilmany, D. D. 2000. Migration effects of Olympic siting: A pooled time series cross-sectional analysis of host regions. *The Annals of Regional Science*, 34(3), 405-420.

- Ma, S. C., Egan, D., Rotherham, I., & Ma, S. M. 2011. A framework for monitoring during the planning stage for a sports mega-event. *Journal of sustainable tourism*, 19(1), 79-96.
- Masterman, G. 2004. *Strategic sports event management: An international approach*. Oxford: Elsevier Butterworth-Heinemann.
- Matheson, V., & Baade, R. 2004. Mega-Sporting Events in Developing Nations: Playing the Way to Prosperity?. *The South African Journal of Economics*, v. 72:5, p.1085-1096.
- Minnaert, L. 2014. Making the Olympics work: interpreting diversity and inclusivity in employment and skills development pre-London 2012. *Contemporary Social Science*, 9(2), 196-209.
- Ohmann, S., Jones, I., & Wilkes, K. 2006. The Perceived Social Impacts of the 2006 Soccer World Cup on Munich Residents. *Journal of Sport & Tourism*, v.11, n.2 p.129-152.
- Pyo S., Cook, R., & Howell, R. 1998. Summer Olympic tourism market: learning from the past. *Tourism Management*, v.9, n. 2, p. 137-144.
- Preuss, H. 2004. *The economics of staging the Olympics: A comparison of the Games 1972-2008*. Cheltenham, UK: Edward Elgar.
- Preuss, H. 1998. *Problemizing the arguments of the opponents of Olympic Games*. Unpublished paper. Mainz, Germany: Johannes Gutenberg University.
- Ritchie, J.R.B. 1988. Assessing the Impacts of the 1988 Olympic Winter Games- The Research Program and Initial Results. *Journal of Travel Research*, 22(3),PP: 17-25.
- Roche, M. 2000. *Mega-Events and Modernity: Olympics and Expos in the Growth of Global Culture*. London: Routledge.
- Roche, M. 1994. Mega- Events and Urban Policy. *Annals of Tourism Research*, v. 18, n.1. USA: Elsevier.
- Ruthheiser, D. 2000. *Imagineering Atlanta*. New York: Verso.
- Schimmel, K. S. 1995. Growth politics, urban development, and sport stadium construction in the United States: A case study. In: *The Stadium and the City* (Bale, J., Moen O. (Eds.)). Keele: Keele University Press.
- Sherwood, P., Jago, L., & Deere M. 2005. Triple bottom line evaluation of special events: Does the rethoric reflect reporting? In *Third International Event Management Conference*, Sydney, Australia.
- Thornley, A. 2012. The 2012 London Olympics. What legacy?. *Journal of Policy Research in Tourism*, 4(2), 206-210.

Toohey, K., & Veal, A. J. 2007. *The Olympic Games: A Social Science Perspective*. Wallingford: CABI.

VanWynsberghe, R., Derom, I., & Maurer, E. 2012. Social leveraging of the 2010 Olympic Games: 'Sustainability' in a City of Vancouver initiative. *Journal of Policy Research in Tourism, Leisure and Events* 4.2: 185-205.

Vieira, A. J. V. 2012. Planeta Azul. *Jornal O Globo - Coluna Economia Verde*, 04 de Julho, p. 32.

Whitson, D., & MacIntosh, D. 1996. The Global Circus: international sport, tourism, and the marketing of the cities. *Journal of Sport and Social Issues*, 23, n.2, p. 278-295.

Table 1

History of Environmental Focus of the Olympic Games

Year	Location	Environment focus
1994	Lillehammer, Norway	Efforts involved Games organizers, government authorities and volunteer groups who were successful in tree planting initiatives and sustainable architecture in the Olympic venues. Recycling, waste reduction restricting private cars, improving public transportation and addressing the visual problems of pollution were several of the steps taken.
2000	Sydney, Australia	Emphasis was on the fact that the city was compact; there was little distance between venues, early completion of venues, security and political stability and the support of the people. Solar power and water and waste management techniques were implemented.
2002	Salt Lake City	“Plant it Green: The Global Trees Race” 100,000 trees planted in Utah Energy recycled from air conditioning heated showers and bathrooms System used ammonia to prevent destruction of ozone layer
2004	Athens	Over 1 million bushes, 290,000 trees and 11 million small trees were planted in Athens. Environmentally friendly building materials were used. Developed eco-excursion in cooperation with the Hellenic Society for the Protection of Nature. Used environmentally friendly transportation vehicles.
2006	Turin	First event to earn both the ISO 14001 international environmental management certification and the European Eco-Management and Audit Scheme (EMAS) certification. Tourism Organizing Committee (TOROC) invested in use of renewable energy, energy efficiency and reforestation projects to bring attention to climate change issues and greenhouse gas production.
2008	Beijing	Beijing Organizing Committee (BOCOG) focused on improvement, protection and awareness raising through the use of environmentally friendly building materials.

		BOCOG also made efforts to improve air quality and enhance sewage and waste treatment systems.
2010	Vancouver	Olympic Village and neighborhood, considered to be a model of sustainable urban living, received LEED Platinum rating. Rainwater provided water for flushing toilets. Post Games, the Olympic venue was converted to a multipurpose center for the community.
2012	London	“Towards a One Planet Olympics” was the theme for the London Olympic Games. They developed a London 2012 Sustainability Plan based on five themes: climate change, waste, biodiversity, inclusion and healthy living. Implemented these points in three stages: construction, staging and post Games.
2014	Sochi	Sochi failed to achieve the objectives of: healthy living, barrier-free world, cultural and national values, economic prosperity and use of modern technologies. The Games were not only the most expensive but also had a negative impact on the environment (illegal dumping and tainting the water supply) and society through jailing of environmental activist

Source: adapted from Holden, MacKenzie, & VanWynsberghe (2008)

Table 2

Framework Categories for Review of Olympic Games Research Literature: January 1994 to May 2014

Categories	Sub-categories
• Author	
• Sustainable dimension (or combination of dimensions)	✓ Cultural ✓ Economic ✓ Environmental ✓ Social
• Year of publication	
• Nation of association of authors	
• Title of articles	
• Name of journal	
• Purpose of article	
• Key words	
• Qualitative or Quantitative research	
• Descriptive/Prescriptive article	
• Methodology	
• Pre Olympics or post Olympics	
• Longitudinal/cross-sectional approach	
• Olympic venues (cities)	

Figure 1

Sustainable dimensions of the research articles

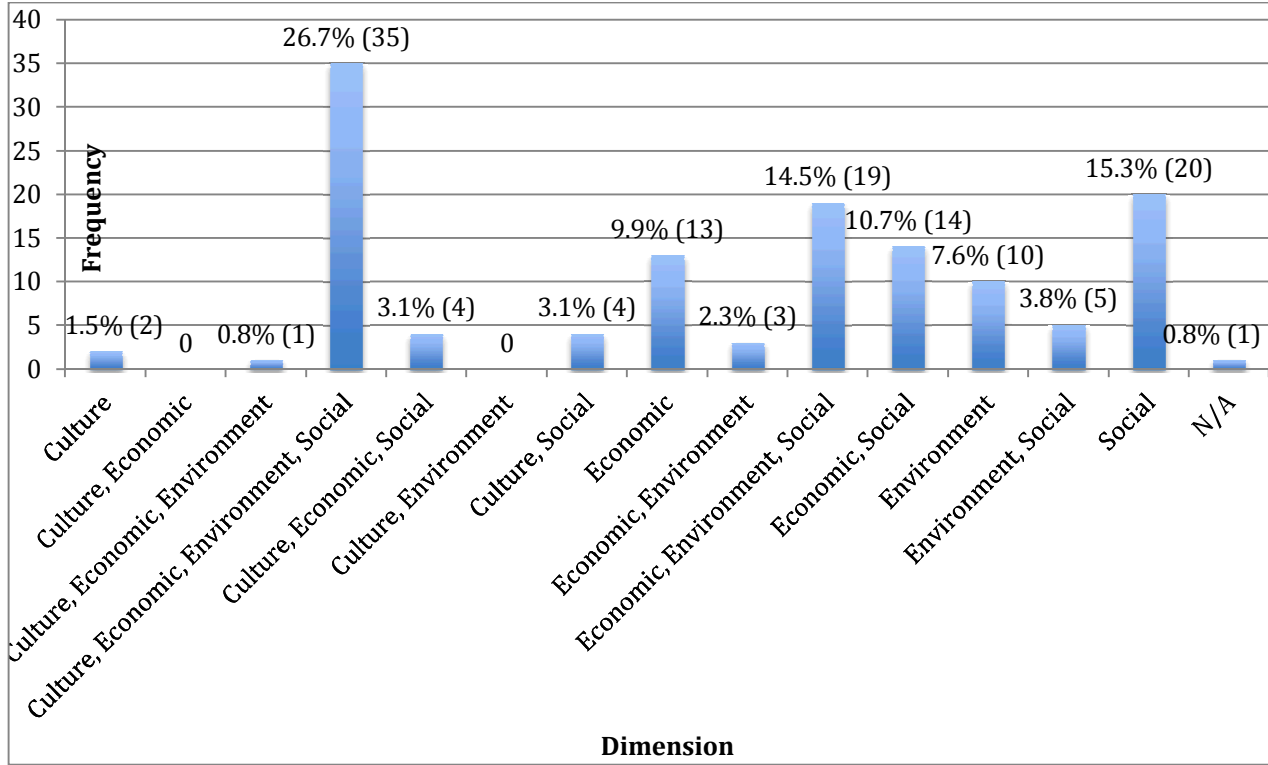


Table 3

Year of publication of research articles

<u>Year</u>	<u>Count</u>	<u>Percentage of the sample set (%)</u>
1996	1	0.8%
1999	2	1.5%
2000	2	1.5%
2001	2	1.5%
2002	3	2.3%
2003	3	2.3%
2004	4	3.1%
2005	1	0.8%
2006	2	1.5%
2007	6	4.6%
2008	12	9.2%
2009	8	6.1%
2010	16	12.2%
2011	15	11.5%
2012	22	16.8%
2013	26	19.8%
2014	6	4.6%
Total	131	100.0%

Figure 2

Sources of Olympics Research by Country

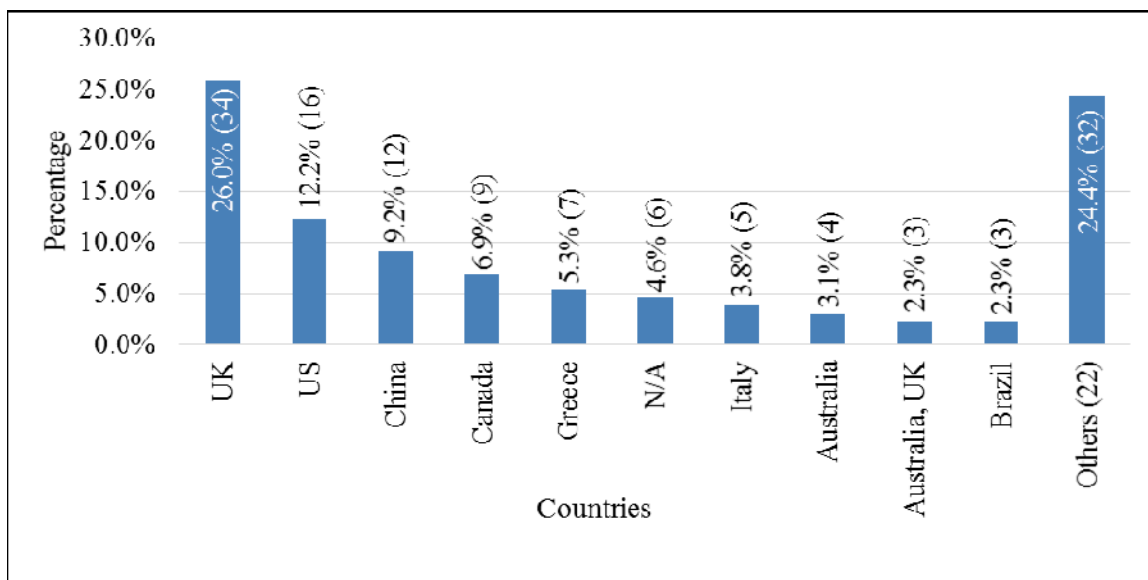


Figure 3

Qualitative or Quantitative Research

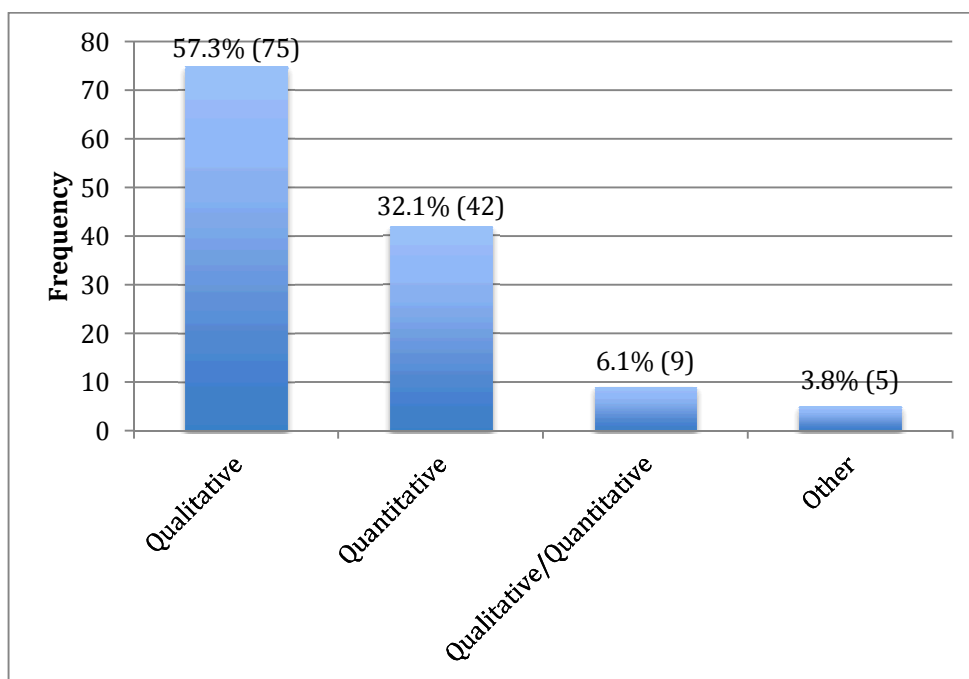


Table 4

Descriptive / Prescriptive Approach

<u>Tone</u>	<u>Count</u>	<u>Percentage of the sample set (%)</u>
Descriptive	102	77.9%
Descriptive/Prescriptive	19	14.5%
Prescriptive	10	7.6%
Totals	131	100.0%