Models for Project Management in 2016 Olympic Games

MARIA JOSÉ SOUSA[12] / FABIANO LIMA[1] / JAIR RODRIGUES MARTINS[3]
[1]Instituto Universitário de Lisboa
[2]Universidade Europeia
[3]Universidade do Sul de Santa Catarina
Estrada da Correia, 53 – 1500 – 210 Lisboa
PORTUGAL
maria-jose.sousa@europeia.pt

Abstract: - The Olympic Games are the major sports event on the planet gathering people for all over the world and integrating several kind of resources that need to be managed in order to achieve efficiency and the sustainability of the event. The research question of this paper is "Which project management business model best fit a mega event like the 2016 Olympic Games?" The organizations which participate in the Olympic Games project management in Rio are under the pressure of external scenarios of uncertainty and also intense competition and internally the organizations that manage all the Olympic resources need to deal with limitations of costs and time – the business model adopted can help to achieve a major success of the event. According to studies made on the past Olympics Project Managers face various challenges and the models adopted can made an integration of various and disperse project management tools. The main finding of this research is that project management maturity models benefits management approaches and reinforce the definition and the use of strategic plans enhancing the control techniques of project management and also the sustainability model is necessary to orchestrate the successful completion of a project with the amplitude of Olympic Games.

Key-Words: - Project Management, Project Management Models, Sustainability, Efficiency

1. Introduction

The 2016 Olympic Games will take place in Rio, Brazil. It will be the major event of sports industry of 2016 and it will be necessary to manage several sports structures and to integrate diverse kinds of resources with efficiency. In order to accomplish that goal the companies that are conceiving and developing the games structures adopted several project management models. In order to analyse the project management models this research will try to answer the research question "Which project management model best fit a mega event like the 2016 Olympic Games?" The limitations of resources, costs and time are variables that influence the project management model adoption.

According to studies made on the past Olympics Project Managers face various challenges and the models adopted can made an integration of various and disperse project management tools. The project management maturity models benefits management approaches and reinforce the definition and use of strategic plans enhancing the control techniques of project management and also the sustainability model is necessary to orchestrate the successful completion of a project with the amplitude of Olympic Games.

The sustainability model is based on the monitoring and reporting on the economic, environmental, and social performance of the preparation of a project. Using this model Olympic Games organizers and public bodies in charge of the Games will become more responsible and accountable. However, it must be acknowledged that fully integrated sustainability practices in the Games organisation are at the earliest stages of the project and it will continue for many years. For the Olympic Games to become an example of sustainability, they must be integrated early into long-term urban and regional policies based on principles of sustainable development. They must also be rooted in inclusiveness and transparency, as well as the pursuit of excellence, which should not only be the focus of athletes but also of organizers and city planners, considering the United Nation's definition of sustainable development that focus on the balance between people's economic and social needs and the ability of the earth's resources and ecosystems to meet present and future needs.

According to the structure of this paper it will presents a literature review that covers project management models, namely, maturity models and sustainability project management model. It will discuss the importance that project management can deliver as a useful integrative tool for managers in the 2016 Olympic Games and will also present a model proposal of project management sustainability of this mega-event.

2. Literature Review

2.1. Project Management

Project management is an important tool for organizational development and for running mega sports events. It helps to achieve the objectives of a project and

the focus of any project management plan is on its successful results [1]. Project managers are responsible for the effective and efficient delivery of the project and in achieving its goals assuming a leadership style to accomplish their role. All projects begins with the breakdown structure of the work into several tasks, along with the respective timelines for the tasks, the financial resources, the human resources allocation and the responsible matrix, where the leader of each working package is identified [2]. Resources are normally a constraint for a project managers: time, human resources and the budget available for the project. These are constraints for the project managers that will try to plan the tasks and the resources allocated to achieve the project goals [3]. For mega events such as the Olympic Games, timeline is very important since the Games need to take place during the scheduled time due to the large number of individuals and organizations associated with the event and the complicated logistics involved [4].

Project management definition, planning and review techniques are the most critical dimensions of project management, namely, the work breakdown structure definition, the budgeting, the review and cost control preventing deviations from the project planning. These techniques help to control the project and to enable the organization to achieve its goals. The review of the project it's crucial because it helps to identify the tasks that may not be able to accomplish the goals in terms of schedule and costs. It requires control measures to be adopted to prevent a negative impact on the overall project.

Although it is widely accepted that mega-events such as the Olympic Games have a large impact on and leave an important legacy to the host city, the Olympic Games have not been part of the sustainability debate. The high concentration implied by the Games in time, in space and in investment need to be analysed in light of the sustainable development impacts in environment, in society and in economic ecosystem. Games organisers and the IOC need to ensure host cities as well as their citizens, are left with a positive long term legacy in terms of life quality and also economic and financial structure in order to maintain the sustainability of the host countries.

2.2. Project Management Models

Project management can beneficiate from business models as the maturity models which provides an approach for continuous improvement and for developing prospective scenarios. First, in an increasingly competitive environment, it is necessary to ensure that the successful results of one project can be extended to future projects, not only supported on the procedures standards, but also on the leadership role and on the responsibilities of the project manager [5]. Practices and techniques of project management are recognised by many organisations in various industries as being essential skills, which benefit businesses [6]. These skills are measured through the use of benchmarking and comparative models. Hillson [7] clarifies that the benchmarking process aims to diagnose strengths and weaknesses, to measure the current capacity and to identify areas for improvement. According to Kwak & Ibbs [8], most companies consider using practices and support tools which are applicable for project management processes, as they permit them to adapt to changing business environments, yet they need a reference model for the efficient implementation of such tools.

Maturity in project management consists of developing repeatable processes and systems which lead to project success [9]. Project management maturity models emerge which provides companies with the necessary mechanisms to allow them to identify the key areas for opportunity and improvement in project management tasks. Additionally, these models serve to develop comparative indicators for the application of project management practices and techniques across organisations which operate in the same business environment or sector. Maturity has been expressed by organisations as a potential key factor for increasing performance, for achieving goals and for being successful. Organisational project management maturity and competency seem to be promising variables which are both related to project success [10], [11]. Dinsmore [12] believes that maturity shows how an organisation has progressed in relation to the incorporation of project management as a way of working, thus reflecting its effectiveness in completing projects.

Basically, the purpose of the maturity model is to provide a framework for improving an organisation's business result by assessing the organisation's project management strengths and weaknesses, by enabling comparisons with similar organisations, and by measuring the correlation between an organisation's project management level and its project performance [13], [14],[15].

Hastak and Shaked [16] provided a three layer risk management model developed for the construction industry, but that can also be applied to other sectors as sports industry. This model suggests that a project faces three levels of risks that are interrelated to each other, project level risks, market level risks and finally the macro level risks. While the project level risks are associated with the technology, financials, resources and design of the project, the market risks are associated with the market in general but considering the same factors. The macro level risks are associated with the operations of the project in a given macro environment and thus include the economic, political and other financial risks.

The Sustainability Project Management Model includes the monitoring and reporting on the economic, environmental, and social performance of the preparation of the project. In the Olympic Games projects organizers and public bodies in charge of the Games become more responsible and accountable using this model. However, it must be acknowledged that fully integrated sustainability practices in the Olympic Games organisation are defined and implemented at the earliest stages of the event and will continue for many years. It is necessary a well-defined and broadly accepted sustainability performance indicators to analyse this model success.

2.3. Project Management of Mega Sports Events

Emery [17] carried out a research across 11 countries involving 178 organizers of major sports events and found that the most important factors in determining the success of such an event are the sponsors, sporting authorities and the media. In case of Athens Olympics for instance the sports facilities were planned to be ready at least 10 months before the scheduled games to enable the actual testing of all the facilities before the mega event [18]. This is indicative of the high levels of facility management techniques being used by the organizers to minimize the risks of failure during the event.

To prevent the failure project management, business models are important mainly when aspects like the budgeting management is not effective and the planning does not reflect the reality, refers Jennings [19] in his research on the cost overruns in case of major events like the Olympic Games. Flyvbjerg and Stewart [20] found that the Olympic Games from 1960-2012 faced cost overruns, with an average overrun of 179 per cent in real terms. The researchers also compared other major sporting events with Olympics and found that the incidence and cost overrun in case of Olympic Games was significantly higher than any other sporting event creating awareness for the financial and social sustainability of the host city.

In terms of the sustainability of the event and also the host city it should be important to define a plan venues for other uses than the Olympic Games, and also the possibility to use temporary infrastructures, because evidence from the past shows that many competition venues built for the Games have received poor post-Games usage and the financial support of this structures contributes for the increase of the economic crises of the host countries [21].

One solution is found in the design of multi-purpose venues. It is indeed preferable to conceive spaces which can be modified according to the circumstances. The Games last for only 16 days and reusing Olympic facilities is one of the greatest challenges to the host city authorities in terms of both city activity and financial profitability.

3. Conceptual Model

Project Management is the application of knowledge, skills, tools, and techniques to project activities in order to meet their demands, being carried out by means of the integration of the processes of initiation, planning, execution, monitoring and control, and closure, as it offers the Project Management Institute[1) (PMI, 2013).

The application of knowledge, skills, tools and techniques to achieve the goal of the project is carried out by a person responsible: the project manager. The main responsibilities of project manager are:

- Identify the needs of the project;
- Establish clear objectives and tangible;
- Meet the expectations of all stakeholders;
- Promote the due establishment between quality, scope, time and cost.

This latest award is the need to balance three conflicting factors (time, cost and scope or quality) factor being the remainder, the consequence of balance. Therefore, if there is time, cost and scope, the consequence will be the quality of the project. Another turn, if there is time, cost and quality, the consequence will be the scope of the project.

This way, the project management includes the balancing of conflicting restrictions the project that include, among others: scope, quality, schedule, budget, resources and risk.

The relationship between these factors is that if any of them change, at least one of the other will probably be amended, in what is called Theory of triple restriction [22].

Successful Projects are those that deliver the product or service specified within the scope, time, and budget and with qualities and this is precisely what is expected of the committees' organizers of the 2016 Olympics.

The professional project management is essential for doing the right thing (effectiveness) in the right way (efficiency) seeking the effectiveness by means of a strategic planning, i.e. by a process of mobilization to achieve success through a proactive behavior [23], considering the current environment and future aiming to:

- Produce all deliveries planned;
- Complete within the timeframe planned;
- Run within the approved budget;
- Deliver according to all functional specifications, performance and quality;
- Meet all of the goals, objectives and goals;
- Achieve all stakeholder expectations.

In this context of project management of mega-events and for its success, it is therefore essential to define a model of project efficiency and sustainability for the

success of the event, including also awareness for the future of the country [24], namely:

- creating sustainable development of the host city and region through an economic, social and environmental legacy;
- being an opportunity to promote development solutions and innovations which maintain or even improve the quality of life of the citizens,
- lead to the management of all local and regional resources (financial, social and environmental) in such a way that Olympic Games' requirements can be fulfilled while maintaining harmonious socio-economic urban and regional milieus and safeguarding at the same time the cultural integrity, biological diversity and life support systems of the host city and region,
- include the citizens through consultation processes at all stages of the event;
- benefit equally all the elements of the host population,
- identifying risks and forms of their mitigation.

This principles must be integrated into the earliest stages of the Games' conceptualization and planning, being part of a strong governance based on principles of sustainable development.

4. Methodology

The methodological approach of the research was qualitative and the main technique to collect and analyze data was content analysis from the literature review of papers on project management and also Olympic Games. It was used a systematic analysis to identify keywords contained in papers selected from the scientific databases Web of Knowledge and Science Direct. The search of articles was based on the keywords "project management", "Olympics Sustainability" and "Olympic Games" and the period being considered was between 1996 and 2015.

The other technique of data collection was an interview with a project Manager of the 2016 Olympic Games Committee in order to understand the models of project management used and the process of planning and execution of this sportive mega event.

5. Findings, Analysis and Discussion of 2016 Olympic Games Project Management

With the constant search for techniques of project management, the 2016 Olympic Games organization has matured the use of the procedures indicated by PMBOK© Guide (A Guide to the Project Management Body of Knowledge launched by the PMI (Project Management Institute) of USA). The large investments in infrastructure, technology and energy, the largest construction companies and service providers in the country are investing heavily in the training of their times in practice the Framework of PMI (Project Management Institute). The PMBOK© Guide, has 47 processes distributed across ten knowledge areas: Integration; Scope; Time; Cost; Quality; Communications; Human Resources: Procurement; Risk and Stakeholder, and defined in five Process Groups: Initiation; Planning; Executing; Monitoring and Controlling; Closing that helps to conceive and to manage the Olympic Games mega projects [25].

Since the conception of the idea of the Olympic Games project to its execution, there is usually a time frame of several years during which the planning needs to be undertaken and thus planning becomes even more important due to the potential risks associated with the external and macro factors.

The objectives of project management are to enable the project to be able to achieve its desired objectives and cost [26]. Project management in case of mega events such as the Olympic Games also needs to ensure that the project is also able to create a long-standing reputation for the host nation to be able to organize events of such scale to enable the country to pitch for such events in future as well [27]. To ensure that all stages of the project are successful it began with several phases and procedures:

- First the countries interested in hosting the Olympics must answer a questionnaire prepared by International Olympic Committee (IOC) which will be evaluated by experts in order to choose the official candidates cities, after that these cities must submit a file in response to a second questionnaire from IOC and this process starts 9 years before the games.
- Seven years before the Olympic Games the IOC announces the winner and the city winner assembles the OCOG (Olympic Committee Organization), which should follow the manuals issued by IOC.
- The Organizing Committee is composed by executive directors, directors and functional areas, which work in an integrated form to accomplish the goals defined in the plans from the mega project Olympic Games.
- The organizing committee starts planning the games defining the venues, categorizing them, and creating an installation model.
- Using a facility model the functional areas defines their way of operations and each functional area develops the document Functional Area Organizational Plan (FAOP) that defines its scope and responsibilities.
- Each functional area creates its portfolio of specific projects, which are accompanied by corporate Project Management Office and the IOC
- Functional Areas projects created are managed at the discretion of the functional areas (are not obliged to follow a methodology or framework

specific). It is required that the projects are planned in an enterprise tool for consultation and that at least are listed project milestones

- The IOC establishes a schedule of visits for assessment of the progress of the project.
- Each venue that will host Olympic Games and/or Paralympic Games is a project and test-events are separate projects.
- Venues projects have a project life cycle including planning, implementation, and decommissioning phases.
- The detailed planning of each project is at the discretion of the areas, as well as the definition of tools to be used.
- The committee initially follows a functional structure and then there occurs a procedure calling venuization.
- Each installation, which we call venue, has its organizational structure that is defined, as well as its operational processes and procedures, work shifts and all your detailed planning.
- The main deliverables of the sportive mega project are test-events, Technical rehearsals, Olympic Games and Paralympic Games.
- The main phases of each venue project are Bump-in, Fit-out, Move-in, Games, Move-out, Bump-out.
- The OCOG has a set of sponsors, and some of these sponsors are defined by the IOC, which the OCOG is obliged to use.
- The sponsors provide products and services via a contract which are called VIK (a cash value that you can use to purchase products and/or services).

The following table (1) shows the phases, the respective activities, the sponsor and the schedule of each phase:

Table 1

Phases	Activity	Sponsor	Time
Initiation	The countries interested in hosting the Olympics applies for.	IOC	9 years before the games.
	Announcement of the winner	IOC	Seven years before the Olympic Games
Planning	Develop venues project plan	OCOG	From winner announcement to implementation starts
Implementation	Implement venues project plan	OCOG	Vary by venue (legacy or temporary), at least 6 months
Games Time	Starts games operation	OCOG	From Olympic Athetles Village opening
Monitoring and Controlling	Track venues projects	OCOG Central Planning and IOC	From planning to Closing
Closing	Decommission venues	OCOG	One week after games time operation finishes. Four weeks of duration, in general

For the Olympic Games to become an example of sustainability, they must be integrated early into long-term urban and regional policies based on principles of sustainable development [28]. They must also be rooted in inclusiveness and transparency, as well as the pursuit of excellence, which should not only be the motto of athletes but also of organizers and city planners. Long-term and harmonious urban policies must be the driving force in hosting the Games, not the short-sighted views of local agendas. True recognition of the diversity of impacts and of irregular patterns in their spatial distribution within the host city's social, economic and environmental context [29] should enable the planning of events which cause fewer negative and inequitable impacts [30].

6. Project Management Model Proposal

In the context of this research it is proposed a sustainable model for project management of the 2016 Olympic Games, and it takes in account the main premises:

Long-term strategy: The Games project must be set in a 15-20 year span. Sustainable development principles must be integrated into all phases of the Games' organization: conceptualization, feasibility, bidding, strategic and operational planning, operations and dissolution. Each phase is different and may require specific tools.

An integrated approach - Olympic venues and infrastructures must be planned in conjunction with the strategic urban planning of the host city and region.

Partnerships for sustainability - Sustainability is a collective effort and strong public-private partnerships are essential.

Early inclusion of the Games into sustainable urban and regional strategies - The city or region which contemplates hosting an Olympic Games must develop a vision for the Games and blend it together with its overall vision for the future of the city and region.

Public participation - For the Games to become integrated into long-term sustainable urban and regional strategies, citizens must be consulted from the earliest stages of the Games conceptualization until after the Games.

Mitigation measures - Mega-events such as the Olympic Games may have severe impacts upon local communities and the environment if they are not properly managed. Potential negative effects must be properly identified, accessed and communicated in order to limit as much as possible the economic, social or environmental pressure on the host citizens.

Sustainability monitoring and reporting tools – The design of specific indicators that measure progress across all dimensions of sustainable development will support assessment of sustainability performance by the Games' organizing committee and responsible city/regional authorities. Sustainability monitoring and reporting tools should lead organizers and city leaders to inform the public and other stakeholders about the results.

Transfer of public knowledge – There is a need to establish a culture of continual improvement in the event industry by setting up a permanent body in charge of transferring experiences, knowledge, best practices, etc. from current host cities to future generations of host cities.

Setting up knowledge transfer programs between Games organizers - the IOC should be in a position to facilitate such a process among public authorities in charge of different aspects of the Games' organization. The benefit would be the promotion of a better understanding of the Games' impact among all applicant cities, as well as the development of tools to permit the integration of sustainability principles in Games management.

Reinforce the sustainability dimension before and during the bidding phase: The conceptualization and feasibility phase is crucial in ensuring the Games concept be integrated into an overall sustainable strategy.

Governance: The IOC should re-enforce its role as the body which determines the standards of facilities and services needed to deliver successful Games. Host cities should no longer be led by local agendas or by Olympic constituent members into building white elephants.

Education: The IOC may play an active role in promoting the integration of sustainable principles within the curricula of event management in higher education.

Applicant and bidding cities must understand the opportunities and the risks of hosting a mega event such as the Olympic Games. Hence the need to work towards maximizing the Games' benefits and minimizing their potential negative effects.

7. Conclusions

This paper has shown through various examples and through a series of recommendations that hosting an Olympic Games can be conceived as an opportunity for a sustainable form of development for a city. However, lots of efforts remain necessary, since public policy and organizational strategies are now adopting sustainable development principles quite widely but the challenge remains of translating the concept into practice. The Games are a great opportunity for host cities to face the global challenges of competitiveness and exhibit their best attributes, but gives as well to the IOC an opportunity to promote sustainable development. The Games have the potential to inspire positive actions from governments, businesses, communities and citizens. They can leverage positive changes realizing that sustainable development objectives in an Olympic Games context means overcoming obstacles caused by fast-track development and by the spatial, temporal and financial concentration implied by the Games. It also requires strong governance and the ability to play an active part in promoting measures favoring sustainable development. This will imply changes in the nature of Olympic Games planning and efficiency using the main techniques of project management, but also incorporating sustainability principles. The return on investment is in the long term and is certainly worth the efforts.

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