The london eye: project management

Engineering, Project Management

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Since the London Eye opened in 2000, it has become one of the important landmarks of London and one of the most famous observation wheels in the world. It welcomed 3. 2 million visitors in its first year of operation, exceeding the predicted 2. 2 million. The London Eye project overcame some obstacles by adopting well-organised methods. Although it faced a time challenge, with the appropriate project management techniques, it was constructed within 16 months, approximately 50% less than the normal time (Mann et al. 2001, pp. 60). This paper demonstrates why the London Eye was classified as a project, and identifies the key stages. Then, the project will be measured and the success of the London Eye will be critically examined. In addition, another notable aspect, supply chain management, which led to the project's success, will be discussed. Lastly, some recommendations will be made.

Projects differ in terms of day-to-day operations in some aspects. For example, a project is a one-off endeavour, while operation consists of

repetitive activities. Therefore, it is important to differentiate a project from the normal operation because the appropriate management techniques and strategy are also different between project management and operation management. Good organisation is essential in order to achieve the objectives of a project, particularly the budget, the deadline, and the quality of the project. A number of academics provide a definition of " project", and many of them identify the characteristics of a project in a similar way. For example, Maylor (2005) gives the following definition of a project; the criteria include non-repetitive activities, a low-volume/high variety of activities, uniqueness, a definite start and finish. Kerzner (1998) also defines a project as being a specific purpose with a definite start and stop date, which consumes resources such as money, people and equipment, with a limited budget in some cases. As can be seen, these two definitions have some similar points, including being a one-off endeavour, unique, and having a specific start and completion date.

The London eye has the characteristics of a project as defined above, and Table1 demonstrates why the London Eye can be classified as a project.

Criteria of Project

The London Eye

Non-repetitive activity

It was one-off endeavour activity. There was no repetition of construction.

Low-volume, high variety of activities

The London Eye is just one structure, but involves a number of various tasks.

Uniqueness

The London eye was built as a commemorative landmark to celebrate the new millennium. In addition, it was the world’s highest observation wheel at that time. It demonstrated the advances in technology and design of the new millennium. Therefore, the London Eye was unique.

Specific start and finish dates

The construction started in the autumn of 1998 and was planned to be completed by January 2000.

Goal-orientated

It was constructed as a symbol of London, to represent the arrival of a new millennium.

Set of constraints

It had budget and time constraints. “ The key project drivers of this high-profile project were a very short programme, controlled budget and narrow riverbank site” (Mann et al. 2001, pp. 61).

Table 1: Characteristics of The London Eye.

In 1993, the architect, Marks Barfield, submitted his design of the giant wheel to the Sunday Times and the Architecture Foundation competition as a significant monument to celebrate the new millennium. At that time, he found little support. Then in 1994, Bob Ayling, Chief Executive of British Airways, became interested in the project and supplied numerous loans to

Mark Barfield. Between 1994 and 1996, the design of the London Eye project was under-developed and trying to obtain planning permission. Official permission was given to the project in 1996. In 1998 the Tussauds Group was the last partner to join the project to manage and operate the London Eye. The construction began in autumn 1998, 16 months before the millennium. (www. londoneye. com 2011)

The Work Breakdown Structure (WBS) is an efficient technique for planning and controlling a project. It identifies the structure of the project and provides a framework and scope of work. In addition, WBS is a communication tool to connect users such as the enterprise management, the project owner, contractors, suppliers and any others who are involved in the project (Bolles and Hubbard 2006, pp. 162). In order to understand the London Eye project, a WBS can be drawn based on the available information presented in Figure 1.

Figure 1: The London Eye’s work breakdown structure

Henry Laurence Gantt (1861-1919) cited in Kumar (2005) developed the Gantt chart, which has been used as a visual instrument to show the scheduled and actual progress of a project. It is easy to understand and simple to draw. Each row of a Gantt chart represents a task, and a horizontal bar shows the expected time each task will take to complete. Each task can be linked based on the concept of the dependency of the overall tasks. The chart can be updated as the project progresses. Thus, it is easy to adjust the chart if the plan changes. Furthermore, the estimated time and actual time spent can be compared. Therefore, it shows the status of project on a task-

by-task basis (Kumar 2005, pp. 15). Figure 2 demonstrates the London Eye's Gantt chart based on the available information and assumptions.

Figure 2: The London Eye's Gantt chart

The London Eye can be classified as a high-technology project. Due to limited space at the site, it was just 30 metres wide, while its height was 135 metres. It was impossible to construct on the available land, and therefore, a boarding platform was built in the river Thames. The main structure of the London Eye was assembled on this floating platform. The last important stage was to lift the structure, which was London's fourth tallest structure, within one day.

rection of London Eye Millennium Wheel London United Kingdom Designed by David Marks and Julia Barf

http://t0. gstatic. com/images? q= tbn: ANd9GcQbf2Lh9MrzgjfEPn08kdXqbAtf0AmhG_xwXDd5uWI3toWHgY-K

There are a number of methods to evaluate the success of a project, but the traditional way is the Iron Triangle, a trade-off between time, cost and quality (TCQ). Oilsen, cited in Atkinson (1999), suggests time, cost and quality should be used as the criteria for success. A number of other writers, such as Turner, Wateridge and McCoy, also support this statement.

::: Downloads: Iron Triangle. gif

Figure 3: The Iron Triangle

Not all projects can balance the TCQ; different projects have different constraints. The London Eye project had time as a priority constraint, since it had to be completed before 2000. In addition, this construction has almost 50% less time available than normal. A construction like this should have taken approximately 2-5 years to complete, but this project had to be completed in just 16 months. Finally, although the London Eye was built within the time constraint, i. e. before 2000, it cost £75 million. Shenhar, Dvir, Levy and Maltz (2001) note that overruns of cost are likely to happen in high level technology projects because of technological difficulties which are beyond the management's control. There was no information provided as to whether the cost was over or under budget. However, since the London Eye was a high technology type project, as explained above, it is possible that its costs overran. A great deal of money was spent in order to mitigate the risks of the project, such as not finishing on time and poor quality. This showed that the London Eye was an uneconomical project. It can be implied that cost was not the major concern of this project, but that time and quality were the priority. Therefore, the London Eye project was not completely successful according to TCQ criteria.

TCQ seems to be inadequate to measure the success of projects. There are others aspects to consider, such as stakeholder benefits, and how the project has an effect on them (Atkinson 1999). Atkinson (1999) introduced " The Square Route" to gauge project management success criteria. This was composed of the iron triangle plus three new categories, namely, strength of results, benefit to organisation, and benefit to stakeholders. Atkinson (1999)

suggests that the Square Route can provide a more sensible and balanced measurement of success.

The London Eye’s stakeholders include suppliers, tourists (customers) and Londoners, particularly those around the South Bank area. The London Eye has several positive effects on stakeholders, but it also causes some problems. In terms of positive impacts, the London Eye boosts London’s economy, and according to the results of a poll, the London Eye is the main purpose of 60% of visitors to visit the South Bank, and 37% of visitors come to London for the London Eye. The London Eye can generate approximately 1. 5% of London’s tourism income. Moreover, new businesses, including restaurants and bars, have been opened around the South Bank area. This means that local residents have more leisure places to relax. In another way, jobs and employment have been created at the London Eye site and the surrounding area. Thus, it can generate income for a huge number of people. On the other hand, illegal traders, such as hotdog vendors, have approached this area, and the number of claims of pick-pocketing has also risen. In addition, environmental problems have become another issue. Levels of pollution from vehicles have risen because of the increase in the number of visitors, and there has also been an increase in the level of litter, while the number of litter bins is limited because of security reasons. However, these issues can be handled, and the London Eye has introduced several procedures to control them. Illegal traders and pickpocket problems are monitored and controlled by the police, and security guards work 24 hours a day at the London Eye and the area around its site. In terms of pollution, coach drivers have to turn off the engines when parked, and have to move

around when the area is congested. Besides, each coach cannot take more than 20 minutes to drop off and collect passengers. The London eye hires a 24-hour cleaning team to deal with the litter problem. (www. londoneye. com 2011) So, although there are a lot of problems, they are alleviated by all the above procedures. Since the benefits generated by the London Eye outweigh the drawbacks, stakeholders are satisfied. Thus, it can be seen that the London Eye succeeds in terms of satisfying stakeholders.

Shenhar, Dvir, Levy and Maltz (2001) introduced a conceptual framework to measure the success of projects by identifying the four main dimensions of the project. The four dimensions comprise (1) project efficiency, (2) impact on the customer, (3) business and direct success and (4) preparing for the future. Each dimension will vary by the time and technology level of the project.

Success dimension 1-project efficiency

The first dimension measures the efficiency of the project to determine whether or not it has achieved its target under constraints, which include time and budget. It indicates how well-organised the project was. However, this dimension cannot predict the success of the project in the long term. It can tell how successfully the project was implemented and executed, but it cannot imply the success of the project in the long run. This dimension can be gauged during the project execution, or immediately after the project has been completed. The London Eye achieved its time target, but its costs seemed to overrun, as discussed above about TCQ. So, this project was not performed perfectly in terms of efficiency.

Success dimension 2-impact on the customer

The satisfaction of the customer is an important factor in measuring a project's success, and this can be measured by figures or statistics of visitors. The number of visitors in the first year of opening exceeded the original forecast by 45%, from 2. 2 million to 3. 2 million visitors (Mann et al. 2001, pp. 60). This success did not just happen in the first year, but still remains. The Guardian (2007) revealed that, according to the results of a survey in Trip Advisor, the London Eye was the most popular paid attraction in the UK, drawing more than 3. 5 million visitors per year. This made the London Eye the top attraction in Europe, beating the Eiffel Tower. This evidence proves that the London Eye project is a great success with customers.

Success dimension 3-business and direct success

This dimension assesses the direct effect of the project on the organisation, such as profit and market share. The obvious supporting evidence of the impact on business success is profit generated by the project. Despite the fact that there are more than 3. 5 million visitors a year, the London eye cannot make a profit, and the major cause of this is the huge amount of interest it has to pay on the loan due from British Airways. The London Eye borrowed £68. 5m from British Airways for the cost of the project, and while it has always been able to generate a good operating profit, this has turned to loss after paying the interest on the loan.

Although the London Eye cannot generate a profit, it helps the company to increase its market share. Since the London Eye is operated by the Merlin

Entertainment Group Ltd., which owns a number of tourist attractions, and is one of the shareholders of the London Eye, the group can offer packages by combining several attraction tickets at a special price. The Merlin Entertainment Group can increase its market share in tourism by taking advantage of the synergy of its tourist attractions. In terms of direct business benefits, the London Eye has not completely succeeded yet.

Success dimension 4-preparing for the future

The last dimension is the longest-term dimension. It looks forward to the future benefits of the organisation, including future opportunities for new ideas or innovations. The London Eye can generate future benefits for the organisation through the value experiences given to the project team. They improved their professional skills in areas like design and construction. Mann et al. (2001) suggest that " civil engineering is not just about the practical side of making things. It is about the human processes of bringing that work about, and the Eye offers important lessons there. We all learned yet again." (Mann et al. 2001, pp. 71). It can be seen that the project built and prepared significant resources in the form of human resources for more challenges in the future.

The supply chain of the London Eye was a notable issue. Since British Airways insisted that the project must be completed in time for the new millennium when there was only 16 months left, well-organised supply chain management was one of the key issues to achieve the objective of the project. Collaboration between each supplier was really important, particularly at the design stage, because this project used many architects

and engineering teams, all of which were responsible for different parts or components. Consequently, it was essential for them to cooperate effectively, or each component may not have been compatible. Figure 4 shows a construction management form of contract.

Source: MANN, A. P., THOMPSON, N. & SMITS, M. 2001. Building the British Airways London Eye. Proceedings of the ICE – Civil Engineering 144 (2), 60-72.

Figure 4: Project organisation

Not only did a lot of architects and engineers from different companies have to work together, but the components of the Eye also came from various countries around Europe. The major components were produced by 6 European countries, which were the UK, Holland, Italy, Germany, The Czech Republic and France (Mann et al. 2001, pp. 61).

With such a huge geographical dispersal of procurement, the project team had to coordinate all of the technical demands, and ensure that every component arrived at the site on time and in the right condition. In terms of coordination, Barratt (2004) identifies a number of elements of collaboration around supply chain management which can aid the success of a project. These are trust, mutuality, information exchange, communication and understanding, and openness and honesty.

Trust- Lee and Billington (1992) cited in Barratt (2004) suggest that effective collaboration of a supply chain is based on trust.

Mutuality- Sparks (1994) cited in Barratt (2004), notes that mutual benefits and mutual risk are factors of collaboration.

Information exchange in the supply chain- Sharing data between buyers and suppliers can be done by an integration process. This may led to collaboration, joint product development, common systems and shared information (Barratt 2004)

Communication and understanding- Collaboration cannot take place without good communication. Broad interfaces between organisations should be developed in order to build innovative thinking (Barratt 2004).

Openness and honesty- Barratt (2004) gives an example that if the delivery is going to be delayed, the supplier should inform the receiver as soon as possible. Then, the receiver can implement a second plan. Such action can develop trust in the supply chain and enhance collaboration.

The London Eye project did well in collaborating with its supply chain management. Mann et al. (2001) noted, “ The completed Eye is what the public see, but the team know that it would not have been possible without their successful relationship.” (Mann et al. 2001, pp. 72).

The London Eye project was successful in many aspects apart from the main weakness, which was the very high cost of construction. This also led to a loss problem because of the high interest rate of the loan for the costly construction. The interest expense turned the operating profit into a loss. Since the project had to be finished within 16 months while its normal expected construction time was 2-5 years (Mann et al. 2001, pp. 61), a great

deal of money was spent on accelerating the work to finish it on time. In order to speed up the construction, high-level time-saving technologies were needed in the construction, and high-level technologies are always costly. Therefore the first recommendation is that the project should have started immediately after it had received official permission. However, the London Eye project received official permission in 1996, and then spent time searching for an operator from 1996 to 1998. Finding someone to operate the attraction was not part of the critical path. Thus, the construction should have started in late 1996, so that the project would have had more than 3 years to be completed before the millennium. Beginning the project sooner could have saved costs because the time would have been extended, and perhaps there would have been an opportunity to find a cheaper construction process.

Another recommendation is that cost management should be taken into account. Costs should be controlled right from the design phase because if any change is needed, it is a lot cheaper and easier to make it during the design stage rather than the construction phase. Thus, every design team member plays an important role in controlling costs, and taking cost control procedures into account during the design stage. Sundaram (2008) suggests budget control methods during the design phase in order to avoid cost overrun. All design team members should be committed to the target costs and projected budget. In addition, Sundaram (2008) provides several recommendations, as follows:

Understand the project scope, including the base line detail.

Keep updating the estimated cost at every step and reconcile it with the prior estimated cost. Then, examine the variances.

Ensure the cost of the project is not over the budget, or reconsider increasing the budget if possible.

Investigate cost variances and coordinate with the design team in order to adjust the design and keep the costs within budget. Alternative designs and engineering techniques should be considered to minimise costs.

Ensure that cost variances in the prior and present designs are reconciled, and check whether there are any unnecessary changes or additional costs before moving to the next stage, until the final design.

After the plan and design have carefully been prepared, these should be clearly communicated to the project team members, all of whom should understand their roles and responsibilities. Besides, they should strictly follow the plan and report any discrepancies to the project manager or responsible person immediately, in order to take the appropriate action in time, since immediate action can diminish the cost of the project.

In conclusion, the London Eye project was successful in many dimensions. It was able to meet the time target, which was the key constraint of the project. In addition, the quality of the design and construction was acknowledged and accepted worldwide. It became one of the top attractions in Europe. In terms of stakeholders, including visitors and Londoners, the London Eye satisfies their concerns. Furthermore, the valuable experience gained by the human resources prepared them for future challenging

projects or new innovations. The exception to total success was the high cost of the project, and the interest charged on the huge loan for construction costs has also led to loss in the company’s financial statement for many years since the project was completed and opened to the public. Therefore, effective cost management methods should be adopted in any project in order to eliminate unnecessary costs and produce the optimum results.