Project Management Evaluation For Edinburgh Trams Project

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Project Overview

The Edinburgh Tram project was conceived in 2001 as a proposal for constructing three transport routes in Edinburgh. The project was later approved in 2006 after undergoing a successful bureaucratic protocol in parliament. The project is basically a railway line that traverses from York Place to Edinburg Airfield. The Scottish government approved the commencement of the project in 2007 with an estimated completion timeline of 3 years between 2008 and 2011 (Lowe, 2010). However, the project experienced numerous controversies characterized by massive delays and alterations in the estimated project costs. Political interests and propaganda were also at centre stage as political parties in the country took advantage of the project's challenges to achieve mileage in their power ambitions. Contractual disputes between infrastructural contractors and project managers largely affected the project's completion as suspensions often occurred until the disputes were resolved (Lowe, 2010). This report presents a critical evaluation of the Edinburgh Trams project's success and flaws in its practical implementation of activities, financial, scheduling, management, resource, scheduling, and expectations.

Objectives of the Project

The Edinburgh Tram project was intended to provide an affordable and ecosystem-friendly transport option for city residents and also decongest traffic in the city. The three-phase line would significantly reduce traffic congestion and minimize environmental damage emanating from heavy motor vehicles. The project was also meant to support the region's local economy by easing accessibility to various points within the city. The project was also initiated to address various issues of safety and security of the city's transport system. This is because the city roads were highly congested, and the city was densely populated, hence leading to insecurity. The Edinburgh city residents would realize maximum social benefits from the project initiations (Lowe, 2010). The government and other transport stakeholders would also set standards and increase revenue collection from the upgraded infrastructure in the city. Various stakeholders were assigned roles in achieving project deliverables. Consequently, their involvement in the project resulted in different impacts at distinct stages of the initiative. The Scottish government was the main stakeholder in the project, and it was tasked with funding, supervising, and monitoring the project (Lowe, 2010). Other stakeholders of the project

included politicians, contractors, courts, and the Scottish community.

Project Strategy, Costs, Timeline, and Expectations

The estimated cost of the project was roughly £375 million. The Scottish government projected the upper cost of the project to be £500 million but was cautious that the cost should not exceed £545 million as this would exceed the expected project benefits. The budget for the project, however, underwent several revisions, quoting the final cost of the project at approximately £776 million. The project was expected to generate a 231% benefit in comparison to the cost of the project. The Edinburgh Trams project would also include 3800 residential units, creating 930 job vacancies (Flyvbjerg, 2018). Out of the 930 vacancies, 530 jobs would be realized in phase 1 of the project, which sought to improve the quality of air, improve accessibility to crucial sections of the city and reduce noise levels within the metropolitan region.

The estimated timeline for the project was 3 years. This time was to run from 2008 to 2011, when the new system was expected to have begun its operations by February 2011. However, several delays were encountered in the project implementation phase, which prompted several revisions. Later, the launch date was rescheduled to May 2014.

Organization Structure

The organization of the Edinburg Tram project describes the deliverables, planning, and responsibilities necessary for the accomplishment of the project. The organizational board plan for Edinburg is comprised of stakeholders, board members, deliverables, and processes of the project (BBC News, 2007). The processes illustrate the responsibilities expected of the stakeholders in accomplishing the process. The processes involved in this project pertain to the human resource team, risk management team, cost management team, procurement team, scope, integration management team, communication process, and quality management team (BBC News, 2007). The project's key stakeholders were organized as follows:

- The City of Edinburg Council (CEC): This comprised the project initiators and owners.
- Transport Initiative Edinburgh (TIE): They were the managers of the project, a private company under CEC.
- Tram Operator: Initially assigned to Transdev but was later transferred to Edinburg Trams Limited. Their role was to operate and maintain the tramway using both ground and aerial views.
- Infrastructural Contractor: This responsibility was achieved by BBS, which comprised three companies, namely Construcciones y Auxiliar de Ferrocarriles, Siemens, and Bilfinger Berger. Their role was to construct the tramway and the tram depot. They were tasked with the procurement and installation of the ticketing machine, installation of overhead power lines and

construction of a passenger shelter.

- Utility diversion contractor: This contract was particularly awarded to Alfred McAlpine Infrastructure Services in 2006, when the company successfully accomplished its work in November 2006. This team was majorly concerned with the construction of a park and a ride at Langston.
- Team Contractor: Besides being a member of the BBS consortium, Construcciones y Auxiliar de Ferrocarriles was issued the contract to develop and hand over the trams for testing in due time. It was also awarded the mandate to oversee the Systems Design Service (SDS) necessary for electronic systems in the transport line.

The implementation of the project was initially spearheaded by TIE, a subsidiary of the city council registered to prevent the council from suffering liabilities emanating from project implementation. TIE managed the project in overall structure and was assigned the role of contracting suppliers to facilitate sections of the contract. This was evident in 2009 when the operation of the trams was snatched from the initially awarded company, Transdev, and given to Edinburgh Trams Limited (Lowe, 2010). The contractual framework of the project comprised the System Design Services (SDS), Vehicle maintenance and supply (TRAMCO), Joint Revenue Committee (JRC), IFRASCO-provided infrastructure and maintenance, and Multi Utilities Diversion Framework Agreement (MUDFA). Contractual disputes that emerged between TIE and BBS resulted in implementation delays for the Edinburgh Trams project (Flyvbjerg, 2018). The project also experienced funding challenges, and this situation compelled the council to cut the tram's length short. Generally, the degree of success for the project's implementation was very low as compared to the budgetary estimations, timelines, and collaboration levels between key stakeholders.

Schedule

The project was subdivided into four sections, and each section was contracted by a specific supplier. The stages included the following (Picken, 2020):

1. The project design phase: This phase of the Edinburgh Tram project consisted of drawings of the infrastructures required, acquisition of land, and compliance with all the existing traffic regulations.
2. Utility diversions work: This phase particularly involved the construction of a park and a ride at Langston. The phase also included other work that enabled the project.
3. Infrastructure construction (Infrasco): This phase was going to be the heart of the project. The epicentre of the Edinburg project was the construction of the tramline and tram depot. The project phase will also include all procurement procedures. The installation of ticketing machines and the building of a passenger shelter and overhead power line were crucial elements of the project. The trains would be electrically powered; hence, having the power line in place would be a significant milestone for the project.
4. Construction of 27 trams (Tramco): This phase was crucial and would need to be completed to

allow time for testing of the project before it was launched.

The project timelines and milestones are illustrated in the figure below:

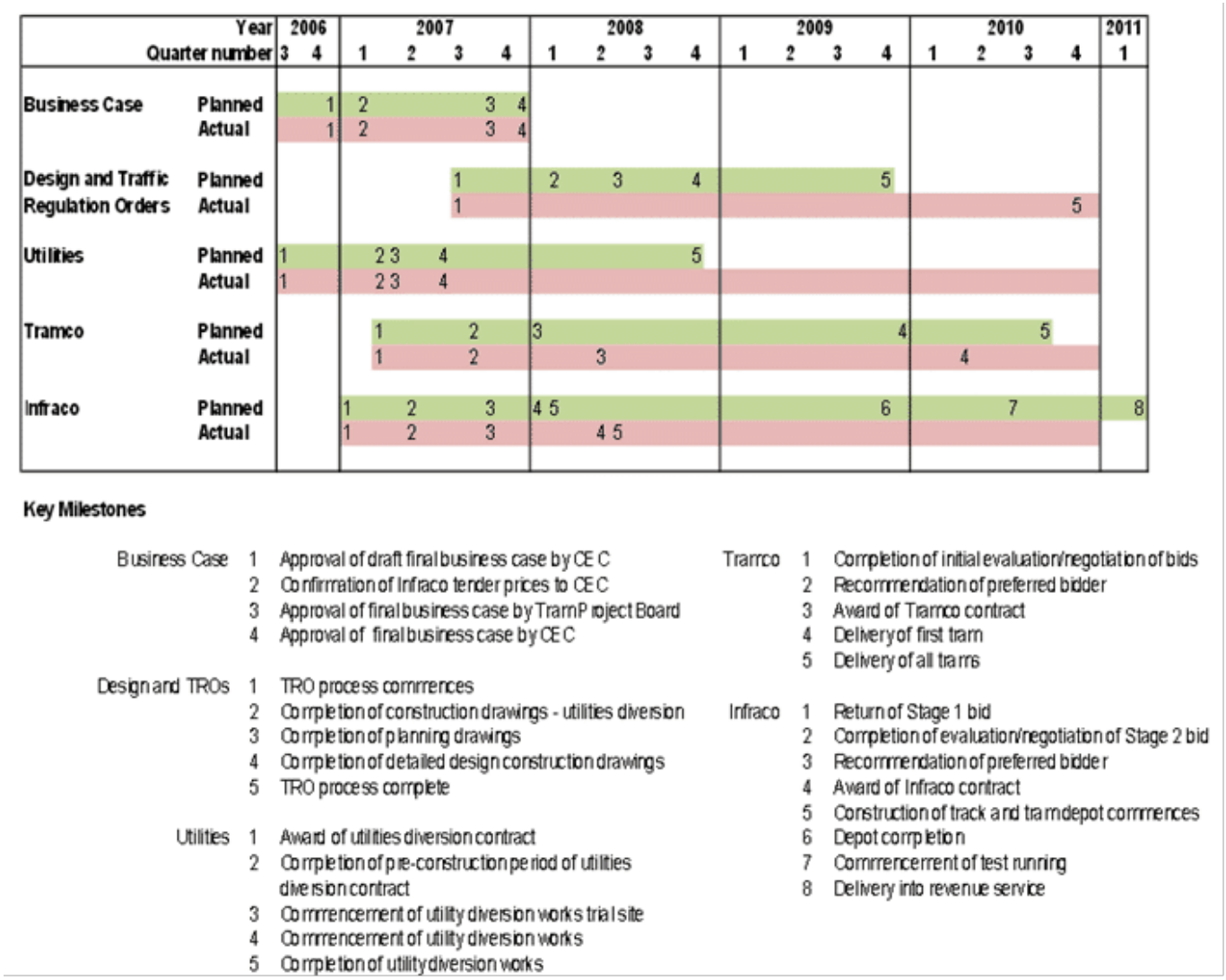

Fig 1: Timelines and illustrations for the Edinburg Trams project

Resources

5.1 Financial Resources

Having been recommended as a solution to decongesting traffic in Edinburg, several resources were injected to ensure that the project was successfully achieved. Financial resources were crucial to the project implementation as £375 million was first budgeted for but proved insufficient. The figure was later increased to £776 million to ensure that the work does not stall. The CEC awarded contracts to numerous companies to enable the completion of the project and ensure it meets its intended targets

(Brocklehurst, 2020). The continuous supply of financial resources was meant to ensure swift workmanship during the project.

5.2 Technical Resources

The technical resources used for the project included the Multi Utilities Diversion Framework, vehicle supply, maintenance equipment, and infrastructure. The project stakeholders were involved in managing specific aspects of the project. For instance, Brinkerhoff was tasked with handling the System Device Service, while McAlpine was involved in handling the Multi Utilities Diversion Framework contract for the Edinburg Trams project. CAF, a Spanish organization, was involved in managing infrastructure and maintenance for Edinburg Trams. The best bidders with distinguished professionalism were selected for the project to ensure the smooth running of the project from start to end (BBC News, 2019). The project is, however, claimed to have dragged due to inadequate staffing. The stipulated 930 employees might not have met the ultimate needs of the project.

Risk Management Elements

The project was marred with several risks, such as budgetary uncertainties and the city's utility infrastructure. Budgetary risks were prevented by the early awarding of the contracts for designing the project. The move enabled the conception of the project in its early stages and ensured accuracy in cost-estimation issues. The city's utility infrastructure was perceived as a potential risk of working within the stipulated deadline. This risk would emerge as a result of the need to relocate certain city utilities to ensure that they are not interrupted during the construction phase of the Edinburgh Trams project (Lowe, 2010). To avoid the issue, utility diversion was adopted as a separate contract to ensure that the project was implemented on time. Another expected risk in the project was the tendency of suppliers to deliver materials unevenly, especially when a supplier deals with numerous services in the project. This risk was reduced by separating the critical elements, which included the project's financial, technical, professional, and equipment, which saw infrastructure constructions and tram developments being separated.

The separation of contracts was not the only approach to reducing the risks associated with coordination and project weaknesses. This was complemented by handing over the entire infrastructure contract to the BBS consortium. The objective of this measure was to coordinate complex aspects of the project and minimize risks resulting from poor coordination between distinct organizations (Picken, 2020). Fluctuation in costs was also something expected during the project's implementation phase. The cost fluctuations are highly risky as they might not only hike the project's costs but also make the costs extremely higher than the benefits. This issue was of great concern considering that the project was approved under a specified budgetary allocation; hence, exceeding the budget would stall the project. The budget exceeded its initial approximation because of delays extending up to 3 years. Hence, the value of project deliverables went up due to inflation. TIE worked

on minimizing this type of risk by setting fixed contract costs (Picken, 2020). The assurance of commitment to this measure was evident by a compensation mechanism in case the project failed to be implemented. In reference to this agreement, £3.2 million was supposed to be paid if phase 1b of the project could not materialize.

The possibility of conflicts between suppliers and TIE was also expected to pose potential impacts that would paralyze the project. TIE made an initiative to minimize this type of risk by offering mechanisms of mediation where conflicts pertaining to contracts would arise. Contract disagreements would first enter a mediation table before legal action could be taken. This was preferred as an easy way of saving time for the completion of the project because legal disputes take a long time to resolve. When a contract matter is taken to court, the judicial process orders an immediate halt of the process until the matter is heard and determined. Disagreements in the project would, therefore, be addressed first, after which legal processes can take their course in case an arbitration approach fails (Lowe, 2010). Consequently, project implementation under alternative dispute resolutions was guaranteed to continue without any interruptions.

As Zwikael et al. (2007) report, in high-risk projects, better project planning improved success on four measures: schedule overrun, cost overrun, technical performance, and customer satisfaction. Schedule overrun is typically caused by financial problems, unachievable contract timelines stated by clients, and a poor definition of project scope. Cost overrun is an expected change in the project budget where the total cost mostly goes up. Technical know-how is a hitch at the implementation stage of a project. All these factors have a negative impact on project implementation, hence the reason behind the stalling of Edinburg's project. Project stakeholders are supposed to strike a good balance between overrun factors to attain the project targets in the required timeframe.

6.1 Theoretical perspectives

The implementation strategy found in Edinburg's Trams project and the forces involved in applying the negotiation strategy help comprehend an important project management theory. The events interfering with Edinburg's project management connect to the game theory applied in the strategic decision-making approach. The manifestation of game theory is evident in the confrontations between BBS and TIE, which are the two major stakeholders involved in the project. The negotiations witnessed by the two entities are similar to Game Theory's 'Chicken' game (Kapliński & Tamošaitiene, 2010). This is because the two stakeholders engage in effortless negotiations, and their success depends on how their opponents negotiate. The disagreements began right from the start of the project in 2008 and continued through 2010. One significant feature of the game theory, as presented in Edinburgh's project, is the inability to offer an absolute solution or strategic and stable solution to the problem (Kapliński & Tamošaitiene, 2010). A stakeholder must combine several approaches to sustain the opponent's curiosity. The aspect of the game theory in the project prolonged its completion. They resolved this controversy by constituting a project management panel in 2009 and restructuring deadlines until the agreement was reached.

Monitoring and Control Processes and Procedures

The monitoring of a project involves measures put in place to facilitate a project's completion in time. The monitoring process is, hence, a strategic tool for project management. Notably, the operational process oversees the process or project implementation. The Edinburgh project made use of 3 operational strategies in monitoring the project's schedule. The monitoring tools include individual work plans, operational plans, project work plans and data collection (Lowe, 2010). The overall monitoring and reporting document assesses the management of a project, funds the project, and supports the implementation process. Hence, the process provides an opportunity for the identification of project deliverables, events, and potential risks. The challenges experienced by the Edinburgh Trams project unearthed the weaknesses of its monitoring team (Lowe, 2010). Due to a lack of proper monitoring at the implementation and operations stage, the project was terminated without any other specific reason. The project process had a significant influence on the monitoring and evaluation process. This is because it ensured that the implementation process was accurate and within the timelines. Consequently, the sum approved for the completion of the project lost value through inflation, making the community believe that the project would not reap its intended benefits.

7.1 Control processes

Meredith et al. (2017) stipulate that the fundamental purposes of a control process involve results regulation through the alteration of various activities concerned with organizational assets. This includes physical asset control, where receipt, storage, maintenance and inventory are addressed. The next phase is human resource control, which focuses on the growth and development of workers on a particular project. Appraisal is common in this type of resource to facilitate quality and speedy execution of work (Meredith et al., 2017). Lastly, financial resource control is another critical factor in project regulation. The project must conform to the financial processes of the organization in charge of the project.

Summary and Assessment of the Project

The Edinburg project was affected by numerous flaws connected to costs, political influence, and delays in completion, which not only dragged the process but also hurt taxpayers. As indicated earlier, the project was initially commissioned by the private company Transport Initiatives Edinburgh (TIE), which was later replaced by consultants Turner & Townsend. The companies were supposed to oversee various phases of the project and ensure its proper implementation. The initial plan to ensure certainty in budgetary allocation was not achieved as the project was delayed for another three years, and the budget went up by more than twice the initial cost. Due to several flaws in budgeting and timelines, the scope of the project was revised several times. Despite the fact that the project was eventually completed, it became very difficult to estimate the benefits of the project to the government and the community.

Instead of taking the whole role of supervising the entire project, the owners of the project would have devised a better approach to make the main suppliers fully responsible for the project. This measure would have assisted in ensuring that initial cost estimations for the project were final and there were no justifiable reasons for demanding a cost increase for the project. The pre-evaluation process would have gauged the competence of the main suppliers and subcontractors responsible for handling various aspects of the project. The government, in particular, ought to hold contractors accountable for their failures instead of giving them a chance to adjust project budgeting and schedule. The government should understand that the success of a project is better achieved if politics are barred from interfering with project implementation. This approach will reduce delays and disputes involved in a serious government project.

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