span of two consecutive years 2016-2018 (Fletcher Building, 2018). The accumulated loss for the construction industry during the 2016 to 2018 financial years shares a significant percentage of New Zealand's GDP. To recover from the current crisis, the industry needs to identify the factors responsible for these failures.

Cost is one of the key factors responsible for project failure in construction industry (Shane, Molenaar, & Anderson, 2009). This is commonly referred to as cost overrun, and is the difference between the initial estimated cost and final project cost. Due to the complexity and uniqueness of construction projects the majority become affected by inflation in the initial project cost which results in cost overrun (Cunnigham, 2017). Researchers have investigated the factors responsible for cost overruns (Cunningham, 2017; Doloi, 2013; Flyvbjerg, Skamris, & Buhl, 2003). Nonetheless, success is the objective of every project team, measured through time, budget, scope and the benefits of projects (Atkinson, 1999). Budget (cost) is a key success measure of project, besides, schedule (time) delays which often impact the cost as well as benefits from the project (Flyvbjerg, 2017). Furthermore, change in scope or quality influence initially agreed time and cost, hence cost overrun occurs. Flyvbjerg et al., 2018 also found that the probability of cost overrun is almost 86% worldwide, nine out of ten projects fail due to cost overruns.

The cost inflations during the construction phase are crucial and cause project failure (Doloi, 2013). Therefore, scope of this research was narrowed to the construction phase, the objective of this investigation is to identify the following:

1. Identify factors causing cost overrun and their impacts.
2. Create a framework to relate factors and nature of impact.
3. Explore possible methods to minimize the impact.

LITERATURE REVIEW

Construction projects are known for their uniqueness and the involvement of various unknown agencies working together to accomplish the same project (Cunnigham, 2017). Research by Kwakye (1997) discovered that the categorisation of a construction project into design and execution phases lacks the practical approach to minimise buildability and construction risks. Due to this categorisation, projects become susceptible to changes and variations during the construction phase. Changes in scope or design affect the time and quality that eventually contribute to cost overrun the estimate. Conventionally, the construction project team is an amalgamation of various consultants, designers, surveyor, and contractors who work together on the same project. Furthermore, the stakeholder or the project owner regularly interferes in the project throughout its life cycle. This situation generates conflicts which could potentially be a cause for cost overrun of projects.

Even though construction failures are common worldwide, occurring in every country whether a developed or developing economy, there are various similarities and differences in factors causing cost overruns and the failure of projects. The following section compiles, reviews and discusses the project cost overruns in developed and developing countries based on the available literature. Further, it evaluates the relationship between the factors and their impacts on projects' success.

The study of the Channel Tunnel (a long underwater rail tunnel) found the project cost overrun was 140% (Flyvbjreg, 2011). The reasons found for the unsuccess of this project were; complexity, interest conflicts, non-standardized design and technology, over commitment, scope change, inadequate contingencies, and project feasibility throughout the realization phase. Josephson et al. (2002) investigated the causes for reworking in construction projects in Swedish industry and found these reworks leads to time delays and cost escalation in projects. The research found rework as a salient part of the procurement system to maintain the quality of projects. Based on this research, factors responsible for rework are design, stakeholders, unskilled labour, tools, and material quality.

Doloi (2013) recommended that early stage estimation and cost management during the construction phase is crucial for the success of the project. Further, this research focused on the roles and responsibilities of the client, consultant and contractor and emphasised the relationship between as a leading factor for effective management accountable for project success in Australia.

Klakegg and Lichtenberg (2016) suggest successive principal for the possibility of successful estimation to completely avoid cost overrun in construction projects. They reported that the Group Triple Estimate (GTE) procedure is key to successful projects in Scandinavian countries. The GTE procedure estimates and considers the extreme low and extreme high value with "most likely" value of each item based on historical preconditions and contingencies. As a result, the survey found 80% of Norwegian public projects were within budget while the actual final cost was 7% lower than calculated mean average values.

The majority of large-scale projects in developing countries are funded by the World Bank, the United Nations, and the World Trade Organizations. The overall influencing factors revealed in Ethiopia by Gebrehiwet & Luo (2017) were ranked as; (1) corruption, (2) lack of utilities, (3) inflation, (4) lack of quality resources, (5) delays in design, (6) procurement delays, (7) delays in approvals, (8) site performance, (9) payment delay, and (10) insufficient planning and scheduling by contractors. It is of interest that corruption ranked as the number one factor, that does not exist in the list of developed countries.

Park and Papadopoulou (2012) investigated cost overrun causes in the Asia-Pacific region, the findings suggested clients need to accept new tendering processes to avoid cost overrun. The smaller projects were found to be less likely to face risks such as market inflation. Nonetheless, shorter duration projects lacked performance due to inadequate cost and time estimates caused by improper planning and poor site management.

In addition, Rauzana (2016) further introduced two more factors; the nature of construction industry, and the role of project managers and they argued that each construction project was unique and involved various agencies acting in a definite short-term role towards the success. This research found factors, such as cost estimates, implementation, working relationships, and project documents were equally responsible for cost overrun.

Based on literature a list of factors causes cost overrun and their relationships with the activity owners in construction projects from various studies was compiled (see Table 1). The coding system used by Wanjari & Dobariya (2016) was adopted in this research to understand the relationship and categorisation of the main factors and factors in cost overrun.

Table 1: List of main factors causes for cost overrun including factors. This information was collected from the literature review and modified according to the context of the New Zealand construction industry.

Main factors	**Factors**
Cost inflation of material	Cost inflation of material
	Labour high rates
	The high cost of transportation
Billing disputes	Bill settlement disputes
Planning delays	Design delays
	Design to tender stage delay
Incomplete tender documents	Incomplete tender documents
	Contract management
Additional work	Additional work
Design changes	Design changes
	Scope changes
Lack of coordination	Lack of coordination between agencies
	Poor site management & supervision
Fraudulent activities	Fraudulent practices and kickbacks
	Supplier manipulation
Mistake during construction	Mistake during construction
Force Majeure	Force Majeure
High-quality expectation from owner	High-quality expectation from owner
Shortening of the contract period	Contractual claims such as an extension of time with cost claims
	Shortening of the contract period
Wastage on site	Wastage on site
Site and labour management	Relationship between site management and labour
Poor financial control on site	Poor financial control on site
	Cashflow and financial difficulties faced by contractors
	Financial difficulties of owner

METHODS

The construction industry spans multiple types of projects distinguishable based on the nature, function, size, and associated stakeholders such as public or private projects. To cover a wide span of research from end-to-end it is necessary to choose a methodology which is capable of collecting evidence from each aspect of the industry, perhaps a small project, mega project or a public funded project. This investigation is based on the reflections of the various construction professionals associated with the construction industry in Auckland, New Zealand. Secondary data was collected through an extant literature search, followed by a semi-structured questionnaire, designed to carry out face-to-face interviews with a few selected key stakeholders in order to gain in-depth understanding of the factors responsible for cost overrun.

FINDINGS

The research focused on project failures in the Auckland construction industry. The participants had distinct opinions based on their experience and their association with industry. For analysis, findings were divided into two sections. First, a set of analysis identified factors affecting project success in the overall construction industry. Based on the literature review 51 factors were identified, affecting the construction projects and causing risks, delays, cost escalation, conflicts, and litigation during the construction phase of the project. The second section of the analysis classified factors into main categories of factors which contributed to cost overrun . Overall, 51 factors were categorised into 15 main factors. These are explained in the later part of this section. This classification is essential to understand, compare, classify, and rank influencing factors according to their impact on the project, as well as to develop the cost overrun relationship model.

WHICH FACTORS CONTRIBUTE TO PROJECT FAILURE?

Overall, 15 main factors were identified from existing literature, namely: design delays, scope change, scope creep, cashflow inconsistencies, procurement method, project management, site management, labour issues, communication, risk management, tenders or contracts, optimism bias, consent or approvals, legislation, and transportation. Based on the main factors and factors investigated using manual coding analysis methods were used to understand the impact, relationship and ownership of component. The activity owners for this research were categorised into three; client, project manager, and contractors considering the majority of involvement. The following Table 2 summaries the external and internal main factors and factors responsible for cost overrun. Additionally, this table includes the participants views on and responses to each factor.

Table 2: List of main factors and factors and participants responses on each factor.

Main factors	Factors	External or Internal	Owner of activity	Participants' responses
Design delays	Delay in drawings	Internal	Project Manager	Participant 1 stated design delays as the major factor which caused cost overrun and added if the delay occurs due to activity initiated by the client, contactors charged for liquidated damages including the cost of extra labour charges which occurred due to delay.
	Delay in approvals		Client	
	Decision delays		Client	
Scope Change	Change in existing scope	Internal	Client/ Contractor	Participant 1 &2 categories scope changes in two types: a change to existing scope, and addition of new item. Participant 1 dealt with 1500 stakeholders involved in a medium scale project. Stakeholders cause majority of scope changes.
	Additional works		Client	
Scope Creep/ Variations	Change in design	Internal	Client/Project Manager	Both participant 1 & 2 revealed the scope change caused delay which could be triggered due to introduction of new technology or new requirement to the project.
	Change in Technology	Internal	Client/Project Manager	
	Change in material	Internal	Client/ Contractor	
	Rework	Internal	Contractor/ Project Manager	
Cashflow inconsistencies	Bad payment	Internal	Client/Project Manager	All participants agreed that cashflow inconsistencies such as bad payment practices employed by either contractor or client affect work progress and cause delays. It could obstruct the project due to lack of labour and material supply at the site.
	Payments to subcontractors	Internal	Contractor	
Procurement method	Control/lead authority	Internal	Client	Participants 2 & 3 had different opinions about the procurement model should be adopted to minimise cost overrun of the project. Nonetheless, both agreed that cost overrun was majorly affected by procurement method applied in the project. The selection of the controller or lead party is decided by the procurement method adopted by the client or stakeholder of the project.
	Delay in material delivery	Internal	Contractor	
	Material related issues	Internal	Contractor	
Nature of project	Conflicts	Internal	Project Manager	Participant 2 & 3 pointed out one-off involvement of various highly skilled teams for project cause conflicts.
	Various agencies	Internal	Client	
	Scale of Project	Internal	Contractor	
Site Management	Project quality control	Internal	Contractor	Participant 1 & 2 agreed that site management is critical, it helps avoid conflicts, and maintains quality of work. For one respondent it was mandatory to update daily progress and to conduct timely follow-up and planning meetings.
	Material and labour	Internal	Contractor	
Labour issues	Insufficient labour	Internal	Contractor	Participants 1 & 3 revealed that small contractors which fail to deliver projects on time face major losses to their business. When these small contractors cannot survive, they loose the business. Thus, there is a shortage of small-medium size contractors in the industry.
	Shortage of skilled labour	Internal	Contractor	
	Peripatetic nature of the industry	External		
	Material wastage	Internal	Contractor	

Communication	Poor communication	Internal	Project Manager	Participant 1 experienced improper communication causing delays in decisions which he described as one-way communication because there was no response from the client-side. Project manager is responsible for communication issues, inefficient project management causes poor communication and decision delays, which contributes to cost overrun.
	Delay in decision-making	Internal	Project Manager	
Risks Management	Core Quality	Internal	Contractors	Participant 2 described risk as an unknown event which could cause additional works and delays to affect the cost of the project.
	Design Errors	Internal	Project Manager	
	Weather conditions	External		
	Future projects	Internal	Contractors	
	Market conditions	External		
	Resignation of experienced team member	External		
	Industry boom	External		
	Expansion of business	Internal	Contractors	
Tender/contract	Competitive tender	Internal	Contractors	According to participant 3, contractors want to expand their books to earn more profits, and do not estimate the risks involved.
	Improper tendering	Internal	Contractors	
	Extreme small margins	Internal	Contractors	
	Lack of standard contract	External	Council	
Optimism Bias	Over-optimistic in the ability to deliver	Internal	Contractors	Optimism bias, as explained by participant 3 majorly influences the project success and causes cost overrun. Further, he related this to the contractor when the contractor is over-optimistic about the ability but fails to deliver the project.
	Insufficient planning	Internal	Project Manager	
	Low-profit margins	Internal	Contractors	
	Selection of contractors	Internal	Client	
	Excessive expectations	Internal	Client	
	Core quality	Internal	Contractors	
	Portfolio Management	Internal	Contractors	
	Fixing provisional sums	Internal	Contractors	
Consent/ Approvals	Consent delays	External	Authorities/	All participants believed the mid-scale and large volume projects such as residences, are affected by delays in council related activities.
	Council			
	Council related issues	External	Council	
	Resources consent	External	Council	
Legislation	Legislative framework	External	Authorities	All participants agree that the New Zealand construction industry lacks a sufficient amount of labour, as well as the availability of skilled labour to deliver the projects within time and budget.
	Skilled migration policies	External	Authorities	
Transportation	Delay in materials	Internal	Contractor	All participants believed issues such as transportation require more infrastructure and a bigger market throughout the country to bring down costs involved in moving material from one place to another.

Research further divided the influencing factors note into three components according to the owner of the activity. The list (see Table 3) shows the relationship between influencing attributes and responsible activity owner. It is observed that the activity owner can influence respective factors to avoid cost overruns. Following is the list of activity owners and their respective factors established based on the information collected from participants.

Table 3: Table indicates the activity owners and respective responsibilities, which influence the cost overrun in construction projects.

Project Manager	Client	Contractor
Delay in drawings	Delay in approvals	Change in the existing scope
Change in design	Decision delays	Change in material
Change in Technology	Change in design	Rework
Rework	Change in Technology	Payments to subcontractors
Bad payment	Change in material	Delay in material delivery
Conflicts	Bad payment	Material related issues
Poor communication	Control/lead authority	Scale of Project
Delay in decision-making	Various agencies	Project quality control
Design Errors	Selection of contractors	Material and labour issues
Insufficient planning	Excessive expectations	Insufficient labour
		Material wastage
		Core Quality
		Future projects
		Expansion of business
		Competitive tender
		Improper tendering
		Extremely small margins
		Over-optimistic in the ability to deliver
		Low-profit margins
		Core quality
		Portfolio Management
		Fixing provisional sums
		Delay in materials

The above main factors have impacts on the project success according to their association with the project or industry. The research sub-divided the factors according to their relationship and influence on the projects. The sub-division into internal and external was required to understand the ability to measure and control the factors and their impact. Internal factors are those that can be controlled by the project team, such as client, project manager, and contractors. External factors are such factors which cannot be controlled by

the project activity owners, but influence the project, such as weather, council approvals, legislation and transportation. Further, the main factors are divided into two categories: contributors and influencers. The influencers have direct impact on the project, while contributors can influence the project indirectly by affecting the influencers. These divisions are important to show the relationships between factors as illustrated in Figure 1.

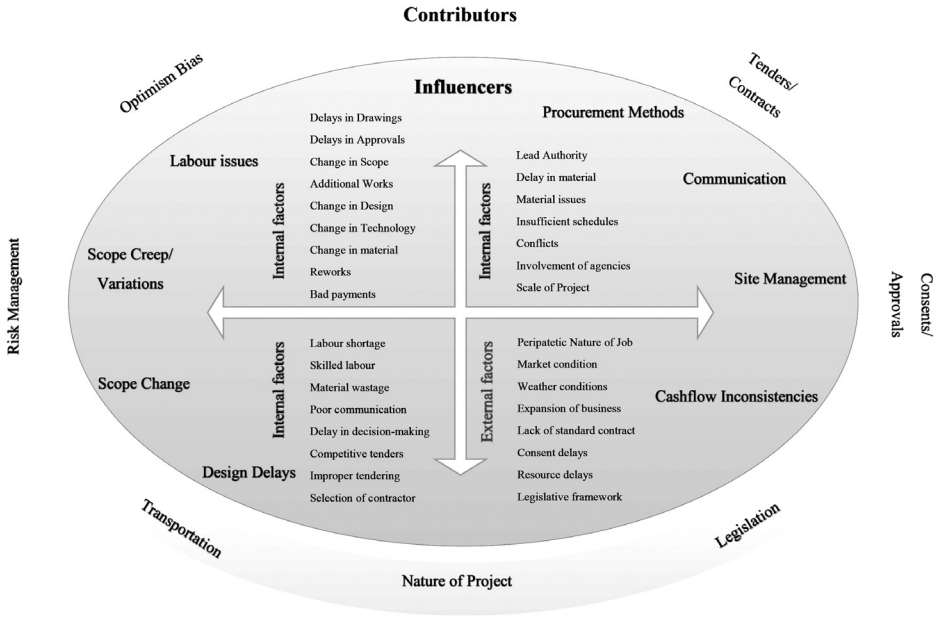

Figure 1: Construction project cost influencers and contributors.

CAN THESE FACTORS BE MEASURED AND CONTROLLED?

According to the participants, failure in the construction industry is inevitable. Due to the nature of the industry and the involvement of factors already mentioned in the earlier section, it is impossible to achieve a perfect model, to avoid the failures completely. According to a participant, if we control internal factors, such as scope change, it has a cascading effect on the project. External factors, such as labour and market conditions cannot be controlled.

This research discovered some methods employed to achieve success and avoid cost overruns. For instance, Building Information Modelling (BIM) has proven to be effective in avoiding risks involved, for instances in scope change, and in factors such as scheduling and accurate estimates. However, the extremely high initial cost of BIM could be half of the overall project cost in case of small projects, so not feasible for small projects. Participants of this research also mentioned that the BIM use is limited to controlling the internal factors, while external factors could impact on the project success too.

Communication is key in achieving success in any project with various specialised agencies working together towards the aim of the project. A tool such as Primavera by Oracle, basically connects every member working on a particular project in order to be able to properly communicate issues and to update the project. Though, it is an effective tool, at the same time, reliability and connectivity within teams is crucial. For instance, if some issue is posted on portal, there is a probability that more than one team member would start working on resolving the issue without coordinating or informing another team. Such incidents are rare but could generate conflicts, and further delays to the project.

A participant argued the PIPS system of procurement introduced in 2010 by Dean Kashiwagi, an academic based in Arizona State University, USA was the most efficient system to avoid cost overruns. The concept of procurement system is divided into three stages; selection of an experienced contractor with a proven record of satisfactory customers, the ability of contractors to identify and draw a risk management plan for the proposed project, lastly, selection of the lowest bidding tender. The system is designed to select based on proficiency forcing contractors to keep working in a specific field. Thus, the system restricts the contractors to a specific typology, and does not allow them to bid for projects of other domain, so restricting them from expanding their portfolio into multi-typology contracts.

This research found four key factors that cause cost overrun in construction projects in New Zealand; scope change, procurement methods, tenders/contracts, and labour issues. Though there are other factors influencing project success, their impact is relatively lower than the four factors above. This research attempted to identify the methods or instruments currently used to avoid or minimise the impact on the project. The employment of methods such as BIM, Early Contractor Involvement (ECI), Performance Information Procurement System (PIPS) system, etc. have been used to achieve successful projects. Though these methods have proved to be useful but have limitations such as usability based on scale and nature of project also availability of technology which can vary from project to project.

DISCUSSION

The factors identified in the investigation are four major influencers in cost overrun due to: a. scope change, b. inefficient tender or contracts, c. labour issues and d. procurement methods. These factors were identified on the basis of the frequency of occurrence and their impact as described by the participants in interviews. The findings of the research agree to majority of the factors and suggested that there are three main factors involved: scope change (Park & Papadopoulou, 2012); Wanjari & Dobariya, 2016), optimism bias (Flyvbjerg, et al., 2018; Shane, Molenaar, Anderson, & Schexnayder, 2009), and procurement methods (Gebrehiwet & Luo, 2017; Asiedu, Frempong, & Alfen, 2017; Shane, Molenaar, Anderson, & Schexnayder, 2009). However, there are more factors which could potentially influence cost overrun in a project, such as design delays, scope creep, cashflow inconsistencies, nature of the project, site management, labour issues, communication, risks management, tenders, contracts, consents/approvals, legislation, and transportation. The main four factors act as the foundation for a successful project, and evading these factors in the project automatically avoids the possibility of occurrence of other factors through a cascading effect. For instance, this was agreed by a participant, that even a small change in project scope has a cascading effect, which can initiate other factors in cost overruns.

Optimism bias is also responsible, as it initiates a majority of influencing factors such as insufficient estimates, procurement methods, risks, conflicts, etc. It is crucial to avoid optimism bias at on early stage a project. The majority of the participants agreed on to this and it was also supported by Flyvbjerg (2006) who found that optimism bias and misrepresentation strategies because of insufficient estimates and inappropriate schedules, contributed to project failures.

While analysing the data, it was observed that codes - main factors and factors – are inter-connected and form a network of activities (Figure 1). These interconnected activities proportionately affected others to initiate or avoid their influence. For instance, the selection of appropriate procurement method could prevent issues such as delays of material, quality, rework, and site management issues.

Typically, procurement systems define the respective role and responsibilities of consultant and contractor, also who would control the project throughout its life cycle. Thus, it could be used to avoid the risk of conflict-related power issues. The interviewers discussed whether conflicts occurred due to power issues between the highly certified and temporary involvement of siloed agencies in a project. Rauzana (2016) mentioned the nature of a project that involves various agencies to achieve a goal is majorly responsible for the failure of projects in construction industry.

Most participants agreed that scope change is a critical factor for performance in a project. As discussed early, the factors are interconnected and have a cascading effect. The involvement of contractors during the preparation of tender documents would enhance the accuracy of estimates.

Communication was observed to have a significant implication on project failure. However, this is avoidable by maintaining trust and relationships between the project teams. It was found though each team interest is limited to their role but working in coordination positively affects the overall project performance. Similarly, Dada (2014) suggested the coordination within teams could avoid site management and conflicts issues. According to Hewage et al. (2011) trust and teamwork is a key factor for project performance.

In present scenario, labour issues in the New Zealand construction industry are crucial and unavoidable. Contractors can pre-estimate their manpower capability to deliver projects before bidding for a project to avoid these issues. This issue is not limited to one project as the shortage of labour causes high labour costs, eventually increasing the project cost. Also labour seeks out work which does not require moving from one place to another. During this research, labour issues are found to be common in developed countries such as USA (Shane J. S., Molenaar, Anderson, & Schexnayder, 2009), Scandinavia (Klakegg & Lichtenberg, 2016), and Sweden (Josephson, Larsson, & Li, 2002) as they suffer skilled labour issues. However, this is not mentioned in the majority of research conducted in developing countries, mainly in Asia as they have a big workforce. This is a legislative issues which can only be controlled by effective policies and proper training schools in the New Zealand.

LIMITATIONS

This research had several limitations. The lack of available literature on the construction industry restricted the data collection methods tools. So the research attempted to contextualise the literature findings in the context of New Zealand. Further, the availability

of participants was an issue, due to which only a few key participants were interviewed. Following the literature review, three key participants were interviewed.

CONCLUSION

The research aimed to identify the key factors that cause cost overrun in the construction industry. The four main factors that are of major concern; scope change, procurement methods, tenders/contracts, and labour issues causing cost overrun in construction projects. The secondary factors are design delays, scope change, scope creep, cashflow inconsistencies, procurement method, project management, site management, labour issues, communication, risk management, tenders or contracts, optimism bias, consent or approvals, legislation, and transportation. Additionally, the investigation identified methods being used to avoid the cost overrun such as BIM, ECI, PIPS, further studies should be conducted to investigate how these methods can be used in NZ context.

Finally, the research managed to identify the relationship between influencers and contributors to cost overrun, their impacts and activity owners in the project (Figure 1). It is found each identified factor has an impact which varies according to nature of the project. Similarly, a few discrepancies were observed in the participants opinions due to the nature of their association with the construction industry. The research further recommends related research to be carried out for various infrastructure and building typology projects to identify the influencing factors of cost overruns on specific project types. It is important to gather a preliminary set of data in every sector, of factors causing failure in the construction industry. This research could provide a framework for further research where instruments and methods could be developed that avoid such failure factors.

REFERENCES

Abd El-Karim, M. S., El Nawawy, O. A., & Abdel-Alim, A. M. (2015). Identification and assessment of risk factors affecting construction projects. *Housing and Building National Research Center*, 202-216.

Aje, O. I., Olatunji, O. A., & Olalusi, O. A. (2017). Overrun causation under advance payment regimes. *Built Environment Projects and Asset Management, 7*(1), 86-98.

Asiedu, R. O., Frempong, N. K., & Alfen, H. W. (2017). Predicting likelihood of cost overrun in educational projects. *Engineering, Construction and Architectural Management, 24*(1), 21-39.

Assaf, S. A., & Al-Hejji, S. (2006). Causes of delay in large constrcution projects. *International Journal of Project Management, 24*, 349-357.

Atkinson, R. (1999). Project management: cost, time and quality, two best guesses and a phenomenon, its time to accept other success criteria. *International Journal of Project Management, 17*(6), 337-342.

Basit, T. N. (2003). Manual or electronic? *The role of coding in qualitative data analysis. Educational Research, 45*(2), 143-154.

Boyce, C., & Neale, P. (2006). COnductiong In-depth interviews: A guide for designing and conducting in-depth interviews for evaluation input. *PATHFINDER INTERNATIONAL TOOL SERIES- Monitoring and Evaluation – 2*.

Campbell, J. L., Quincy, C., Osserman, J., & Pedersen, O. K. (2013). Coding In-depth Semistructured Interviews: Problems of Unitization and Intercoder Reliability and Agreement. *Sociological Methods & Research, 42*(3), 294-320.

Chevroulet, T., Giorgi, L., & Reynaud, C. (2012, Dec 1). New Approach for the Assessment of High-Speed Rail Projects and How to Contain Cost Overruns: Lessons from the EVA-TREN Project. *Journal of Infrastructure Systems, 18*(4), 297-304.

Cunnigham, T. (2017). *Cost Control during The Construction Phase of the Building Project: The Consultant Quantity Surveyor's Perspective.* Dublin Institute of Technology, School of Surveying and Construction Management. Dublin: Dublin Institute of Technology.

Dada, M. O. (2014). The influence of project team relationships on cost growth. *Journal of Financial Management of Property and Constrcution, 19*(1), 76-94.

Doloi, H. (2013). Cost Overruns and Failure in Project Management: Understanding the Roles of Key Stakeholders in Construction Projects. *Journal of Constrcution Engineering and Management, 139*(3), 267-279.

Fletcher Building. (2018). *Focus - Annual Report.* Auckland: Fletcher Building.

Flyvbjer, B., Holm, M. S., & Buhl, S. (2014, March). Underestimating Costs in Public Works Projects. *Journal of the American Planning Association, 68*(3), 279-295.

Flyvbjerg, B. (2006). Curbing Optimism Bias and STrategic Misrepresentation in Planning: Reference Class Forecasting in Practice. *Europen Planning Studies*, 16, 3-21.

Flyvbjerg, B. (2017). Introduction: The Iron Law of Megaproject Management. In B. Flyvbjerg, *The Oxford Handbook of Megaproject Management* (pp. 1-18). Oxford: Oxford University Press.

Flyvbjerg, B., Ansar, A., Budzier, A., Buhl, S., Cantarelli, C., Garbuio, M., . . . Wee, B. V. (2018). Five things you should know about cost overrun. *Transportation Research Part A Policy and Practice*.

Flyvbjerg, B., Skamris, H. M., & Buhl, S. L. (2003). How common and how large are cost overrun in transport infrastructure projects? *Transport Reviews, 23*(1), 71-88.

Flyvbjerg. (2011). Over budget, over time, over and over again. In M. P. W.G., J. K. Pinto, & J. Soderlund, *The Oxford Handbook of Project Management* (pp. 321-344). Oxford University press.

Gebrehiwet, T., & Luo, H. (2017). Analysis of Delay Impact on Construction Project Based on RII and Correlation Coefficient: Empirical Study. *Creative Construction Conference*. *196*, pp. 366-374. Primostem, Crotia: Procedia Engineering.

Hewage, K., Ganorruwa, A., & Ruwanpura, J. (2011). Current status of factors leading to team performance of onsite construction performance in Alberta building construction projects. *Canadian Journal of Civil Engineering, 38*, 679-689.

Jackson II, R. L., Drummond, D. K., & Camara, S. (2007). What is Qualitative Research? *Qualitative Research Reports in Communication, 8*(1), 27-28.

Johansen, A., Sandvin, B., Torp, O., & Okland, A. (2014). Uncertainty analysis - 5 challenges with today's practice. *Procedia – Social and Behavioral Sciences, 119*, pp. 591-600.

Josephson, P.-E., Larsson, B., & Li, H. (2002). Illustrative Benchmarking Rework and Rework Costs in Swedish Construction Industry. *Journal of mAnagement in Engineering, 18*(2), 76-83.

Klakegg, O. J., & Lichtenberg, S. (2016). Successive cost estimation - successful budgeting of major projects. *29th World Congress International Project Management Association (IPMA) 2015. 226*, pp. 176-183. Procedia - Social and Behavioral Sciences.

Koushki, P. A., & Kartam, N. (2004). Impact of construction materials in project time and cost in Kuwait. *Engineering, Constrcution and Architectural Management, 11*(2), 126-132.

Kwakye, A. (1997). *Construction Project Administration in Practice*. Wokingham: Addison Wesley.

Lo, T., Fung, I. W., & Tung, K. C. (2006). COnstrcution delays in Hongkong civil engineering porjects. *Journal of Counstruction Engineering and Management, 132*(6), 636-649.

Love, P. E., Wang, X., Sing, C.-p., & Tiong, R. L. (2013, March 1). Determining the probability of project cost overruns. *Journal of Construction Engineering and Management,, 139*(3), 321-330.

Mason, J. (2002). *Qualitative Researching; Second edition.* London: SAGE Publications Ltd.

MBIE. (2013). *The New.* New Zealand Government, MBIE. Wellington: New Zealand Government.

MBIE. (2015). *Building a Future.* Ministry of Business, Innovation and Empolyment.

Oladapo, A. (2007). A qualitative assessment of the cost and time impact of variation orders on construction projects. *Journal of Engineering, Design and T2007echnology, 5*(1), 35-48.

Orb, A., Eisenhauer, L., & Wynaden, D. (2001). Ethics in Qualitative Research. *Journal of Nursing Scholarship, 33*(1), 93-96.

Park, Y.-I., & Papadopoulou, T. C. (2012). Causes of cost overruns in transport infrastrcuture projects in Asia. *Built Environment Project and Asset Management, 2*(2), 195-216.

Peansupap, V., & Cheang, L. (2015). Identifying issues of change leading to cost conflicts:case study in Cambodia. *Creative Construction Conference. 123*, pp. 379-387. Procedia Engineering.

PwC. (2016). *Valuing the role of construction in the New Zealand economy.* Auckland: Construction Strategy Group.

Rahman, A. I., Memon, A. H., & Abd. Karim, A. T. (2013). Significant Factors Causing Cost Overruns in Large Constrcution Projects in Malaysia. *Journal of Applied Sciences, 2*, 286-293.

Ramachandara, T., & Rotimi, J. O. (2012). Liquidation and its effects on constrcution trade creditors in New Zealand. *Journal of Financial Management of Property and Construction, 17*(2), 166-175.

Ramos, M. (1989). Some ethical implications of qualitative research. *Research in Nursing & Health*, 57-63.

Rauzana, A. (2016). Cost overruns and failure in constrcution projects. *IOSR Journal of Business and Management, 18*(10), 80-83.

Riffe, D., Lacy, S., & Fico, F. (2005). *Analyzng media messages:Using quantitaive content analysis in research*. Mahwah: NJ: Lawrence Erlbaum Associates.

Sanjari, M., Bahramnezhad, F., Fomani, F. K., Shoghi, M., & Cheraghi, M. A. (2014). Ethical challenges of researchers in qualitative studies: the necessity to develop a specific guideline. *Journal of Medical Ethics and History of Medicine*.

Shane, J. S., Molenaar, K. R., Anderson, S., & Schexnayder, C. (2009). Construction Project Cost Escalation Factors. *Journal of Management in Engineering, 25*(4), 221-229.

Shepperd, J. A., Caroll, P., Grace, J., & Terry, M. (2002). Exploring the causes of comparitive optimism. *Psychologica Belgica, 42*, 65-98.

Smith, P. (2014). Project Cost Management - Global Issues and Challenges. *27th IPMA World Congreee. 119*, pp. 485-494. Procedia - Social and Behavioral Sciences.

Tookey, J. (2018, August 01). How is a major contractor going bust in the middle of NZ's building boom? (H. Oliver, Interviewer) The Spinoff.

Tseng, C.-L., Y., L. K., & Sundararajann, S. K. (2005). Managing cost overrun risk in project funding allocation. *Annals of Opertations Reseacrh, 135*, 127-153.

Wanjari, S. P., & Dobariya, G. (2016). Identifying factors causing cost overrun of the constrcution projects in India. *Sadhana – Academy Proceedings in Engineering Sciences, 41*(6), 679-693.