
**A Survey on Target Costing (TC) in New Zealand's Private
Training Establishments (PTEs): the Level of Awareness
among Managers and the Degree of Adoption**

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**A dissertation submitted to
Auckland University of Technology
in partial fulfillment of the requirements for the degree
of
Master of Business (MBus)**

2015

School of Business

Abstract

This dissertation explores the occurrence and use of target costing in New Zealand Private Training Establishments (PTEs) and examines the level of target costing (TC) implementations in different TC PTEs. I find that there is a relatively moderate adoption rate of target costing (33.3 per cent) in the PTE sector in New Zealand. More than half of these PTEs, which adopted target costing (referred as TC PTEs), have only a basic level of target costing implementation. This dissertation also identifies factors that contribute to a more complete implementation of target costing in PTEs, by empirically examining the association between eight identified factors and the completeness of target costing implementation. Five management techniques/tools (factors) have been found to be significantly associated with the completeness of target costing implementation: 1) top management support in the implementation of target costing; 2) cross-functional teams; 3) a structural reporting system; 4) performance rewards based on achievement of target costs; and 5) active participation of suppliers and other external stakeholders in the program development. This suggests PTEs with a higher level of target cost implementation are more likely to adopt these techniques/tools. This research also empirically examines the effect of the target costing adoption on cost reduction performance, quality level of services, and customer satisfaction level in the PTE context, as well as the impact of completeness of target costing implementation on these three aspects. The findings from this study suggest that the adoption of target costing has positive influences on cost reduction performance and quality level of

services in PTEs. Moreover, the effectiveness of target costing in reducing cost also increases when the TC PTEs have a more complete target costing implementation.

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Glossary 1

CAM-I	Consortium for Advanced Manufacturing-International
CEO	Chief Executive Officer
GCC	Gulf Co-operation Countries
ITP	Institutes of Technology and Polytechnics
KMO	Kaiser–Meyer–Olkin
NPD	New Product Development
NZQA	New Zealand Qualifications Authority
NZQF	New Zealand Qualifications Framework
OECD	Organization for Economic Co-operation and Development
PCA	Principal Components Analysis
PTE	Private Training Establishment
QFD	Quality Function Development
SMA	Strategic Management Accounting
SPSS	Statistical Package for Social Sciences
TC	Target Costing
TEC	Tertiary Education Commission
TEOs	Tertiary Educational Organizations
U.K.	United Kingdom
U.S.	United States

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Attestation of Authorship

“I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.”

Acknowledgements

I would like to thank all people who have helped and inspired me during my master study. I especially want to thank my primary supervisor, Dr. Suresh Ramachandra, and my secondary supervisor, Dr. Anil Narayan, for their guidance during my research and study at the Auckland University of Technology. Besides my supervisors, my sincere thanks also go to all the respondents who participate in this study. This dissertation would not have been possible without all the information provided by them.

Also, I would like to thank my friend Sky Liu, Helen Liu, Cici Chen and Seven Ge, for acting as a constant source of encouragement and emotional support. They always offer me with help whenever I am in need.

Last but not the least, I would like to thank my family: my parents Shangcun Cui and Ming Tang, for supporting me spiritually throughout all time. Without their support, it would be impossible for me to finish this study.

Ethics Approval

An ethics application has been approved by the Auckland University of Technology Ethics Committee on March 19, 2015. This ethics application has been approved for three years until 17 March 2018. AUTEK Reference number is 15/56.

Chapter 1 Introduction

The purpose of this dissertation is to provide some insight regarding the occurrence and use of target costing (TC) in New Zealand Private Training Establishments (PTEs) and identify factors that contribute to a more complete implementation of target costing in PTEs, through a quantitative analysis. Another aim of this research is to empirically examine the effect of target costing adoption on cost reduction performance, quality level of services, and customer satisfaction level in the PTE context, as well as the impact of the completeness of target costing implementation on these three aspects.

This study examines three research questions: 1). Has target costing been used in New Zealand's PTEs? If so, what is the level of implementation? 2). What are the factors that contribute to a more complete implementation of target costing in the PTE environment? 3). Has target costing brought any benefits for PTEs? And what is the impact of the completeness of target costing implementation on the benefits perceived by TC PTEs?

Private higher education, one of the most dynamic segments of post-secondary education, is expanding in both scope and number of providers (Altbach, 1999). A well-educated population is pivotal for the success of any nation (Chandra & Pattanayak, 2010). Specifically, higher education contributes to the supply of well-trained workforces and helps facilitate the development of a knowledge-based society (Chandra & Pattanayak, 2010; Ogle, Liu, Zorn, & Williams, 2012). Globally, post-secondary students have had more access to higher education during the last three decades (Ryan, 2012), which has been described as the massification of higher education by Scott

(1995). Meantime, this widening of access to higher education by post-secondary students, along with factors such as population growth, has created unprecedented demands on the capacity of the tertiary education sector (Botsford, 2012; Ryan, 2012; Scott, 1995). However, in many countries, the governments are unwilling or have little or no ability to provide the necessary support for the expansion of higher education systems (Altbach, 1999). Moreover, student population is greatly differentiated than they were before, in terms of interests and goals for education and the level of personal ability (Altbach, 1999). For example, some students who want to acquire employment skills and have more working opportunities in the future, are more interested in vocational programs, while others would like to be better equipped with broader-focused theoretical knowledge and research skills for jobs that require critical thinking over applied skills. As a consequence, traditional universities are finding it more challenging to satisfy the various demands from students. All of these factors have contributed to the rise of the private segment (Altbach, 1999).

While private higher education plays an ever-increasingly important role in the higher education systems worldwide, they are also facing certain problems and challenges (Altbach, 1999). First, the costs of higher education are increasing (Granof, Michael, David, & Vaysman, 2000; Ismail, 2010; Zusman, 2005). As the world is changing rapidly, the higher educational institutions also need to make adjustments and take necessary actions correspondingly (Ismail, 2010). For example, the digital revolution is one of the developments that have a significant influence on higher educational institutions (Ismail, 2010). By way of response, higher educational institutions create

innovations in the way they deliver courses, such as the provision of on-line courses, and invest heavily in information and communication technology projects (Ismail, 2010; Marshall, Baldwin, & Peach, 2008). All of these efforts have led to the increase in higher education costs (Ismail, 2010). Moreover, the globalization and internationalization of higher education and the proliferation of higher education providers have also led to intense competition within this industry (Appanna & Goundar, 2011; OECD, 2004). As competition intensifies, the influence of market forces on prices also increases, especially while supply exceeds demand (Kwah, 2004). In such a competitive academic environment where students are confronted with so many options, higher educational institutions, which want to remain in a competitive position in the future, have to attract and retain more students (Hasan, Ilias, Rahman, & Razak, 2008). Consequently, higher educational institutions have to improve the quality of services, which has proved to have a positive influence on the student satisfaction (Hasan et al., 2008). However, private educational institutions, who have to face the rising cost of higher education, while constrained by the limits on tuition increases set by the market with fierce competition (Zusman, 2005), are challenged to provide this high level of service quality. According to Altbach (1999), in most countries, especially in the developing world, the majority of newer private schools were clustered at the bottom of the academic hierarchy. One reason behind this phenomenon was due to the limited resources owned by these institutions (Altbach, 1999).

Unlike those non-profit public universities and colleges, which emphasize scholarly efforts and educational achievements rather than monetary outcomes, private

educational institutions are largely motivated by profits (Appanna & Goundar, 2011; Granof et al., 2000). Moreover, for most private educational institutions, students' tuition fee payments are the main source of funds, as they are self-financed institutions (Altbach, 1999). The limited sources of funds on the one hand and the goal of maintaining satisfactory profits on the other hand are posing high economic pressure on private educational institutions. To generate the desired profit, organizations have to reduce costs when they have little control or the power to determine the price (Schmelze, Geier, & Buttross, 1996). However, private institutions still have to address high-quality education at the same time as their survival depends on whether they can attract students and provide appealing and appropriate courses or programs (Altbach, 1999). As a consequence, the private educational institutions need effective cost management techniques to manage the overall cost efficiently and help respond positively to these challenges.

The target group for this study is New Zealand Private Training Establishments (PTEs). PTEs are government-regulated, privately owned and governed tertiary education providers (Fitzsimons, 1997). In 2013, the total enrollments of New Zealand PTE students of 75,079 comprised 18 percent of all enrollments in New Zealand tertiary education (Education Counts, 2013). In 2012, the tuition revenue paid only by international fee-paying students was 204 million, which represented 27.4 percent of all tuition income generated by the entire tertiary education industry (New Zealand Education, 2013c). Similar to private higher education segments in other countries, the New Zealand PTE sector has also experienced rapid growth (Appanna & Goundar,

2011). Currently, there are around 600 PTEs in New Zealand, among which about 200 PTEs are involved in international student recruitment (New Zealand Education, 2013b). This proliferation of private education providers, combined with other factors such as the toning down of government support, loosening of regulatory restrictions, centralization of market competition, has resulted in the need from education providers to focus on cost and profit (Appanna & Goundar, 2011). Meanwhile, in regard to the low quality of education provided by the non-university tertiary sector in New Zealand, it has raised concerns and the complaints have been largely aimed at PTEs (Appanna & Goundar, 2011). One of the reasons given by PTEs for their difficulty in meeting accreditation requirements from NZQA was costs (Fitzsimons, 1997). As the sub-quality performance in the provision of education seriously affects and constrains the long-term development and prosperity of New Zealand PTE industry, PTEs must also make efforts to improve the quality of education while working on cost control. For this purpose, PTEs have a great need to find a cost management technique that can help them target the three elements, which include price, quality, and cost, simultaneously.

Target costing (TC) is one alternative cost management technique, which can help companies strengthen their competitiveness in meeting today's business challenges (Al-Suboo & SanadSabe, 2000). Intense global competition and ongoing technology changes have increased the level of difficulty for companies to acquire and maintain their competitive advantages (Ax, Greve, & Nilsson, 2008). For purposes of survival, companies have to reduce their costs under the pressure from customers to reduce prices in such a competitive environment (Schmelze et al., 1996). However, products/services

simply at lower cost are not able to satisfy customers any more (Ax et al., 2008; Modarress, Ansari, & Lockwood, 2005). Factors such as timely product introduction, quality and customer demands should also be addressed in the product/service development process (Cooper, 1996; Huang, Lai, Kao, & Chen, 2012; Lynn, Abel, Valentine, & Wright, 1999; McMann & Nanni, 1995; Tani et al., 1994). Target costing is a systematic process, which includes planning new products/services, determining expected selling price and targeting the profit margin for the new offerings, and reducing the total life cycle cost of new products/services (while still meeting customer requirements) by examining all ideas for cost reduction in different stages (Cooper & Slagmulder, 1997). It helps companies determine and manage the cost in the product/service design stage, as well as the quality and functionality of the product/service (Ax et al., 2008; Ewert & Ernst, 1999; Kato, 1993). The target cost would be determined based on the difference between the expected selling price, which is established based on the price level of existing products/services or competitors' offerings, and the expected profit margin derived from an organization's strategic profit plan (Ansari, Bell, & Swenson, 2006; Dekker & Smidt, 2003; Ellram, 2006; Okano & Suzuki, 2007). This "reverse costing" or "price-led costing" mechanism is one of the key principles of target costing systems (Ansari, Bell, & CAM-I Target Costing Group, 1997). Although most scholars emphasized the cost reduction part of target costing, it is also a discipline mechanism, which can help designers realize different goals during the product/service development process (Dekker & Smidt, 2003). Since being utilized by the Japanese automotive companies in the 1960s, target costing has gained a reputation for help companies achieve cost control and improvement in both quality and customer

satisfaction (Ansari, Bell, & Okano, 2007). Therefore, this cost management technique has grown in popularity not only in Japan but also all around the world, and has been widely adopted (Ansari, Bell, & Okano, 2007; Huang, Lai, Kao, & Chen, 2012). While Yazdifar and Askarany (2012) have reported that 18.4 percent of service companies, which include educational organizations, in the U.K., New Zealand and Australia, have implemented and accepted target costing, it has not been mentioned that whether these educational organizations surveyed in their research include New Zealand PTEs.

This paper discusses three important issues relating to target costing. First, it explores whether target costing has been used in New Zealand PTEs; and if it has been adopted in these PTEs, how complete is the target costing implementation? In another word, what is the level of target costing implementation? Companies which are not in the education industry and known for target costing technique adoption (referred as TC companies) were compared with New Zealand PTEs for this research. A number of similarities were found. For example, both TC companies and PTEs are conducting business in competitive environments, thus, have administrative demand in resources management and cost control. Furthermore, to remain in a competitive position, they all have to provide high-quality products/services, which satisfy customer needs. Given the needs for both tight cost control and customer-related information from PTEs, I would like to investigate whether target costing method has been adopted in PTEs, in particular. In this present study, the principle of “price-led costing” is used as a criterion to distinguish TC PTEs from non-TC PTEs, as it represents the most significant difference between target costing method and traditional “cost-plus” method (Kwah,

2004). PTEs, which determine the target cost based on the difference between expected selling price and desired profit margin during the service development process, are deemed as TC PTEs. In this study a general definition of target costing, which uses a formula to illustrate the “price-led costing” mechanism with a brief description, was provided in the questionnaire (see Appendix A). Participants were asked to compare the cost management practices used in their establishments with target costing described in the definition and then select yes or no to indicate whether they have adopted such method. To further examine the maturity of target costing implementation in these TC PTEs, this study utilized the four-level taxonomy of target costing implementation developed by Yazdifar and Askarany (2012), where the common steps taken in a fully developed target costing process were used as a benchmark to categorize the implementations of target costing into four levels. Similar to many other management practices and philosophies, target costing also has many variations in practice (Feil, Yook, & Kim, 2004). In Dekker and Smidt’s (2003) study, 59 percent of the respondents indicated that they were using target costing. However, some participants pointed out that although the practices used in their organizations were to some extent similar to the definition of “target costing” given in the questionnaires there were still many differences (Dekker & Smidt, 2003). These practices were termed by different names such as ‘cost planning’, ‘cost projection systems’ and ‘basic net price’ (Dekker & Smidt, 2003; Kato, 1993). Yazdifar and Askarany’s (2012) research demonstrated that implementation and use of target costing varied across companies even though they all claimed that this technique was adopted in their companies. These differences might cause a potential confound if they are not be controlled, and may compromise the

comparability and generalizability of research studies. Some researchers are aware of the differences in the implementation of target costing, and control for these differences in their research with various instruments. For example, Al-Awawdeh and Al-Sharairi (2012) developed a six-dimension model to measure the level of target costing adoption in Jordanian private universities. In another research, Huang et al. (2012) adopted three modified items to assess the target costing adoption level. However, Forsman, Lindgren, Jönköping University, and Jönköping International Business School (2006) claimed that Likert-scales are not suitable for measuring target costing implementation, as target costing is a technique which can either be used or not (Ansari et al., 1997). When using Likert-scale questions, it is difficult to determine whether the organization adopts this technique or not when the respondents mark their answers in between the two extreme values. The decision about the threshold value would affect the validity and reliability of results (Forsman et al., 2006). Therefore, this paper utilizes Yazdifar and Askarany's (2012) four-level taxonomy of target costing implementation to determine the completeness of target costing implementation within a PTE after it has been classified as a TC PTE. The level of target costing implementation is examined with multiple yes/no questions. In each yes/no question, participants were asked whether a specific step/action has been taken in their PTEs. The level of target costing implementation will be determined based on these answers. According to the four-level taxonomy, the TC PTEs, which reach the fourth level, have a highly complete target costing implementation, while the level-1 TC PTEs only have the basic level of implementation. This model not only enables researchers to identify the completeness of target costing implementation within companies but also helps managers plan their implementation

steps and benchmark their progress towards developing an advanced target costing system. This taxonomy will be discussed in detail in the third chapter.

Furthermore, this paper explores factors that contribute to a more complete implementation of target costing in the PTE environment. For the better use of target costing, researchers tried to identify critical success factors that help companies develop and implement target costing successfully (Feil et al., 2004; Kwah, 2004; Yook, Kim, & Huh, 2007). Although it is generally argued that certain management tools/techniques (critical success factors) might facilitate the successful implementation of target costing, there has been limited empirical evidence to support this view. Moreover, I found that, in most research, the successful target costing implementation has not been clearly defined. Generally, the maturity of target costing implementation and the achieved results from implementation can be considered as two indicators of the success of target costing implementation. In the case study carried out by the Consortium for Advanced Manufacturing-International (CAM-I) and the University of Akron (Ansari et al., 1997), these two criteria have been used in the selection of best target costing practices (Kwah, 2004). Given the fact that no previous literature has examined the relationship between these critical success factors and the completeness of implementation, this issue is addressed in the present study. Based on previous literature, eight behavioral/structural factors (critical success factors) that might contribute to a more complete implementation of target costing have been recognized in this study and will be further discussed in chapter three. To examine the relationship between these identified factors and the completeness of target costing implementation, I use two subsamples: level-1

TC PTEs and level-4 TC PTEs identified in this study and compare the adoption rate of each identified behavioral/structural factors between these two groups.

Finally, this study empirically examines the impact of target costing adoption on cost reduction performance, quality level of services, and customer satisfaction level in New Zealand PTEs. Prior literature suggests that the adoption of target costing has brought significant improvements in institutional performance in terms of cost reduction, quality of products/services and customer-orientation (Ansari et al., 2007; Duh, Xiao, & Chow, 2009), however, most of these studies are case studies that document the successful implementation and positive results achieved from the application of target costing based on secondary information from the self-reports of the adopters (Ansari et al., 2007). Quantitative research that examines the impact of the adoption of target costing on organizational performance is scarce. Afonso, Manuel, Paisana, and Braga (2008) and Huang et al. (2012) have conducted quantitative research to investigate the impact of the use of target costing on the success level of New Product Development (NPD) and firm performance in their studies respectively, however, both studies are conducted with data collected from non-service companies. This suggests that the results from these two studies may not apply to the service industries, which include PTE industry. Therefore, it is worthwhile investigating whether the use of target costing has brought any benefits for PTEs. To address this issue, two subsamples are utilized: TC PTEs and non-TC PTEs identified in this study. The impact of target costing adoption on cost reduction performance, quality level of services, and customer satisfaction level in New Zealand PTEs is investigated by examining the differences in the three aspects between

the two subsamples. The cost reduction performance, quality level of services, and customer satisfaction level are all assessed with multiple 5-point likert-scale items separately. Given the argument that the adoption of target costing has a positive influence on the performances regarding cost reduction, quality of products/services and customer-orientation (Ansari et al., 2007; Duh et al., 2009), I expect higher scores of cost reduction performance, quality level of services and customer satisfaction level in TC PTEs than those in non-TC PTEs. Moreover, the impact of the completeness of target costing implementation on cost reduction performance, quality of services and customer satisfaction level in TC PTEs is also investigated, using two groups: level-1 TC PTEs and level-4 TC PTEs. The differences between the two groups in regards to the three aspects are examined.

This study contributes to the literature on the target costing practices by providing the first empirical study on target costing practices in New Zealand PTEs. Although target costing has been implemented for decades, the studies that address target costing have mainly focused on its adoption in manufacturing industries (Ansari et al., 2007), while research on the adoption of this technique by the service sector has been overlooked (Yazdifar & Askarany, 2012), especially in the private education environment. Moreover, while most of these studies only investigate the adoption and perceived benefits of target costing, they do not address the level of implementation of this technique (Yazdifar & Askarany, 2012). Given the significant role of PTEs in the New Zealand higher education system; the unprecedented demand from PTEs for efficient cost management techniques; and the current literature gap in this area,

this research could provide insight into the use of target costing in New Zealand PTEs. Instead of simply reporting the latest adoption rate of this technique in New Zealand PTEs sector, this study also examines the level of target costing implementation in New Zealand PTEs, providing insight into the use of target costing in this sector.

This study has also added new knowledge to the literature in regard to the factors that contribute to a more complete implementation of target costing by providing empirical evidence on the statistically significant correlation between some of the identified critical success factors and the completeness of target costing implementation.

This study also contributes to the literature in regard to the impact of target costing adoption on cost reduction performance, quality level of services, and customer satisfaction level in PTEs. Furthermore, no previous literature has empirically examined the impact of the completeness of target costing implementation on an education-sector organization's cost reduction performance, quality of services and customer satisfaction level. Contributing to these gaps in the literature, this study examines the differences between TC PTEs and non-TC PTEs in regards to the three aspects, as well as the differences between level-4 TC PTEs and level-1 TC PTEs.

The remainder of this dissertation is organized as follows. Chapter 2 presents a background introduction of the New Zealand Private Training Establishments (PTEs) industry and a review of the target costing literature. In chapter 3, the theory is outlined. This is followed by chapter 4, which discusses the research design and methodology.

Chapter 5 reports the empirical results. Chapter 6 summarizes the findings, the limitations and provides recommendations for further research in the future.

Chapter 2 Literature Review

This chapter is divided into two sections. The first section provides a background introduction of New Zealand PTEs. Also, by comparing PTEs with the TC companies, we find some similarities between these TC companies and PTEs. The second part of this chapter presents the literature review of target costing approach, which includes the definition, process of target costing and its diffusion in both manufacturing and service companies.

2.1 Background

New Zealand's tertiary education sector comprises eight universities, 18 institutes of technology and polytechnics (ITPs), three wānangas, and approximately 600 Private Training Establishments (PTE) and workplace trainings (NZQA, n.d.). Each sector has a different education focus.

The PTE sector mainly focuses on providing some specific vocational courses at the certificate and diploma level, in order to respond to industry requirements for graduates with specific skills (New Zealand Education, 2013c; NZQA, n.d.). Some PTEs also offer English language teaching programs in addition to academic certificates, diplomas and degrees at various levels (Appanna & Goundar, 2011). The tertiary education provided by PTEs varies from short-term vocational training courses that last for several hours to degrees and postgraduate studies lasting one year or longer. Management and Commerce (21%), Society and Culture (15%), Education (12%), Food, Hospitality and Personal Services (11%), and Creative Arts (11%) are the five major programs the PTE sector offers (Tertiary Education Commission, 2015a).

Different from the other public tertiary education sectors such as universities and ITPs, the PTE sector is led by private capital and most PTEs are profit-driven (Appanna & Goundar, 2011). The size and characteristics of PTEs vary from a small business, which has only one single qualification offered to fewer than 20 equivalent full-time students (EFTS), to a multi-site operation with a range of qualifications offered to over a thousand EFTS (New Zealand Education, 2013c; Tertiary Education Commission, 2015b). According to Fitzsimons and Frater (1996), the second-tier PTEs are those stable and moderately successful PTEs, which offer a more limited variety of courses and have one or two operation sites. The number of PTEs that fit into this category accounts for twenty to thirty percent of all of the PTEs. The third tier consists of some smaller, community-based PTEs (Fitzsimons & Frater, 1996). Most of these PTEs are operated by Trusts and offer only one or two courses. Because these PTEs are usually located in areas isolated from the main employment centers they are often in outlying socio-economic areas, and approximately 60-70% of PTEs are in this tier (Fitzsimons, 1997).

For the purpose of making effective use of the opportunities brought by the internationalization of tertiary education, higher educational institutions must have the basic economic resources, which are unevenly distributed between institutions (OECD, 2004). Whereas the majority of the establishments in the New Zealand PTE sector have not been equipped with the necessary economies of scale they have relatively low goodwill. The limited resources owned by these PTEs may constrain their ability to make effective use of these opportunities and their long-term development. Moreover,

the training courses or qualifications offered in most of the PTEs are similar in nature. Given these circumstances, it is necessary for PTEs to enhance their competitiveness by improving their cost efficiency.

2.1.1 Similarities between PTEs and the Companies, which Introduced Target Costing

The PTEs in New Zealand are surrounded by a highly competitive environment; therefore, more reliable costing information is needed to avoid any costing errors (Ax et al., 2008). In addition to the accrual cost information, customer-related information is also necessary, as the competitive environment compels companies to customize their products and services (Ax et al., 2008). Therefore, companies need more aggressive cost management tools to ensure an acceptable return while maintaining their competitive position (Ax et al., 2008; Dekker & Smidt, 2003). The following part discusses the similar situations/challenges faced by both PTEs and those TC companies in terms of the level of competition, the needs to satisfy customer requirements, and the necessities to focus on design in the product/service development process.

Facing Intense Competition

According to Finn and CIMA NHS Working Group (2005) and Ansari et al. (2007), the companies, which first made use of target costing, were all facing extremely intense competition. The fierce rivalry forced managers to control their costs and launch products at determined prices to attract customers (Finn & CIMA NHS Working Group, 2005).

Domestically, there are intense rivalries between the existing PTEs, new entries and substitutes, such as ITPs, wanangas, and even universities. Currently, there are approximately 600 Private Training Establishments across the country. However, most of them lack the requisite economies of scale and have relatively low goodwill. According to Fitzsimons and Frater (1996), 60-70 percent of PTEs only have a small size with one or two courses offered. Moreover, the long-term prosperity of the PTE industry and the relatively low barrier of entry to the PTE market, which is due to the relaxation of regulatory impediments (Appanna & Goundar, 2011) and low capital requirement for new investors, attract new participants into this industry every year (Appanna & Goundar, 2011). Similarly, international education is also a competitive market. The Organization for Economic Co-operation and Development (OECD) has reported a remarkable increase in the number of mobile or international students enrolled in tertiary education in OECD countries, from 1.59 million in 2000 to 2.84 million in 2009 (OECD, 2015). The British Council, and Universities U.K. also have predicted continued growth in international tertiary enrollments over the next few years, in the main English speaking countries (Ministry of Education, 2011). Notwithstanding the cheerful prospects for the global international education export industry, the relatively high New Zealand dollar has increased domestic education costs and hindered the expansion of tertiary networks in priority markets such as India and Gulf Co-operation Countries (GCC) (New Zealand Education, 2013a). The intense competition with other English speaking countries such as U.S, Canada, Australia and U.K in the international education market has increased pressure on New Zealand education providers to maintain and grow market share (New Zealand Education,

2013a). Such a competitive environment forced some small PTEs to exit the international student market. In 2014, only 178 PTEs were involved in international recruitment, which was 33.6 percent lower than the 268 in 2006 (Tertiary Education Commission, 2014). Generally, private higher education in New Zealand is a free market, however, the government does regulate the fees for domestic students, who are enrolled in those funded programs, must not exceed maximums set in the conditions of the funding ("Education Act 1989," 1989). There are also some quality assurance requirements for those funded PTEs to ensure high-quality performance and cost efficiency. Under this circumstance, PTEs, especially those funded-PTEs, need sophisticated cost management techniques to address and manage these requirements and help enhance their competitiveness and their position.

Satisfying Stakeholder Requirements

For companies to maintain their competitive position, providing products at an economic price is not the only element that guarantees success (Ax et al., 2008). In addition companies need to create products or services that target specific customer segments and also have the corresponding features and functionality (Ax et al., 2008). One reason for these manufacturing or service companies to adopt target costing is that it incorporates customer requirements for quality, cost and time simultaneously in products and process decisions and guides in cost analysis (Ansari et al., 2006). Similar to those TC companies, PTEs also have the necessity to provide programs or courses that satisfy the requirements from various stakeholders. As some PTEs offer programs that are in specific vocational niches (NZQA, 2014), the motivation of the target

students to attend those PTE programs is expecting to acquire employment skills and have more working opportunities. If PTEs were considered as the provider/ producer of skilled employees in the labor market, then government, industries and communities would be the customers. One of the priorities formulated in the New Zealand tertiary education strategy for 2014 to 2019 is to ensure the delivery of skilled people, who are well matched to labor market needs (Draft Tertiary Education Strategy 2014-2019, 2012). The government also encourages industries to be more involved in planning and delivering education (Draft Tertiary Education Strategy 2014-2019, 2012). In addition to these vocational programs, the portfolio of PTEs also includes English language teaching, as well as some academic certificates, diplomas and degrees at various levels (Appanna & Goundar, 2011). In Marshall et al.'s (2008) report, some interviewees indicated that their PTEs developed programs based on the needs of students, as they are the direct customers. In the external evaluation and review, which is conducted by NZQA to rate the educational performance in all non-university tertiary educational organizations (TEOs), one of the review questions is "how well do programs and activities match the needs of the learner and other stakeholders". By asking this question, all these non-university TEOs, which include PTEs, are encouraged to be customer-focused.

Design-focused

More companies have learned that the quality must be designed into the products before they are manufactured, because any changes made after the production begins would be both costly and time-consuming (Cooper & Chew, 1996). Furthermore, due to the fact

that a large percentage of costs are committed either directly or indirectly at the design stage (Ansari et al., 1997; Cooper & Chew, 1996), any decisions made at this stage will have an impact on the final cost of products (Yazdifar & Askarany, 2012). To ensure the realization of all necessary functions and quality level for a product at a minimum total life cycle cost, many companies have adopted target costing and put a strong focus on the design stage (Cooper & Chew, 1996). Target costing helps transfer the challenge of the future marketplace to the product designers (Cooper & Chew, 1996).

According to Ansari, Bell, and Klammer (2004), target costing can also be applied by many service industries, which are design driven, with the focus shifted from products to service delivery systems (Cooper & Chew, 1996). PTEs have also placed a strong emphasis on the service design. In a survey conducted by NZQA regarding good practice examples of Maori and Pacifica private training establishments, one PTE said that the development of a program took two years to complete, while another PTE said that the design of the program was quite quick yet the development was a lengthier process (Marshall et al., 2008). Although some PTEs seemed to be operating with the core of their programs established, some fine-tuning is still needed from time to time (Marshall et al., 2008). The design of the program of a PTE tends to be an ongoing process with continuous changes in order to respond to the changing needs of its learners and its respective industries (Marshall et al., 2008). For PTEs, a program or a course no longer simply means the teaching activities during class-time. It also includes a lot of supporting and administrative activities, such as providing guidance and orientation for new students, supporting students who do not speak English as their first

language with counselors, organizing leisure activities, and furnishing students with computers, study room and library. However, due to the limited resources within an establishment, PTEs should put a strong focus on service design to ensure the maximum utility of their service delivery systems. A single service delivery system may be used to deliver various kinds of services (Cooper & Chew, 1996). For example, in PTEs, the administrative staff may be in charge of the enrollment registration of students from various courses; similarly, a classroom can be available for different classes at different times. Although the resources consumed by different services might be at a similar level, the revenue and customer value generated by individual services could vary. Therefore, given the limited resources owned by PTEs, it is really important for managers in PTEs to utilize the service delivery systems more efficiently. Whilst for PTEs, target costing can facilitate a discussion regarding whether to start or stop offering new courses/programs, it is also a tool to reduce existing costs, for example, by making changes in the way services are delivered.

In conclusion, similar to those TC companies, PTEs are also facing intense competition, and have the responsibility to satisfy customer requirements and to focus on design in their service development process. As a consequence, the necessity exists for PTEs to adopt sophisticated cost management techniques, which can help satisfy these commitments. Given the fact that target costing has been successfully implemented in many companies in various industries and has helped with cost reduction, quality and customer satisfaction improvement in these companies (Ansari et al., 2007; Leahy,

1998), this technique can be considered as a potential choice for PTEs. The next part presents a review of the target costing literature.

2.2 Literature Review

This section presents the definition, process involved in target costing, and its widespread adoption in both manufacturing and service industries.

2.2.1 Defining “Target Costing”

According to Dekker and Smidt (2003), the central concept of target costing is “reverse costing”. Many researchers choose to use the following formula to illustrate the general idea of target costing: $\text{maximum allowable cost} = \text{attainable selling price} - \text{required profit margin}$ (Dekker & Smidt, 2003; Ellram, 2006; Okano & Suzuki, 2007). The cost would be determined based on the difference between the selling price and expected profit. In addition, Cooper and Slagmulder (1997b) have also called this reverse costing mechanism “market-driven costing”. It is reflected by customer orientation, competitor orientation, and interdepartmental coordination (Narver & Slater, 1990). According to Ewert and Ernst (1999), this market orientation is an essential characteristic of the target costing technique, which facilitates companies’ understanding of market conditions. While the formula only explains how the target cost has been determined, some scholars prefer a more comprehensive definition of target costing, which consists of both determination and achieving management process (Ansari et al., 2006; Ellram, 2006; Everaert, Loosveld, Acker, Schollier, & Sarens, 2006; Makido, 1989; Yoshikawa, Innes, & Mitchell, 1993).

Although scholars have reached consensus on the key elements of target costing, there are still some subtle differences that exist in terms of the interpretations of the target costing concept (Ansari et al., 2007; Everaert et al., 2006). Researchers Bayou and Reinstein (1997), and Laseter (1998a, 1998b) have held that target costing was primarily a costing reduction technique and undervalued its value management aspect (Ansari et al., 2007). On the other hand, some scholars have considered target costing as a strategic management accounting (SMA) technique (Ansari et al., 1997; Ansari, Bell, Swenson, & CAM-I Target Costing Group, 2005; Cooper, 1992; Cooper & Slagmulder, 1997a, 2002; Japan Accounting Association, 1996; Okano, 2002, 2003; Partridge & Perren, 1997). According to Dekker et al. (2003) target costing has an effect on organizational strategy and vice-versa. It is a system that helps companies achieve the long-term profit goals, which emerge from their organization's strategy (Chenhall & Langfield-Smith, 1998; Dekker & Smidt, 2003; Ewert & Ernst, 1999; Guilding, Cravens, & Tayles, 2000). Cost reduction is a means to achieve these profit goals (Cooper & Slagmulder, 1997b; Partridge & Perren, 1997).

Among these scholars, Ansari et al. (2005) have considered Value Engineering as a significant part of target costing. On the contrary, Cooper and Slagmulder (1997b) have viewed Value Engineering separate from target costing. Similar divergence existed in terms of the issue regarding the relationship between quality function development (QFD) and target costing. In Booth's (1995) view, target costing seemed to be equal to QFD, while Hales and Staley (1995) considered that they were two separate tools. Consequently, Dekker and Smidt (2003) called for studies that provide more insight

into the precise nature of target costing. The next part introduces the common steps taken in a target costing system.

2.2.2 Target Costing Process

Notwithstanding the variance in target costing definitions, scholars have summarized some common steps that are taken to implement a target costing system, by observing the ways in which target costing has been applied in different industries. Ax et al. (2008) have summarized the characteristics of target costing that emerge as fundamental in the review of TC literature. Based on their research, the common steps that are taken to implement a fully developed target costing system are outlined and discussed in detail below. The two key stages in the target costing process include the determination of the target cost and its attainment (Yazdifar & Askarany, 2012).

Setting Target Cost

Step 1 New product/service design (Ax et al., 2008; Ellram, 2006)

The first step involved in target costing for a new product/service is to identify its market segment's preferences and then determine the product's characteristics that will meet these customer needs (Ansari et al., 1997; Cooper & Slagmulder, 1997b; Ellram, 2006; Kaplan & Cooper, 1998; Worthy, 1991). In some cases, companies will receive requests directly from customers for a new product/service, or features, especially from key customers or multiple customers (Ellram, 2006). While in the case of an anonymous market, customer requests will be assessed based on the data from market research and customer surveys (Bernal, Dornberger, Suvelza, Torres, & Byrnes, 2009; Ellram, 2006).

Some companies may choose to develop new features, processes, and technologies

internally when they believe a market exists. They will also look at their competitors' offerings regarding new products/services or features to get inspiration (Ellram, 2006).

Step 2 Determine expected selling price (Ax et al., 2008; Ellram, 2006)

In the target costing process, a selling price for a new product/service is determined during the product/service design stage (Ellram, 2006). After the determination of product/service features desired by customers, companies need to predict the selling price, generally, based on the price level of existing products/services (Kato, 1993). Even so, companies also need to assess what the market division is willing to pay for each feature and the product as a whole (Ansari et al., 1997; Ansari et al., 2006; Ellram, 2006). Besides the perceived value by customers, the availability of competitive products/services is another factor that affects the selling price (Ellram, 2006; Kwah, 2004; Loosveld, 2003). Companies have to take the selling price and perceived value of competitor alternatives and even functional substitutes into consideration (Cooper, 1994b; Loosveld, 2003). Moreover, the selling price of the new product/service also needs to adapt to the long-term objectives of the company, for example, the market position a company wants to attain, the product concept, the product life cycle, the brand image a company wants to establish, and so forth (Kato, 1993; Kwah, 2004; Loosveld, 2003).

Step 3 Establishing target profit margin (Ax et al., 2008)

A desired profit margin is derived from an organization's strategic profit plan (Ax et al., 2008; Cooper, 1994a; Ellram, 2006; Kato, 1993; Monden & Hamada, 1991). Generally, companies often set the target profit margin relying on the financial rate of return, such

as return on sales, return on assets and return on investments (Ansari et al., 2006). There are also other factors that have an influence on the target profit margin of a product/service, including profit levels of similar products/services, historical profit margin of predecessor products/services and the relative strength of competitive offerings (Ax et al., 2008; Cokins, 2002). Based on these factors, the target profit margin of different products may vary according to the realities of the market environment. In order to guarantee the company's overall target profits, a lower profit margin for one product has to be reimbursed with a higher profit margin on another product (Cooper & Slagmulder, 1997b).

Step 4 Setting target cost (Ax et al., 2008; Ellram, 2006)

The difference between expected selling price and desired profit margin is called allowable cost, which is the cost level that has to be achieved in order to gain the determined target profit (Ax et al., 2008). This method is called the subtraction method. The final target cost is determined based on the allowable cost with some adjustments for already identified cost reduction opportunities, and for cost increasing and cost decreasing factors (Ax et al., 2008; Ellram, 2006; Yazdifar & Askarany, 2012). Setting target cost is not a once-for-all decision. Companies have to refine and revise the target price and profit margin when new data becomes available (Ansari et al., 2006). Hence, the target cost has to be modified correspondingly. Moreover, besides cost efficiency, companies also need to achieve other goals such as quality and functionality during the new product/service development process. In realizing these conflicting objectives,

product/service designers have to consider the customer requirements and make trade-offs between these goals (Ax et al., 2008; Dekker & Smidt, 2003).

Achieving Target Cost

Step 5: Target cost allocation (Ax et al., 2008; Ellram, 2006)

In this step, target cost is subdivided to have specific targets for different internal activities, departments, functions or cost items, as well as external suppliers and subcontractors. The function-oriented method and component-allocation method are two of the most commonly used approaches for target cost allocation in manufacturing companies (Everaert et al., 2006; Yazdifar & Askarany, 2012).

Regarding service companies, due to the intangibility of services, it is difficult to assign common use functions to individual components of services (Bernal et al., 2009). Therefore, the service companies should use other methods to restructure or deconstruct target cost. The findings from Bernal et al. (2009) have recommended service companies assign target cost to different parts/activities of the service delivering process. For example, the target cost for delivering a training course can be assigned to the teaching activities, recruitment activities, marketing activities and so forth.

Step 6: Closing the cost gap (Ax et al., 2008; Ellram, 2006)

To achieve the target cost level, companies have to adopt cost-cutting strategies at the production stage (Yazdifar & Askarany, 2012). This includes optimizing the relationships between material, parts, and the production process, and identifying

available cost reduction opportunities in existing methods and processes (Ax et al., 2008).

Nevertheless, in the target costing process, cost reduction is mainly realized by design changes (Loosveld, 2003; Tanaka, 1993). The overall objective for a company is to develop a product/service that attains the target cost while still complying with the considerations and requests of customers. Design effort should be made to balance quality, cost and functionality (Ansari et al., 1997). To secure the minimum total cost of a product/service, designers have to make trade-offs between the functions and their costs and make sure that all the unnecessary functions or processes are removed. Tools such as Value Engineering, QFD are frequently used in this step (Cooper & Slagmulder, 1997b; Yoshikawa et al., 1993).

Step 7: Continuous improvement (Ax et al., 2008; Ellram, 2006)

Although the accounting literature argues that a product/service could be launched only after the target cost has been reached, in real life, companies may introduce new products/services that have not achieved target cost for competitive, service or other reasons (Ax et al., 2008; Everaert et al., 2006). In these cases, ongoing effort is made for continuous improvement on cost reduction throughout the product/service life cycle. In the target costing literature, these efforts are referred to as ‘kaizen costing’ (Ax et al., 2008).

Although these seven steps are the common steps taken to implement a fully developed target costing system, not all companies that adopt target costing actually go through all

of the steps therefore the practices that are involved with target costing may vary across companies. The next part discusses the widespread adoption of target costing.

2.2.3 Diffusion of Target Costing

Target costing has been widely adopted, since it was developed by Toyota at the beginning of the 1960s (Ansari et al., 2007). This part discusses the acceptance of target costing in both manufacturing and service companies.

Target Costing in Manufacturing Companies

According to Ansari et al. (2007), target costing has been increasingly adopted by a number of leading companies throughout the world and has helped bring significant financial success for these companies. More than 80 percent of Japanese businesses from various industries have used target costing, including prominent companies such as Daihatsu, Toyota, Nissan, Denso, Panasonic, Canon, Kubota steel, and Olympus (Ansari et al., 1997; Ansari et al., 2007; Japan Accounting Association, 1996). Swenson, Ansari, Bell and Kim (2003) described the best target costing systems in four US companies: Boeing, Caterpillar, Daimler Chrysler and Continental Teves. Furthermore, companies in China, India and Malaysia have also implemented this technique (Huang et al., 2012; Sulaiman, Ahmad, & Alwi, 2004).

Target Costing in Service Companies

Although target costing has been widely adopted for decades, the studies that address target costing mainly focus on its implementation in manufacturing industries. Moreover, some scholars also assume that target costing is only relevant to manufacturing companies (Ansari et al., 2007). As a consequence, research related to

target costing in the service sector has been overlooked.

Not surprisingly, there are other researchers who take exception to this idea. They argue that target costing is also relevant to the service industries as it is to the manufacturing industries because both manufacturing and service companies have to identify the customer and market needs and pursue particular financial performance (Cooper & Chew, 1996; Finn & CIMA NHS Working Group, 2005; Kaplan Financial knowledge Bank, 2014). Furthermore, Cooper and Chew (1996) pointed out that for service companies, it is not only possible to add new services, it can be hard not to. For service-oriented companies, the focus of target costing should shift from the product to the service delivery system (Cooper & Chew, 1996; Finn & CIMA NHS Working Group, 2005).

Their assertion has been supported by some cases of target costing adoption in service companies. A number of American healthcare businesses have made significant improvements in terms of service quality and cost reduction through the adoption of techniques used in manufacturing companies, which include the target costing method (Finn & CIMA NHS Working Group, 2005; Spear, 2006). Not only in America, in a survey conducted by Jackson and Lapsley (2003) in Scotland, six percent of the respondents from health care organizations indicated that they were using target costing. The implication of target costing is not only limited to the health care sector. According to Yazdifar and Askarany (2012)'s survey, the adoption rate of target costing in the surveyed service firms was 23.5 percent (both on a trial basis and implemented and accepted basis), which is even slightly higher than 23.3 percent in the sampled

manufacturing companies, suggesting that target costing is equally prevalent among service and manufacturing companies.

Given the commendable reputation target costing has acquired for helping companies achieve cost control, quality improvement and improving customer satisfaction and its widespread adoption in various industries, this study examines the occurrence and use of target costing in PTEs. The following three research questions are explored in this study: 1). Has target costing been used in New Zealand PTEs? If so, what is the level of implementation? 2). What are the factors that contribute to a more complete implementation of target costing in the PTE environment? 3). Has target costing brought any benefits for PTEs? And what is the impact of the completeness of target costing implementation on the benefits perceived by TC PTEs? The next chapter discusses the theories and concepts that are relevant to these research questions.

Chapter 3 Theoretical Framework

This chapter outlines the theories and concepts that are relevant to three research questions examined in this study. This chapter consists of three parts. The first part introduces the four-level taxonomy of target costing implementation developed by Yazdifar and Askarany (2012). And this study measures the level of target costing implementation that a TC PTE has achieved based on this four-level target-costing model. Hence, regarding the implementation of target costing, the higher level a TC PTE is classified as, the more complete the implementation of target costing it has achieved. The second part outlines the previous literature in terms of the necessary factors that help forward the successful implementation of target costing. In the third part, the existing knowledge regarding the effectiveness of target costing is summarized.

3.1 The Use of Target Costing

3.1.1 Empirical Studies on Target Costing Adoption

Many scholars have conducted surveys to investigate the use of target costing in organizations. In some studies, scholars use scale to measure the level of target costing implementation. For example, Al-Awawdeh and Al-Sharairi (2012) conducted a six-dimension model based on the six key principles outlined by Ansari et al. (1997) to examine target costing adoption in the Jordanian private universities. The six target costing variables were: a) the leadership of target selling price; b) focusing on the students; c) using work teams and their development; d) reducing the cost of the life

cycle of university specialization; and e) focusing on the design phase of university specialization and taking care of all stages of the value chain (Al-Awawdeh & Al-Sharairi, 2012). Each target costing variable was measured with multiple scale items separately. In another research, Huang et al. (2012) adopted three modified items from Afonso et al. (2008): (a) Our firm always searches and sets the competitive price for new product launch; (b) Our firm always computes the desirable production cost of the new product from the following formula: target cost = target price - desired profit; and (c) Our firm always communicates with suppliers and clients for the development of new product, to assess the target costing adoption level in selected Chinese electronics and information firms. Each item was measured on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). However, Forsman et al. (2006) claimed that Likert-scales are not suitable for measuring target costing implementation, as target costing is a technique, which can be either used or not (Ansari et al., 1997). When using Likert-scale questions, it is difficult to determine whether the organization adopts this technique or not when the respondents mark their answer in between the two extreme values (Forsman et al., 2006). The decision about the threshold value would affect the validity and reliability of the finding (Forsman et al., 2006). Therefore, some scholars choose to focus mainly on reverse costing, the crucial feature of a target costing system in their studies, and consider companies, which determine the target cost based on the difference between expected selling price and desired profit margin during the product/service development process, TC companies. For example, in Dekker and Smidt (2003)'s survey, a quite general definition of target costing, which focused on reverse costing, was provided. The adoption of target costing was examined by asking

respondents in their survey to indicate whether they have used a technique that resembles the description provided in the target costing definition, using a yes/no question (Dekker & Smidt, 2003). The instrument used in this present study for examining the adoption of target costing in PTEs is adapted from Dekker and Smidt (2003). One advantage of using a general definition is that it enables identifying companies that have developed and been using costing practices with similar characteristics as target costing, which would not be identified by focusing on “target costing” per se, or by setting narrow boundaries on the system’s characteristics (Dekker & Smidt, 2003). However, the down side of this approach is it does not capture the variances in target costing practices across companies (Dekker & Smidt, 2003). To address this issue, this present study uses the Yazdifar and Askarany’s (2012) four-level taxonomy of target costing implementation as a theoretical basis to further categorize the target costing implementations in the TC PTEs into four different levels.

3.1.2 Yazdifar and Askarany’ Four-level Taxonomy of Target Costing Implementation

Based on five prior articles, which discussed the most common steps to be taken to implement TC (also sometimes referred to as the characteristics of TC), Yazdifar and Askarany (2012) develop a four-level taxonomy of target costing implementation that categorizes the degree of target costing implementation into four levels. Yazdifar and Askarany (2012) also use a table (see Table 1) to summarize the views discussed in these articles and explain how the four levels of TC implementation are connected to these steps. The 7-step target costing procedure outlined in Chapter 2 was summarized based on one of the five articles-Ax et al.’s (2008) research. In this taxonomy,

organizations with a **level-one** implementation have only identified target cost as the difference between expected price and required profit (Yazdifar & Askarany, 2012). Organizations classified into this level have only taken the first four steps in the target costing process discussed in Chapter 2 to set the target cost. The **level-two** TC implementation also includes the adoption of cost-cutting strategies at the production stage to approach the target (Yazdifar & Askarany, 2012). This level can be further divided into two sub-levels, including: a) decomposing target cost for different activities, functions, subassemblies, or cost items; and b) establishing intense co-operation between different functions (Yazdifar & Askarany, 2012). Organizations, which further examine all cost-reducing strategies at the planning and pre-production stages, have reached the **third level** (Yazdifar & Askarany, 2012). This level is a summary of the two sub-levels, including a) detailed cost information provided to monitor progress towards cost reduction target; and b) continuous comparison of the actual cost with the target cost (Yazdifar & Askarany, 2012). Compared with level-one TC organizations, TC organizations categorized into these two levels (level 2 and level 3) have also further taken both step 5 and step 6 in the target costing process summarized in Chapter 2. At **level four**, organizations need to adopt Value Engineering to incorporate customer requirements (Yazdifar & Askarany, 2012). According to Yazdifar and Askarany (2012), level 4 TC PTEs have implemented a fully developed TC system. They have taken all the seven steps in the 7-step target costing process discussed in the previous chapter. Each level denotes an increasingly more complete implementation of target costing. With this model, researchers are able to determine to which extent target costing has been used within an organization.

Table 1: Implementation and characteristics of TC discussed in three recent articles and two earlier articles. (Yazdifar & Askarany, 2012, P. 385)

Ibusuki and Kaminski (2007)	Everaert et al. (2006)	Ax et al. (2008)	Ewert and Ernst (1999)	Laseter et al. (1997)
<p>The implementation of a TC and the determination of the product target cost involve the ten steps described below, which are based on the work of Crow (1999):</p> <ol style="list-style-type: none"> 1.Re-orient culture and attitudes 2.Establish a market-driven target price (L1) 3Determine the target cost (L1) 4.Balance target cost with requirements (L1) 5. Establish a TC process and a team based organization (L2) (L3) (L4) 6. Generate ideas and analyze alternatives (L2) (L3) (L4) 7. Establish product cost models to support decision making (L2) (L3) (L4) 8. Use tools to reduce costs (L2) (L3) (L4) 9. Reduce indirect cost application (L2) (L3) (L4) 10. Measure results and maintain management focus (L1) (L2) (L3) (L4) 	<p>Based on what are learnt from prior case study research in Japan, a set of eight characteristics of TC are deduced:</p> <ol style="list-style-type: none"> 1. The target sales price is set during product planning, in a market- oriented way (L1) (L3) 2. The target profit margin is determined during product planning, based on the strategic profit plan (L1) (L3) 3. The target cost is set before new product development really starts based on either the subtraction or the addition method (L1) 4. The target cost is subdivided into target costs for functions, subassemblies, cost items, designers or suppliers (L1) 5. TC requires cross-functional co- operation (L2) (L3) (L4) 6. Detailed cost information is provided to support cost reduction (L2) (L3) 7. The cost level of the future product (drifting cost) is compared with its target cost at different points during NPD (L3) 8. Establishing the general rule that 'the target cost can never be exceeded' (L2) (L2) (L3) 	<p>The characteristics that emerge as fundamental in the review of TC literature are as follows:</p> <ol style="list-style-type: none"> 1. Identifying the desired product and service attributes (L1) 2. Establishing the target price (L1) 3. Determining the target profit (L1) 4. Determining the target cost (L1) 5. Decomposing the target cost (L1) (L2) (L3) 6. Closing the cost gap (L1) (L2) (L3) 7. Continuous improvements (L1) (L2) (L3)(L4) 	<p>The essence of TC is characterize by three elements:</p> <ol style="list-style-type: none"> 1. A market orientation, as the selling price is the starting point for determining the TC (L1) 2. A coordination function, as the TC coordinates the activities of product designers (L3) 3. Strategic learning, as it, in interaction with other factors, influences the long-term cost structure. (L3) (L4) 	<p>The authors identify the following steps in the target setting activity:</p> <ol style="list-style-type: none"> 1. Establish TC for the end product or services, that is, examine 'what the market will bear' (L1) 2. Allocate targets to the elements of functionality valued by the client, that is, identify and document functionality that the customers value in the product or service (L4) 3. Link functionality to key sub- systems (that is, understand target cost at the sub-system level) (L4) 4. Compare value based targets with cost estimates (that is, develop design against target using continuously evolving designs and cost estimates) (L3) 5. Re-aggregate target costs across sub- systems (that is, aggregate the results across sub-systems and suppliers) (L3) 6. Make any needed trade-offs until the overall target achieved (L3) (L4)

In Yazdifar and Askarany's (2012) research, the adoption of target costing was first examined by asking respondents to indicate the extent to which TC was accepted in their organizations, using a 5-point Likert-type scale as follows: 1='discussions have not taken place regarding the introduction of TC'; 2 = 'a decision has been taken not to introduce TC'; 3='some consideration is being given to the introduction of TC in the future'; 4='TC has been introduced on a trial basis'; and 5='TC has been implemented and accepted'. After that, for those companies that have implemented target costing, the level of target costing implementation was further examined by asking them to indicate the level of target costing implementation in their companies by selecting one of the following levels (Yazdifar & Askarany, 2012):

Level 1: Identification of target product cost as the difference between expected price and required profit.

Level 2: Adoption of cost-cutting strategies at the production stage to approach target.

Level 3: Examination of all cost-reducing strategies at the planning and pre-production stages.

Level 4: Adoption of value engineering to incorporate customer requirements.

In this present study, instead of using the 5-point Likert-type scale, which was used in Yazdifar and Askarany's (2012) research, to examine the adoption of target costing in the sampled PTEs, I provide a general definition of target costing as below in the

questionnaire (see Appendix A) and assess the target costing adoption using a yes/no question.

Target costing is defined as a costing technique that uses the following formula to calculate a target cost during the new service/program development process. Central to the target costing concept is “reverse costing”. The target price is determined by the market price, combined with other factors, which may affect the target price. A required profit margin is then subtracted from the target price to derive the target cost.

$$\text{“Target cost = Target selling price - required profit margin”}$$

Respondents were asked to indicate whether they have used a technique that resembles the description provided in the definition by selecting yes or no. By doing so, PTEs, which determine the target cost based on the difference between expected selling price and desired profit margin during the service development process, are deemed as TC PTEs in this study. After distinguishing the TC PTEs from non-TC PTEs, for these TC PTEs, the level of target costing implementation is further examined. Regarding the four-level taxonomy, it provides a theoretical basis to further categorize the TC PTEs in my sample into four different levels. The findings will be discussed in detail in Chapter 5. In this study, the level of target costing implementation in these TC PTEs has been assessed via several yes/no questions, rather than one single multi-choice question. These questions include the following: 1). Does your organization decompose the target cost for different activities, departments, programs or cost items? 2). Do different departments and different groups co-operate to achieve the target cost? 3). Is there detailed cost information provided to enable program/course designers to compare the

impact of different program/course designs on cost reduction and to monitor progress towards the cost reduction objective? 4). Does your organization compare the actual cost against target cost at different stages of new program/course development (i.e. design stage, before trial teaching stage, before full-scale recruitment). 5). After the target cost has been determined, does the program/course designer investigate what kind of innovation or techniques (i.e. new class model, online class, etc.) are needed to achieve the required target cost, outcomes and quality level? The flow of categorizing the surveyed PTEs into four levels based on their answers to these six survey questions will be explained in the next chapter. The level of target costing implementation is used as an indicator of the completeness of target costing implementation in TC PTEs. The higher the level of implementation, the more complete the target costing practice.

3.2 Factors that Contribute to a More Complete Implementation of Target Costing

Target costing is a dynamic and comprehensive system, which requires many tools and techniques (Yook et al., 2007). In recent years, critical factors that help forward the successful implementation of target costing have been presented in the literature. According to Swenson et al. (2005), three areas should be evaluated before an organization plans to adopt target costing, which include: (1) organization's culture and infrastructure, (2) key target costing principles, and (3) the availability of processes and tools to support target costing. In their research, the availability of necessary processes and tools is considered as the most pragmatic (Swenson et al., 2005). They also identified certain processes and tools, which are necessary for supporting target costing activities and facilitating the successful implementation of target costing, including: 1)

product-focused financial systems, 2) Value Engineering and value analysis; 3) voice of the customers; 4) decision analysis, 5) benchmarking and cost driver analysis, 6) product estimating, and 7) supplier partnership (Swenson et al., 2005).

Kwah (2004) has also summarized some key points that can help foster and make the better use of target costing, including: 1) high pressure on performance margins; 2) top management support; 3) active supply chain participation; 4) empowered cross-functional teams which are actively involved in the target setting process; 5) the existence of a structural reporting system which monitors target achievements and failures; and 6) performance rewards and evaluations based on target performance, based on a case study conducted by the Consortium for Advanced Manufacturing-International (CAM-I) and the University of Akron (Ansari et al., 1997). Similarly, Feil et al. (2004) reviewed eight business and cultural factors that help Japanese companies develop and implement target costing successfully based on prior literature. They are 1) top management leadership, 2) team-orientation, 3) commitment to work, 4) mutual trust, 5) management accounting, 6) education, 7) keiretsu and 8) information network (Feil et al., 2004).

Although it is generally argued that these critical factors might facilitate successful implementation of target costing, limited research exists that has empirically examined the real association between these factors and the success of target costing implementation (Omar, Sulaiman, Hui, Rahman, & Hamood, 2015). Moreover, in most research, the successful target costing implementation has not been clearly defined. Generally, the completeness of target costing implementation and the achieved results

from implementation can be considered as two indicators of the success of target costing implementation. In the case study carried out by the Consortium for Advanced Manufacturing-International (CAM-I) and the University of Akron (Ansari et al., 1997), these two criteria have been utilized in the selection of best target costing practices (Kwah, 2004).

Yook et al. (2007) conducted quantitative research to examine the relationship between some critical success factors and performance of target costing in Japanese companies. However, according to my knowledge, little if any previous research has examined the relationship between critical success factors and the completeness of target costing implementation. Therefore, it is worthwhile investigating which factors contribute to a more complete implementation of target costing. The impact of these factors on achieving the expected results from target costing implementation in PTEs has also been addressed in this study. However, instead of examining the relationship between some critical success factors and performance of target costing in PTEs, I investigate the impact of the completeness of the target costing implementation on achieving the expected results. This will be discussed in the next section.

Based on previous studies, eight behavioral/structural factors, which may contribute to a more complete implementation of target costing, have been identified and are discussed in detail below.

1. Cross-functional team

The implementation of target costing requires the interaction between staff from

different disciplines such as production, engineering, design, marketing, accounting and sales, to spot opportunities for cost reduction, as well as quality improvement and functional innovation (Carr & Ng, 1995; Cooper & Slagmulder, 1997b; Monden & Hamada, 1991; Yoshikawa et al., 1993). A well-developed cross-functional team, which consists of product design, marketing, purchasing, sales, finance, cost accounting, cost targeting and, in many cases, customers and agencies, can enhance the level of interdepartmental coordination (Afonso et al., 2008). Therefore, cross-functional teams represent a critical factor for the implementation of target costing (Schmelze et al., 1996).

2. Top management support for target costing implementation

Because of the cross-functional nature of target costing, a top-down approach is a strong support for the successful implementation of target costing, as companies need to align all the employees with the mindset of the company's leadership (Feil et al., 2004). Moreover, in some cases, top management is the initiator of the awareness for target costing within an organization (Ansari et al., 1997; Feil et al., 2004). It not only ensures the necessary resources required for a target costing team it also gives them autonomy to make the decisions (Feil et al., 2004; Schmelze et al., 1996). Therefore, upper-level management is critical to the successful implementation of target costing (Omar, Sulaiman, Hui, Rahman, & Hamood, 2015).

3. Reliable cost estimation models

In the design stage of target costing, product/service designers are required to make trade-offs between the different functionalities and their costs, and compare the impact of different design decisions on achieving cost reduction (Everaert et al., 2006; Yazdifar & Askarany, 2012). The accuracy of the cost estimation has a direct impact on the attainment of the final target cost (Kwah, 2004). A reliable cost estimation model could enable companies to convert detailed cost information into accurate cost estimations in connection with the different parts, units, functions and processes by using sophisticated cost analysis (CA) codes (Kwah, 2004). Therefore it is a critical factor for successful implementation of target costing (Swenson et al., 2005).

4. Establishing the policy of “Not Exceeding Target Costs”

The main objective of target costing is to enable companies to achieve their long-term profit plans by providing products/services that generate satisfactory returns (Cooper & Slagmulder, 1997a). According to Cooper (1995), some Japanese companies have applied a cardinal rule that “the target can never be exceeded” in the target costing process. However, in some non-Japanese contexts, some unexpected or unplanned costs, such as inflation and labor cost increases due to union negotiations are automatically added to a target cost (Kato, 1993), which may lead to impaired efficacy of target costing. A cardinal policy that “the target can never be exceeded” ensures that a cost increase in any stage of the product development process would be offset by an equivalent cost reduction elsewhere (Cooper & Slagmulder, 1997b). Moreover, this policy also guaranteed that only profitable products/services could be introduced (Cooper & Slagmulder, 1997b). Thus, with such a policy, companies are more likely to

perceive the benefits from the use of target costing (Cooper & Slagmulder, 1997b; Everaert et al., 2006). Consequently, the possibility for companies to be committed to improving the implementation of this method will also increase correspondingly.

5. Structural reporting system, which monitors target cost achievements and failures

Structural reporting system makes it possible to have continuous comparison of the actual performance with the target cost objective at different stages of the product/service development. It helps companies monitor the progress towards achieving the target cost (Kwah, 2004). In Japanese companies, the system provides a mechanism for an appropriate response, when a failure in target cost accomplishment has been observed (Kwah, 2004). Once the reason for missing the target has been investigated, companies will carry out some action review and set a new direction (Kwah, 2004). Therefore, a structural reporting system is a necessary tool for supporting target costing activities and facilitating the successful implementation of target costing (Swenson et al., 2005).

6. Active participation of agencies, suppliers and other external stakeholders in the program development

Strong cooperation with suppliers and other external stakeholders is an essential element of target costing (Cooper & Slagmulder, 1997a; Schmelze et al., 1996). Close relationship with suppliers enables them to get involved early in the product design process and to provide new technologies or ideas that satisfy both the supplier's and

buyer's needs for achieving target cost (Ellram, 2000). Based on these arguments, Swenson et al. (2005) held that a process that encourages supplier partnerships is necessary to support target-costing activities, leading it to be a crucial factor for successful implementation of target costing.

7. An excellent information network

An excellent information network, which facilitates the intensive feedback from customer and markets delivered to course/program designers, is also necessary for the success of target costing (Feil et al., 2004). In order to satisfy the rapidly changing needs from customers, companies also need various methods to collect information about markets (Swenson et al., 2005). Therefore, a rigorous tool or process that helps companies identify and rank customer requirements in terms of product features and functionalities is also necessary in target costing implementation (Swenson et al. 2005). An excellent information network with customers and suppliers enables companies to create a dynamic feedback loop between themselves and the stakeholders' needs (Feil et al., 2004). It is a supplement to the formal market research (Feil et al., 2004), making it critical for the successful implementation of target costing.

8. Performance rewards based on achievement of target costs

In addition to those techniques and tools, the execution of target costing also requires the active participation of employees (Cooper & Slagmulder, 1997b). An appropriate reward system can enhance the enthusiasm of employees to participate in this process and improve the implementation level of target costing within a company (Kwah, 2004).

Therefore, it might play an important role in facilitating the successful implementation of target costing in organizations.

Based on these arguments, I predict that TC PTEs that have a more complete implementation of target costing would be more likely to adopt these processes and tools (critical success factors) than TC PTEs with a less complete implementation.

3.3 Benefits of Target Costing

Since Toyota developed target costing in the early 1960s (Afonso et al., 2008), the extant literature has devoted significant interest towards exploring the positive results achieved from the use of target costing (Ansari et al., 2007; Duh et al., 2009; Huang et al., 2012). In a research study conducted by Gagne and Discenza (1993), the findings showed that automobile companies that used target costing experienced a reduction in cost, and improved profits. The major findings of Schmelze et al.'s (1996) research revealed that the implementation of target costing at ITT automobile companies helped companies maintain profitability and increase market share during extremely competitive times. In Fischer's (1996) paper, HP's Vancouver plant and its supplier developed a more customer-focused product development and pricing strategy with the application of target costing. In terms of the success of target costing, it is not limited to Japanese and Western environments, as businesses in China and in other Asian countries also perceived the benefits brought by this technique. The implementation of target costing, coupled with incentive compensation systems has caused an increase in both sales and profits in Handan Iron and Steel Company, one of the top 100 corporations in China (Lin, Merchant, Yang, & Yu, 2005). Although, it is generally

argued that the target costing adoption can bring significant improvements in companies' performance, such as reduced cost and product development time, more customer-focused products, increased customer satisfaction, and improved quality (Brausch, 1994; Cooper & Slagmulder, 1999; Gagne & Discenza, 1993; Leahy, 1998; Schmelze et al., 1996), most of the studies on the benefits of target costing are case studies that use secondary information from self-reports of adopters (Ansari et al., 2007; Partridge & Perren, 1997). There are limited empirical studies that have examined the efficacy of target costing.

Based on a sample of 82 Portuguese manufacturing small and medium-sized enterprises (SMEs), a study by Afonso et al. (2008) investigated whether there is a relationship between the use of target costing and the New Product Development (NPD) success. In their research, a multidimensional success index was created, built from six measurements that include: new product success rate; percentage of sales from products less than three years old; new product launching frequency; customer satisfaction degree; and market share and new product quality level, to measure the NPD success (Afonso et al., 2008). Both success level of NPD and the use of target costing were measured with five-point Likert-scale questions. The empirical results suggested a significant correlation between the use of target costing and NPD success (Afonso et al., 2008). However, the study documented no significant relationship between the use of target costing and time-to-market of new products (Afonso et al., 2008), which suggested that the use of target costing would not lead to reduced product development time. One explanation offered by Davila and Wouters (2004) is that in regard to product

development, since managers have limited attention in the new product development process, therefore, they have to identify alternatives, estimate their impacts on costs and choose the one that either minimizes costs or focuses on the time-to-market.

Huang et al. (2012) conducted quantitative research to investigate the relationship between the implementation of target costing and firm performance based on a sample of 189 Chinese electronics and information technology firms. In their research, they measured the firm performance via six-items: cost reduction, customer satisfaction, on time delivery to customers, continuous improvement, sales growth, and overall profitability. Both firm performance and the target costing implementation were measured with 7-point Likert-scale questions. The results suggested that the implementation of target costing at electronics and information industry firms in China had a positive influence on firm performance (Huang et al., 2012). Given that these two empirical studies have both been conducted using data collected from non-service companies, the results for these studies may not apply to the service industries including the PTE industry. Therefore, it is worthwhile investigating whether the use of target costing leads PTEs to realize the benefits outlined above. It would allow managers in PTEs to gain more insight into the effectiveness of target costing in the PTE context.

As I discussed in the earlier chapter, the intense competition among higher education providers has driven the needs for tight cost controls and improving the quality of education to attract new students and retain more students. Under these circumstances, a cost management system adopted in PTEs should be able to help address these challenges. Thus, this study examines the impact of target costing adoption on cost

reduction performance, the quality level of services, and customer satisfaction level in PTEs, using two sample subsamples: the TC PTEs and non-TC PTEs. Moreover, the impact of the completeness of the target costing implementation in terms of achieving these intended objectives in PTEs is also investigated. To address this issue, two subsamples have been employed: level-1 TC PTEs and level-4 TC PTEs identified in this study. The differences in cost reduction performance, quality level of services, and customer satisfaction level between the level-1 TC PTEs group and the level-4 TC PTEs group have also been examined.

Various instruments have been used for measuring cost reduction performance in previous studies. And since most of them are related to the manufacturing industries, they are not suitable for service companies. For example, the four items used by Yook et al. (2007) to measure this variable comprise: 1) Product cost reduction; 2) Upstream cost reduction; 3) Reduction of raw materials purchased; and 4) Waste reduction on the factory floor. Considering the large proportion of indirect cost, for service companies, how to maximize the utilization of current resources and service delivery system is more critical for cost reduction purposes (Baum, 2012). In this study, four 5-point Likert-scale questions have been used to measure the cost reduction performance in PTEs: 1) In our organization, the rate of unprofitable program or course in the long-term is very low; 2) In our organization, the rate of occupancy (teaching rooms, laboratories and library) is very high; 3) Our organization has achieved cost reduction by outsourcing some business functions; 4) The organization has achieved cost reduction in the average cost of students. Participants were asked to use numbers to indicate the

extent to which they agree with these statements (1= strongly disagree, 5= strongly agree). A cost reduction performance score is, therefore, obtained by calculating the average of the responses to all four questions, with the negatively worded question reverse scored. A higher score indicates a better cost reduction performance.

Since there is little if any literature that has defined the quality of services in PTEs, in this research, the quality of services in PTEs was measured using four 5-point Likert scale questions, which were developed based on the requirements for NZQA registration of PTEs (NZQA, 2009). The four questions are: 1) There is sufficient expertise in teaching and subject knowledge that is current and relevant to the needs of learners and other stakeholders; 2) Adequate and appropriate learning resources and equipment are accessible by learners; 3) Our organization always achieves good educational outcomes; and 4) Our organization has done very well in encouraging and providing financial support for tutors to undertake personal development. All responses are measured with 5-point Likert scale (1= strongly disagree, 5= strongly agree). An overall quality level of services score is obtained by calculating the average of the responses to the four questions, with higher scores indicating a higher level of quality in terms of services provided.

Some researchers have used one-dimensional constructs to measure the level of customer satisfaction obtained by organizations (Marvin, Suresh, Norman, & Ganesh, 2011). To improve the measurement reliability, in this research, the customer satisfaction level in PTEs is measured with three 5-point Likert scale questions: 1) Most Students give positive feedback on our organization; 2) Most students are willing to

introduce our organization to their friends and families; and 3) Most graduates are willing to come back to our organization if they plan to take further education, ranging from Strongly Disagree (1) to Strongly Agree (5). Similarly, a score for customer satisfaction level is computed as the average of the responses to all three of the items such that the higher scores indicate higher levels of customer satisfaction.

In conclusion, this chapter has summarized a theoretical framework. The survey questions used to address the three research questions in this present study are formulated based on this framework and will be discussed in detail in the next chapter. The next chapter explains the research objectives, research design and the research methodology employed in this study.

Chapter 4 Research Design and Methodology

This chapter consists of two parts. The first part outlines the research objectives, research questions and hypotheses. The second part describes the research methodology employed in this study and the justification, as well as how the data was collected and analyzed.

4.1 Research Objectives

The purpose of this dissertation is to provide some insight regarding the occurrence and use of target costing in New Zealand PTEs and identify factors that contribute to a more complete implementation of target costing in PTEs, through quantitative analyses. Another aim of this research is to empirically examine the effect of the adoption of target costing on cost reduction performance, quality level of services, and customer satisfaction level in the PTE context, and also to examine the impact of the completeness of the target costing implementation as it relates to the three aspects.

1. Research questions

The following three questions are examined in this study:

- 1). Has target costing been used in New Zealand PTEs? If so, what is the level of implementation?
- 2). What are the factors that contribute to a more complete implementation of target costing in the PTE environment?

3). Has target costing brought any benefits for PTEs? And what is the impact of the completeness of target costing implementation on the benefits perceived by TC PTEs?

2. Research hypotheses

To examine the research questions in this present study, several hypotheses were generated (see Table 2 and Table 3). Based on the arguments outlined and summarized in the previous chapter, I predict that TC PTEs that have a more complete implementation of target costing would be more likely to adopt some certain processes and tools (critical success factors) than TC PTEs with a less complete implementation. In the present study, I use two subsamples: level-1 TC PTEs and level-4 TC PTEs identified in this study as the representatives of TC PTEs with a less complete implementation and TC PTEs with a more complete implementation, respectively. Therefore, the first eight (H1a to H1h) were tested to examine the relationship between the eight critical success factors identified in Chapter 3 and the completeness of target costing implementation.

The prior literature suggests that the adoption of target costing has brought significant improvements in institutional performance in terms of cost reduction, quality of products/services and customer-orientation (Ansari et al., 2007; Duh et al., 2009). Based on these arguments, three hypotheses (H2a to H2c) were tested to examine the impact of target costing adoption on cost reduction performance, quality level of services, and customer satisfaction level in PTEs, respectively. Furthermore, to examine the impact of the completeness of target costing implementation on cost reduction performance, the quality level of services, and customer satisfaction level in PTEs, three null hypotheses

(H2d to H2f) have been formulated.

The next part discusses the research design, including the methodology employed in this study and the justification, as well as the data collection and analysis process.

Table 2: Research Questions and Hypotheses (A)

Research questions	Hypotheses
Q 2). What are the factors that contribute to a more complete implementation of target costing in the PTE environment?	<p>H1a: level-4 TC PTEs are more likely to have a cross-functional team, in comparison to level-1 TC PTEs.</p> <p>H1b: level-4 TC PTEs are more likely to have top management support for target costing implementation, in comparison to level-1 TC PTEs.</p> <p>H1c: level-4 TC PTEs are more likely to have reliable cost estimation models, in comparison to level-1 TC PTEs.</p> <p>H1d: level-4 TC PTEs are more likely to have a policy of “not exceeding target costs”, in comparison to level-1 TC PTEs.</p> <p>H1e: level-4 TC PTEs are more likely to have a structural reporting system, in comparison to level-1 TC PTEs.</p> <p>H1f: level-4 TC PTEs are more likely to have active participation of agencies, suppliers, and other external stakeholders in the program development, in comparison to level-1 TC PTEs.</p> <p>H1g: level-4 TC PTEs are more likely to have an excellent information system, in comparison to level-1 TC PTEs.</p> <p>H1h: level-4 TC PTEs are more likely to have performance rewards based on achievement of target costs, in comparison to level-1 TC PTEs.</p>

Table 3: Research Questions and Hypotheses (B)

Research questions	Hypotheses
<p>3). Has target costing brought any benefits for PTEs? And what is the impact of the completeness of target costing implementation on the benefits perceived by TC PTEs?</p>	<p>H2a: TC PTEs have a better cost-reduction performance than non-TC PTEs.</p> <p>H2b: TC PTEs have a higher quality level of services than non-TC PTEs.</p> <p>H2c: TC PTEs achieve a higher level of customer satisfaction than non-TC PTEs.</p> <p>H2d: There is no difference between level-4 TC PTEs and level-1 TC PTEs in cost reduction performance.</p> <p>H2e: There is no difference between level-4 TC PTEs and level-1 TC PTEs in quality level of services.</p> <p>H2f: There is no difference between level-4 TC PTEs and level-1 TC PTEs in the customer satisfaction level.</p>

4.2 Research Design

4.2.1 Research Method

Generally, the type of research method of data collection and analysis should fit and match the research study (Creswell, 2009). In other words, the choice regarding the type of research method applied to a thesis or dissertation should be made based on the magnitude of the research question and the results that are expected to be obtained from it (Yin, 1994). Whilst there are mainly two different types of research methods, the qualitative research method and the quantitative research method, some scholars may use a mixed method (both the qualitative and the quantitative method) in their research (Gray, 2004).

Qualitative Method

Qualitative research adopts an inductive approach, by or through which a generalization, relationships and even theories may be possibly constructed from the observations (Gray, 2004; Newman & Benz, 1998; Patton, 1990). The qualitative approach pays attention to detail with regard to verbal and non-verbal behavior. It is concerned with the contextual description and analysis of what is happening in a small sample rather than generalizations to large populations (Gray, 2004). The researcher's own experience may have an impact on the final quality of work (Bryman & Bell, 2007; Saunders, Lewis, & Thornhill, 2009). The general application of the qualitative approach includes collecting respondent opinions, interpreting data, bringing personal values to the study, creating an agenda for change/reform, and so forth (Bryman & Bell, 2007; Creswell, 2009; Saunders et al., 2009).

Quantitative Method

In terms of the quantitative research method, it employs a deductive approach, wherein research is used to test theories through exploring the association between variables (Bryman & Bell, 2007; Newman & Benz, 1998; Saunders et al., 2009). Those theories and hypotheses are usually formulated based on prior literature. Due to the random selection and relatively large sample size, the results involved with quantitative research could be generalized for the whole population. The quantitative approach emphasizes quantification in the collection and analysis of the data, therefore, is usually employed for testing or verifying theories or explanations, evaluating variables in questions or hypotheses, observing and measuring information numerically, and so forth (Bryman & Bell, 2007; Creswell, 2009; Saunders et al., 2009).

This study was conducted using an analytical survey. One advantage regarding survey method is time and cost efficiency (Foster & Swenson, 1997). Moreover, it allows results and patterns to be compared and statistically analyzed (Foster & Swenson, 1997). A survey is often used to provide a detailed and quantified description of a population (Sapsford, 1999). Analytical surveys are usually adopted to test a theory in the field through exploring and testing associations between variables (Gray, 2004). They emphasize a deductive approach, the drawing of a representative sample from the population, and generalizability of results (Gray, 2004). Given the magnitude of the research questions in this study and the results expected to be obtained from the questions the analytical survey is an appropriate method to employ to achieve the research objectives of this study.

4.2.2 Data collection

The data used in this study was collected through an anonymous online questionnaire, which was built with an online form builder called “**Wufoo**”. The questionnaire was built on their website, having a dedicated URL link address. Questionnaire is also one of the most commonly used primary data gathering techniques (Gray, 2004). According to Gillham (2000), the advantages of the questionnaire technique include: low cost in terms of both time and money, quick inflow of data from many people, quick coding of questions and easy data analysis of closed questions, ensuring the respondents’ anonymity, and lack of interviewer bias. Moreover, a web-based questionnaire would be considered an appropriate data gathering methodology given the large survey population (Cobanoglu, Warde, & Moreo, 2001). The research design for this study employed a self-completion anonymous online questionnaire administered to nationwide PTEs, with a focus on the adoption and implementation of target costing.

The Selection of the Sample

Currently, there are around 600 PTEs operating in New Zealand. Due to the great number of providers and the unstable nature of PTEs, it is difficult to get the full list of PTEs. Given the fact that the majority of New Zealand PTEs are NZQA registered PTEs, therefore, I began with an original sample of 542 NZQA registered PTEs, using the list of providers on the NZQA website as of March 2015. I further excluded some PTEs that have been in operation for less than one year, as this survey also examines the long-term organizational performance of PTEs in three aspects. Ultimately, 513 PTEs were selected. All of the contacts were obtained from the NZQA website.

As little knowledge about existing target costing practices in New Zealand was presented during the design stage of this study, it was difficult to identify the informative person as the respondents in this survey. Given the fact that target costing is a management technique and involves executive decision-making, I preferred to send the invitation email with the URL link to the online questionnaire attached, to the principal, general manager, managing director, CEO, president or similarly positioned executive staff in each PTEs as a key respondent. These respondents were also encouraged to forward the email to other appropriate staff/department within the PTE if they considered themselves not the best person to answer the questions.

In late March 2015, a total of 738 invitation emails were sent to the principals, general managers, managing directors, CEOs, presidents or similarly positioned executive team members in the 513 selected PTEs. The invitation letter had a short message that explained the purpose and the relevancy of this study, with a copy of the participation information sheet that clarified the procedure of the survey attached. A dedicated URL link to the online questionnaire was also attached in the invitation email. All contact email addresses were obtained from the NZQA website. In situations where email addresses for managerial staff were not provided online, the general contact email address was used. To avoid multiple responses from the same PTE, the online questionnaire was set to allow only one entry per IP address. Two weeks after the initial contact, a following reminder was sent by email.

The Preparation of the Survey Questionnaire

A pilot test was completed to ensure the validity and reliability of the questionnaire

before it was sent out. My supervisors initially checked the questions to assure all of the questions included in the questionnaire were necessary and were closely related to the research objectives. Several modifications were made to ensure the way in which the questions had been phrased, was clear, concise and unambiguous, and free from jargon and abbreviations. Also the length of the questionnaire was reduced through changes in the approaches used to ask certain questions. The amended questionnaire was then transformed into the online version and it was reviewed by two accountants to check the on-screen instructions, navigational routes (especially for skip questions), and the sequence of the questions. Some adjustments also were made to enhance the accessibility of certain questions. Finally, the final draft was pre-tested by two managerial staff who worked in two PTEs to ensure all of the questions were clear and easily understood by respondents, and relevant in the PTE context.

The online questionnaire consists of four sections. All of the survey questions in the questionnaire are closed questions, as they make it easier to compare the views of one group with another (Gray, 2004), and some of these questions were developed based on previous studies undertaken by other researchers (Dekker & Smidt, 2003; Yazdifar & Askarany, 2012). Table 4, 5 and 6 summarized the research questions and the survey questions that are used to respond them. At the beginning of the questionnaire, a general definition of target costing was provided as follow:

Target costing is defined as a costing technique that uses the following formula to calculate a target cost during the new service/program development process. Central to the target costing concept is “reverse costing”. The target price is determined by the

Table 4: Research Questions and Survey Questions (A)

Research question	Survey question	How the survey questions address the research questions?
1). Has target costing been used in New Zealand PTEs? If so, what is the level of implementation?	Q1. Does your company use the above-described method in its course/program development phase...or something similar?	To distinguish TC PTEs from non-TC PTEs and investigate the adoption rate of TC in the sampled PTEs.
	<p>Q2 Does your organization decompose the target cost for different activities, departments, programs or cost items?</p> <p>Q3 Do different departments and different groups co-operate to achieve the target cost?</p> <p>Q4 Is detailed cost information provided to enable program/course designers to compare the impact of different program/course designs on cost reduction and to monitor progress towards the cost reduction objective?</p> <p>Q5 Does your organization compare the actual cost against target cost at different stages of new program/course development (design stage, before trial teaching stage, before full-scale recruitment)?</p> <p>Q6 After the target cost has been determined, does the program/course designer investigate what kind of innovation or techniques (new class model, online class, etc.) are needed to achieve the required target cost, outcomes and quality level?</p>	To examine the level of TC implementation in TC PTEs in my sample.

Table 5: Research Questions and Survey Questions (B)

Research question	Hypotheses	Survey question	How the survey questions address the hypothese?
2). What are the factors that contribute to a more complete implementation of target costing in the PTE environment?	<p>H1a: level-4 TC PTEs are more likely to have a cross-functional team, in comparison to level-1 TC PTEs; H1b: level-4 TC PTEs are more likely to have top management support for target costing implementation, in comparison to level-1 TC PTEs; H1c: level-4 TC PTEs are more likely to have reliable cost estimation models, in comparison to level-1 TC PTEs; H1d: level-4 TC PTEs are more likely to have a policy of “not exceeding target costs”, in comparison to level-1 TC PTEs; H1e: level-4 TC PTEs are more likely to have a structural reporting system, in comparison to level-1 TC PTEs; H1f: level-4 TC PTEs are more likely to have active participation of agencies, suppliers, and other external stakeholders in the program development, in comparison to level-1 TC PTEs; H1g: level-4 TC PTEs are more likely to have an excellent information system, in comparison to level-1 TC PTEs; and H1h: level-4 TC PTEs are more likely to have performance rewards based on achievement of target costs, in comparison to level-1 TC PTEs.</p>	<p>19. Please select all the management practices, which are relevant or undertaken in your organization.</p> <p>Top management support for target costing implementation;</p> <p>Cross-functional team;</p> <p>Reliable cost estimation models, which enables precise cost estimates and cost monitoring;</p> <p>High pressure on “not exceeding target costs”;</p> <p>Structural reporting system, which monitors target cost achievements and failures;</p> <p>Performance rewards based on achievement of target costs;</p> <p>Active participation of agencies suppliers and other external stakeholders in program development;</p> <p>An excellent information network, which enables the intensive feedback from customer and markets delivered to course/program designers;</p>	<p>Q19 is used to identify management practices that used in each sampled PTE and investigate the adoption rate of each indentified factor in two groups-level-1 and level-4 TC PTEs, respectively. The adoption rates of each indentified factor in the two subsamples are compared to test these eight hypothese (H1a to H1g).</p>

Table 6: Research Questions and Survey Questions (C)

Research question	Hypotheses	Survey question	How the survey questions address the hypothese?
<p>3). Has target costing brought any benefits for PTEs? And what is the impact of the completeness of target costing implementation on the benefits perceived by TC PTEs?</p>	<p>H2a: TC PTEs have a better cost-reduction performance than non-TC PTEs.</p> <p>H2d: There is no difference between level-4 TC PTEs and level-1 TC PTEs in cost reduction performance.</p>	<p>Q7 In our organization, the rate of unprofitable program or course in the long-term is very low; Q8 In our organization, the rate of occupancy (teaching rooms, laboratories and library) is very high; Q9 Our organization has achieved cost reduction by outsourcing some business functions; and Q10 The organization has achieved in cost reduction in the average cost of students.</p>	<p>Q7,8,9 and 10 are used to calculate a cost reduction score for each sampled PTE. The mean ranks of cost reduction scores in two subsamples-TC PTEs and non-TC PTEs, are compared to test H2a. The mean ranks of cost reduction scores for level-1 TC PTEs and level-4 TC PTEs are compared to test H2d.</p>
	<p>H2b: TC PTEs have a higher quality level of services than non-TC PTEs.</p> <p>H2e: There is no difference between level-4 TC PTEs and level-1 TC PTEs in quality level of services.</p>	<p>Q12 There is sufficient expertise in teaching and subject knowledge that is current and relevant to the needs of learners and other stakeholders; Q13 Adequate and appropriate learning resources and equipment are accessible by learners; Q14 Our organization always achieves good educational outcomes; and Q15 Our organization has done very well in encouraging and providing financial support for tutors to undertake personal development.</p>	<p>Q12,13,14, and 15 are used to assess PTEs' performance on quality improvement. The mean ranks of quality level of services scores in two subsamples-TC PTEs and non-TC PTEs, are compared to test H2b. The medians of quality level of services scores for level-1 TC PTEs and level-4 TC PTEs are compared to test H2e.</p>
	<p>H2c: TC PTEs achieve a higher level of customer satisfaction than non-TC PTEs.</p> <p>H2f: There is no difference between level-4 TC PTEs and level-1 TC PTEs in the customer satisfaction level.</p>	<p>Q16 Most Students give positive feedback on our organization; Q17 Most students are willing to introduce our organization to their friends and families; and Q18 Most graduates are willing to come back to our organization if they plan to take further education.</p>	<p>Q16, 17 and 18 are used to assess PTEs' performance score on customer satisfaction. The medians of customer satisfaction scores in two subsamples-TC PTEs and non-TC PTEs, are compared to test H2c. The medians of customer satisfaction scores for level-1 TC PTEs and level-4 TC PTEs are compared to test H2f.</p>

market price, combined with other factors, which may affect the target price. A required profit margin is then subtracted from the target price to derive the target cost.

“Target cost = Target selling price - required profit margin”

In the first sector, six ‘yes/no’ questions were used to examine the adoption and implementation level of target costing, including Q1 Does your company use the above-described method in its course/program development phase...or something similar? Q2 Does your organization decompose the target cost for different activities, departments, programs or cost items? Q3 Do different departments and different groups co-operate to achieve the target cost? Q4 Is detailed cost information provided to enable program/course designers to compare the impact of different program/course designs on cost reduction and to monitor progress towards the cost reduction objective? Q5 Does your organization compare the actual cost against target cost at different stages of new program/course development (design stage, before trial teaching stage, before full-scale recruitment)? And Q6 After the target cost has been determined, does the program/course designer investigate what kind of innovation or techniques (new class model, online class, etc.) are needed to achieve the required target cost, outcomes and quality level? The first question (Q1) was used to distinguish the TC PTEs from non-TC PTEs. PTEs were considered as TC PTEs, when they replied with “yes” to the first question; otherwise, they were non-TC PTEs. The following five questions (Q2 to Q6) are used to examine the implementation level of target costing in TC PTEs only; therefore, they do not apply to those non-TC PTEs. Moreover, not every TC PTEs were expected to answer all the five questions (Q2 to Q6). A participant was expected to

move to a next question only when s/he selected “yes” to the previous one, using a ‘Go to’ instruction at the end of each response provided in the question; otherwise, they were asked to move to Q7 in the next section (Section 2). For example, when a participant selected ‘yes’ in Q1, they were asked to go to Q2 with a ‘Go to’ instruction following the ‘yes’. However, if s/he selected ‘no’ in Q1, they were asked to go to Q7 in Section 2 with a ‘Go to’ instruction following the ‘no’. TC PTEs were classified as level-2 TC PTEs, when they answered ‘yes’ to both Q2 and Q3; otherwise, they were level-1 TC PTEs. Similarly, when level-2 TC PTEs also replied with “yes” to Q4 and Q5, they were level-3 TC PTEs. Level-4 TC PTEs were those TC PTEs, which replied with “yes” to all the questions in this part.

The second part of the online questionnaire includes three sub-sections, which were used to measure the cost reduction performance, quality level of services and customer satisfaction level correspondingly. Each sub-section also contains several questions. Responses to these questions were all measured with 5-point Likert scale, ranging from Strongly disagree (1) to Strongly agree (5). Participants were expected to answer all the questions in this part. In the first sub-section, four questions were used to measure the cost reduction performance in each PTEs including: Q7 In our organization, the rate of unprofitable program or course in the long-term is very low; Q8 In our organization, the rate of occupancy (teaching rooms, laboratories and library) is very high; Q9 Our organization has achieved cost reduction by outsourcing some business functions; and Q10 The organization has achieved in cost reduction in the average cost of students. A cost reduction performance score was, therefore, obtained by calculating the average of

the responses to all four questions, with the negatively worded question reverse scored. A higher score indicates a better cost-reduction performance. The second sub-section comprises five questions, which include Q 11 The PTE has capacity to develop, design and deliver courses that are responsive to the needs of students and other stakeholders; Q12 There is sufficient expertise in teaching and subject knowledge that is current and relevant to the needs of learners and other stakeholders; Q13 Adequate and appropriate learning resources and equipment are accessible by learners; Q14 Our organization always achieves good educational outcomes; and Q15 Our organization has done very well in encouraging and providing financial support for tutors to undertake personal development. I was initially planning to use these five questions to measure quality level of services in PTEs, however, based on the Principle Component Analysis, the Q11 loaded on two components at 0.370 and 0.420 respectively, therefore, the responses to this question were not included in the calculation of the overall quality of services score. Finally, the overall quality of services score was obtained by calculating the average of the responses to the Q12, Q13, Q14 and Q15, with higher scores indicating higher quality levels of services provided. In the third sub-section, three questions were used to measure customer satisfaction level in PTEs, including Q16 Most Students give positive feedback on our organization; Q17 Most students are willing to introduce our organization to their friends and families; and Q18 Most graduates are willing to come back to our organization if they plan to take further education. Similarly, a score for the customer satisfaction level was computed as the average of the responses to all the three questions such that the higher scores indicate higher levels of customer satisfaction.

The third part of the online questionnaire was used to investigate the diffusion of the eight critical success factors as discussed in Chapter 3 in PTEs with a multi-choice question identifying critical success factors that used in different PTEs. Participants were asked to select all the management practices, which are relevant or undertaken in their PTEs from the following.

1. Top management support for target costing implementation
2. Cross-functional team
3. Reliable cost estimation models, which enables precise cost estimates and cost monitoring
4. High pressure on “not exceeding target costs”
5. Structural reporting system, which monitors target cost achievements and failures
6. Performance rewards based on achievement of target costs
7. Active participation of agencies suppliers and other external stakeholders in program development
8. An excellent information network, which enables intensive feedback from customer and markets to be delivered to course/program designers

Part four sought the demographic information about the PTE: funding status (1= receiver, 2 =non-receiver), student type (1= domestic only, 2= international only, 3=

both domestic and international), and organizational size by employee numbers (1= 0-19, 2=20-49, 3= 50-99, 4= 100+), with three classification questions.

4.2.3 The Method of Analysis

SPSS-22 (Statistical Package for Social Sciences) was used for the analysis of data obtained from the questionnaire. All the raw data collected through the questionnaire was edited, coded and transcribed into a form suitable for data analysis. In this study, 18 variables were generated. Table 7 and Table 8 present the variables definitions.

Methods Used to Test Validity and Reliability of the Variables

In the questionnaire, a total of 12 items (Q7 to Q18 in the questionnaire) were classified into three categories (cost reduction performance, quality level of services, customer satisfaction level) to measure organizational performance of PTEs. To ensure the classification of 12 items was properly done, a Principal Components Analysis (PCA) based on VARIMAX was conducted to test the conceptual validity and the reliability of these newly developed scale variables (cost reduction performance, quality level of services, customer satisfaction level), using the eigenvalue of 1.0 as the base. Factor analysis is usually conducted in the development of scales/latent variables. It helps reduce a large set of variables to a smaller set of variables that “cluster together” (Afonso et al., 2008). An aggregated cluster of variables is also called a “ factor” (Macky, 2013). Factor analysis can also be used to provide an “after the fact” justification for combining the multiple variables into a single new variable and show that the new latent variables are factorially independent of each other (Macky, 2013).

Table 7: Variable Definition (A)

Variable Name	Level of Measurement	Variable Measurement
TC_IMP	Nominal	1 if TC PTEs are classified as level-1 TC PTE; 2 if TC PTEs are classified as level-2 TC PTE; 3 if TC PTEs are classified as level-3 TC PTE; 4 if TC PTEs are classified as level-4 TC PTE.
COST_RED	Interval	The average of the responses to Q7, Q8, Q9 and Q10 in questionnaire.
QUALITY_SER	Interval	The average of the responses to Q12, Q13, Q14 and Q15 in questionnaire.
CUSTOMER_SAT	Interval	The average of the responses to Q16, Q17, and Q18 in questionnaire.
FUNDING	Nominal	1 if PTE receive funding from tertiary education commission; 2 otherwise.
SIZE	Nominal	1 if PTE only have 0-19 employees; 2 if PTE only have 20-49 employees; 3 if PTE only have 50-99 employees; 4 if PTE only more than 100 employees.
STU_TY	Nominal	1 if PTE only have domestic students; 2 if PTE only have international students; 3 if PTE has both domestic and international students

Table 8: Variable Definition (B)

Variable Name	Level of Measurement	Variable Measurement
TC_ADO	Nominal	1 if PTEs adopt target costing; 2 otherwise.
TC_COM	Nominal	1 if TC PTEs are classified as level-1 TC PTE; 2 if TC PTEs are classified as level-4 TC PTE.
CT_ADO	Nominal	1 if PTEs have cross-functional teams, 2 otherwise.
TMS_ADO	Nominal	1 if PTEs have top management support, 2 otherwise.
CEM_ADO	Nominal	1 if PTEs have reliable cost estimation model, 2 otherwise.
PLO_ADO	Nominal	1 if PTEs have policy of “Not Exceeding Target Costs”, 2 otherwise.
SRS_ADO	Nominal	1 if PTEs have structural reporting system, 2 otherwise.
PR_ADO	Nominal	1 if PTEs have rewards based on target costing achieving, 2 otherwise.
POS_ADO	Nominal	1 if PTEs have active participation of external stakeholders, 2 otherwise.
IN_ADO	Nominal	1 if PTEs have an excellent information network, 2 otherwise.

There are many different types of factor analysis. Principal Component Analysis is one of the most commonly used factor analysis to perform the extraction of the factors (e.g. Afonso et al., 2008; Yook et al., 2007) (Macky, 2013). VARIMAX is an orthogonal rotation method that reduces the number of items with high coefficients (loadings) on each factor (scale variable) (Afonso et al., 2008). It is usually adopted to enhance the meaning of the extracted factors. Coefficients higher than 0.5 are considered as significant and generally accepted (Afonso et al., 2008).

When I initially conducted a PCA on the 12 questions (Q7 to Q18 in the questionnaire), one of 12 items (Q 11 The PTE has capacity to develop, design and deliver courses that are responsive to the needs of students and other stakeholders and consistent with the establishment's goals and objectives) loaded on two components at 0.370 and 0.420 respectively; therefore, I decided to exclude this item in the data analysis.

Finally, a PAC was run on 11 questions (Question 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, and 18 in the questionnaire) that were used to measure organizational performance of 114 PTEs. Using PCA requires an adequate sample size and assumes a linear relationship between all variables (Statistics Laerd, n.d.-c). The suitability of PCA was assessed prior to analysis, using two measures: the Kaiser–Meyer–Olkin (KMO) and Bartlett's Test of Sphericity. The former one (KMO) assesses the adequacy of sampling for the overall data set (Afonso et al., 2008), while the later one (Bartlett's Test of Sphericity) examines the linear relationship between all variables (Statistics Laerd, n.d.-c). Value of KMO ranges from zero to 1; the higher, the more adequate the sampling (Statistics Laerd, n.d.-c). According to Kaiser (1974), value of KMO is “Marvelous” if

higher than 0.9; and “Meritorious” for values between 0.8 and 0.9, whilst for values lower than 0.5 the adequacy is unacceptable. Bartlett's Test of Sphericity tests the null hypothesis that there are no correlations between any of the items to check the quality of the correlations amongst the variables (Statistics Laerd, n.d.-c). The statistical significance of Bartlett's Test of Sphericity (p-value) is used to determine whether the null hypothesis should be accepted or rejected (Statistics Laerd, n.d.-c). When Bartlett's Test of Sphericity is statistically significant ($p < .05$), the null hypothesis should be rejected, which suggests there are correlations between these items. Therefore, the data is suitable for a PCA (Statistics Laerd, n.d.-c).

In this present study, inspection of the correlation matrix showed that all variables had at least one correlation coefficient greater than 0.3. The overall KMO measure was 0.738 with individual KMO measures all greater than 0.5, suggesting the sample size is adequate enough to use the PCA technique. Bartlett's Test of Sphericity was statistically significant ($p < .0005$), indicating a linear relationship between the 11 items. Therefore, the data in this study was suitable for a PCA. With the PCA, three components have been revealed in this study, using eigenvalues greater than one. The factor loading scores of most of the 11 items were about 70 percent or above. All the statistics are displayed in chapter 4. Hence, it can be concluded that the development of the three scale variables (factors) has been done properly.

Furthermore, Cronbach's α (alpha) was analyzed to test the reliability of the three scale variables (factors) used in this study. Cronbach's (1951) α is one of the most frequently used measures of internal consistency within a group of items (a measure of reliability)

when multiple Likert items are used to form a scale or subscale in a survey/questionnaire (Afonso et al., 2008). It measures how much the items on a scale are measuring the same underlying dimension (Cronbach, 1951). Its value can range from 0 to 1, with values above 0.7 suggested as a minimum requirement for internal consistency (Afonso et al., 2008). In this present study, the Cronbach's α of each scale-variable is above 70 percent, which indicates all three scale variables (cost reduction performance, quality level of services, customer satisfaction level) have reasonable internal consistency, therefore, can be regarded as reliable. All the statistics are displayed in chapter 4. Based on the two analyses, the three scale variables, which were used to measure cost reduction performance, quality level of services and customer satisfaction in PTEs, can be considered as appropriate developed and reliable.

Methods Used to Test the Hypotheses

Non-parametric statistical analyses have been used to analyze data in this study, due to the limited sample size and inadequate distributional properties for most of the variables for using parametric statistical analyses. Moreover, because the statistical power of the tests used (the ability of the test to find significant effects, when they indeed exist) tends to decrease with a relatively small sample size, particularly for subsample analyses (Dekker & Smidt, 2003). Therefore, the statistical results of this study are interpreted at the 10 percent level of significance, given the suggestion made by Lindsay (1993).

The second research question examined in this study related to whether there are associations between the completeness of target costing implementation and the presence of certain management techniques (critical success factors). To address this

research question, I use two subsamples: level-1 TC PTEs and level-4 TC PTEs identified in this study and compare the adoption rate of each identified management techniques between these two groups. Table 9 presents the definition of variables used to test the eight hypotheses: H1a, H1b, H1c, H1d, H1e, H1f, H1g, and H1h.

To examine the relationship between the eight critical success factors identified in Chapter 3 and the completeness of target costing implementation, Cramer's V tests were conducted to examine whether the adoption rate of each identified critical success factor (the dependent variable) is associated with TC_COM variable (the independent variable).

The Chi-square test for association is usually used to test whether two categorical variables are associated (statistics Laerd, n.d.-a). Although the Chi-square test is a very useful method when testing a relationship, it also has several weaknesses (Macky, 2013).

First, it can only be used to indicate whether there is association between two variables but cannot inform the strength/magnitude of any association (Macky, 2013; statistics Laerd, n.d.-a). A second problem with the Chi-square test is that it assumes that no more than 20 percent of the expected frequencies for any given analysis will be smaller than five and that any single expected frequency will not be less than one. If either occurs, the Chi-square should not be used (Macky, 2013). Cramer's V test is one of the derivatives of Chi-square test (Macky, 2013). Cramer's V measures the strength of association between two nominal variables, ranges from 0 to +1. The larger values of Cramer's V indicate stronger relationships between variables (Macky, 2013). Therefore, both the statistic and statistical significance of Cramer's v on these variables were used to test hypothesis H1a, H1b, H1c, H1d, H1e, H1f, H1g, and H1h.

Table 9: Variables Used to Test Hypotheses H1a, H1b, H1c, H1d, H1e, H1f, H1g, and H1h

Variable Name	Level of Measurement	Variable Measurement
Dependent variables		
CT_ADO	Nominal	1 if PTEs have cross-functional teams, 2 otherwise.
TMS_ADO	Nominal	1 if PTEs have top management support, 2 otherwise.
CEM_ADO	Nominal	1 if PTEs have reliable cost estimation model, 2 otherwise.
PLO_ADO	Nominal	1 if PTEs have policy of “Not Exceeding Target Costs”, 2 otherwise.
SRS_ADO	Nominal	1 if PTEs have structural reporting system, 2 otherwise.
PR_ADO	Nominal	1 if PTEs have rewards based on target costing achieving, 2 otherwise.
POS_ADO	Nominal	1 if PTEs have active participation of external stakeholders, 2 otherwise.
IN_ADO	Nominal	1 if PTEs have an excellent information network, 2 otherwise.
Independent variable		
TC_COM		1 if TC PTEs are classified as level-1 TC PTE; 2 if TC PTEs are classified as level-4 TC PTE.

Table 10: Variables Used to Test Hypotheses H2a, H2b, H2c, H2d, H2e, and H2f.

Variable Name	Level of Measurement	Variable Measurement
Independent variable		
TC_ADO	Nominal	1 if PTEs adopt target costing; 2 otherwise.
TC_COM	Nominal	1 if TC PTEs are classified as level-1 TC PTE; 2 if TC PTEs are classified as level-4 TC PTE.
Dependent variable		
COST_RED	Interval	The average of the responses to Q7, Q8, Q9 and Q10 in questionnaire.
QUALITY_SER	Interval	The average of the responses to Q12, Q13, Q14 and Q15 in questionnaire.
CUSTOMER_SAT	Interval	The average of the responses to Q16, Q17, and Q18 in questionnaire.

The third research question examined in this study contains two sub-questions: whether the cost reduction performance, quality level of services and customer satisfaction is better in the PTEs that adopt target costing, and what is the impact of completeness of target costing implementation on the three aspects (cost reduction performance, quality level of services and customer satisfaction). To address these questions, six hypotheses were tested: H2a, H2b, H2c, H2d, H2e, and H2f. Table 10 presents the definition of variables used to test the six hypotheses.

To examine the impact of target costing adoption on cost reduction performance, quality level of services and customer satisfaction level, I partitioned the sample into two subsamples based on whether target costing was adopted in the establishment. Mann–Whitney tests were conducted to determine whether there are statistically significant differences in cost reduction performance, quality level of services, and customer satisfaction (the dependent variables) between TC PTEs and non-TC PTEs (the two groups of the independent variable: TC_ADO). The Mann-Whitney U test is often presented as the nonparametric alternative to the independent-samples t-test (Statistics Laerd, n.d.-b). It is used to determine whether there are differences in the **mean ranks** between the two groups in the independent variable when the two distributions have **different shapes**; whereas, the Mann-Whitney U test is used to determine whether there are differences in the **medians** of the two groups when the two distributions are the **same shape** (Statistics Laerd, n.d.-b). In this study, for both cost reduction score and quality level of services score, the distribution is different across categories of the independent variable (TC_ADO); whereas, the distribution of customer

satisfaction score is the same across categories of the independent variable (TC_ADO). Therefore, the statistical significance of Mann-Whitney U statistic was used to test hypothesis H2a, with the **mean ranks** of cost reduction performance scores for both TC PTEs and non-TC PTEs reported. Similarly, the statistical significance of Mann-Whitney U statistic was used to test hypothesis H2b, with the **mean ranks** of quality level of services scores for TC PTEs and non-TC PTEs reported. The hypothesis H2c was tested with the statistical significance of Mann-Whitney U statistic, with the **medians** of customer satisfaction level scores for TC PTEs and non-TC PTEs reported.

Similarly, I employed two subsamples: level-1 TC PTEs and level-4 TC PTEs, to examine the impact of completeness of target costing implementation on cost reduction performance, quality level of services and customer satisfaction level. Mann-Whitney tests were conducted to determine if there are statistically significant differences in cost reduction performance, quality level of services, and customer satisfaction level (the dependent variables) between level-1 TC PTEs and level-4 TC PTEs (the two groups of the independent variable: TC_COM)

In this study, for both the quality level of services score and the customer satisfaction score, the distribution is the same across categories of the independent variable (TC_COM); whereas, the distribution of cost reduction performance score is different across categories of the independent variable (TC_COM). Therefore, the statistical significance of Mann-Whitney U statistic was used to test hypothesis H2d, with the **mean ranks** of cost reduction performance score for level-1 TC PTEs and level-4 TC PTEs reported. However, the hypothesis H2e was tested with the statistical significance of

Mann-Whitney U statistic, with the **medians** of quality level of services score for level-1 TC PTEs and level-4 TC PTEs reported. Similarly, the hypothesis H2f was tested with the statistical significances of Mann-Whitney U statistic, with the **medians** of customer satisfaction level score for level-1 TC PTEs and level-4 TC PTEs reported.

This next chapter discusses the empirical results of this study.

Chapter 5 Results and Analysis

This chapter comprises two sections. The first section presents the sample characteristics. In the second section, the descriptive statistics and the empirical results, which are related to the three research questions, are presented and discussed.

5.1 Sample Characteristics

Eventually, 114 out of 513 surveyed PTEs gave responses with varying degrees of completion, which led to a response rate of 22.2 percent. While 52.6 percent of them were only considered to be of a small size (n=60), with fewer than twenty employees, 27.2 percent of them have 20 to 49 employees (n=31). PTEs with 50 to 99 employees (n=11) and those with more than 100 employees (n=12) accounted for 9.7 percent and 10.5 percent of the total respondents respectively (see Table 11). This is consistent with the description about PTEs' demographic distribution in Fitzsimons and Frater (1996) report.

Regarding the source of students, more than half of the respondents only had domestic students (n=70) (61.4 percent), while the rest of the respondents either only recruited international students (n= 16) (14.0 percent) or had both domestic and international students (n= 28) (24.6 percent). According to New Zealand Ministry of Education, there were 178 PTEs involved in international student recruitment in 2014 (Ministry of Education, 2015), responsible for approximate 32.8 percent of the total research population (n=542). This percentage is close to the rate of surveyed PTEs involved in international student recruitment out of all the respondents in this research (38.6

Table 11: Sample Statistics

	Number of PTEs	Percentage (%)
Receiving funding or not		
Receiver	55	48.2%
Non-receiver	59	51.8%
Total	114	100.0%
Student type		
Domestic student only	70	61.4%
International student only	16	14.0%
Both Domestic and international student	28	24.6%
Total	114	100.0%
Organizational size (by employee number)		
0-19	60	52.6%
20-49	31	27.2%
50-99	11	9.7%
100+	12	10.5%
Total	114	100.0%

percent). Whereas 55 out of the 114 respondents have received funding from TEC (48.2 percent), the others have not. Although we are not sure about the exact proportion of SDR providers (receiving funding from Tertiary Education Commission (TEC)) out of the total research population (n=542), according to New Zealand Ministry of Education, among the 178 PTEs that were involved in the international student recruitment in 2014, there were 91 SDR providers, versus 87 non-SDR providers (those which do not receive funding from Tertiary Education Commission (TEC)) (Ministry of Education, 2015). No significant difference in regard to the rate of SDR providers has been found between the respondents in this survey and the research population (n=542).

Therefore, the respondent sample seemed to be broadly representative of the population, from which it was drawn.

5.2 Descriptive Statistics and Empirical Results

5.2.1 Adopting Target costing? If so, what is the Level of Implementation?

Adoption of Target Costing

The sample of PTEs has been partitioned into two subsamples based on whether PTEs have adopted target costing. PTEs that adopted target costing are assigned to the TC PTEs group, while PTEs that did not adopt target costing are assigned to non-TC PTEs group. Eventually, I find that a total of 38 PTEs that indicated the presence of target costing in their establishments via their responses to the questionnaire, which leads to a 33.3 percent adoption rate of target costing. According to Table 12, there is no significant difference between funding receiver PTEs and non-receiver PTEs in terms of

Table 12: Diffusion of Target Costing in PTEs

	Non- TC PTE	TC PTE	Total (%)
Receive funding or not			
Receiver	67.3%	32.7%	100.0%
Non-receiver	66.1%	33.9%	100.0%
Total	66.7%	33.3%	100.0%
Student type			
Domestic	67.1%	32.9%	100.0%
International	62.5%	37.5%	100.0%
Both	67.9%	32.1%	100.0%
Total	66.7%	33.3%	100.0%
Organizational size			
0-19	63.3%	36.7%	100.0%
20-49	77.4%	22.6%	100.0%
50-99	63.6%	36.4%	100.0%
100+	58.3%	41.7%	100.0%
Total	66.6%	33.3%	100.0%

the extent of the diffusion of target costing (adoption versus non-adoption). Similarly, the diffusion of target costing seems to be similar across PTEs with different student types. Although PTEs with more than 100 employees seems to have a slightly higher adoption rate of target costing than other three groups, the difference in the target costing adoption rate between the four groups of PTEs that have different organizational size is not significant.

Level of Target Costing Implementation

I further partition the TC PTEs subsample into four groups based on the level of target costing implementation in these PTEs. Eventually, I find that of the 38 TC PTEs, 52.6 percent (n=20) have only identified target cost as the difference between expected price and required profit (see Table 13 below), therefore, these PTEs are classified as level-1 TC PTEs and only the first four steps in the 7-step TC procedure (summarized in chapter 2) are followed in these PTEs.

The cost management practices within four (10.5 percent) PTEs also contained the processes of decomposing target cost for different activities and functions, subassemblies, cost items, designers or suppliers; and establishing intense co-operation between different functions. Therefore, these are level-2 TC PTEs. Only 5.3 percent (n=2) of the total TC PTEs are classified as level-3 TC PTEs, meaning that these PTEs had detailed cost information provided to monitor progress towards cost reduction target; and continuous comparison of the actual cost with the target cost, additionally, compared with the level-2 TC PTEs. In these six TC PTEs (both level 2 and level 3 TC

Table 13: The ‘levels’ of Implementation of Target Costing

Level of TC adoption					
	Level-1	Level-2	Level-3	Level-4	Total (%)
Receive fund or not					
Receiver	52.9%	17.6%	5.9%	23.5%	100.0%
Non-receiver	52.4%	4.8%	4.8%	38.1%	100.0%
Total	52.6%	10.5%	5.3%	31.6%	100.0%
Student type					
Domestic	59.1%	9.1%	9.1%	22.7%	100.0%
International	57.1%	14.3%	0.0%	28.6%	100.0%
Both international and domestic	33.3%	11.1%	0.0%	55.6%	100.0%
Total	52.6%	10.5%	5.3%	31.6%	100.0%
Organizational size					
0-19	54.6%	13.6%	4.5%	27.3%	100.0%
20-49	71.4%	0.0%	0.0%	28.6%	100.0%
50-99	25.0%	25.0%	0.0%	50.0%	100.0%
100+	40.0%	0.0%	20.0%	40.0%	100.0%
Total	52.6%	10.5%	5.3%	31.6%	100.0%

PTEs), step 5 and step 6 in the 7-step TC procedure have been further taken to implement target costing. Twelve (31.6 percent) PTEs indicated that in addition to all these processes, they also investigate what kind of innovation or techniques (new class model, online class, and so forth) are needed to achieve the required target cost, outcomes and quality level, so they are level-4 PTEs. And all steps in the 7-step TC procedure are followed in these twelve level-4 PTEs.

As a point of reference, these figures are different from than those reported in Yazdifar and Askarany's (2012) study. According to Yazdifar and Askarany (2012)'s survey, only 17.7 percent of surveyed companies have implemented and accepted target costing. Among these TC companies, most of them are either level-3 TC companies (examination of all cost-reducing strategies at the planning and pre-production stages) (30.1 percent) or level-4 TC companies (Adoption of value engineering to incorporate customer requirements) (30.1 percent). The companies with the first level of adoption (identification of target product cost as the difference between expected price and required profit) represent 24.7% of all the TC companies. Only a small proportion (15.1 percent) of TC organizations are exercising the level-two implication (Adoption of cost-cutting strategies at the production stage to approach target) (Yazdifar & Askarany, 2012). The differences in the findings may be caused by several reasons. First, this study adopts a different approach to examine target adoption from the approach used in Yazdifar and Askarany's (2012) study. Instead of specifically asking about the "target costing" per se, this study provided a quite general definition of target costing to participants, helping identify those TC PTEs, which would not be identified by focusing

on “target costing” per se, or by setting narrow boundaries on the system’s characteristics. More PTEs are deemed to be a TC PTE with such a broad criterion, which also leads to a higher proportion of level-1 TC PTEs out of the total TC PTEs in this study. Second, this study only focuses on New Zealand PTEs, whilst the survey sample in Yazdifar and Askarany’s (2012) study included both manufacturing and service companies from three countries (U.K., Australia, New Zealand). Moreover, the data used in Yazdifar and Askarany’s (2012) study was collected in 2007, which is almost eight years earlier than this study. Therefore, the adoption rate of target costing may also increase during this time as this technique becomes more mature and well known.

According to Table 13, there is no significant difference between funding receiver PTEs and non-receiver PTEs in terms of the levels of target costing implementation. Although TC PTEs that have both international and domestic students tend to be more likely to be level-4 TC PTEs, in comparison to TC PTEs with either domestic or international only students, the difference in terms of levels of target costing implementation is not significant between the three groups. Similarly, TC PTEs with a medium to large size (50-99; 100+) are more likely to be level-4 TC PTEs than TC PTEs with a relatively small size (0-19; 20-49). However, the difference in the levels of target costing implementation is not significant between the four groups.

In conclusion, PTEs in New Zealand do use target costing with a relatively moderate adoption rate (33.3 per cent) in the PTE sector. The maturity of TC implementation varies across different PTEs. More than half of the TC PTEs have only a basic level of

target costing implementation. Therefore, for New Zealand PTEs, there is still room for improvement in TC system.

5.2.2 Factors that Contribute to a More Complete Implementation of Target Costing

The second research question examined in this study relates to whether PTEs with higher completeness of target costing implementation are more likely to adopt certain management techniques/tools (critical success factors). To address this research question, eight hypotheses (H1a to H1h) are formulated to examine the relationship between these eight identified factors and the completeness of target costing implementation and the results are summarized in Table 14. I use two subsamples: level-1 TC PTEs and level-4 TC PTEs identified in this study and compare the adoption rate of each identified management technique between these two groups.

To answer this question, the Cramer's v tests have been used to investigate whether there are correlations between the completeness of target costing implementation in TC PTEs and the use of the eight identified management techniques/tools (critical success factors): 1) having top management support in target costing implementation; 2) establishing the policy of "Not Exceeding Target Costs"; 3) adopting a structural reporting system; 4) performance rewards based on achievement of target costs; 5) cross-functional team; 6) reliable cost estimation model; 7) active participation of agencies, suppliers and other external stakeholders in the program development; and 8)

Table 14: Hypotheses and Results (A)

Research question	Hypotheses	Results	Conclusion
Q2. What are the factors that contribute to a more complete implementation of target costing in the PTE environment?	H1a: Level-4 TC PTEs are more likely to have a cross-functional team, in comparison to level-1 TC PTEs.	Accepted	1) top management support; 2) cross-functional team; 3) performance rewards based on achievements of target costs; 4) structural reporting system; and 5) active participation of agencies, suppliers, and other stakeholders are the five critical factors that might facilitate PTEs to reach towards a fully developed target costing process.
	H1b: Level-4 TC PTEs are more likely to have top management support for target costing implementation, in comparison to level-1 TC PTEs.	Accepted	
	H1c: Level-4 TC PTEs are more likely to have reliable cost estimation models, in comparison to level-1 TC PTEs.	Rejected	
	H1d: Level-4 TC PTEs are more likely to have a policy of “not exceeding target costs”, in comparison to level-1 TC PTEs.	Rejected	
	H1e: Level-4 TC PTEs are more likely to have a structural reporting system, in comparison to level-1 TC PTEs.	Accepted	
	H1f: Level-4 TC PTEs are more likely to have active participation of agencies, suppliers, and other external stakeholders in the program development, in comparison to level-1 TC PTEs.	Accepted	
	H1g: Level-4 TC PTEs are more likely to have an excellent information system, in comparison to level-1 TC PTEs.	Rejected	
	H1h: level-4 TC PTEs are more likely to have performance rewards based on achievement of target costs, in comparison to level-1 TC PTEs.	Accepted	

excellent information network.

On average, I find that all of the level-4 TC PTEs have cross-functional teams, versus only 60 percent of the level-1 TC PTEs have them. The correlation between the presence of cross-functional team and the completeness of target costing implementation was significant (at the 5 percent level) and moderately strong (Cramer's $v=0.447$, $p=0.011$) (see table 15). Therefore, the hypothesis H1a is accepted.

Senior management support is often critical in implementing target costing, as it helps align all the employees with the mindset of the company's leadership (Feil et al., 2004). My results (see table 15) show that while all level-4 TC PTEs have top management support for this implementation (100.0%), only 60 percent of level-1 TC PTEs have top management support. The result of a Cramer's v test (Cramer's $v=0.447$, $p=0.011$) indicates a significant (at the 5 percent level) and moderately strong association between the TMS_ADO and TC_COM variables. Therefore, the hypothesis H1b is accepted.

A structural reporting system, which enables continuous comparison of the actual performance with the target cost objective at different stages of the product/service development, is crucial for the TC implementation (Kwah, 2004). My results (in Table 15) show that 75 percent of level-4 TC PTEs adopted structural reporting systems whereas only 20 percent of level-1 TC PTEs had them (26.3 percent). There is a strong and significant (at the 1 percent level) association between the use of a structural reporting systems and the completeness of target costing implementation in TC PTEs (Cramer's $v=0.542$, $p=0.002$). Therefore, the hypothesis H1e was accepted.

The statistics also show (see Table 16) that 83.3 percent of level-4 TC PTEs had active participations of agencies, suppliers, and other external stakeholders in the program development, which is higher than the rate in level-1 TC PTEs (50.0 percent). The association between the completeness of target costing implementation and the active participations of suppliers and other external stakeholders is moderately strong and significant at the 10 percent level (Cramer's $v=0.333$, $p=0.059$). This supports hypotheses H1f.

The results (see Table 15) indicate 75 percent of level-4 TC PTEs (54.2 percent) had performance reward systems that linked the rewards to the target cost achievement while only 15 percent of level-1 TC PTEs had such systems. There is a strong and significant (at the 1 percent level) association between the performance systems that link rewards to target costing achievement and the completeness of target costing implementation in TC PTEs (Cramer's $v=0.600$, $p=0.001$). This is consistent with hypothesis H1h.

There is also a weak correlation between the completeness of target costing implementation and the use of information networks, which facilitate the intensive feedback from customer and markets delivered to course/program designers (see Table 16). According to the statistics, both level-1 TC PTEs (60.0 percent) and level-4 TC PTEs (83.3 percent) have a high adoption rate of information network, suggesting this technique is equally prevalent in both level-1 and level-4 TC PTEs. However, according to the result of Cramer's v test, this association is not statistically significant (Cramer's $v=0.244$, $p=0.168$). Therefore, the hypothesis H1g was rejected.

Table 15: Crosstab of Adoption of Each Identified Management Practices by Level-1 TC PTEs and Level-4 TC PTEs (A)

	Level-1 TC PTE	Level-4 TC PTE	Total (%)
CT_ADO			
Adopter	60.0%	100.0%	75.0%
Non-adopter	40.0%	0.0%	25.0%
Total	100.0%	100.0%	100.0%
Cramer’s v test	Value	Approx. Sig. (2-tailed)	
Cramer’s v	0.447	0.011	
TMS_ADO			
Adopter	60.0%	100.0%	75.0%
Non-adopter	40.0%	0.0%	25.0%
Total	100.0%	100.0%	100.0%
Cramer’s V test	Value	Approx. Sig. (2-tailed)	
Cramer’s V	0.447	0.011	
PR_ADO			
Adopter	15.0%	75.0%	37.5%
Non-adopter	85.0%	25.0%	62.5%
Total	100.0%	100.0%	100.0%
Cramer’s V test	Value	Approx. Sig. (2-tailed)	
Cramer’s V test	0.600	0.001	
SRS_ADO			
Adopter	20.0%	75.0%	40.6%
Non-adopter	80.0%	25.0%	59.4%
Total	100.0%	100.0%	100.0%
Cramer’s V test	Value	Approx. Sig. (2-tailed)	
Cramer’s V	0.542	0.002	

Table 16: Crosstab of Adoption of Each Identified Management Practices by Level-1 TC PTEs and Level-4 TC PTEs (B)

	Level-1 TC PTE	Level-4 TC PTE	Total (%)
PLO_ADO			
Adopter	40.0%	33.3%	37.5%
Non-adopter	60.0%	66.7%	62.5%
Total	100.0%	100.0%	100.0%
Cramer’s v test	Value	Approx. Sig. (2-tailed)	
Cramer’s v	0.067	0.706	
POS_ADO			
Adopter	50.0%	83.3%	62.5%
Non-adopter	50.0%	16.7%	37.5%
Total	100.0%	100.0%	100.0%
Cramer’s V test	Value	Approx. Sig. (2-tailed)	
Cramer’s V	0.333	0.059	
CEM_ADO			
Adopter	50.0%	58.3%	53.1%
Non-adopter	50.0%	41.7%	46.9%
Total	100.0%	100.0%	100.0%
Cramer’s V test	Value	Approx. Sig. (2-tailed)	
Cramer’s V test	0.081	0.647	
IN_ADO			
Adopter	60%	83.3%	68.8%
Non-adopter	40%	16.7%	31.3%
Total	100.0%	100.0%	100.0%
Cramer’s V test	Value	Approx. Sig. (2-tailed)	
Cramer’s V	0.244	0.168	

Finally, 58.3 percent of level-4 TC PTEs had a reliable cost estimation model, slightly higher than the rate in level-1 TC PTEs (50.0 percent) (see Table 16). The adoption rate of this technique seemed to be moderate in both groups. No significant correlation has been observed between the cost estimation model and the completeness of target costing implementation (Cramer's $v=0.081$, $p=0.647$). Therefore, the hypothesis H1c was rejected. Moreover, I find that the adoption rate of a policy of "Not Exceeding Target Cost" is low in both level-1 TC PTEs (40 percent) and level-4 TC PTEs (33.3 percent). No significant correlation has been observed between the presence of a policy of "not exceeding target costs" and the completeness of target costing implementation (Cramer's $v=0.067$, $p=0.706$). Therefore, hypothesis H1d was rejected. One reason that may explain this is that a cardinal policy that "the target can never be exceeded" is often applied in the target costing process in Japanese companies (Cooper, 1995), however, the Western sense of target cost does not emphasize the intensity with which the rule "the target cost can never be exceeded" is applied (Kato, 1993). Thus, this finding is consistent with Kato's (1993) claim.

In conclusion, five out of eight hypotheses are accepted based on the result of the statistical analyses. Therefore, among the eight identified critical factors, five factors are significantly correlated with the completeness of target costing implementation, suggesting level-4 PTEs are more likely to adopt these management techniques/tools (critical factors) than level-1 TC PTEs. These five factors are 1) top management support; 2) cross-functional team; 3) performance rewards based on achievements of target costs; 4) structural reporting system; and 5) active participation of agencies,

suppliers, and other stakeholders. I also find that the adoption rate of information network is high in both level-1 and level 4 TC PTEs, suggesting this tool is equally prevalent in both groups. Although there is no significant correlation between the information network and the completeness of target costing implementation, this tool might still be important for developing an advanced target costing process. On the other hand, the adoption rate of cost estimation model is relatively moderate in both level-1 and level 4 TC PTEs, and no correlation has been observed between the cost estimation model and the completeness of target costing. This suggests the cost estimation model is equally important for both level-1 and level-4 TC PTEs but not as critical as other six factors for developing an advanced target costing process in PTEs. Similarly, no correlation has been found between the policy of “Not Exceeding Target Costs” and the completeness of target costing implementation. Moreover, the adoption rate of such a policy is relatively low in both level-1 and level-4 TC PTEs, suggesting this policy is not very important for developing an advanced target costing process in PTEs. Therefore, 1) top management support; 2) cross-functional team; 3) performance rewards based on achievements of target costs; 4) structural reporting system; and 5) active participation of agencies, suppliers, and other stakeholders are the five critical factors that might facilitate PTEs to reach towards a fully developed target costing process.

5.2.3 Differences between TC PTEs and Non-TC PTEs, and between Level-1 TC PTEs and Level-4 PTEs

Test for Validity and Reliability of the Variables

A Principal Components Analysis (PCA) was conducted on the 11 questions that measured organizational performance on 114 PTEs. The suitability of PCA was assessed prior to analysis. Inspection of the correlation matrix showed that all variables had at least one correlation coefficient greater than 0.3. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.738 with individual KMO measures all greater than 0.5, classifications of 'middling' according to Kaiser (1974). Bartlett's Test of Sphericity was statistically significant ($p = .000$), indicating that the data was likely factorizable.

PCA revealed three components that had eigenvalues greater than one and explained 32.37%, 15.87%, and 12.12% of the total variance, respectively. A VARIMAX orthogonal rotation was employed to aid interpretability. The interpretation of the data was consistent with the organizational performance attributes the questionnaire was designed to measure with strong loadings of quality level of services items on Component 1, cost reduction performance items on Component 2, and customer satisfaction level items on Component 3. The loading scores of most of the 11 measures were about 70 percent or above as shown in the last column in Table 17 and Table 18. Hence, it can be concluded that the classification was properly conducted.

Also, Cronbach's alpha was employed, to check the internal consistency (a measure of reliability) of the three variables. As presented in Table 17 and Table 18, Cronbach's

Table 17: Descriptive Statistics and Factor Analysis: Dependent Variables (A)

Performance items	N	Mean (Standard Deviation)	Factor Loadings
Cost reduction performance (Cronbach's $\alpha = 0.748$)	101	3.60(0.86)	
(1) Low rate of unprofitable program	112	3.81(1.09)	0.710
(2) Rate of facility occupancy is low (Reversed)	105	3.50(1.22)	0.704
(3) Cost reduction achieved by outsourcing	108	3.44(1.15)	0.773
(4) Achievement of cost reduction on average student	108	3.64(1.10)	0.762
Quality level of services (Cronbach's $\alpha = 0.745$)	109	4.38(0.43)	
(5) Sufficient expertise	114	4.52(0.58)	0.708
(6) Adequate learning resources	113	4.37(0.60)	0.744
(7) Good educational outcome	113	4.41(0.59)	0.780
(8) Support for teachers	111	4.23(0.59)	0.695

Table 18: Descriptive Statistics and Factor Analysis: Dependent Variables (B)

Performance items	N	Mean (Standard Deviation)	Factor Loadings
Customer Satisfaction level (Cronbach's α = 0.703)	106	4.58(0.35)	
(9) Positive feedback from students	113	4.63(0.49)	0.728
(10) Students willing to introduce the PTE to their friends	112	4.51(0.54)	0.785
(11) Students willing to come back if further education is taken	106	4.37(0.65)	0.791

alphas of all three variables were above 70 percent, and they are regarded as being reliable.

Tests of the Hypotheses

To answer the third research question (Has target costing brought any benefits for PTEs? And what is the impact of the completeness of target costing implementation on the benefits perceived by TC PTEs?), I examined the differences between the TC PTEs subsample (n=38) and non-TC PTEs subsample (n=76), and also between the level-1 TC PTEs (n=20) and level-4 TC PTEs (n=12), along three aspects including: cost reduction performance, quality level of services, and customer satisfaction level. Six hypotheses (H2a to H2f) are tested and the results are summarized in Table 19.

The descriptive statistics on cost reduction performance, quality level of services, and customer satisfaction level for the full sample (n=114) are presented in Table 20.

Summary statistics on the dependent variables indicate that the mean and median values of COST_RED are 3.599 and 3.600, respectively. The mean and median values of QUALITY_SER are 4.381 and 4.380. The mean and median values of CUSTOMER_SAT are 4.576 and 4.578. Among the three aspects of organizational performance, PTEs appear to have achieved a relatively delightful performance in customer satisfaction, while the overall performance of PTEs on cost reduction is not that satisfactory, especially in terms of reducing costs by outsourcing and improving the utilization rate of facilities.

Table 19: Hypotheses and Results (B)

Research question	Hypotheses	Results	Conclusion
Q3. Has target costing brought any benefits for PTEs? And what is the impact of the completeness of target costing implementation on the benefits perceived by TC PTEs?	H2a: TC PTEs have a better cost-reduction performance than non-TC PTEs.	Accepted	The adoption of target costing has positive influences on cost reduction performance and quality level of services in PTEs. Moreover, the effectiveness of target costing in reducing cost also increases when the TC PTEs have a more complete target costing implementation.
	H2b: TC PTEs have a higher quality level of services than non-TC PTEs.	Accepted	
	H2c: TC PTEs achieve a higher level of customer satisfaction than non-TC PTEs.	Rejected	
	H2d: There is no difference between level-4 TC PTEs and level-1 TC PTEs in cost reduction performance.	Rejected	
	H2e: There is no difference between level-4 TC PTEs and level-1 TC PTEs in quality level of services.	Accepted	
	H2f: There is no difference between level-4 TC PTEs and level-1 TC PTEs in the customer satisfaction level.	Accepted	

Table 20 Descriptive Statistics by PTEs in Different Subsamples (A)

Full sample and TC PTEs vs. Non-TC PTEs													
	Full Sample			TC PTEs				Non-TC PTEs				Test of Difference	
				TC_ADO=1				TC_ADO=2				TC PTEs vs. Non-TC	
	Valid n	Mean (Std.)	Median	Valid n	Mean (std.)	Mean Rank	Median	Valid n	Mean (Std.)	Mean Rank	Median	p-value	Mann-Whitney U
COST_RED	101	3.599(0.857)	3.600	33	4.210(0.148)	71.03	4.500	68	3.359(0.087)	41.28	3.375	0.000	461.000
QUALITY_SER	109	4.381 (0.427)	4.380	36	4.548(0.073)	67.94	4.750	73	4.242(0.048)	48.62	4.250	0.002	848.000
CUSTOMER_SAT	106	4.576(0.352)	4.580	36	4.645(0.060)	59.69	4.667	70	4.531(0.042)	50.31	4.667	0.121	1037.000

The last ten columns of Table 20 present the descriptive statistics on the TC PTEs subsample and the non-TC PTEs subsample, as well as the test of differences on these statistics across the two subsamples. On average, while TC PTEs have a cost reduction performance score of 4.210, non-TC PTEs have a cost reduction performance score of 3.359. A Mann-Whitney U test was run to determine if there were statistically significant differences in cost reduction performance score between TC PTEs and non-TC PTEs. Distributions of the cost reduction performance scores for TC PTEs and non-TC PTEs were not similar. The result suggested that there was a significant (at the 1 percent level) difference in cost reduction performance score (Mann-Whitney $U = 461$, $z = -4.806$, $p = 0.000$ two-tailed) between TC PTEs and non-TC PTEs. PTEs that adopted target costing have a higher score of cost reduction performance (Mean Rank = 71.03) compared to non-TC PTEs (Mean Rank = 41.28). This is consistent with hypothesis H2a, which suggests a positive impact of target costing adoption on cost reduction performance in PTEs. This result is also consistent with previous findings reported in the literature (Cooper & Slagmulder, 1999; Leahy, 1998).

On average, TC PTEs have a quality level of services score of 4.548, while non-TC PTEs have a quality level of services score of 4.242. Distributions of the quality level of services scores for TC PTEs and non-TC PTEs were not similar. Based on the results of a Mann-Whitney U test, the quality of services score in TC PTEs (Mean Rank = 67.94) is significantly (at the 1 percent level) higher than that in the non-TC PTEs (Mean Rank = 48.62) (Mann-Whitney $U = 848$, $z = -3.052$, $p = 0.002$ two-tailed), providing

support for hypothesis H2b. Therefore, the adoption of target costing has increased the quality level of services in PTEs considerably.

I find that TC PTEs have an average customer satisfaction level score of 4.645, which is slightly higher than that in Level-1 TC PTEs (4.531). Distributions of the customer satisfaction level scores for TC PTEs and non-TC PTEs were similar. However, regarding the customer satisfaction level, the score does not differ significantly between the TC PTEs and non-TC PTEs (Mann-Whitney $U = 1037$, $z = -1.552$, $p = 0.121$ two-tailed). TC PTEs have a similar level of customer satisfaction (Median=4.667), compared with the non-TC PTEs (Median=4.667). Thus, Hypothesis H2c is rejected, which suggests that the adoption of target costing has no significant influence on customer satisfaction level in PTEs. One explanation for this is that the overall customer satisfaction level in these surveyed PTEs is high (4.58 out of 5). Therefore, from PTEs' perspective, in terms of customer satisfaction, there might be less room for improvement.

I also use two subsamples (level-1 TC PTEs, level-4 TC PTEs) to examine the impact of the completeness of target costing implementation on the cost reduction performance, quality level of services, and customer satisfaction level by comparing the level-1 TC PTEs ($n=20$) with level-4 TC PTEs ($n=12$), along these three aspects. Three null hypotheses are formulated. Table 21 presents the descriptive statistics of the level-1 TC PTEs and the level-4 TC PTEs and the test of differences on these statistics across the two groups. On average, level-1 TC PTEs have a cost reduction performance score of 4.000, while level-4 TC PTEs have a cost reduction performance score of 4.406. A

Mann-Whitney U test was run to determine if there was a statistically significant difference in cost reduction performance score between level-1 TC PTEs and level-4 TC PTEs. Distributions of the cost reduction performance scores for the two groups were similar. The result indicated that the difference in cost reduction performance scores across the two groups is statistically significant at the 10 percent level (Mann-Whitney U = 49.000, $z = -1.829$, $p = 0.067$ two-tailed). Level-4 TC PTEs have a slightly higher cost reduction performance score (Median=4.750) than level-1 TC PTEs (Median= 4.500). Therefore, the null hypothesis H2d was rejected. The completeness of target costing implementation does have a positive influence on cost reduction performance in TC PTEs.

I find that level-4 TC PTEs have an average quality level of services score of 4.675, which is slightly higher than that in level-1 TC PTEs (4.500). Distributions of the quality level of services scores for level-1 TC PTEs and level-4 TC PTEs were similar. However, based on the results of a Mann-Whitney U test, the difference in the quality level of services scores between level-1 TC PTEs (Median=4.750) and level-4 TC PTEs (Median=4.875) is not statistically significant (Mann-Whitney U= 85.000, $z = -1.003$, $p = 0.316$ two-tailed). Therefore, the null hypothesis H2e was accepted, which suggests no significant difference between level-4 TC PTEs and level-1 TC PTEs in terms of quality level of services. The completeness of target costing adoption has no significant influence on quality level of services in TC PTEs. I also find that level-4 TC PTEs have an average customer satisfaction level score of 4.533, which is slightly lower than that

Table 21: Descriptive Statistics by PTEs in Different Subsamples (B)

Panel B: Level-1 TC PTEs vs. Level-4 TC PTEs										
Level-1 TC PTEs					Level-4 PTEs				Test of Difference	
TC_COM=1					TC_COM=2				Level-1 TC PTEs vs. Level-4	
Variables	Valid	Mean (Std.)	MeanRank	Median	Valid	Mean (Std.)	MeanRank	Median	p-value	Mann-Whitney U
Cost reduction	17	4.000(0.246)	11.88	4.500	10	4.375(0.239)	17.60	4.750	0.067	49.000
Quality of	18	4.500(0.104)	14.22	4.750	12	4.675(0.129)	17.42	4.875	0.316	85.000
Customer	18	4.689(0.076)	16.44	4.667	12	4.533(0.133)	14.08	4.667	0.451	91.000

in level-1 TC PTEs (4.689). Distributions of the customer satisfaction level scores for level-1 TC PTEs and level-4 TC PTEs were similar. Based on the results of a Mann-Whitney U test, the difference in the customer satisfaction level scores between level-1 TC PTEs (Median=4.667) and level-4 TC PTEs (Median=4.667) is not statistically significant (Mann-Whitney U= 91.000, $z = -0.754$, $p = 0.451$ two-tailed). Therefore, the null hypothesis H2f was accepted, which suggests there is no difference between level-4 TC PTEs and level-1 TC PTEs in the level of customer satisfaction. The completeness of target costing implementation has no significant influence on customer satisfaction level in TC PTEs. Again, perhaps due to the fact that both the quality level of services and level of customer satisfaction are high in these TC PTEs, with a score of 4.548 (out of 5) and 4.645 (out of 5) respectively, there is less room for improvement in terms of quality of services and customer satisfaction in TC PTEs.

In conclusion, the adoption of target costing has brought some benefits for New Zealand PTEs. The findings from this study suggest that the adoption of target costing has positive influences on cost reduction performance and quality level of services in PTEs. However, as the overall customer satisfaction level in the surveyed PTEs is high, no significant difference has been observed between the TC PTEs and non-TC PTEs in terms of customer satisfaction level. Moreover, the effectiveness of target costing in reducing cost also increases when the TC PTEs have a more complete target costing implementation. However, no significant differences in quality level of services and customer satisfaction level have been found between the level-1 and level-4 PTEs, as both groups seem to have quite satisfactory performances in these two aspects. Based

on these findings, the target costing technique could be considered as a viable cost management technique for New Zealand PTEs and it does improve the cost reduction performance and quality level of services in PTEs.

The next chapter summarizes the findings and limitations of this study, and provides some recommendations for further research in the future.

Chapter 6 Conclusion

New Zealand PTE sector has experienced rapid growth during the recent decades due to the increasing population of post-secondary students and the relaxation of regulatory impediments (Yazdifar & Askarany, 2012). The rise of the PTE industry has brought significant opportunities for the private education providers and has also led to intense and have been criticized for having sub-quality performance in the provision of education. So, while working on cost control for survival purposes, PTEs must make efforts to improve the quality of education. Hence, to help address these challenges it is necessary for PTEs to employ some sophisticated cost management techniques.

Target costing, as one of those cost management tools, has received recognition for helping companies remain competitive positions, and has been widely adopted by many companies (Cooper & Slagmulder, 1997b; Yazdifar & Askarany, 2012). Given the commendable reputation target costing has acquired as it relates to the necessity that exists for PTEs to adopt sophisticated cost management techniques, this study explores the occurrence and use of target costing in PTEs.

Three research questions have been examined in this study: 1). Has target costing been used in New Zealand PTEs? If so, what is the level of implementation? 2). What are the factors that contribute to a more complete implementation of target costing in the PTE environment? And 3). Has target costing brought any benefits for PTEs? And what is the impact of the completeness of target costing implementation on the benefits perceived by TC PTEs?

First, I explore whether target costing has been used in New Zealand PTEs. 38 out of the 114 respondents in this survey indicate that their PTEs determine the target cost based on the difference between expected selling price and desired profit margin during the service development process, which leads to a 33.3 percent adoption rate of target costing. Instead of simply reporting the adoption rate of TC in New Zealand PTEs, I also further examine the completeness of target costing implementation in these 38 TC PTEs, using the four-level taxonomy of target costing implementation developed by Yazdifar and Askarany (2012). I find that most of the TC PTEs (n=20) have the basic level of target costing implementation (level-1 implementation), suggesting that they only identify target cost as the difference between expected price and required profit. Among the 38 TC PTEs, 4 of them further decompose target cost for different activities and functions, subassemblies, cost items, designers or suppliers, and establish intense co-operation between different functions, which places them as level-2 TC PTEs. Further to taking the above steps, two of the TC PTEs have provided detailed cost information to monitor progress towards cost reduction, as well as continually compared the actual cost with the target cost. As a consequence, they are classified as level-3 TC PTEs. The findings also show that out of the 38 TC PTEs, 12 have an advanced level of target costing implementation (level-4 implementation) as they also adopt innovation or techniques (new class model, online class and so forth) to achieve the required target cost, outcomes and quality level.

Moreover, I also explore factors that contribute to a more complete implementation of target costing in the PTE environment. Based on the previous literature, I identified

eight behavioral/structural factors that might contribute to a more complete implementation of target costing. Eight hypotheses (H1a to H1h) are formulated to examine the relationship between these eight identified factors and the completeness of target costing implementation, by comparing the adoption rate of each identified management technique between two sample groups: level-1 TC PTEs and level-4 TC PTEs. The findings indicate a significantly higher adoption rate of five individual management techniques/tools (critical success factors) from the level-4 TC PTEs than that from the level-1 TC PTEs. Four factors are significantly (at either 1 percent or 5 percent level) associated with the completeness of target costing implementation, including 1) top management support in the implementation of target costing; 2) cross-functional teams, which are actively involved in the target setting process; 3) a structural reporting system; and 4) performance rewards based on achievement of target costs, while the correlation between the completeness of target costing implementation and the active participation of agencies, suppliers, and other external stakeholders in the program development is significant at the 10 percent level. I also find that the adoption rate of information network is high in both level-1 and level 4 TC PTEs, suggesting this tool is equally prevalent in both groups. Although there is no significant correlation between the information network and the completeness of target costing implementation, this tool could still be important for developing an advanced target costing process. Therefore, these six management techniques/tools might facilitate PTEs to reach towards a fully developed target costing process. However, both level-1 and level-4 TC PTEs have a relatively moderate adoption rate of cost estimation model, while the adoption rate of the policy of “Not Exceeding Target Costs” is low in both groups.

Neither of the two factors is correlated with the completeness of target costing implementation. Therefore, these two factors are not so vital for developing an advanced target costing process in PTEs.

Lastly, to address the last research question, three hypotheses (H2a to H2c) are formulated to examine the impact of target costing adoption on cost reduction performance, quality level of services, and customer satisfaction level in New Zealand PTEs by comparing the TC PTEs with the non-TC PTEs in respect to the three aspects. The statistical analyses reveal that TC PTEs do have significantly (at the one percent level) higher scores of cost reduction performance and quality level of services than non-TC PTEs, suggesting a positive influence of target costing adoption on cost reduction performance and quality level of services in PTEs. This finding is consistent with the arguments presented in prior studies. However, no significant difference in customer satisfaction level score between the TC PTEs and non-TC PTEs has been observed in this study, suggesting an insignificant influence of target costing adoption on customer satisfaction level in PTEs. One explanation for this is that the overall customer satisfaction level in these surveyed PTEs is high (4.58 out of 5). Therefore, as it relates to PTEs, there might be less room for improvement in terms of customer satisfaction level.

I also compare the level-1 TC PTEs with the level-4 TC PTEs in terms of cost reduction performance, quality of services and customer satisfaction level. Similarly, three null hypotheses (H2d to H2f) are used to examine the impact of the completeness of target costing implementation in regard to these three aspects. I find that level-4 TC PTEs

have a significantly (at the 10 percent level) higher score of cost reduction performance than level-1 TC PTEs, suggesting a positive influence of the completeness of target costing implementation on cost reduction performance in TC PTEs. However, no significant differences in quality level of services scores and customer satisfaction level scores between the level-1 TC PTEs and level-4 TC PTEs have been observed in this study, suggesting insignificant influences of the completeness of target costing implementation on quality level of services and customer satisfaction level in TC PTEs. Again, both the quality level of services and level of customer satisfaction are high in these TC PTEs, with a score of 4.548 (out of 5) and 4.645 (out of 5) respectively. Therefore, in regard to TC PTEs, there is less room for improvement in terms of quality of services and customer satisfaction level.

This dissertation, will hopefully, provide certain insight regarding target costing practices in New Zealand PTEs. The findings from this dissertation constitute and develop several contributions to the current literature. First, it provides the first empirical study on target costing adoption and implementation in New Zealand PTEs. The findings of this study suggest that target costing has been used in New Zealand PTEs and there is a relatively moderate adoption rate of target costing (33.3 per cent) in the PTE sector. However, more than half of the TC PTEs have only a basic level of target costing implementation, indicating that they only set target cost as the difference between expected price and required profit without taking any further actions to achieve it. Therefore, for the better use of target costing and maximizing the benefits perceived

from TC adoption, New Zealand PTEs still need to improve and optimize their TC process.

Second, this study has added new knowledge to the literature in regard to the factors that contribute to a more complete implementation of target costing. Five identified management techniques/tools (critical success factors) have been found statistically significant correlated with the completeness of TC implementation, including 1) top management support in the implementation of target costing; 2) cross-functional teams, which are actively involved in the target setting process; 3) a structural reporting system; 4) performance rewards based on achievement of target costs; and 5) active participation of agencies, suppliers, and other external stakeholders in program development. Therefore, these five management techniques/tools could contribute to a more complete target costing implementation in PTEs. This study has materialized the critical factors for a mature target costing implementation.

Finally, this study empirically examines the impact of target costing adoption and the completeness of target costing implementation in relation to cost reduction performance, quality level of services, and customer satisfaction level in PTEs, through statistical analyses. The findings from this study suggest that the cost reduction performance and quality level of services in TC PTEs are significantly (at the one percent level) higher than those in non-TC PTEs, therefore, there is a positive influence of target costing adoption on cost reduction performance and quality level of services in PTEs. Moreover, level-4 TC PTEs have been found that have a significantly (at the 10 percent level) higher score of cost reduction performance than level-1 TC PTEs, suggesting a positive

influence of the completeness of target costing implementation on cost reduction performance in TC PTEs. In conclusion, the adoption of target costing has improved the cost reduction performance and quality level of service in New Zealand PTEs. Moreover, the effectiveness of target costing in reducing cost also increases when the TC PTEs have a more complete target costing implementation. Therefore, the target costing technique could be considered as a viable cost management technique for New Zealand PTEs.

However, this study also has some potential limitations. Firstly, regarding the survey method, it may pose a potential threat in terms of the validity and generalizability of the findings. For example, the respondents were mostly CEOs, general managers or similarly positioned managerial staff in a PTE, and thus may exhibit a bias toward reporting higher organizational performance.

Secondly, although the reliability of constructs that used for measuring all three of the performance variables in this research are statistically reliable, as these instruments have not been used before, the constructs could be tested with new data and possibly refined with additional items.

Thirdly, the response rate is relatively low. Because of the inadequate distributional properties for most of the variables for using parametric statistical analyses, non-parametric statistical analyses are used to analyze data. The relatively small sample size reduces the statistical power of the tests used (the ability of the test to find significant effects, when they indeed exist), particularly for subsample analyses

(differences in organizational performance between TC PTEs at different implementation levels).

I recommend further studies to investigate the actual processes of target costing systems used in PTEs or other types of service organizations, and how these systems are actually designed and used through in-depth qualitative studies.

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Appendix A : Questionnaire

Part 1: this part will ask you some questions about the cost management practices in your organization. If you think this technique has not been used by your PTE, just choose "No" in Q1 and go to Q7 to answer the later part of this questionnaire.

Target costing is defined as a costing technique that uses the following formula to calculate a target cost during the new service/program development process. Central to the target costing concept is “reverse costing”. The target price is determined by the market price, combined with other factors, which may affect the target price. A required profit margin is then subtracted from the target price to derive the target cost.

“Target cost = Target selling price - required profit margin”

1. Does your company use the above-described method in its course/program development phase...or something similar?

Yes, we do as described (go to Q2)

Yes, but something similar (go to Q2)

No, we use other methods (go to Q7)

2. Does your organization decompose the target cost for different activities, departments, programs or cost items?

Yes, we do as described (go to Q3)

Yes, but something similar (go to Q3)

No, we do differently (go to Q7)

3. Do different departments and different groups co-operate to achieve the target cost?

Yes, we do (Go to Q4)

Yes, but not very intense (Go to Q4)

No, we don't (Go to Q7)

4. Is there detailed cost information provided to enable program/course designers to compare the impact of different program/course designs on cost reduction and to monitor progress towards the cost reduction objective?

Yes, there is (Go to Q5)

Yes, but not very much (Go to Q5)

No, there isn't (Go to Q7)

5. Does your organization compare the actual cost against target cost at different stages of new program/course development (i.e. design stage, before trial teaching stage, before full-scale recruitment).

Yes, we do (Go to Q6)

Yes, but not very often (Go to Q6)

No, we don't (Go to Q7)

6. After the target cost has been determined, does the program/course designer investigate what kind of innovation or techniques (i.e. new class model, online class, etc.) are needed to achieve the required target cost, outcomes and quality level?

Yes, we do

Yes, but not very often

No, we don't

Part 2: this part we will ask you to do self-assessment on your organization's performance in different aspects. We are interested in the organizational performance of all PTEs.

Use a 5 rating scale to indicate how much you agree or disagree with the following statements.

1	2	3	4	5	N/A
Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Not applicable

(The first section asks you to assess your organization's performance on cost reduction)

7. In our organization, the rate of unprofitable program or course in the long-term is very low.
8. In our organization, the rate of occupancy (teaching rooms, laboratories and library) is very high.
9. Our organization has achieved cost reduction by outsourcing some business functions.
10. The organization has achieved cost reduction in the average cost of students.

(The second section asks you to assess your organization's performance on quality improvement)

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11. The PTE has capacity to develop, design and deliver courses that are responsive to the needs of students and other stakeholders.
 12. There is sufficient expertise in teaching and subject knowledge that is current and relevant to the needs of learners and other stakeholders.
 13. Adequate and appropriate learning resources and equipment are accessible by learners.
 14. Our organization always achieves good educational outcomes.
 15. Our organization has done very well in encouraging and providing financial support for tutors to undertake personal development.

(The third section asks you to assess your organization's performance on customer satisfaction)

16. Most Students give positive feedback on our organization.
17. Most students are willing to introduce our organization to their friends and families.
18. Most graduates are willing to come back to our organization if they plan to take further education.

Part 3: This part is to identify management practices that used in different PTEs. Please select all the practices, which are relevant or undertaken in your organization.

19. Please select all the management practices, which are relevant or undertaken in your organization.

Top management support for target costing implementation

Cross-functional team

Reliable cost estimation models, which enables precise cost estimates and cost monitoring

High pressure on “not exceeding target costs”

Structural reporting system, which monitors target cost achievements and failures

Performance rewards based on achievement of target costs

Active participation of agencies suppliers and other external stakeholders in program development

An excellent information network, which enables the intensive feedback from customer and markets delivered to course/program designers

Part 4: this part asks about information about your organization

20. Do your organization receive any funding from tertiary education commission?

1. Yes
2. No

21. What's the student type in your organization?

1. Domestic students only
2. International students only
3. Both domestic and international students

22. Approximately how many employees are there in this organization? _____

1. 10-19
2. 20-49
3. 50-99
4. 100+
