Introducing remote printing into the publishing industry of a small, remote economy: the case of New Zealand

By

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A thesis
submitted to the Victoria University of Wellington
in partial fulfilment of the requirements for the degree of
Masters of Commerce

Victoria University of Wellington
2017

Table of Contents

Acknowledgements

First of all, I would like to thank Bronwyn Howell, Victoria University of Wellington, for her insightful and constructive comments and also valuable contribution in developing this project.

Next I would like to gratefully acknowledge the assistance of the respondents in the collection of data.

I would also like to thank Lincoln Gould for his willingness and assistance throughout this project.

Also I should thank my employer John Vallely for his assistance and insight through the development to completion of this project. It was greatly appreciated.

Abstract

This research investigates the expected effects on developed business models of introducing remote printing technology into the New Zealand book publishing industry. Remote printing technology will both address and improve on the constraints of geographical proximity and market size, enabling the New Zealand book publishing industry to collectively grow and experience future prosperity.

Aspects of technological innovation and consumer behaviour are examined to explore issues surrounding geographic proximity and supply chain inefficiencies. Criteria are developed using Just-In-Time (JIT) theory and Supply Chain Management (SCM) to evaluate where remote printing technology might best be integrated in the New Zealand book publishing industry's supply chain. The mutual effects between remote printing technology adoption and the expected effects on business models are evaluated, identifying which model is expected to provide the most significant benefits in a New Zealand context.

A case study of six New Zealand book industry respondents was conducted. Qualitative data was collected in semi-structured interviews with members associated within different sectors of the New Zealand book publishing industry. The interview data was supplemented with secondary data sources, including publicly available information about the New Zealand book industry. A within-case and cross-case analysis was performed around the research identified above.

By evaluating developed business models and assessing which model/s effectively address the New Zealand context, remote printing offers brick-and-mortar booksellers the ability to better compete with offshore online booksellers. The expected effects remote printing technology will have on the New Zealand book industry are presented. A major contribution to this study is that remote printing technology could in fact have a revolutionary impact on the New Zealand book industry, compared to what has been previously considered.

Keywords: New Zealand, Internet Selling, Remote Printing, Business Models, Supply Chain, Publishing, Brick-and-Mortar Bookselling, Case Study

Chapter 1. Introduction

This chapter provides the background and motivation for this research, identifies the research questions which will be investigated, and lays out the process in which this thesis will seek to answer it.

1.1. Background

The book publishing industry today is very different from what it was a decade ago. The phenomenon known as e-commerce has facilitated the way in which business can be conducted. Companies continue to integrate e-commerce into their existing business models as it enables them to explore new market avenues and grow the business (Clay et al., 2002). Iyer et al. (2002) define e-commerce as commercial transactions of goods and services being conducted electronically via computer networks including the Internet. The channels of e-commerce are growing at rates quicker than traditional brick-and-mortar booksellers (Lieber & Syverson, 2011). Increased competition from offshore online retailers has been positively assisted, as public acceptance for e-commerce has increased rapidly (Van Vliet & Pota, 2000). Based on the estimated population of New Zealand; as of June 2015 there were 3.9 million mobile phones connected to the Internet, which is 86 active connections for every 100 New Zealanders (MacPherson, 2015). Doolin et al. (2003) noted that New Zealand's rate of technological adoption is rather high compared to the rest of the developed world. Steel et al. (2013) identified that New Zealand has a limited domestic market size and is geographically isolated. E-commerce provides New Zealand consumers the ability to: (1) shop online at their convenience 24/7; (2) access previously unavailable goods; (3) purchase from a much greater range of stock; and, (4) receive the goods at a much more reasonable price in a quick timeframe (Chan & Pollard, 2003).

The survival of New Zealand brick-and-mortar booksellers has been greatly affected by e-commerce and its business model characteristics (Chu et al., 2012) including:

1. **Price.** The books sold on various Internet sites were 9-16% lower than the prices of the same books in brick-and-mortar outlets (Brynjolfsson & Smith, 2000). In a New Zealand context, Steel et al. (2013) suggests this is because of the country's

geographical distance from holding companies in the United Kingdom. Fabling (2015) noted that the administration and overhead costs associated with online selling are significantly lower when compared to traditional retailing.

2. **Inventory management.** Brynjolfsson et al. (2003) p.1581 explain that, "Internet retailers have nearly 'virtual inventory' through centralised warehouses and drop shipping arrangements with distributors". Amazon has the capability to only stock one or two copies in its warehouse – but still make the title available to the whole country – and restock it as quickly as customers buy books (Hansell, 2002). However, Amazon may not stock the book at all, instead operating on a platform connecting buyers with sellers. The average book may sit on a brick-and-mortar bookstores shelf for six months before it is brought (Hansell, 2002). The cost of holding this inventory in hundreds of stores is huge. Brick-and-mortar bookstores are limited by capacity constraints and are required to curate stock (Chu et al., 2012), which means in a New Zealand context reducing everything on offer to roughly 20,000 titles (Fabling, 2015).

3. **Product variety.** The weightlessness of online selling has enabled Amazon to provide 57 times more book titles than a conventional bookstore and provide easy access to over 2.3 million books in print (Brynjolfsson et al., 2003). Brynjolfsson et al. (2010) identified that product variety at Amazon increased fivefold over their eight-year study. If product variety increases, it will provide customers with more products they want (Ton & Raman, 2010), increasing consumer surplus gains; because customers now have access to goods that were previously unavailable at brick-and-mortar stores (Brynjolfsson et al., 2003). If a customer can increasingly get access to what they want online, their repurchase intentions will be considerably higher (Shih & Fang, 2005). The Internet offers greater access to information, and New Zealand consumers place increased value on superior product variety, because of the country's geographical isolation (Steel et al., 2013).

4. **GST.** GST legislation is based on a bricks-and-mortar approach, and fails to account for the digital environment (Lowe, 2015). Offshore online retailers supplying New Zealanders with low value goods are not required to register in New Zealand and pay tax (Gould, 2015). The New Zealand government is losing an estimated $200 - $300 million in revenue (Pullar-Strecker, 2015). The issue of GST is rather complex, and the

cost involved with imposing a GST threshold as low as zero will still not deter consumers from shopping online (McClay, 2015). Offshore online retailers would respond by marginally lowering their prices to account for GST (Steel et al., 2013).

5. **E-books.** Over the past two decades the growth of digital communications and media has had a tremendous impact on print demand (Davis, 2014). Publishing has become virtualised, the roles of authors, publishers, distributors, wholesalers, and customers are transforming as a contingent system (Ho et al., 2011). This electronic reading format has disrupted the market, and taken market share away from existing brick-and-mortar booksellers (Edmunds, 2013; PwC, 2014; Benhamou, 2015). Indications from the United States of America, suggest e-book sales have plateaued (Shaw, 2015), but technological innovation has enhanced the capabilities of other electronic devices including smart phones and tablets; which continue to demonstrate exponential growth (Fabling, 2015).

6. **Publisher Withdrawal.** Globally, the book industry has witnessed significant changes in the external environment, which have influenced operations internally, resulting in the global publisher pullback (Macdonald, 2013). There is no international distribution publishing house in New Zealand anymore (Fabling, 2015). As a result, brick-and-mortar booksellers have (1) had to increase their liabilities and carry more stock; (2) there is greater difficulty in judging order quantities to meet demand equilibrium; (3) the availability of older titles also presents further challenges; (4) purchase intentions maybe deterred by longer lead-times and the cost of the book; and, (5) the number of books published in New Zealand has also decreased to some degree (Fabling, 2015).

1.2. Motivation

The New Zealand publishing industry consists of businesses located in New Zealand, whose chief aim is the creation, distribution, and sale to consumers of books (PwC, 2014). New Zealand has one of the largest numbers of bookstores per capita than any other OECD country (Gould, 2015). One organisation recognised as being focused on supporting and growing the New Zealand book publishing industry is Booksellers New Zealand: a membership organisation of New Zealand booksellers. Some key roles of this organisation include writing

book reviews and author reviews, organising author events and literary festival coverage (Booksellers NZ, 2016). Currently, Booksellers New Zealand has launched an #efairness campaign, because it firmly believes that New Zealand is currently disadvantaged by a loophole that means that people do not pay GST or duty on low-value purchases when they buy from foreign websites (Booksellers NZ, 2015).

There has been much research conducted globally about the value of reading and the development of the economy. PwC, (2014) identified both direct and indirect economic benefits of the New Zealand publishing industry:

- achieved a gross output of sales directly contributing $160 million to New Zealand GDP;

- supported an estimated total of 5,160 Full-time equivalents (FTEs);

- creates a recognisable global brand for the country, enhancing the perception of other New Zealand goods and services, and improving New Zealand's ability to attract migrants and visitors;

- allows New Zealanders to tell their own stories and develop and express a distinctive national identity;

- the role that local educational publishing plays in the New Zealand curriculum, as a developer and distributor of New Zealand-specific materials.

1.3. Problem Statement and Research Questions

Lin et al. (2005) noted that typical features of the publishing industry includes: a complicated logistics channel, short life cycle of products, high product volume, and expert-oriented management. Fabling (2015) discovered, that like other industries, the book publishing industry is a knowledge intensive industry. Technological innovation and shifting consumer trends have been partly responsible for the changes that have been witnessed along the book publishing supply chain. A Nielsen Global Online Survey conducted in 2008, identified that 41% of items purchased online were books (Hall & Gupta, 2010). This evidence suggests that book buying behaviours have shifted away from the traditional purchasing channel towards the digital online purchasing channel. Technological developments have improved the logistic system and customer relationship management (Ho et al., 2011), while banking innovations have also enhanced Internet growth (Steel et al., 2013). A multichannel approach, known as

Omni-channel retailing has increased competition, and forced retailers and supply chain partners to re-evaluate their competitive strategies (Potter et al., 2015), because the customer is now far more engaged in decisions within the supply chain, rather than choosing from more limited options. Brick-and-mortar booksellers, "can no longer rely on barriers such as geography and customer ignorance to advance their positions in traditional markets" (Brynjolfsson et al., 2013 p.26). Offshore online retailers have been capable of utilising technology and e-commerce business models in order to establish a strong foothold in international markets, and Amazon is a prime example.

In turn, publishers are now conducting more conservative print-runs with the focus on becoming more efficient. If a publisher can no longer forecast strong sales for a specific title, the title is deemed to be near the end of its lifecycle and a reprint is not ordered. This decision results in the book being classed as out-of-print, which means access to copies becomes difficult. In one circumstance, it is known that when a publisher decided not to order a print-run, a bookstore owner decided to team up with the author and publish around 800 copies of the book. The bookstore owner paid for the materials to print the book, and have each copy bound. But holding excess stock that is assumed to be slow moving and cannot be returned presents a significant liability. But, what if New Zealand brick-and-mortar booksellers had the ability to utilise remote printing technology? How could remote printing technology reduce bookstore owners' liabilities and allow them to better manage their inventory?

Consequently, three research questions are raised which will be addressed in this thesis:
1. How can remote printing improve supply chain inefficiencies in the New Zealand book industry?
2. How could remote printing technology be introduced into New Zealand so that brick-and-mortar booksellers have the ability to access older stock?
3. What are the expected effects on different business models? and,
    a. where would this technology be best integrated along the supply chain?

1.4. Thesis Outline

This thesis draws upon e-commerce, Just-In-Time theory (JIT), Supply Chain Management (SCM), and Print-On-Demand (POD) literatures to address the research questions. This study evaluates an alternative approach to combatting the competition of offshore online retailers through the utilisation of remote printing technology. The aim was to assess the comparative effects of different means of introducing remote printing into New Zealand, to help brick-and-mortar booksellers improve their efficiency. From a theoretical view, a review of the literature found that most previous research has been conducted on a United States of America perspective, and it is assumed that the adoption of remote printing technology into the New Zealand book industry will be more beneficial in a New Zealand context, because of the country's unique circumstances of small scale and remoteness. The literature that addresses Just-In-Time theory and Supply Chain Management has focussed on other industries, and has largely excluded the book industry. The process of introducing remote printing technology into a geographically isolated and small market economy from a New Zealand perspective also tends to be inadequate.

The thesis is structured as follows. Chapter 2 focuses on reviewing the literature regarding business models, Print-On-Demand, Just-In-Time theory, and Supply Chain Management. Chapter 3 outlines the methodological approach undertaken for this inquiry. In Chapter 4 the application of both Just-In-Time theory and Supply Chain Management are used to develop a framework for evaluating various business models to identify the expected effects of integrating remote printing technology along different points in the New Zealand book publishing supply chain. The estimated costs of purchasing and running the printing technology are also presented. Chapter 5 analyses how remote printing technology would operate in New Zealand and the associated benefits it will have for the New Zealand book publishing industry. Chapter 5 also identifies which model for running remote printing technology will operate the most effectively, and addresses the issues reflective of the New Zealand context. Several implications regarding the technology are also identified, and the future business opportunities offered by the technology are also presented. Chapter 6 explains how remote printing technology improves supply chain efficiency in the New Zealand's book publishing industry. Chapter 7 summarises and concludes.

Chapter 2. Literature Review

This chapter begins by describing how e-commerce has effected existing business models and altered the book publishing supply chain. The discussion then shifts to Print-On-Demand identifying the benefits and implications presented by this technology, where it is available, and how it is currently being utilised. This discussion also includes a review on the relevant Supply Chain Management literature, relating Just-In-Time theory to Print-On-Demand, and analysing how this technology will improve on various inefficiencies reflective of the New Zealand context.

2.1. Reinventing business models

The book publishing industry has been deeply affected by the disruptive technologies of the Internet, and its relatively new business model - e-commerce. In fact, the publishing industry appears to have been rather slow to adopt this new business model (Martin & Tian, 2012). This new "e-supply" chain offers unprecedented business opportunities when enterprises fully integrate their knowledge, processes, and technology (Lan & Unhelkar, 2006). The publishing industry's failure to acknowledge and embrace technological development, has in fact challenged the traditional publishing industries survival. As a consequence, the New Zealand book industry has been greatly impacted. The disconnection in understanding of technology and how it applies to book publishing is the real source of concern for publishing companies, and brick-mortar booksellers. In today's customer relationship management, the customer is in control, and a business must realign its value chain around the customer to eliminate inefficiencies (Lan & Unhelkar, 2006). Two forces that have severely affected the industry include: technological change and demand shifts (Tat Keh, 1998).

A model adopted from Martin and Tian (2012) describes how internal and external forces effect the supply chain, requiring business models to be altered or reinvented.

2.1.1. External forces

Technological change, consumer behaviour and competition from different players along the supply chain, are all considered to be the most relevant external forces affecting the supply chain (Tat Keh, 1998; Martin & Tian, 2012).

2.1.1.1. Technological change

Technology continues to play a dominant role in changing the publishing industry. Almost all facets of the industry from the writing of a book to distributing it to final consumers, have been affected by technology, which comes in many forms (Tat Keh, 1998, p. 110). The Internet has been a disruptive technology (Martin & Tian, 2012), and is considered to be a dimension which is affecting the publishing industry (Tat Keh, 1998). It has eroded the traditional existing revenue models. E-commerce has revolutionised how books are sold all along the supply chain (Brynjolfsson et al., 2013). The development of digital formats has caused several challenges for the publishing industry. Specifically, the printing process has been directly affected by new technology (Tat Keh, 1998). The exponential growth in digital communication technology has enabled consumers to view material in a variety of formats. In turn, the process of distributing books to the final customers has been made easier with electronic mail, inventory management programs, and other tools (Stander, 1994, as cited in Tat Keh, 2012).

2.1.1.2. Consumer Behaviour

Changes in consumer behaviour continue to impact the existing book supply chain. Consumers in New Zealand are very technologically aware (Doolin et al., 2003), which according to Eisenhart (1996), is due to the exposure of computer technology, as it has made consumers more sophisticated and able to exploit these new technologies for their reading needs. While Tat Keh (1998) p.113 also mentioned, "As consumers grow in their technical sophistication, the demand function also changes. The product offering is no longer solely dictated by publishing houses". New technology has enabled the consumer to assume some of the traditional publisher's role in the choice and format of information, leaving the consumer with more control (Potter et al., 2015). Because the supply chain is more customer-centric, consumers no longer have to put up with longer lead-times and higher costs. Brick-and-mortar booksellers must now focus on improving customer relationship management (Ho et al., 2011).

2.1.1.3. Competition

Technological development and changes in consumer behaviour, such as online sales, have positively assisted offshore online retailers. They have incorporated new technology to manage the supply chain and customer relationships (Briggs, 2009). This has been accomplished through the adaption and implementation of the e-business model, which was designed through technological implementation in familiar and emergent forms (Martin & Tian, 2012).

Specifically, the focus of any business model or e-business model is on the interaction of the firm with its marketplace (Jansen et al., 2012). Nonetheless offshore online retailers e.g. Amazon and The Book Depository, have successfully exploited changes in consumer behaviour through technological developments (Martin & Tian, 2012). In return they have created a new market, and in the process attracted consumers from the traditional business model. Amazon has successfully introduced new forms of digital media, providing customers with alternative approaches to viewing content e.g. Kindle. As a global brand with unparalleled market reach (Martin & Tian, 2012), Amazon has gained a dominant position in the markets not just for new, but for used and rare books (Brynjolfsson et al., 2010). Adding further pain to brick-and-mortar bookseller's wounds, Amazon has incorporated a Print-On-Demand (POD) service (Brynjolfsson et al., 2006). This service offers the capability of a complete

publishing service, improving on the existing supply chain model. In affect it has enabled authors to self-publish and sell through Amazon's website, cutting out several supply chain players. Though, a much bolder move has seen Amazon now establish a physical presence in bookselling through the introduction of bookstores on university campuses (Howell, 2016), with further intentions of establishing physical stores in shopping malls.

2.1.2. Internal Forces

Internal forces affecting the supply chain include: organisational structure, organisational strategy, ICT strategies, knowledge, and niche markets (Martin & Tian, 2012).

2.1.2.1. Organisational structure

The measures publishers take to respond to challenges and opportunities in changing markets and technologies play a significant role in organisational structure. Considering New Zealand's market size and technologically aware citizens, international publishing houses have withdrawn from New Zealand, serving New Zealand customers through electronic options. Tat Keh (2012) suggests this is a result of the publishing industry's long history of mergers and acquisitions. Primarily technological developments and market changes have witnessed the conglomeration of publishing houses (Martin & Tian, 2012). Publishing houses have relocated to Australia, while others are located in the United Kingdom. This decision has affected all the players in the supply chain, especially brick-and-mortar booksellers. Lead-time is longer, and the costs of books have increased due to both administration costs and postage costs.

2.1.2.2. Organisational strategy

One obvious impact on organisation strategy is Internet trading. The Internet has built on existing selling methods, creating and delivering more value to customers through new business models i.e. e-commerce (Porter, 2001; Martin & Tian, 2012). Over the last decade, the balance between costs, revenues, and profits have been a matter of concern for book publishers (Martin & Tian, 2012). The costs of printing and distribution are high, but so too are the costs of developing electronic databases. A publishing strategy that employs both physical and digital formats is also considered to be expensive (Doolin et al., 2003). The

digitisation of content and the means of its delivery are already having a significant effect on academic publishing (Martin & Tian, 2012). In turn the growth of Printing-On-Demand (POD) has gained significant momentum. Publishers and brick-and-mortar retailers cannot choose to overlook the opportunities of digital publishing. Although, choosing which technologies to invest in, and which technologies present the most effective benefits is no easy task.

2.1.2.3. ICT strategies

The implementation of computer technology requires that organisational strategy and information communications technology (ICT) be effectively aligned with the organisations objectives (Savin, 2004; Martin & Tian, 2012). Publishers, distributors, wholesalers, and brick-and-mortar booksellers must be capable of successfully incorporating their operating systems, content management, marketing, and content delivery as part of their business strategy (Thompson, 2013). This is because strategic implications can result from digitisation, which affect workflows, warehousing and distribution, supply chains, and business models (Martin & Tian, 2012). A viable and coherent ICT strategy must be developed into the organisations objectives.

2.1.2.4. Knowledge management

Knowledge plays a huge role in organisations, specifically when considering the dimensions of supply and demand, with reference to technological development, and changes in consumer behaviour. All the players along the supply chain must know their customers' needs and wants. This is because knowledge enables organisations to learn, develop, and compete. Generally in the book industry this involves knowing the market, customers, products, services, methods, processes, competitors, employees, and regulatory regime (Martin & Tian, 2012). Primarily knowledge plays a huge role in organisational survival.

2.1.2.5. Customer Relationship Management (CRM)

Managing customers effectively is an essential part of a business strategy. After all, an organisations business strategy that aims to optimise profitability, revenue, and customer satisfaction, must focus on improving relations with customers, especially since processes are

becoming more customer centric (Thompson, 2013). Customer relationship management is particularly focused on developing relationships with customers by delivering them exactly what they want, when they want it, and through the most appropriate channels (Martin & Tian, 2012). Today, customers demand convenience through exceptional service. This has seen many retailers develop an Omni-channel business model (Brynjolfsson et al., 2013), whereby players along the supply chain provide several avenues in which business can be conducted with their customers.

2.1.2.6. Niche Markets

From a strategic point-of-view, players along the supply chain have worked out a practice that involves targeting a small market that has a group of customers with highly specialised needs. Kotler (2003) noted that niche markets define a customer base seeking a distinct mix of benefits. This practice has enabled certain players to diversify their business and receive positive growth prospects. Niche markets are becoming particularly important in an industry that is faced with constant conglomeration, technological innovation, and shifts in customer behaviour (Martin & Tian, 2012, p. 27).

2.3. Digital Printing

Book publishing is undergoing a transformation from the employment of traditional processes to digitisation (Martin & Tian, 2012). The introduction of digital printing has brought several benefits including: reduced costs, small print-runs, Just-In-Time/Print-On-Demand, lower stock holding, lower shipping costs, and local printing options. Technology has enabled a faster and more efficient publishing process.

2.3.1. Print-On-Demand (POD)

The New Zealand book publishing industry like other industries has its difficulties. A variety of solutions to deal with these challenges have already been be proposed. In recent years, the rise of Internet users, and the applications of new business models, has seen the introduction of remote printing, also known as Print-On-Demand (POD). As a form of digital printing, Print-On-Demand technology means that, "books, brochures and other written material could be

printed when they are wanted by a customer" (Larsson, 2004, p. 143). Print-On-Demand enables print-runs of single copies of titles, which are taken from digital files stored in a central location. It is now suggested, that remote printing could also prove a viable alternative and assist the New Zealand publishing Industry in overcoming several of its current challenges (Fabling, 2015).

2.3.1.1. Lightning Source and Global Connect

Ingram's Print-On-Demand technology powered by Lightning Source provides a simple way to meet customer demand without overprinting, enabling for more control over printing costs. Books can be distributed via Drop-Shipping arrangements or books can be printed in a warehouse whereby Ingram's Print-On-Demand system is integrated into the supply chain (Ingram Content, 2016). There is a Lightning Source plant being operated out of Melbourne, Australia through Harper Collins. Ingram also offers another Print-On-Demand technology referred to as Global Connect. The main difference between Ingram's products compared to other sites like CreateSpace is that Ingram's technology is a business-to-business operation, and its clients are all book publishers not authors. CreateSpace is designed more specifically for authors. Many authors prefer to utilise Ingram's products and services based on the company's distribution channel and being the world's largest book wholesaler reaching 133 countries (Friedlander, 2013).

Because Lightning Source is utilised by global publishers, and both distributors and wholesalers (Milliot, 2015), with relation to New Zealand, major publishers have withdrawn out of the country, and supply from Australia. Therefore, by introducing Ingram's Global Connect technology, it will allow publishers in any country to print and distribute titles in countries where Ingram has its own operations as well as in countries of one of its partners (Publishers Weekly , 2011). Specifically, Global Connect will permit publishers to offer books for sale in other countries, and not have to worry about such issues of high fixed costs and shipping.

2.3.1.2. Perceived Benefits of Print-On-Demand

For publishers, the benefits of Print-On-Demand technology, allow publishers to generate additional revenues from previously published books with minimal investment; test market new releases with minimal risk; test demand to avoid pre-emptive shipping of only to order or low stock return titles, as well as end of life stock; and keep marginal titles in circulation without paying for additional print-runs (Snow, 2001), which presents publishers with greater flexibility and unprecedented business opportunities. Ho et al. (2011) identified that in certain circumstances, Print-On-Demand publishing has overtaken the amount of traditional book publishing. This is because it is increasingly possible to print much more precisely in terms of both quantities and timing. Set-up time for digital presses are extremely quick (Martin & Tian, 2012). It should also be recognised that being able to print shorter-print runs, makes it more possible to print locally and avoid expensive shipping costs.

Another area where Print-On-Demand technology has been widely employed is by publishers in the academic and scholarly fields. It has enabled these publishers to better manage their inventory and keep backlist titles available (The Economist, 2010). Furthermore, Wilson-Higgins (2011) suggest Print-On-Demand technology could aid libraries with a strategy to deal with increasing user demands with declining material budgets. As a result of a global publishing pullback, it has created difficulty for authors to get their work published. However, Print-On-Demand technology has enabled these authors to self-publish their work (The Economist, 2010), while there are many websites that allow authors to bypass sceptical publishers. In the process authors upload their work free of charge, and pay only when they sell a book. Brick-and-mortar booksellers in overseas markets such as Barnes and Noble have incorporated Print-On-Demand into its business model (Frank, 2014), a move that is considered to be a strategy for picking up more self-publishing, while expanding into another segment of the book market.

Brynjolfsson et al., (2006) analysed Amazon's sales patterns and found that 30% to 40% of its sales are in books that wouldn't normally be found in a conventional brick-and-mortar bookstore. They identified that by supplying this 30%-40% consumer surplus with these relatively obscure book titles, exceeds $1 billion annually. Traditionally, this would be problematic for brick-and-mortar booksellers because they have to allocate shelf space for each of the titles they stock. If print-on-demand systems were in place, this issue could be averted.

Brynjolfsson et al., (2006) explained that books printed using traditional offset printing technologies are profitable only in volumes of 1,000 or more. When considering readership in niche markets, this traditional method is not economically feasible. A large print run like this involves risk associated to printing costs, and unknown demand. Koschat (2008) noted that a basic yet critical success element of marketing and retail operations is the ability to match inventory with demand. If Print-On-Demand technologies were utilised, authors and small publishers can print titles when they are demanded. Since titles could be printed one at a time, authors and publishers do not need to incur up-front costs from initial print-runs and the risk of uncertainty in market demand (Brynjolfsson et al., 2006).

2.3.1.3. Intellectual Property Rights in the Digital Environment

Generally, in the publishing context, authors own the copyright of their works. Intellectual property affects a publisher's potential for commercial success. Publishers add value to authors' manuscripts by employing editors, designers, layout artists, illustrators and indexers to polish and package the books, and to undertake extensive sales and marketing campaigns to capture the attention of the public (WIPO, 2013, p. 30). In the digital environment, publishing is in the process of transforming its value chain and business models. Content creators, freelance workers and publishers are all owners of copyright. Nonetheless, publishing rests on a contract between the author and the publisher. The author licences the rights of reproduction and distribution, which provides the publisher with legal means necessary for publication (WIPO, 2013, p. 38). Generally, the authors of novels and textbooks, are paid royalties by the publisher. This is a percentage based on actual sales of the book, so the author will receive a share of the sales price. Usually, if a book is classed 'out-of-print' the rights are reverted to the author. However, through remote printing, the authors work would be kept in print, and when further copies are sold, the author would receive their margin.

2.4. The book publishing supply chain

The publishing industry has tended to be inefficient, particularly in the terms of printing. Cooper and Ellram (1993) p.13 define supply chain management as, "an integrative philosophy to manage the total flow of a distribution channel from the supplier to the ultimate user". Houlihan (1985) viewed the supply chain as a single entity rather than fragmented functions

responsible for such areas as purchasing, manufacturing, distribution and sales. Voukurka and Lummus (2000) p.95 stated that, "The goal of supply chain management is to achieve improved customer satisfaction at reduced overall costs". Reduced cycle time improves responsiveness to customer demand (Vokurka & Lummus, 2000). Globalisation and recent economic trends have created complex supply chains (Varma et al., 2006). Supply chain management is relevant to competing in the market, while also addressing responsible behaviour at all stages of the supply chain.

Furthermore, "The supply chain is considered to be a business model, which defines how a firm delivers value to customers, entices customers to pay for value and converts those payments to profit" (Trkman et al., 2015, p.589). Kaufman (1997) p.14 notes that the purpose of supply chain management is to "remove communication barriers and eliminate redundancies". Ketchen and Giunipero (2004) state that supply chain should be considered as an integral part of strategic management, while, Simatupang and Sridharan (2002) note that in order to be effective in matching supply to demand, collaboration between both the manufacturers and retailers is a must. New competition is affecting every aspect of how networked enterprises organise and operate. Therefore, given the nature of business, "if individual enterprise want to thrive in the new landscape, it has to understand how supply chain networks work – and how they can make them work better" (Jain & Benyoucef, 2008, p. 469). Davis (1993) noted there are three distinct sources of uncertainty that hinder the supply chain: suppliers, manufacturing, and customers, while Riley (1985) suggests that three elements necessary for the supply chain to operate efficiently include: (1) recognising end-use customer service level requirements; (2) defining where to position inventories along the supply chain; and (3) developing policies and procedures for managing the supply chain as a single entity.

The traditional view of a supply chain is a network of entities through which materials flow from suppliers to customers (Jain & Benyoucef, 2008, p. 470). The primary objective of traditional supply chain management is to minimise the total cost of transportation, warehousing, inventory, order processing and information systems (Jain & Benyoucef, 2008). Increasing competition has forced firms to reconsider and reframe their supply chain strategies time and again (Sharma & Sisodia, 2014, p. 1046). This is because supply chains encounter a competitive environment influenced by macroeconomic issues, market conditions, fluctuating demand of end-users, and changing needs in core processes within and across companies (Christopher & Holweg, 2011; Trkman et al., 2015). Every firm in a supply chain must

continually change its business model/s. This is because of the uncertainty that can arise from a variety of both internal and external sources including: suppliers, customers and competitors (Trkman et al., 2015). There is an ever increasing cost of managing the supply chain, and Ganeshan (1999) notes that supply chain carrying costs are up to 40%, but by scientifically managing them, huge economic benefits can relate. Integrating remote printing technology into the existing supply chain can prove a viable option.

Integration and implementation of supply chain management practices is essential from a strategic view-point. Power's (2005) study found that whether the process for integration is vertical or virtual, the requirement for integration of supply chains is inherently strategic, and a potential source of competitive advantage for multiple trading partners. More importantly Power (2005) identified that an emergent theme from the literature is the importance of taking a holistic view and systemic view of the supply chain, as it acts as an impediment to more extensive implementation. Previously the book publishing industry has witnessed a disjointed set of efforts to overcome difficulties. Manthou et al., (2004) note that e-business specifically has gained from moving to a virtual supply chain. However, the real challenge is developing a more effective and integrative supply chain to promote adoption and implementation of enabling technologies and methods.

Sharma and Sisodia (2014) compared various inventory policies (economic order quantity, periodic ordering, and stock to demand) and the effects they had on various performance metrics at different levels of the supply chain. The study found that having an integrated supply chain in fact optimises the supply chain as a whole, rather than aggregating local optima. Burns et al. (1985) and Blumenfield et al. (1985) directed study towards distribution efforts made to minimise inventory holding, production, and transportation costs associated with production and distribution. Levy (1997) p.95 stated that, "distance only increases the amount of inventory in the supply chain, but also results in the need for higher levels of buffer inventories". This demonstrates why remote printing would be beneficial if implemented in New Zealand given geographical proximity (Steel et al., 2013), reducing the need to hold excess stock in the supply chain. A customer order for a book would no longer need to travel through the long supply chain, further improving cycle time. Cohen and Lee (1988) reported on a model framework and analytic procedure for evaluating the performance of the overall supply chain. They suggest the key innovation lies in the integration of the entire range of inventory subsystems and the associated linkage of decisions and performance measures. Because supply chains can

be rather complex, Baganha and Cohen (1998) note that understanding the dynamics of supply chains is important for various reasons. Lee et al., (1997) note this is because an understanding of supply chain dynamics can reduce bullwhip effect, increase customer satisfaction, and permit the smooth flow of parts and materials from start to end without out-of-stock situations.

It has also been investigated how technologies, systems, and paradigms can be used for the effective management of networked enterprise (supply chain networks), specifically long supply chains. Jain and Benyoucef (2008) identified that competition in the future will not be between individual enterprises, but between competing supply chains. They suggest the main reason for this is global competition, which is forcing enterprises to focus on their core competencies. Vidal and Goetschalckx (1997) reviewed the evolution of strategic production-distribution models of global supply chains, and concluded that there is a need for more comprehensive models as well as specialised solution methods. Meixell and Gargeya (2005) reviewed model-based research for global supply chain design, and assessed the fit between the research literature and the practical issues of global supply chain design. They found that, although most models resolve a difficult feature associated with globalisation, few models address the practical global supply chain design problem in its entirety. They stated that, "global supply chain models need to address the composite supply chain design problem by extending models to include both internal manufacturing and external supplies locations" p.547. They further concluded that, "global supply chains need further emphasis on multiple production and distribution tiers in the supply chain" p.547, and lastly they concluded that, "performance measures used in global supply chain models need to be broadened in definition to address alternative objectives" p.547.

As a global publisher, Harper Collins has recognised that their supply chain must meet the needs of their customers (Booksellers New Zealand, 2011). They have identified that for Australia and New Zealand, getting books into the hands of consumers in a timely fashion, will help them compete with international retailers and meet the expectations of readers (Booksellers New Zealand, 2011). Sharma & Sisodia (2014) p.1048 noted that "As a consequence of cost pressure from the supply side and increasing competition in the demand domain, a two pronged strategy is needed which aims to optimise the cost without sacrificing the optimum service level". Therefore, an efficient modern solution known as remote printing is in the framework. The aim is to have the entire Harper Collins book catalogue available for customers in all major territories and ready for delivery within minutes. Benefits to the

publisher include: a reduction in their carbon footprint, the shipping itself will be more efficient, and hundreds of books that were previously unavailable to keep in stock, will now become available within minutes of an order being placed. As stated by Davis (1993) p.45, "changes to product and process will stimulate reductions in the uncertainties plaguing each node in a supply chain, namely, supplier performance, manufacturing, and customer demand. The traditional book publishing supply chain involved moving physical copies of books from printers to publishers to wholesalers to brick-and-mortar booksellers to consumers. Steps in this process can be skipped and go backwards (book returns), which is between the publisher and distributor/wholesaler, and between the distributor/wholesaler and retailer (Figure 2).

Figure 2

The Traditional supply chain is comprised of "independent and interconnected organisations, situated at various points along the chain, which perform certain tasks or functions for which they are remunerated in some way" (Martin & Tian, 2012, p. 134). This includes: the creation and development of content, design, quality control, marketing, printing, and sales (Thompson, 2013). The traditional supply chain is rather complex, and embodies an extensive range of products, many different members and many familiar processes: publishing, buying, distribution, selling, and returns. Cope (2001) noted, that for physical copies of books, there was ample change in the supply chain beyond bypassing the bookstore, although with e-books

there are more fundamental changes in getting books from manufacturers to consumers. This implies that digitalisation is redefining supply chain strategies (Martin & Tian, 2012). New Zealand brick-and-mortar booksellers have attempted to integrate e-commerce into their existing business models, but still encounter difficulty in meeting customer demands with the same effectiveness as their counterparts in the supply chain. This is because books still have to travel through longer distribution channels (Vanier, 1973), effecting cost, lead-time, demand, and availability. The introduction of e-business and remote printing technology has enticed alterations in the supply chain, specifically as to how books can be distributed (Figure 3).

Figure 3

As a result, Publishers can sell directly to Customers. Authors can choose to self-publish, or sign with other intermediaries i.e. Amazon. The introduction of Print-On-Demand technology has created further possibilities, while enhancing the efficiency of the supply chain.

2.4.1. Printing-On-Demand and Just-In-Time

Not only is an integrated supply chain important for successful distribution, but so is the strategy that is employed to manage it. One of the real difficulties faced by every player on the traditional supply chain is demand forecasting, as Davis (1993) mentioned, the real difficulty

is knowing how much inventory to hold and where to hold it. A traditional print-run begins in units of 1,000 and in certain circumstances this results in oversupply, resulting in a low inventory turnover and an increase in the cost of inventory holding. But with the advent of digital technology, a large book run can be followed by a much shorter 50-book run, followed by a 450-book run, without stopping (Szenberg & Ramrattan, 2015).

One method that has been designed to achieve inventory reduction costs is Just-In-Time (JIT), and in fact JIT has revolutionised manufacturing (Womack, Jones, & Roos, 1990). Pioneered by the Japanese, JIT is an integrated set of activities designed to achieve high-volume production using minimal inventories of parts that arrive at the work station exactly when they are needed (Jacobs & Chase, 2013). JIT is typically applied to repetitive manufacturing, which is the same or similar items made one after another. Zipkin (1991) notes that since JIT began, it has evolved into a philosophy of continuous improvement and elimination of waste. Vokurka and Lummus (2000) p.91 explain that, "JIT implementations include: quality control improvement; lead time reductions; vendor performance improvement; total preventative maintenance continuous improvement; and, the elimination of waste". In the 21st century three main strategic imperatives have emerged including: low cost, high quality, and improved responsiveness (Vokurka & Lummus, 2000). However, another strategic imperative that must also now be considered is product variety. Today customers are demanding more variety, better quality and service including: reliability and faster delivery. By employing JIT philosophy, manufacturers can better meet customer requirements. This is because JIT is similar to the concept of total quality management, as its ultimate goal is meeting and exceeding customer requirements (Vokurka & Lummus, 2000). If remote printing technology was to be implemented by the New Zealand book publishing industry, customer relationship management could be further improved. The JIT production process enables manufacturers to resolve trade-offs between quality, cost efficiencies, and shorter cycle times.

2.4.1.1. Quality

Since 2010 the book industry has seen increasing levels of customisation provided. Originally if a book was highly visual and included drawing or photographs, traditional printing offered a better reproduction (Tat Keh, 1998). But further innovation has seen the quality of digital printing begin to meet market expectations, enabling smaller production runs and even Print-

On-Demand solutions for the mass market (Potter et al., 2015). As Schiff (2014) mentioned, comparing a title that is printed using offset printing to a title that has been digitally printed is now rather difficult to distinguish.

2.4.1.2. Cost

The economics of traditional printing are driven by the length of a print-run; as the length grows, the cost per-unit comes down (The Economist, 2010). From the publisher's perspective, it is understandable when a re-print is not issued on certain titles because the demand may not meet the supply. Excess stock, which may also be slow moving not only ties up capacity, but it also has a cost because the stock is languishing in a warehouse or on a bookshelf. Additionally, traditional offset equipment is very expensive, difficult to set-up and hard to operate (Brooks, 2013), while a large team of individuals with specialised skills is also required. This demonstrates that there is a high cost per-unit for short print-runs when using the traditional printing method. This is because the high costs of short print-runs are driven primarily by the set-up-cost of the press and bindery equipment. Many of the high costs associated with traditional printing are minimised through digital printing.

As technological innovations made breakthroughs, digital printing began to be utilised by publishers as a substitute to manage demand and supply uncertainty and high costs. Publishers began to distribute content through electronic means, specifically Internet websites and e-books (Thompson, 2013), as it was recognised that there are very little costs associated in this method of production. As further technological innovation occurred, the development of Print-On-Demand technology was established, and slowly incorporated by publishers once they recognised the potential benefits. Specifically, Print-On-Demand is designed to be more efficient and cost effective when considering shorter print-runs, as Larson (2004) p.143 notes "the primary advantage of POD is that copies of a book or brochure could be produced as they are needed". In turn, this allows for waste to be reduced. This whole process of Print-On-Demand technology is rather familiar with lean manufacturing; the elimination of mass produced material. Both Boyd et al., (2002) and Biggart and Gargeya (2002) analysed the effects that JIT systems had on financial ratios, specifically asset turnover and return on assets. Both these studies indicated that JIT adoption had positive effects on these financial ratios.

Furthermore, Kros et al., (2006) analysed the impact of the adoption of JIT production systems by different equipment manufacturers (OEMs) on the inventory profiles of their suppliers. They examined five financial measures of inventory management performance. Three specific industry sectors where OEMs had adopted and implemented JIT principles were identified. These sectors were the automotive, electronics, and aircraft industries. These industries were chosen due to their history and nature of JIT adoption and implementation. It was found that given mixed results highlighted in the data analysis, inventory management practices and their results do not appear to be consistent across the three industries studied. As the three industries were inherently different (made-to-stock: auto and electronics, and made-to-order: aircraft) it appeared that JIT systems used in each of the industries studied may have been modified somewhat. One assumption from this finding suggests that industries altered the JIT system because of the number of units being produced in order to achieve greater efficiency. More importantly, this finding in the research suggests that JIT systems can be modified in order to meet the needs of different industries including: the book publishing industry.

Following the mergers and acquisitions in the global publishing industry that led to the withdrawal of publishing houses from New Zealand, the travel cost of freight has also increased. But if remote printing was adopted by the New Zealand publishing industry, it would reduce the administrative costs of importing. Accordingly, Helo (2004) noted that the location of first, second, and third tier suppliers is becoming increasingly important due to the increasing costs of transportation. Therefore, if Print-On-Demand technologies are to be implemented in the New Zealand book publishing industry, the location of facilities play an important role. Primarily, the facilities where the operation is being undertaken would need to be in an area that has easy access to regular shipping schedules in order to facilitate the demand schedules.

2.4.1.3. Lead-time

Long cycle times are a key reason as to why a book should be stocked at any level of the supply chain including brick-and-mortar booksellers, wholesalers, and publishers. However, there is the cost of holding inventory, and as identified, conventional booksellers simply do not have the capacity to stock everything on offer. Effective customer relationship management requires that the service provided meets and exceeds customer expectations (Ho et al., 2011). This is even more so in a geographically isolated country such as New Zealand. Service consist of two

critical factors: (1) lead-time, time from when the order is placed until the book is delivered; and, (2) integration with normal customer ordering patterns. When considering the traditional publishing model, it is simple to recognise why a book must be stocked at every level of the supply chain. When a customer wants a book, the book must be in stock. Evidence suggests this is often not the case, and the long-supply channels the book has to travel through to get to the end-user only further increases the cycle time. This is simply not acceptable in today's world, given the technological capabilities of consumers. Not only is a sale lost, but the competition i.e. offshore online retailers win again. What is more problematic, is that, when the customer learns they can get what they want, at an acceptable price and promptly, their repurchase intentions will be considerably higher (Shih & Fang, 2005).

The Introduction of remote printing into the New Zealand book publishing industry would cut delivery time down significantly, reducing lead-time, enabling better service, and improving customer relationship management. Offshore online retailers will most likely not be able to offer the same estimated delivery time given New Zealand's geographical proximity from the United States of America and the United Kingdom. Rather their only inherent advantage lies in their lower pricing. But as Fabling (2015) discovered, customer gratification appears to be more of an issue in New Zealand.

The current competitive environment emphasises lower cost, high quality products in a greater variety (Vokurka & Lummus, 2000). Both logistics and distribution have become critical links of supply chains. Ha, Li, and Ng (2003) investigated the role of delivery frequency on supplier competition, while further analysing how the nature of competition (price or delivery) and the decision rights (who is responsible for handling logistics and making price and/or delivery decisions) in a supply chain affect the performance of individual firms. This was achieved by positing a two-level supply chain model in which there is one customer with a constant demand for product, and two suppliers. Production was assumed to be instantaneous, an approximation of JIT manufacturing, but transportation is not. Their analysis demonstrated that the customer is better off under delivery competition, while the suppliers are better off under price competition. It was also identified that higher delivery frequency is a source of competitive advantage, and it has the potential to lead to more intensive price competition.

2.4.1.4. Greater access to stock

The effects of globalisation have witnessed many organisations in an industry merge with one another. The book publishing industry has also seen several publishing houses merge. The nearest publishing houses from New Zealand are located in Australia, and Fabling (2015) identified that this has provided New Zealand brick-and-mortar booksellers with greater pools of stock to draw from, and order fulfilment rates have significantly increased. Although this suggests greater variety, it also means brick-and-mortar booksellers have more difficulty in curating their inventory. This implies that you need to know your market and your customers reading preferences. Given limited demand, and market size, stocking peculiar titles can result in slower inventory turnover. In turn, customers demand variety (Steel et al., 2013). If the New Zealand book publishing industry implemented remote printing, perhaps this would counteract the problem, as these peculiar titles for example, would only be printed when demanded. The implementation of JIT purchasing systems "can result on average, in reduced inventory costs, shorter lead-times, and improved productivity for buying organisations" (Kros et al., 2006, p.227), which is imperative in a New Zealand brick-and-mortar bookselling context. Nonetheless pull-based systems are faulted in that they require demand to remain stable during supply lead-time (Lyons et al., 2004). This indicates that if remote printing is to be integrated into the New Zealand book publishing supply chain, it would require a large capacity and a large title base for demand to remain constant.

2.4.1.5. Waste management

Print-On-Demand was originally developed to help publishers manage the economics of deep backlists; keeping titles in print without being forced to print and store piles of physical books; this approach is known as made-to-order. Sustainability is about doing more with less, it's about being efficient and productive, so that resources (raw materials, labour, time) are not wasted. The effectiveness of JIT as a pull-based system is related to inventory reductions (Yeh, 2000), and Lieberman and Demeester (1999) noted that, raw materials in this system tend to exhibit immediate reduction. Kros et al. (2006) p.225 suggest that, "the level of finished goods inventory would also be reduced as a result of improvements in process reliability and reduced cycle times".

The Economist (2010) predicted that about 30% of books in the United States of America are returned to the publisher. This implies that in a New Zealand context, the rate of book returns could appear significantly higher considering New Zealand's unique circumstance. If remote printing was installed in New Zealand, it could benefit the publishing industry by improving several factors including: warehousing, transportation, inventory, customer service, and purchasing.

2.5. Summary

It was widely believed in the 1990's that the end of the book was near, but technology has not killed the book, rather it is enhancing our ability to produce and distribute printed books (Staley, 2003). Recent statistics show that book sales in the New Zealand print book market as of October 31st 2015 were up 9% for the year ending, with the total value of those books sold increasing by 3% (Picken, 2015). This evidence suggest that New Zealand brick-and-mortar booksellers are adopting to new market conditions, which is reflected in the higher sales. The literature shows that e-commerce has increased competition between offshore online retailers and brick-and-mortar booksellers. Globalisation has removed traditional trade barriers, enabling business to be conducted anywhere and anytime over computer networks. The e-commerce business model has created multiple avenues in which business can now be conducted more efficiently and effectively. Given technological development, and shifts in consumer behaviour, the business of publishing is now in the readers (Martin & Tian, 2012), and therefore technology and publishing must be considered synonymous because technology-based solutions, rather than content appears to be the determinant of survival.

There has been a disconnect between management and its understanding of technology (Tat Keh, 1998). There is a need for new business models and value propositions for book publishing to survive the new information economy (Martin & Tian, 2012). By providing a theoretical understanding of how the New Zealand book publishing industry can better compete against offshore online retailing through the implementation of remote printing technology; how remote printing technology can be integrated using different business models; and, the expected effects of integrating remote printing into the existing book publishing supply chain, will be investigated. It is predicted that this technology can help improve on several of the book industry's challenges. This field of enquiry is important because it will explore the potential

benefits of how integrating technology can benefit the book industry, as other academics have strongly affirmed the primacy of business solutions over technological ones (Martin & Tian, 2012). Previous research conducted by Kros et al. (2006) analysed three industries (automotive, electronics, aircraft) identifying how the implementation of Just-In-Time systems benefited these industries. The research demonstrated that Just-In-Time systems can be modified to meet the needs of different industries. This study will attempt to demonstrate how Just-In-Time systems can be modified to the New Zealand book publishing industry, to establish a more level playing field against offshore online retailers, while identifying a suitable business model with unique value propositions.

Chapter 3. Research Methods

This chapter outlines the focus of the research; investigating the expected effects on business models of integrating remote printing along the book publishing supply chain to address issues in the New Zealand context. The research objectives are also discussed. Next, the research process undertaken is described, and its applicability is discussed. Finally, a brief summary of the participants is provided.

3.1. Research Focus and Objectives

Following the literature review, the main focus of the research was structured as shown below in figure 4:

Figure 4

The objectives of this research are to: (1) establish how remote printing technology can be integrated at different stages in the supply chain; (2) identify the pros and cons of integrating remote printing at different stages in the supply chain; and, (3) identify the most appropriate position along the book publishing supply chain to integrate remote printing technology, to address the New Zealand context, improving lead-time and customer relationship management. This study will contribute to the lean manufacturing, Just-In-Time theory, and Supply Chain Management literatures. It is proposed that findings from this study, and the evaluation of

business models, can then be utilised and altered by other industries in New Zealand that sell tangible products, that are also experiencing difficulty with offshore online retailers.

3.2. Research Design

Given the lack of previous research on remote printing technology and its application on geographically isolated economies in a New Zealand context, exploratory research using the paradigm of post-positivistic philosophy (Guba & Lincoln, 1994) was carried out to explore the possibilities of making the technology more readily available in New Zealand to help deal with some of the current issues the New Zealand book publishing industry is facing. Eisenhardt (1989) proposed that case studies are usually appropriate for an exploratory study, to answer, "how" and "why" questions, particularly with contemporary phenomena.

This research consists of two parts. First, the generic book publishing and sale supply chain in a small, remote economy as conceptualised and the different potential locations for introducing remote printing were identified. An evaluation framework was developed from the Just-In-Time theory and Supply Chain Management literatures to assess the theoretically-expected effects of locating the capability at each of the different points of the supply chain. When applied to the case of the New Zealand industry, a theoretically-preferred model was identified. Second, empirical analysis was undertaken by interviewing participants in the New Zealand industry, to assess a case study of the New Zealand publishing industry, whereby industry participants were interviewed to ascertain their perceptions of the potential effects of the introduction of remote printing at various positions for themselves and the New Zealand industry.

The empirical research used qualitative data collected in semi-structured interviews with members associated to the New Zealand book publishing industry. Topics covered in the interviews included background information on existing book publishing supply chains, the perceived implications of remote printing technology, potential avenues of business that would be created if remote printing technology was implemented, and which model/s respondents assumed would work if remote printing was made more readily available in New Zealand. Several interview guides are included in Appendix 3. In total there were three different interview guides as this study was industry focussed with some questions specifically targeted

towards different respondents. Most of the interviews were audio-taped with permission, and transcribed to ensure data was collected and used accurately. Qualitative data analysis was used to interpret the interview transcripts and field notes, generating relevant themes and categories.

An application for ethical approval for this research was made to the Victoria University of Wellington Human Ethics Committee. Approval was given on 25 March 2016. Participants were given an information sheet (Appendix 4) that outlined the purpose of the research, the nature of their involvement, and what measures would be taken to ensure that their rights were protected as participants. Participants then signed a consent form (Appendix 5).

3.3. Data Collection

3.3.1. Sampling of Participants

The book industry participants were carefully selected according to their background. The population of interest was defined as people associated and working in the New Zealand book industry. The participants were based in Wellington, and their main business activities involved book promotion, book publishing, and book selling. The participants were selected across multiple sectors in the New Zealand book industry, because it was important to investigate participants that would be directly or indirectly involved with the remote printing technology. In doing so, it helped identify an all-rounded aspect of the participant's different opinions and views towards the remote printing technology being introduced into the New Zealand book industry form a brick-and-mortar perspective. It was important to avoid observations specific to a particular sector. Participants were selected form a range of sectors in the New Zealand book industry, from CEO's associated with the New Zealand book industry to owners of brick-and-mortar bookstores, in order to provide a comprehensive view of the research issues and have further practical and theoretical implications for the New Zealand book industry and the research literature in this area.

The sample was identified through personal knowledge and relationships. Both my supervisor and current employer provided me with a number of contacts that could be approached that were working in the New Zealand book industry. Participants in the sample were contacted by email in order to request participation in the research. It was considered that CEO's, book

publishers, and brick-and-mortar booksellers would be the participants, as these participants had knowledge and experience, and also held positions in the New Zealand book industry. These participants were also directly linked to the research. A sample list of 14 participants was created, and an invitation and participation information sheet was sent to the participants by email. In the end, six participants were successfully recruited to participate in the study, from multiple sectors in the New Zealand book industry, whom would have the knowledge and experience to insightfully answer the interview questions.

3.3.2. Data collection and data analysis

Semi-structured interviews were conducted separately with CEO's associated with the New Zealand book industry, book publishers, and brick-and-mortar booksellers. In total six participants were interviewed. Interviews lasted between 25-45 minutes, with an average of 30 minutes. Three interview guides were constructed because certain questions were tailored specifically to certain participants based on their knowledge and involvement in the New Zealand book industry. Some participants would not have been capable of answering questions of interest to this study. The interview guides contained questions based on the issues arising from the literature review. Interview questions were designed to study the book industry's supply chain, identifying how technological development has altered supply chain activities. Several business models were also developed from the literature, and participants were asked to identify which business model they assumed could effectively be implemented. Interviews were audio-taped and transcribed to ensure that the data was collected and used accurately. In one case, an interview was conducted over the phone and brief notes were written down, this was at the convenience of the participant. The interview data were supplemented with secondary data sources, including publicly available information on the New Zealand book industry and its activities.

A within-case and cross-case thematic analysis was organized around the research focus identified above. The transcribed interviews were read a number of times to identify dominant and characteristic themes that different respondents had identified based on the research questions underlying the study. Coding categories drawn from the literature review were used to conduct the analysis. For example, in relation to the research questions based on disruptive technologies and business models, specific factors relating to Martin and Tian's (2012) model

framework outlined in the literature review were used as coding categories. Attention was given to identifying emergent categories from the data that related to a specific context of New Zealand and the New Zealand book industry. Once the coding had been completed for each participant, the categories were organised into tables to enable comparison across the six interviews. This enabled for commonalities and differences to be identified and described.

Based on the analysis, the following four chapters' present findings related to the proposed implementation of remote printing. Where appropriate, quotes from the respondents are used to illustrate their particular points.

3.3.3. Summary of Participants

In this section the profiles of the six participants from the New Zealand book industry in the study are presented. Each participant has been assigned a pseudonym and a brief summary of the respondent's association to the New Zealand book industry is presented.

Participant BK01 is an active and leading figure in the New Zealand book publishing industry, who is also capable of drawing on a wealth of knowledge about the New Zealand book publishing industry.

Participant BK02 has a wealth of experience with books and is involved with a nationwide chain of bookshops that sells books and other book related products.

Participant BK03 is associated to a major scholarly book publisher that has been publishing books in New Zealand for decades. The publishing press this participant is involved with, has a focus on scholarly non-fiction and poetry.

Participant BK04 is associated with a leading New Zealand publisher that has produced creative and scholarly work for decades. This participant also has a wealth of knowledge about the New Zealand publishing industry, and can also draw on experience from working overseas.

Participants BK05 and BK05A are involved with helping authors get their books to the market, with some clients even based overseas. These participants are experienced with cover design, print layout, E-book design and formatting, as well as marketing.

Participant BK06 is involved with a specialist New Zealand bookseller based in Christchurch, Wellington, and Auckland.

Chapter 4. Criteria and Model Development for the Introduction of Remote Printing in New Zealand

This chapter proceeds as follows. First, the proposed models are briefly explained, providing details as to how remote printing would operate. Next, a brief description is provided of the criteria used to assess the proposed models for integrating remote printing technology in the book publishing supply chain. The estimated costs of purchasing the remote printing technology and its operation costs are also analysed; including the estimated costs of printing a book using remote printing technology. Finally, this chapter finishes by discussing the pros and cons of integrating remote printing technology at various points in the book publishing supply chain, in a New Zealand context.

4.1. Considering Various Models for Remote Printing Integration in New Zealand

Organisations that currently use remote printing technology provide this service based on several business models. Some organisations may use a variety of different business models in order to expand market reach including:

1. **Print-To-Order:** An organisation can print and supply any number of copies from one to several hundred and ship them direct to the end consumer.
2. **Drop Ship:** An organisation does a print run of about 1,000 - 1,500 titles, and then these titles will be shipped to a distributor or wholesaler.
3. **Short Run:** An organisation does a print run of about 1,500 titles, and these titles will then be sent to a warehouse.

The Print-To-Order (PTO) business model is considered to be the most powerful and flexible model available today, offering the most to publishing operations (Gallagher, 2014). Considering the external environment, there has been a shift toward more electronic product and less demand for print product. A short print-run of about 1,000 – 1,500 titles could also oversupply the New Zealand market, while, the Print-To-Order model allows for the supply of any number of copies to be printed, and supplied directly to an end consumer (Gallagher, 2014). The other benefit with the Print-To-Order model is that a product never goes out-of-stock from an inventory perspective. The Print-To-Order model reduces inventory concerns and demand uncertainties, while supply is always guaranteed, which means an order is never lost.

The costs associated with the Print-To-Order model in terms of print-run size, could be deemed relatively more expensive when compared to other print-run models. The Print-To-Order model may provide significant cost savings when the costs of freight, warehousing, stock handling, shipping to the consumer, and shipping of returns are all considered in the costs calculation. Further, the Print-To-Order model may well prove to be more beneficial than the traditional offset printing model, and other short print-run models, due to lower risk, and lower title return rates. In particular, Printing-To-Order lowers investment risk and eliminates complex decisions involved with demand forecasting. Another benefit of the Print-To-Order model is that only the inventory sold is paid for, which takes away the risk of losing a sale due to unavailable products.

Given the current market trends, it is crucial to identify new ways in reducing the costs associated with the traditional publishing models. Doing so, would enable organisations to provide even greater content, while also enhancing the value of the content. Five models have been developed based on the Print-To-Order business model. Based on the six criteria developed, and applying them to the five different models, it is predicted that Model 5 would be the best option, and that the respondents will also identify Model 5 as being the most appropriate model. In addition to these five models, a sixth model (Model 5a.) was developed based on information mentioned in an interview. It is assumed that both Model 5 and Model 5a. best comply with the characteristics of the New Zealand context for introducing remote printing, specifically addressing the issues of, geographical proximity, lead-time, and costs.

4.1.1. Model 1. Publishing

In this model, publishers have control of the entire publishing process (publishing, distributing, and retailing). Specifically, customers (distributors and wholesalers) would initiate the demand for a title, and then the publisher would Print-To-Order. Further, some publishers own distributors. Brick-and-mortar bookstores could also send customer orders directly to the relevant publisher, and once the orders are printed they would be shipped directly to end customer, as specified by the retailer.

4.1.2. Model 2. Distributors

In this model, distributors will run the remote printing technology. Although, other print-run models described above may be better suited given the distributors capacity to hold stock. The Print-To-Order model allows distributors to more effectively manage inventory, and reduce overhead costs. As discussed, a distributor can use the Print-To-Order model to replenish stock, and also fulfil customer orders. Once the customer order is fulfilled, it will be shipped to the end customer, as specified by the retailer. Brick-and-mortar retailers would also be able to take advantage of the distributors ability to print out-of-stock and out-of-print titles, and stock their store bookshelves.

4.1.3. Model 3. Wholesalers

In this model, wholesalers will run the remote printing technology. If the wholesaler was large enough, the other models described could in fact be applied instead, or in conjunction with the Print-To-Order model. At this level of the supply chain, this is where this Print-To-Order model is assumed to have more of an affect, because it is designed to supply any number of titles from one to several hundred. Wholesalers can use this model to replenish stock and fulfil customer orders of single titles sent by the retailer. When orders are received by the wholesaler, the title will be printed and sent to the specified destination. In addition, brick-and-mortar retailers could take customer orders for specific titles, send them to the wholesaler, and arrange with the wholesaler to print the title and have it shipped directly to the end consumer.

4.1.4. Model 4. Brick-and-Mortar Booksellers

```
┌─────────────┐          ┌─────────────┐          ┌─────────────┐
│ Independent │          │    Chain    │          │  Warehouse  │
│  Bookstore  │          │  Bookstore  │          │             │
└─────────────┘          └─────────────┘          └─────────────┘

              ┌─────────────┐
              │  Customer   │
              └─────────────┘
```

```
┌──────────────────────────────────────────────────────────┐
│  ------------▶  Orders Sent      ────────▶  Order Fulfillment  │
└──────────────────────────────────────────────────────────┘
```

In this model, independent New Zealand bookstores, and New Zealand bookstore chains would invest in remote printing technology. Considering the size of independent bookstores, and chain bookstores, and the small number of sales of each individual store for any particular title, the Print-To-Order model is deemed the most appropriate. The effectiveness of the Print-To-Order model being applied this far down the supply chain in a New Zealand context should reduce several of the impacts that are currently affecting brick-and-mortar booksellers in New Zealand i.e. offshore competition, lead time, and service. Independent bookstores and chain bookstores would remotely print, while chain bookstores may even decide to run remote printing in their warehouses. Orders would be completed by the nearest facility and directly sent to the consumer. Generally, consumers would be able to view a catalogue of titles that can be printed using remote printing, or if a consumer requests a particular title that is not in store, providing that title is in the catalogue it could also be printed.

4.1.5. Model 5. Booksellers Association of New Zealand

In this model, the Booksellers Association of New Zealand would become involved and set-up remote printing using the Print-To-Order model. The Booksellers Association of New Zealand would control the remote printing technology, and be responsible for providing catalogues to brick-and-mortar booksellers of titles that are available to be printed using this service. Several facilities would be set-up and located around New Zealand in areas with suitable logistical infrastructure. Primarily this model is designed to better serve New Zealand readers, while combatting several threats the New Zealand book industry is currently facing. Brick-and-mortar bookstores would take customer orders, and then send the orders off to the Booksellers Association of New Zealand, and the nearest facility where the remote printing technology is located would print the title/s, and then the title/s would be sent directly to the end customer. Alternatively, brick-and-mortar booksellers could also use this service to stock older titles that were previously unavailable, but still cherished during specific events during the year i.e. Anzac Day and Christmas.

4.1.6. Model 5a. Booksellers Association of New Zealand

Similar to Model 5, this model also has the Booksellers Association of New Zealand becoming involved and operateing remote printing using the Print-To-Order model. The only real difference in this model is how the books would be distributed upon printing completion. The Booksellers Association of New Zealand would control the remote printing technology, and be responsible for providing catalogues to brick-and-mortar booksellers of titles that are available to be printed using this service. Existing distribution channels held by the New Zealand publisher would be used to distribute the title/s to the end customer. Primarily this model is designed to better serve New Zealand readers, while combatting several threats the New Zealand book industry is currently facing. Brick-and-mortar bookstores would take customer orders, and then send the orders off to the Booksellers Association of New Zealand, and the local print partner would print the title/s and send directly to the end consumer. Alternatively, brick-and-mortar booksellers could also use this service to stock older titles that were previously unavailable, but still cherished during specific events during the year i.e. ANZAC Day and Christmas.

4.2. Criteria to Consider for Remote Printing Integration in New Zealand

If remote printing was to be implemented by the New Zealand book industry, a specific set of criteria needs to be considered given the unique circumstances of the New Zealand market. This criterion will help identify where remote printing will be most effectively integrated along the New Zealand book publishing supply chain. The framework consists of six generic criteria that have been developed from the literature. The criteria will now be described briefly, and are illustrated in Table 1.

1. **Geographic Proximity.** New Zealand is relatively distanced from the rest of the developed world (Steel et al., 2013). Books travel long distances to reach the New Zealand market (Fabling, 2015). It is imperative that remote printing be carried out domestically given the New Zealand context of geographical isolation; longer distribution channels effect cost, lead-time, demand, and availability (Vanier, 1973).

2. **Facilities/Locations.** Lower pricing of books online is a result of a more efficient business model (Brynjolfsson et al., 2000); books pass through fewer players in the supply chain. The costs of transportation continue to increase (Helo, 2004), and this reflects the higher pricing of books when they travel through long-supply chains. Where the remote printing operations are carried out is important. If remote printing is carried out domestically, printing facilities must be situated in areas supported by good logistical infrastructure.

3. **Demand and Supply.** The supply chain has become very customer centric (Lan & Unhekar, 2006; Brynjolfsson et al., 2013; Potter et al., 2015), and variety is an important aspect of the book market (Brynjolfsson et al., 2003; Steel et al., 2013). To accommodate to these requirements, (1) Printing-On-Demand must function as a pull-based system; customers chose the titles they want to have printed; and, (2) a large title base must be offered, which will also better enable for production to remain constant – a requirement for Printing-On-Demand (Ha, Li, & Ng, 2003; Koschat, 2008), as demand must remain stable during supply lead-time (Lyons, 2004).

4. **Lead-time.** The time taken from when an order is placed, until that order is completed is very important because reduced cycle time improves responsiveness to customer demand (Lummus & Voukura, 2000). In a New Zealand context, geographical proximity; locations of the remote printing technology; and delivery frequency are all determinants of cycle time (Kros et al., 2006). One inherent advantage of remote printing compared to traditional offset printing, is the reduction in set-up-time; faster throughput shortens lead-time, more promptly meeting customer demand.

5. **Delivery Frequency.** Timeliness of deliveries is an important part of service. The quicker a title can be put in the customer's hand improves customer satisfaction, increasing repurchase intentions (Shih & Fang, 2005). Delivery frequency is also a source of competitive advantage (Ha, Li, & Ng, 2003). The locations of where remote printing operates is important. Areas with good logistical infrastructure should be capable of providing more frequent deliveries. Further, the costs of transportation are increasing, so if print-runs are done domestically: (1) the cost of shipping books will be significantly lower; and, (2) books will travel shorter distances.

6. **Costs.** The theory of economies of scale implies that remote printing is not as cost-effective compared to traditional offset printing; the cost of printing single units remains the same and does not decrease. But when the costs of freight, warehousing, stock handling, and shipping/delivery are all considered, remote printing could improve cost-savings to both the supplier and customer. Further, consumers are demanding greater variety in a timely fashion at a reasonable price.

Table 1. Remote Printing Criteria

Remote Printing Criteria	Publishers	Distributors	Wholesalers	Brick-and-Mortar Booksellers	Booksellers Association New Zealand
1. Geographic Proximity	The nearest major publishing houses are located in Australia. Other large publishing houses are run out of the United Kingdom.	Some distributors are owned by publishers, while others would be located within close proximity to publishers.	Located offshore.	Situated throughout both towns and cities in New Zealand.	Situated in New Zealand.
2. Facilities and Locations	Printing operations may be carried out in-house, or in offsite warehouses. Printing could even be outsourced to external printing facilities, which operate overseas.	Printing operations would be carried out in-house or in offsite warehouses. Distributors may also choose to outsource printing to other offshore facilities.	Printing operations will most likely be carried out in-house, although smaller wholesalers may print offsite or outsource the printing operation.	Local printing operations may be carried out in-store, while bookstore chains may have several warehouses where printing is carried out.	Printing operations would be carried out in 2-3 locations domestically. It was discovered that an existing New Zealand publisher could also be used.
3. Demand and Supply	Catalogues of content offerings for printing-on-demand would be provided. For production to remain constant, the publisher must have content the consumer demands.	Will have access to publisher's content, and would be capable of supplying that content.	Will have access to publisher's content, and would be capable of supplying that content.	Can contact a variety of publishers to source their content and deliver the title/s to the consumer. It is predicted that demand would be rather unstable, and would vary throughout bookstores.	A large catalogue of various Publishers titles would be offered. A larger access to content, would allow for production to remain more constant. It was identified that Ingram has a very large content base.
4. Lead-time	Printing would be completed within 48 – 72 hours. Depending on publisher location, a further 48 – 72 hours would be incurred. Total cycle time averages 96-144 hours.	Printing would be completed within 48 – 72 hours. Depending on distributor location, a further 48 – 72 hours would be incurred. Total cycle time averages 96-144 hours.	Printing would be completed within 48 – 72 hours. Depending on wholesaler location, a further 48 – 72 hours would be incurred. Total cycle time equates to an average of 96-144 hours.	The estimated average time from when an order is received, printed, and delivered is 24-48 hours. Printing done at this level may result in a backlog if demand is not effectively managed.	The aim is to have the book printed and delivered to the end customer within 24 – 36 hours. This is possible if the printing facilities have been suitably located.

5. Delivery -frequency	Given the locations of major publishing houses, it is more economical to ship bulk orders, unless a special arrangement concerning distribution and postage is struck. Most books will arrive from Australia.	Distribution channels are long and complex. Given the locations of many distributors, as well as their emphasis on bulk orders, deliveries could incur wait times. Most books will arrive from Australia.	Generally, wholesalers deal with brick-and-mortar booksellers, and fulfil orders of single unit's compiling into bulk orders. Complex distribution channels see bulk order shipments. Most books will arrive from Australia.	Because books are printed locally and delivered directly to the end customer upon the completion of printing, this should result in higher deliveries rates. The travel time from Australia is eliminated. However, the postage in rural areas is assumed to be less frequent.	Printing facilities will be located in areas that provide good logistical infrastructure, resulting in more frequent deliveries. Because printing is run locally, travel distance is shortened. It was discovered that existing distribution channels of a New Zealand publisher may be utilised (Model 5a).
6. Costs	Although inventory can be better managed, improving inventory turnover, books still arrive from Australia and the United Kingdom. It is also not economical to send single copies through complex distribution channels. Further, printed books would still be exchanged through several supply chain partners. Quicker delivery options would most likely be at the consumer's expense.	Although inventory can be better managed, improving inventory turnover, books still arrive from Australia and the United Kingdom. It is also not economical to send single copies through complex distribution channels. Further, printed books would still be exchanged through several supply chain partners. Quicker delivery options would most likely be at the consumers expense.	Although inventory can be better managed, improving inventory turnover, books still arrive from Australia and the United Kingdom. It is also not economical to send single copies through complex distribution channels. Further, printed books would still be exchanged through several supply chain partners. Quicker delivery options would most likely be at the consumers expense.	The cost of investment to implement remote printing in independent New Zealand bookstores would be rather high. While unstable production would also hinder the profitability of remote printing at this level.	Considering that titles would be printed locally, and handled by fewer supply chain partners, and travel shorter distances, it is assumed that the cost of the book will be more reasonable. Further, books are not being stored in warehouses for long periods, and inventory is being turned over as quickly as the titles are printed and ready for shipment.

4.3. The Estimate Costs of Remote Printing Technology

The expected costs involved with remote printing technology will now be analysed. Although, there appears to be no specific figures around the cost of the actual printing machine, the cost of an Espresso Book Machine is estimated to be between $85,000 - $185,000, with maintenance per-month costing between $600 - $1,000 (Rosen, 2013). The annual cost of maintenance on average equates to $9,600. Table 2 illustrates the estimated costs and average costs.

Table 2. Estimated Cost and Maintenance Cost Per-month of the Printing Machine

	Min	Max	Average
Machine Cost	$85,000.00	$185,000.00	$135,000.00
Monthly Maintainence	$600.00	$1,000.00	$800.00

In addition, the costs involved for retrieving an authors or publishers work are estimated to be around $8.00 to $12.00 with the average cost of shipping at $6.50, as illustrated below in Table 3.

Table 3. Estimated Cost Per-file and Shipping Cost

	Min	Max	Average
Copyright Costs Per Book	$8.00	$12.00	$10.00
Shipping Costs	$5.00	$8.00	$6.50

The estimated costs associated with actually printing the book itself have been calculated from a document supplied by Ingram Content Group (2015). Ingram offers a variety of sizes, colour options and paper qualities for printing books. Typically, the sizes of both Paperbacks and Hardcovers come in the dimensions of small, medium, and large. The cost of printing a book varies depending on size, ink colour and quality, paper quality, and the number of pages of the actual book. A discount tends to be offered if more than one book is being printed. Perhaps if a customer was ordering more than one title this sort of discount could also apply to them. Below, Table 4 illustrates the different sizes for both Paperback and Hardcover formats, while Table 5 indicates discounts associated to printing books in volume.

Table 4. Formats and Sizes

Paperback Trim Sizes	
Size	Width and Height (in)
Small	5.5x8.5
Medium	6x9, 6.14x9.21, 8.5x8.5
Large	7x10, 8x10, 8.5x11

Hardcover Trim Sizes	
Size	Width and Height (in)
Small	5.5x8.5
Medium	6x9, 6.14x9.21
Large	7x10, 8x10, 8.5x11

Table 5. Print-On-Demand Volume Discounts

Print-On-Demand Volume Discount	
Quantity	Discount
1 - 99	10%
100 - 249	15%
250 - 499	20%
500 - 999	25%
1000 - 1499	30%
1500 +	35%

Following this information, Appendix 1 demonstrates the estimated costs of printing a Paperback in Black and White, and also the costs of printing using both different ink quality and paper quality. Appendix 2 estimates the costs of Printing a Hardcover in Black and White, as well as the costs of printing a Hardcover using different ink and paper qualities. It should be noted that these costs will slightly vary depending on the number of pages of a particular book. It also needs to be mentioned that these costs are estimates, and do not depict the real costs of this operation but for the purposes of this research it helps calculate the approximate figures involved with introducing remote printing technology into New Zealand.

As per the calculations, it is suggested that the price for a book to be printed in a Paperback format are approximately between $25.50 and $31.50, while the approximate costs for a book to be printed in the Hardcover format are between $36.50 and $51.50. These estimated figures include: intellectual property rights of the file, printing costs, and handling costs.

4.4. Integrating remote printing into the New Zealand publishing industry

The publishing industry has responded to globalisation by developing international supply chains, in which various value adding activities comprising of a finished product are dispersed geographically in a number of countries. Other businesses have also embraced globalisation, "and in the process they have tried to implement lean production systems that encompass goals

such a JIT delivery, low inventories, zero defects, flexible production in small batches, and close technical cooperation with suppliers" (Levy, 1997, pp. 94-95). In a New Zealand context, remote printing technology would be used to deter customers purchasing from offshore online retailers; as demand materialises books would be printed locally. The objective is to optimise service levels, improving customer relationship management. Given the competition from offshore online retailers utilising an Internet based trading model, the adoption of remote printing would help brick-and-mortar booksellers establish a more level playing field, if not generate a competitive advantage. There are several options existing where remote printing could be integrated, they will now be analysed:

1. **Publishers.** Publishers have a number of functions within the book supply chain, including editing, publishing, printing, and marketing (Tat Keh, 1998). They are also responsible for copyrighting the authors material, and setting the recommended retail price (RRP). It is hard for publishers to acquire the real sales information of retailers; they cannot accurately realise the distribution of customer demands; and a high return rate of books leads to high costs and inventory warehousing. By integrating remote printing with publishers, several possibilities exist: (1) some publisher's may have sufficient volume to install a Print-On-Demand facility in one of their warehouses or run Print-On-Demand on-site; (2) some publishers may use Print-On-Demand to accommodate customer demand, or print on short runs to meet forecasted demand; and, (3) some publishers may outsource such activities, contracting external Print-On-Demand suppliers to 'drop ship', where by goods are provided by direct delivery from the manufacturer to the retailer or customer, originating from an order that the publisher receives (Tat Keh, 1998; Martin & Tian, 2012).

   One objective of supply chain management is to run a more efficient supply chain by identifying and exploiting methods to generate cost savings (Fawcett et al., 2008). Compared to a traditional print-run that operates on an economies of scale approach i.e. the greater quantity of goods produced, the lower cost per-unit of fixed costs, Print-On-Demand technology, "is recognised to be more expensive, as it is less cost-effective to conventional print runs" (Martin & Tian, 2012, p. 199). Digital printing per-unit costs stay the same. Nonetheless offset printing is suitable for long print-runs, and Print-On-Demand for short print-runs. If Print-On-Demand was undertaken by the publisher it

would eliminate the transaction between the publisher and printer, but it is unlikely that this would have a significant reduction in the overall process.

From a New Zealand context, if Print-On-Demand technology was integrated by publishers, not a lot would change; due to the global withdrawal of publishing houses out of New Zealand (Booksellers New Zealand, 2011). Drop shipping could slightly improve the process, and slightly reduce lead time. On average publishers would aim to have the books printed in 24-48 hours, and then considering the logistics of shipping the book, the whole process could end up taking 3-4 days. Although cycle time is shortened, a customer may still choose to purchase the book from an offshore online retailer, wait a few extra days but pay less, an all too common trade-off a customer is willing to make (Brynjolfsson et al., 2003). It is highly unlikely that these global publishers would consider installing 2-3 Print-On-Demand facilities in New Zealand locations, because the costs in doing so outweigh the revenue generated from this operation, as the market is not big enough. Furthermore, there is a cost for providing this service, and if the higher costs of production were passed on to the customers they may choose to just go through the traditional channel and place a customer order, or most probably purchase from offshore online booksellers. There is also the question of whether publishers would want to let conventional booksellers take a cut of the margin, especially when customers could access these services directly from the publisher's website.

Further, publishers may be unwilling to agree to New Zealand implementing remote printing, given the assumption in loss of control. However, if remote printing was to be established in New Zealand, Booksellers New Zealand would hold the responsibility for publishing the books. If the Global connect system was to be utilised, Ingram would maintain file integrity and security as well as reporting and payment remittance to publishers in the same manner as it is today (Publishers Weekly , 2011). International publishers should not be disadvantaged and lose control of the publishing process. For copyright purposes Ingram would supply Booksellers New Zealand with a catalogue of Print-On-Demand titles. When the book is printed for the customer, the publisher and author will still receive their share of the profit (WIPO, 2013).

2. **Distributors.** Distributors buy books on discount from publishers and then sell the books to booksellers. In certain circumstances, distributors may be owned by publishers. They are responsible for keeping stock-on-hand, and sending reps to bookstores to get the books on shelves. Distributors have a network of established contacts and could grow the business for Print-On-Demand technology, as they generally offer broad market coverage, and are able to access markets that were previously unavailable. Distributors are capable of holding inventory, and aim to shorten product to market lead-times. However, distributors can tend to have a high mark-up because they are also in the business of generating economic value.

Like publishers, distributors also focus on moving large amounts of stock through multiple channels serving many markets. Distribution channels can be very complex. If Printing-On-Demand was to be implemented, and single copies of books were distributed through the long supply channels, as opposed to sending bulk stock, there would be a much greater cost. It is clear distributors would not want to front this cost, and it would be passed on to the consumer. If distributors were to implement remote printing technology, they would be better off using Print-On-Demand technology to replenish stock, rather than fulfilling single copy orders.

3. **Wholesalers.** Wholesalers buy books on discount and keep stock from which they fulfil smaller orders from stores. They are generally not involved in marketing the product. Wholesalers tend to only accept quantity orders, and work with independent and chain bookstores. Primarily, wholesalers work for booksellers by fulfilling their orders. A wholesaler's main objective is to get a book/s from point A to point B in the shortest amount of time possible at the lowest possible cost.

If Print-On-Demand technology was integrated by wholesalers, they could use this printing technology to: replenish stock, drop-ship, and/or distribute; where orders come through the wholesaler, and are printed and fulfilled through the wholesaler. The printing done by wholesalers would be carried out at an on-demand basis printing units of one, unless the wholesaler could effectively forecast how many copies of a particular title each one of its customers will request; a bookstore may have a quantity order for the wholesaler to fulfil, but generally that order will be made up of single title copies requested by the retailer. If the wholesaler does not have a title requested, they can print

one immediately, rather than signal to the retailer that one of the books is backordered. At the wholesaling level of the supply chain, remote printing technology can be effectively operated by wholesalers to both fulfil their customer orders, while at the same time running a side business of Printing-On-Demand with booksellers through a drop shipping arrangement. One of the problems of integrating Print-On-Demand technology at the wholesale level from a New Zealand perspective, is that if the wholesaler is not large enough, they will struggle to keep up with demand, and in effect a backlog would occur. The capacity of a wholesaler is a key component.

4. **Brick-and-Mortar Booksellers.** Both independent bookstores and chain book stores are tasked with the commercial trading of books; the retail and distribution end of the publishing process. Over the years the way books are sold has evolved given trends in the market place. Bookstores have even introduced new processes into their existing business model – typically selling over the Internet. Some bookstores even target specific niche markets. Bookstores offer consumers the experience of browsing and physically touching the book. Both independent and chain bookstores work alongside with wholesalers, distributors, and publishers during the bookselling process, while more importantly establishing relationships with customers to increase customer loyalty.

Integrating remote printing technology this far down the supply chain raises several questions, particularly because brick-and-mortar booksellers have the lowest demand for any particular title excluding: the bestsellers. It is unlikely that brick-and-mortar booksellers would see the real benefits behind establishing remote printing technology themselves. Store space is limited and the cost of prime locations is expensive (Fabling, 2015). Further, the cost of investment in this technology at a conventional bookseller level does not appear to be economically feasible, and the printing would also need to be effectively integrated into the brick-and-mortar shopping experience. Generally, customers look for the book they want on the bookshelf, they find it and then go and pay for it. If they do not know exactly what they are looking for, they browse throughout the bookstore selection. Upon finding a book, they will go and pay for it. The customer may also ask staff in the bookstore for assistance if they cannot locate a particular book. A customer probably won't go into a bookstore if they are certain the book that they want is not in stock. Many brick-and-mortar booksellers provide catalogues and

information about new arrivals and expected release dates (Fabling, 2015). Therefore, customers must be made aware of the variety of titles that are currently available through the Print-On-Demand catalogue. If remote printing was implemented by brick-and-mortar booksellers, it may help an individual store better meet customer demands, possibly generate more sales, but not necessarily improve the stores profit margins. For Print-On-Demand to be effective it requires constant demand, and the rate of customer demand will be hard to forecast.

5. **Booksellers New Zealand.** Booksellers New Zealand is concerned with improving and growing the New Zealand book industry as a collective, rather than individual booksellers.

If Booksellers New Zealand were to run the remote printing technology, it is predicted this would have the most significant benefits. Collectively signing multiple publishing houses to agree to provide their title catalogues, would provide greater variety and greater access to stock combined. A significant title base encourages a more substantial order stream, maintaining a more constant level of demand. If remote printing was carried out in several major locations i.e. Auckland, Wellington, and Christchurch, delivery should prove effective given the quality of logistical infrastructure in these regions. If remote printing is carried out locally, it provides greater flexibility, and it reduces lead-time to roughly 24-36 hours. This remote printing operation would work by brick-and-mortar booksellers taking a customer order on a title classed as 'POD', and then sending the order off to the nearest remote printing facility. The book is printed, sent, and delivered to the customer. This model would work best around a direct sales fulfilment model; books would be Printed-On-Demand and shipped to destinations specified by the retailer.

Chapter 5. The Introduction of Remote Printing Technology into the New Zealand Book Industry

This chapter begins by explaining how remote printing would ideally function in New Zealand, identifying several factors that must be properly evaluated for this printing technology to succeed. It is then explained how this printing technology would enable both New Zealand publishers and brick-and-mortar booksellers to improve on various business aspects. A discussion about the most appropriate model for introducing remote printing into New Zealand as identified by the respondents is analysed, while future implications of the printing technology are also identified. Lastly, some future business avenues the printing technology offers are discussed.

5.1. Remote Printing Technology

It was identified that remote printing technology is currently available in New Zealand (BK01), and is utilised by major publishers, various university presses, and bookshops around the world (BK04). The main focus of this research is to identify how remote printing technology also known as Print-On-Demand (POD) technology could be utilised by brick-and-mortar booksellers to better compete with foreign online competition, as well as grow the New Zealand book industry. The underlying assumption of making remote printing more readily available in New Zealand reflects the idea of looking at this operation as a commercial venture (BK01), which creates revenue for both Booksellers New Zealand as well as New Zealand bookshops.

As indicated previously, New Zealand provides a unique example as to why this technology could be used by the book industry; it has been argued that geographical proximity, market size, and technological awareness have all impacted the New Zealand book industry in some way (Doolin et al., 2003; Steel et al., 2013).

5.1.1. How Remote Printing Would Operate

One respondent who was interviewed (BK01) is actually evaluating the possibility of introducing remote printing technology into New Zealand, and making it more readily

available. While the other interview respondents also had opinions towards how this technology should be utilised if made more readily available.

Overall the answers received from the interviews are consistent with the literature in regards to how Print-On-Demand technology is utilised. But more importantly, although this printing technology is available, there is only one organisation in the world that has just about every title, and this organisation is known as Ingram Books in the United States of America. BK01 noted that Ingram Books runs two Print-On-Demand operations: Lightning Source and Global Connect, and they are evaluating the possibility of introducing Global Connect into New Zealand. It was explained that if Global Connect was made available in New Zealand, this technology would operate on the method of pull-based demand; the customer initiates the transaction by asking for a title to be printed. The customer's order would be sent off to the print partner who would then print the book, and then dispatch the book to specified destination. BK01 further explained that this technology relies on two things: (1) the customer being able to pay for the book though the Eftpos system at the shop; and, (2) the e-commerce system that is attached in the shop must be capable of sending an order off to the supplier of the digital file – who will then release that file of the book to the printer, print the book, and making the book ready for dispatch within 24-hours.

The interview respondents identified several factors that must be evaluated before the Global Connect printing technology is considered a viable approach.

1. **Costs.** This was one of the most mentioned considerations. For all the players involved, in both the production process and the distribution process, an appropriate margin is required for remote printing to be economically feasible. Even if the margins are tight, remote printing will only be viable if there is a reasonable margin in it for everybody involved (BK01, BK02, BK03, BK05). From another perspective, the capital costs including: the price of the machine, the maintenance of the machine, the cost of materials and labour needed to produce the goods, and postage costs also need to be brought into the equation. It was mentioned by BK01 that these costs were still being calculated, but Table 2 and Table 3 provide some estimate costs.

2. **Affordability.** From a consumer perspective, this service of turning an electronic file into a tangible product must be deemed as affordable, meaning the price of the book

being produced using the remote printing operation comes out at a reasonable price (BK02, BK03). BK01 mentioned that theoretically, remote printing should prove to be cheaper. However, it was suggested that the difference would be insignificant in the sense that, the end price the book is sold for, will not be unrealistically low, meaning that if the price of the book produced from remote printing is cheaper, the variance may be only a few dollars. Furthermore, it was made clear that a lot of pricing work is still ongoing, but both Appendix 1 and Appendix 2 provide the expected costs.

3. **Access and Availability.** Another important point that was brought up in the interviews, is that, although the costs of titles may vary meaning some titles produced using remote printing technology could be a little expensive, the idea of making remote printing more readily available in New Zealand is not solely focused on producing the book as cheaply as possible. Rather, it was suggested that the real value exists in pricing availability (BK01). BK06 mentioned that the depth of backlist titles is an important means of offering variety. Moreover, this is consistent with the literature, emphasising that consumers' surplus gains increase, as consumers value variety and choice (Ton & Raman, 2010; Brynjolfsson et al., 2003).

4. **Lead-time and Delivery.** Customer gratification continues to increase (Fabling, 2015), therefore by having technology that is readily available, capable of producing a title, and having it in the customer's hands within 24-36 hours is assumed to be where the real benefits begin to kick-in. Most of the participants agreed that if this is made possible, then the printing technology should succeed on the basis of delivery competition confirming the findings of Ha et al., (2003); that efficient delivery times are a source of competitive advantage.

5. **Promotion.** The remote printing technology needs to be marketed towards brick-and-mortar bookstores, because this is where it is believed the most demand can be achieved, as any number of customers can walk into the bookstore and enquire. A catalogue of titles that are available through this printing technology must also be made available, so customers are aware of what is actually available. The titles being offered must be what the customers actually want to read, and BK01 stated that they have looked at what sells overseas and the top sellers in other countries that utilise Ingram's Print-On-Demand technology.

6. **Reader Markets.** The remote printing technology must also be capable of occupying markets in which the technology appeals. BK06 suggested that given the characteristics of their market, they were not certain that Print-On-Demand technology would be a viable avenue of business for them. It was also identified that one of the more obvious areas in which this service will be utilised is in the production of old classics (BK01). The idea of branching out into a particular niche such as old classics is consistent with what the current literature has acknowledged as being potential viable avenues of business. It was also mentioned that the remote printing technology could also be utilised to print university text books, which do not represent strong consistent sales.

5.2. The Perceived Benefits of Remote Printing in a New Zealand Context

Based on the interview respondent's role within the New Zealand book industry, the answers given regarding the potential benefit that remote printing technology would have to the New Zealand book industry varied, offering a well-rounded perspective. The answers provided by the respondents were consistent with the literature relating to Print-On-Demand (POD) and Just-In-Time (JIT) theory. The Global Connect printing technology is similar to the JIT systems approach, as BK02 noted that, it will enable for shorter print-runs, while reducing and/or eliminating warehouse storage costs. Further, less money is spent on raw materials such as paper and ink, because the operation only uses enough of those resources to make the required products and nothing else.

Several respondents identified particular areas in which remote printing technology would enable them to better manage their business:

1. **Inventory Management.** It is well known that the innovation of Internet selling has enabled offshore online booksellers to provide easy access to content, as well as offer a much greater range of titles. The titles being supplied by offshore online booksellers have often been at a much lower price when compared to the price for the same title in a brick-and-mortar bookstore (Brynjolfsson & Smith, 2000). Even more advantageous is the near unlimited storage capacity of virtual selling. Offshore online booksellers are capable of storing millions of electronic files, as well as advertising thousands of titles for sale via an electronic catalogue on the website. This is a far more cost-effective

method when compared to traditional brick-and-mortar bookselling. Firstly, there is the cost of storing a tangible book on the bookshelf and waiting for it to sell, and secondly, brick-and-mortar booksellers are also limited to the amount of stock they can hold physically. BK02 insisted that remote printing would enable them to better match supply with demand, while also enabling for better sales monitoring. They went onto further explain that instead of conducting a traditional print-run of 2000-5000 copies, the print run can be reduced to 500-1000 copies, and if stock begins to run-low more copies can be printed in a suitable time frame. By being capable of conducting shorter print-runs, both BK02 and BK05 mentioned that titles can still be made available, while the amount of unsold titles and books being sent back to the publishers is significantly reduced and/or eliminated totally.

From another aspect, both BK03 and BK05 mentioned that remote printing not only creates the possibility of conducting shorter print-runs, but it allows for more titles to be kept available, even the titles that do not sell very quickly. BK05 mentioned that, "there are a lot of books that will never have big volumes, but are worth publishing". So instead of taking on liabilities of stocking slow moving or end-of-life stock, remote printing enables a brick-and-mortar bookseller or self-publisher to carry no copies at all, but when the book is required – it can be made readily available. BK05 stated that publications of family histories are a prime example, because these types of books are really quite important to publish - they contain a fair amount of important information, which could be of significant use in future decades, especially if you look at the whole genealogy space.

2. **Combatting the Competition.** Because New Zealander's are technologically aware, they are familiar with online shopping (Doolin et al., 2003), and BK01 mentioned that consumers are increasingly purchasing from Internet selling websites that are predominantly based overseas, in terms of books they have greater access to both variety and previously unavailable titles. So rather than Internet selling just providing greater convenience as discussed by (Chrysostome & Rosson, 2009), consumers have become more accepting towards online transactions because it enables them to better deal with the constraints of being situated in a geographically isolated country (BK01, BK02, BK05). Because the New Zealand market is deemed relatively small, it is not as economically attractive as other larger markets, which almost all of the interview

respondents acknowledged as the number one reason for major publishers withdrawing from New Zealand and supplying out of Australia. Not only has this increased lead-time and handling costs, but it has provided offshore online retailers with a competitive advantage. Not only can offshore online retailers provide greater access to variety, they can also offer a cheaper price. According to the literature, consumers will purchase online because of access to greater variety (Brynjolfsson et al., 2003; Steel et al., 2013). However, several respondents suggested that remote printing technology has the ability to combat this issue if printing is done locally. BK01 mentioned, "If remote printing was introduced, it will enable brick-and-mortar booksellers to provide greater accessibility and variety of titles at an economic price in a good time-frame… printing can be done locally rather than internationally" (BK02). Because customers are more demanding, remote printing can have the book in the customer's hands within 24-36 hours compared to Amazons time frame of about five working days.

Nonetheless, BK05 pointed out, that from an authors and publishers point-of-view, quality has a huge impact. They explained that some authors are rather hesitant about their titles being printed and distributed out of China, Taiwan, and Hong Kong, because there is a stigma of poor quality. Rather, they suggested that if the book could be printed locally and it was slightly dearer by about ten percent, they are certain that authors would most likely opt for the local option and print locally because of the assumption about better quality.

3. **Opportunities for Self-Publishers.** As indicated in the literature, several other respondents mentioned similar ideas referring to self-publication. They suggested remote printing would in fact enable for more local authors to get themselves published and a foot into the market. New and local authors are often constrained by the expensive costs associated with traditional offset printing (BK05). However, remote printing offers more control and flexibility and as BK01 stated, "and the other aspect if you turn it around, it would be able to fulfil a customer's request to have a prepared manuscript printed for them to whatever number of copies they wanted".

5.3. Proposed Models for Introducing Remote Printing Technology

Overall the data collected from the interviews clearly indicates that Model 2 and Model 5 would be the most effective models if remote printing technology was made more accessible. One interesting comparison from the interviews revealed that the respondents who were associated to the publishing side of the New Zealand book industry first selected Model 2, whereas, the respondents associated to the brick-and-mortar bookstore side of the New Zealand book industry selected Model 5.

Some interview respondents were indecisive to begin with, selecting several models. But after taking a few moments to think and talk things through they narrowed down their answer to just one model. One respondent selected Model 4 to begin with, suggesting that if Print-On-Demand was run in a brick-and-mortar bookstore, the book could be printed immediately and then handed over to the customer (BK03). BK03 also suggested, that Model 4 would enable brick-and-mortar booksellers to keep the customer in-store, or even come back to the store to collect the book. Further, if you supply direct, then there is no opportunity to upsell the customer when they come back into the store to collect their book/s (BK01, BK06). But after considering the costs associated with this model, BK03 elected Model 2 as being the most effective. BK05 explained that this technology would be quite attractive if it was run by the distributors because they have the experience and knowledge of moving both small and more preferably larger volumes through long and complex channels. However, BK05 did acknowledge that there are not many large distributors if any left in New Zealand anymore, as most of them have shifted overseas. BK06 pointed out that there is cause for concern regarding both Model 2 and Model 3, stating that, "what you don't want as a bookseller is the distributor or wholesaler capturing the information of your customer's data. It is giving the distributor an opportunity to market, which enables them later on to become the retailer". This assumption demonstrates that perhaps brick-and-mortar booksellers are afraid of being cut out of the market, once again. Lastly, almost all of the respondents mentioned that publishers are closely tied to distributors (BK02, BK03, BK05), and some publishers even own distributors.

Another respondent suggested that none of the models were going to work because they believed that, "there are currently no sufficient systems in place" (BK04), reasoning that New Zealand's ordering systems are still very manual, adding complexity to the supply chain. In

regards to this issue, BK01 mentioned that Ingram Books assume that integrating the Eftpos systems is going to be all too complicated. However, BK01 explained that research has been conducted into the Ingram set-up and also the print link in Wellington, identifying that the two to three e-commerce systems operating in New Zealand are capable of being integrated. However, BK06 assumed that the models are fine, but only if the customer knows which book/s they want.

Several respondents indicated that some of these other models are based overseas, and BK02 noted that Model 5 helps tackle the issues of locality, freight, travel-time, distance, and cost. BK03 mentioned that Model 5 could be rather difficult to implement because all the publishers would need to be convinced that the numbers and margins were going to work, so everybody involved gets a reasonable cut. BK01 revealed that Model 5 is an active development strategy of Booksellers New Zealand right now, and following an in-depth discussion into the way this model would work, Model 5 would be slightly altered, prompting for another model to be developed - Model 5a. Instead of having several remote printing facilities located throughout New Zealand, the system would be made more efficient by teaming up with a local print partner who has the capacity and capability to effectively run this remote printing technology. Furthermore, BK01 noted that an added benefit of teaming up with this local print partner, is access to their existing distribution channels throughout New Zealand.

5.3.1. Model Summary

Below, Table 6 summarises the models that respondents initially chose as being the most appropriate model in a New Zealand context to operate the remote printing technology. Unfortunately, BK04 did not believe any of the models would work, and although BK06 briefly identified several implications with some of the models, they too did not believe any of the models would function.

Table 6. Models Chosen by Respondents

Respondent	Elected Model
BK01	Model 5
BK02	Model 5
BK03	Model 2
BK04	N/A
BK05	Model 2
BK06	N/A

5.3.2. Re-evaluating the Models

The interview respondents that had not chosen Model 5 as their initial model, were then given further explanation as to how Model 5 is actually going to work, and that Model 5 is an active development strategy of Booksellers New Zealand. Upon the inclusion of this information, these respondents selected Model 5 for being the best option from a brick-and-mortar bookstore perspective in a New Zealand context. Because of this distance factor, BK05 noted that Model 5 and Model 5a. would be the next best alternative, providing that this model could work in the way explained as well as being competitive with other players such as Amazon Books. More specifically, the interview respondents recognised Model 5 as being the best approach to enable a brick-and-mortar bookstore to fulfil an order from a customer, improving service, while adding to the capabilities of better customer demand fulfilment, as cycle time is reduced to 1-2 working days. The data collected from the interviews is rather consistent and reflects to a certain extent, what has already been mentioned in the literature. Following further explanation and discussion, five out of the six respondents selected Model 5. BK04 remained adamant that none of the models were going to work because of the New Zealand book industry's inability to integrate e-commerce systems.

5.4. Implications

The proposed introduction of remote printing was discussed in-depth during the interviews. The data collected from the interview respondents has drawn several conclusions about the future viability of remote printing technology.

1. **Growing Expectations.** An issue that could potentially arise in the future if remote printing was to be made readily available in New Zealand, is even though customer demand can be met far quicker than previously, BK02 suggested that people's expectations will only continue to grow. A 24- hour expectation could turn into 12 hours, and a price of $12.00 would then be considered expensive, so it would then be expected for $6.00.

2. **Market Size and Margins.** Because New Zealand is a small market economy in which book sales in New Zealand are reflective of, Ingram Books is concentrating its Global Connect printing technology towards larger economies such as China, India, and Italy (BK01). Several participants stated that the maths would have to be done. Ball point figures must be analysed, because there is the concern surrounding sufficient margins for everybody involved. Determining how the cost structures would work, and what the cost of producing each volume would be are also important. If the margins are not desirable, then it would not be economically worthwhile. BK01 suggested that the cost of Printing-On-Demand (POD) would allow for sufficient margins to be received by all those players involved in the operation, although, there is still a lot of pricing work to do.

3. **Publishing Rights and Re-negotiation.** The geographical slice up of publishing rights was also mentioned as a cause of concern. BK01 mentioned that publishing rights really depend on whether the publisher who supplies Ingram Books has allowed for that file to be sold globally, or if there are restrictions only allowing for the file/book to be sold in particular regions. For example, some titles have Global rights, Common Wealth rights, or North American rights, and effectively, these rights determine which markets the titles can be sold in. Because publishing rights are heavily involved with where the

title can be printed and sold, this also impacts the content availability for remote printing in New Zealand.

From a Publishers perspective, BK03 mentioned that if they were to consider providing their catalogue of titles for Print-On-Demand, they would have to advise their authors about this change, and this would mean re-negotiating contracts. Ideally, "You would be wanting to come up with a different royalty rate for each book. You might decide you are going to have a plateau when the sales reach that level for the book. Then you start paying royalties again" (BK03). Although not directly linked to publishing rights, BK05 drew attention towards the issues of the International Standard Book Number (ISBN) and the regulations surrounding this, as it may be a cause of concern for self-publishers using the free ISBN's provided in New Zealand. BK05 explained that if you publish anything in New Zealand you should provide the National Library with two copies.

4. **Maintaining Stability.** In order for remote printing to be cost effective and operate efficiently, the JIT theory requires that demand remains constant (Vokurka & Lummus, 2000). In this operation, customers are heavily involved in this process; they are the ones that stimulate demand by initiating the sale (pull-based demand). Several respondents noted that a catalogue of titles must be offered so that customers know exactly what titles can be printed. While, BK01 noted that as the market grows for Print-On-Demand, capacity levels would also need to be maintained. For example, over-flow could result if a large group of customers were looking for different books to be printed, while overload could also be a problem if there are a lot of customers demanding the same book. Unfortunately, BK01 explained that putting a number on the amount of demand required for the system to remain stable is too hard at this stage. However, constant demand is an important component associated with JIT as it helps ensure efficient capital utilisation rates (Karmaker, 1989). But, BK01 did mention that a lot of research has been conducted in overseas markets based on what is selling well through Ingram's Print-On-Demand service.

5. **Quality and Image.** Publishers become recognised through the work they produce and turn into a finished good. Presentation is a key factor behind the publisher's image - from designing to producing each book. BK03 mentioned that publishers would want

some control of how their books looked under their name if Printed-On-Demand, and this is because they are concerned about their reputation and profile in the market. It was mentioned that to begin with, if remote printing is to be introduced, in the initial stages the operation would be centred around standardisation; there would be one standard size, one standard paper use, and the cover would be as per the cover of the original book (BK01). Although, these factors may not significantly impact the customer's decision to continue the sale, publishers would be less convinced. Several respondents were hesitant with this idea of standardisation because they were concerned with how the book would appear to the market. BK05 noted that, "there is a huge difference between metric and imperial to start off with… we still spend time looking at paper stocks, ink quality, and especially cover design and interior design" (BK03). Even though Print-On-Demand may be better suited to certain markets rather than others, BK06 strongly expressed that in the market of children's books, they did not believe that the technology is capable of reproducing the book as per the original. It was further explained that, "the attractions of a physical book are the look and the esoteric feel, standing in the store and holding it and physically feeling it. With Print-On-Demand, I don't think you get that".

It is clear publishers are concerned with the quality of Printing-On-Demand, if a book is produced using remote printing technology, and the book is not of an acceptable quality or of a consistent standard when compared to the traditional printing method, it sends a message to the customers that the product is not worth as much, and the price should be dropped (BK03). This also damages the publisher's reputation. As a bookseller, BK06 suggested that the quality in reproduction produced by Print-On-Demand technology is not satisfactory for the market of books in which they are situated, noting, "I don't see Print-On-Demand as a major part of our offering". Furthermore, participant BK05 drew attention to another possibility as to why publishers may also not be overly keen on the idea of standardising remote printing, and this is because they may be cautious over quality and the loss of control by handing over the printing to another party. BK05 reflected on the standardisation approach, suggesting that although the process would be standardised, several standard sizes could still be used, allowing for illustrations to be both readable and legible.

6. **Distribution and Supply.** If remote printing was to be made more readily available, several participants identified that it could potentially cut out many of the middle-men

in the supply chain, as you wouldn't necessarily have a distributor. Rather you would send the book directly to the customer, by enabling them to buy directly off your website. However, as BK03 mentioned, "there are a few dangers in that". Particularly, there is the risk of endangering relationships with one another. For example, if publisher's were to sell directly from their websites, as opposed to distributing out their titles to a cluster of booksellers, publisher's would actually risk their relationships with their better booksellers.

Another participant actually suggested that remote printing would add to the distribution options that are currently available in New Zealand (BK01). This is because remote printing is being proposed as a solution to deal with the current challenges that New Zealand brick-and-mortar booksellers are facing. Although, remote printing would cut out certain players, authors and publishers would still receive their share of the revenue being generated from this operation. The idea of introducing remote printing is not to completely shutout nor cut ties with publishers, rather BK01 suggested, that the bookseller would always go to the publisher first. But as described previously, publishers do not always have enough available stock under short notice (BK02). So instead of turning the customer away, while deterring them from purchasing from offshore online booksellers, if the title was a Print-On-Demand title, the customer's needs would be met immediately. If the book was out-of-print meaning the publisher didn't have any copies; brick-and-mortar booksellers didn't have any copies; and The Book Depository and Amazon did not have any copies, the title may be available through the Print-On-Demand service. So rather than remote printing being introduced to disrupt the book market, it is actually being proposed as an alternative solution to help better meet the most important player's needs in the market – the reader.

BK04 assumes that for remote printing to be a viable option, the New Zealand supply chain would have to be very different to its current structure. It would actually require a small number of big distributors, and a more efficient system would need to be in place.

7. **Global Connect Technology.** Because New Zealand is viewed as a small market compared to other developed economies, it is un-likely or unable to install a Lightning Source Plant. So the next best alternative is to install the Global Connect printing

technology. However, Ingram Books appears to be focussing on introducing this technology into other countries at the moment including: India, China, and Italy (BK01). Furthermore, it appears Ingram Books has not understood exactly how this technology would be used in a New Zealand context. Because there are no wholesalers in New Zealand, and Ingram Books Global Connect technology distributes through wholesaler's sales channels, the idea was to instead use the sales channels of brick-and-mortar booksellers (BK01).

5.5. Future Business Avenues

Currently Ingram Books Lightning Source service has begun to move down the path of Print-On-Demand customisation, whereby customers can choose the size of the book, the paper and colour of the paper, and whether the books is produced in a Paperback format or Hardcover format (IngramSpark, 2014). In the process, this service add-on is just another way in which more revenue can be generated, while the customer's needs are better fulfilled. However, it is possible this service add-on only appeals to specific sets of customers that are actually prepared to pay for these add-ons. Throughout the interviews, respondents expressed different ideas as to how remote printing technology could eventually end-up adding an additional service to their current business model.

1. **Customisation/Differentiation.** BK01 mentioned that they are involved with implementing remote printing technology on a much larger scale in New Zealand, and that this service would ideally begin with a fairly straightforward printing operation. Typically, the Print-On-Demand service would be standardised, allowing for the service to be brought up to both a capable and desirable production stage (BK01). This means the service would begin by only offering the basics, and then over time it would be determined as to whether this remote printing service in New Zealand could be developed further, similarly to Ingram Books Lightning Source Print-On-Demand service. BK01 further explained that this service customisation additive would only be considered if there were good enough margins for everyone involved. Secondly, if customers had the ability to customise their books they want printed, it would have to be at an economical price for everyone involved. This includes the cost of material, the cost of production, and the overall cost of the book. Ingram offers both Paperback and

Hardcover formats in various sizes, also allowing consumers to also chose both the colour and quality of the ink and paper quality.

2. **Online Business Growth**. BK02 suggested that if remote printing technology was implemented, it would allow them to grow their online business. They explained that they deliver locally, and get a lot of online orders, although order fulfilment can sometimes be delayed due to stock availability. As a result, the book has to either be sourced from another store, or ordered from the respective publisher, and this means lead-time is extended between 3-10 working days depending on where the book is actually sourced from. The customer may then choose to withdraw from the transaction and purchase the book from the competition such as another bookstore or an offshore online retailer. However, if this book was available on Print-On-Demand, BK02 suggests they could get the book within 24-hours, and deliver it to the customer within the next 24-hours. Nonetheless, for online sales to grow, the title must be available in the Print-On-Demand catalogue, and this could cause an issue if it is not a Print-On-Demand title.

3. **Market Entry.** BK05 mentioned, that if remote printing was made more readily available in New Zealand, it could help them grow their business services, as they are involved with helping authors get their titles printed and to the market. Remote printing will allow them to promote another option to authors who want to self-publish. It also enables them to provide their clients with another option that is local and also competitive with other international players. Furthermore, BK05 explained that shipping titles from overseas can be quite expensive for the author, whereas if the operation was local, the cost of shipping would be significantly lower, and the authors would also feel more in control. It was also mentioned that, usually if an author underestimates demand, the current re-print approach takes up to six weeks, but if done locally, lead-time could be significantly reduced.

5.6. Summary

In general, the six respondents interviewed raised some interesting ideas about remote printing technology, drawing attention to a few relevant themes of this research, providing clear

indications as to why remote printing would be of benefit, the impacts that would result from remote printing being made more readily accessible, and what would also have to be done for remote printing to be effective for all the players involved. Most of the respondents suggested that remote printing could in fact work in New Zealand if the right measures are implemented. Despite the presence of some minor barriers identified by the respondents, the overall support for remote printing was quite high. For instance, if Booksellers New Zealand was controlling the remote printing technology, issues surrounding publishing rights, ISBN's, and demand stability could be more easily managed. However, if the remote printing technology was integrated somewhere else along the supply chain, these factors could be more of an issue. Some of the issues surrounding the quality and ISBN's, are only really associated with both self-publishers and local New Zealand publishers. In the future, remote printing may open up potential new avenues of business, making the technology even more useable and accessible, which is promising as this suggests that remote printing technology will not only help New Zealand brick-and-mortar booksellers compete with the offshore online competition, but the New Zealand book industry will have the ability to grow and explore other avenues of business - not previously recognised.

Chapter 6. The New Zealand Book Supply Chain

This chapter starts by identifying why New Zealand's book publishing supply chain is considered to be operating inefficiently. It then briefly discusses how digital technology continues to impact the supply chain. Finally, several ideas that could be considered towards improving on supply chain inefficiencies in a New Zealand context are discussed.

6.1. Supply Chain Inefficiencies

Overall the data from the interviews suggest that the book supply chain in New Zealand should not be considered inefficient. Rather the book supply chain in New Zealand is very different to both the book publishing supply chains in the United States of America and the United Kingdom. Given the unique circumstances of the New Zealand book publishing market, as well as publishers withdrawing from New Zealand, BK05 mentioned that, this has actually provided them with a business opportunity - assisted publishing.

As the traditional publishing market in New Zealand is so small and has become constricted, BK03, BK04, and BK06 argued that this has actually caused the supply chain to work reasonably efficiently. It was further predicted by these respondents that overtime there will be more consolidation of warehouses and distributors in New Zealand. More optimistically, BK04 suggested that supply times from the good publishers in Australia are as good as they are based in New Zealand, which conflicts with the literature given that books travelling from Australia to New Zealand travel a longer distance.

The types of problems mentioned as to why the traditional book supply chain may be viewed as inefficient are consistent with the literature (Shih & Fang, 2005). The interview respondents identified several factors that may indicate why the book publishing supply chain in the New Zealand context may be deemed inefficient:

1. **Shorter Print-runs.** It was identified that publishers and brick-and-mortar booksellers have different views towards remote printing technology. For example, it appears local publishers have realised that the conditions of the New Zealand book market require them to centre their printing operations around shorter print-runs, as opposed to the

more traditional offset print-run, which is based on the industrial revolution ideology of printing large volumes at cheap prices (BK05). BK03 explained that they will print a few hundred copies, and then later on they may conduct a print-run of just a few copies should they need them. Conducting larger print-runs given New Zealand's market size actually creates more problems than it solves. With economies of scale in mind, if New Zealand publishers were to strive towards these efficiencies, it would most likely see publishers over-investing in printing, which results in them making a loss anyway (BK03). BK05 mentioned, that besides well-known authors of fiction and cookbooks, the numbers are simply just not there for conducting a traditional offset print-run in a New Zealand context for other titles, because they will most likely pile up into huge store returns, or as remainders (BK02). Because major publishing companies are running very conservative print-runs, BK06 said that, "often the print-run is sold out before the stock arrives. Companies are monitoring sales through bookshops before they do a reprint. They are not going to print more unless they can see sales through other bookstores". The interview respondents implied that this is becoming more of an issue, because when they have gone to re-order, there was no stock, and there was no reprint scheduled.

2. **Cycle Time.** Books can travel half-way around the world to arrive in New Zealand, the time taken to fulfil a store-order/customer-order can be a significant issue. The nearest International market for books is Australia, although, if the book is an indent title from the United States of America or the United Kingdom, it can take up to a month to arrive (BK02).

3. **Margins.** As books travel through longer distribution channels and through multiple players in the supply chain, the prices books are sold for in New Zealand are deemed expensive. In other words, there are multiple margins incorporated in the cost of one book, which are recouped at the expense of the end-customer (BK02).

4. **Access and Availability of Stock.** As major publishing houses relocated to Australia (BK05), the availability of stock has been a real issue, while the quality has not met previous standards as books are now arriving with more errors, and damages (BK02). BK06 noted that since publishers have consolidated and supply out of one publishing house, inventory fulfilment rates are much higher. Although, several respondents

mentioned that sending books back through the supply chain and receiving replacement books further increases lead-time, which impacts the service provided by brick-and-mortar booksellers to the end-customer.

Furthermore, BK01 mentioned that in particular circumstances, in order to get access to a book to complete a customer order, New Zealand brick-and-mortar booksellers have been known to have utilised the services of The Book Depository. They explained this could be for several reasons including: (1) there are no available copies in New Zealand; (2) the relevant publishing house has no available copies; and, (3) as mentioned by BK02 when they tried to order a set amount of copies, the publisher informed them they did not have sufficient stock to meet the demand. BK01 explained that, this has meant that brick-and-mortar booksellers have had to acquire the title through the competition, further suggesting that brick-and-mortar booksellers may have not recouped the costs from the sale when ordering from the competition. Rather the intention of the brick-and-mortar booksellers was to influence repeat business.

6.1.1. The Revolution of Digital Publishing

As discovered in the literature (Ho et al., 2011), the innovation of Internet selling via the e-commerce business model concept, has revolutionised the way in which books can now be sold. Technological innovation has altered the structure of the book publishing supply chain, which has allowed for content to be both published and sold electronically across a variety of electronic platforms. As a result, there have been both positive and negative impacts. It was identified by several respondents that the e-commerce business model has had a significant impact on their business. BK04 said the number of online sales they receive only continue to grow. While, BK02 noted that 'the no Netflix tax' has hurt their business to some extent.

Digital publishing has also allowed for more authors to self-publish their works, as well as take back control from major publishing houses. Self-publishers now have the ability to completely cut out the middlemen (BK03, BK05). One respondent suggested the structure of both the digital supply chain and traditional supply chain would remain relatively the same (BK04), further explaining that, one method in which books are sold involves a less interactive experience, stating that, "what Amazon has done is shifted electrons and not physical books".

BK04 continued to argue that, "I don't think Amazon have cut out any of the middle men. It might look like they have, but they really haven't". In comparison to this view, several other participants disagreed suggesting that digital publishing and digital technology has in fact seen certain players being cut from the supply chain. BK03 noted that, the supply chain in some circumstances has almost vanished because the sale is strictly between the publisher and the reader, or even between the author and the reader. BK05 noted, "I would be really worried if I was a traditional publisher or a traditional distributor. I would be worried if I was a traditional bookshop unless I had a point of difference".

6.2. Improving on Supply Chain Inefficiencies

In general, the six respondents interviewed raised interesting ideas towards how the New Zealand book industry can combat the current challenges of consumer behaviour trends and technological innovation.

Some respondents explained that as a result of major publishers withdrawing from New Zealand, some smaller New Zealand publishers have now developed their own distribution houses (BK01). BK04 mentioned that although tricky, over time there should be a greater consolidation with warehouses and distribution, replicating to some extent what the larger international publishing houses have done – pulling their resources together, sharing facilities and distribution channels. Several respondents also mentioned the need for local storage, local printing, and local distribution (BK01, BK02, BK05).

In addition, global publisher withdrawal has also impacted authors, particularly self-publishers. BK05 explained that, the use of digital technology in terms of e-books can also be used to overcome the issue of demand forecasting particularly with fiction. The reasons for this include: (1) getting to know the market for your books; and, (2) the cost of production is marginal as the layout is a lot quicker to do. BK05 further noted that, "to me this is your classic Just-In-Time, testing the market, and e-books are your Just-In-Time, and you can distribute them anywhere. We see it as being way more efficient if you take out those middlemen".

Chapter 7. Discussion and Conclusion

This chapter, begins by discussing the findings from chapters four, five, and six, and comparing the findings to the literature. This includes: impacts from the digital supply chain, remote printing integration, and the expected effects on the existing book supply chain if remote printing is introduced. This chapter then draws some conclusions about the study, also discussing several theoretical implications of the study. Lastly, the limitations of the research are discussed, and further research opportunities are identified.

7.1. Discussion

7.1.1. Impacts of the Digital Supply Chain

In relation to new business models being introduced and integrated into the existing book publishing supply chain in this study, examples of both technological innovation and changing consumer trends were found to be partly responsible for the required alterations of the New Zealand book publishing supply chain. To some extent both New Zealand publishers and brick-and-mortar booksellers have been somewhat influenced by both changes in technology and customer demand (Tat Keh, 1998). This has required them to realign their business operations in order to better accommodate to these changes (Lan & Unhelkar, 2006). In the process, the methods of selling books has evolved (Brynjolfsson, Hu, & Rahman, 2013), and developments in technology have enabled for books to be distributed in a variety of different formats to the customer (Tat Keh, 1998). Technological advancement has also allowed New Zealand consumers to exploit several disadvantages reflective of the New Zealand book market, which (1) has allowed the consumer more control (Potter et al., 2015); and, (2) benefited reading needs. This somewhat confirms that New Zealanders are technologically aware (Doolin et al., 2013).

In terms of the e-commerce business model, and the utilisation of technology in this study, the findings largely match those expected from the literature, including access to larger markets which offer greater accessibility and variety (Hansell, 2002; Brynjolfsson et al., 2003; Chu et al., 2012), at a much lower price (Brynjolfsson & Smith, 2000; Steel et al., 2013), in a much more convenient time frame (Chan & Pollard, 2003). As a result, these factors have created

difficulties for some New Zealand brick-and-mortar booksellers (Chu et al., 2012). Offshore online booksellers such as Amazon and The Book Depository have been rather capable of utilising the e-business model to interact with the global market place (Jansen et al., 2012), providing New Zealand consumers with the convenience they desire. The rate of consumers purchasing books via online channels only continues to increase (Lieber & Syverson, 2011), demonstrating public approval of this global phenomenon known as e-commerce (Van Vliet & Pota, 2000; Clay et al., 2002). But as found in this study, the real issue is that, online selling has changed the consumers demand function. Consumers have become accustomed to the online environment and expect it to be consistent with a brick-and-mortar bookstore. This study found that both technological innovation and consumer behaviour appear to be interrelated, demonstrating why the supply chain has become more customer centric (Thompson, 2013), which has presented further issues for New Zealand brick-and-mortar booksellers, requiring them to work on their customer relationship management side of the business (Ho et al., 2011). It was discovered that respondents involved with selling books in this study all had an online presence, further identifying that online sales growth is recognised to be exponential.

With respect to the perceived problems of the New Zealand book publishing supply chain, the participants in this study reported many of the issues identified in the literature review. These included the costs associated with transportation and warehousing (Jain & Benyoucef, 2008), the conditions of the market and shifts in demand (Christopher & Holweg, 2011; Trkman et al., 2015), where inventory is positioned along the supply chain (Davis, 1993), collaboration between manufacturers (publishers) and retailers (booksellers) (Simatupang & Sridharan, 2002), taking a holistic approach to managing the supply chain (Power, 2005), and achieving customer satisfaction at a reduced cost (Vokurka & Lummus, 2000). Although, these issues were identified in the interviews, the respondents did acknowledge that some of these problems are consistent with the New Zealand book publishing supply chain being very different to book publishing supply chains in overseas markets, typically the United States of America, and the United Kingdom. As a result, and because of New Zealand's unique circumstances, the respondents suggested that the New Zealand book publishing supply chain is operating reasonably efficiently given the current circumstances of the external environment.

However, the reasons as suggested by the respondents as to why the New Zealand book publishing supply chain could be perceived as inefficient are consistent with the literature. Reasoning includes: that books travelling through longer supply chains only increases the price

of the book (Brynjolfsson & Smith, 2002; Fabling, 2015), global publisher withdrawal has increased estimated arrival times (Fabling, 2015), and the lack of access to stock and the reduced availability of stock compared to online sites such as Amazon and The Book Depository have also presented challenges (Hansell, 2002; Brynjolfsson et al., 2003). This study also found that because New Zealand is reflective of a small market economy, publishers are running more conservative print-runs, which at times sees the stock sell out before it actually arrives. But the underlying problem resulting from this situation is that, unless the publishers can see strong sales across a majority of bookshops, a re-print is not ordered. This suggests that publishers are not wanting to incur the liability of excess stock being held up in warehouses. In other words, by better managing both inventory and overhead costs, publishers are operating more efficiently and cost-effectively.

With regard to digital publishing and the supply chain, this study also reported on the impacts identified in the literature review. These included the issues around collecting tax on tangible goods arriving from overseas (Steel et al., 2013; Lowe, 2015), allowing certain players to cut other players out of the supply chain, while enabling authors to manage costs and establish their target markets through e-books, although, this is suggested to be more typical of new authors and self-publishers as compared to well-regarded authors. There is no argument that digital publishing has altered the supply chain. It has provided authors with more control, but it has also meant that brick-and-mortar booksellers are at risk of being completely cut of the supply chain as the interaction in the market place is between the author and the reader or the publisher and the reader. However, the respondents did not see digital publishing as their biggest threat. Instead they suggested that the consequences of offshore online selling are more of an issue.

7.1.2. Integrating Remote Printing into New Zealand – Business Models

Based on the criteria developed from the literature review for introducing remote printing technology into the New Zealand book publishing industry (Vanier, 1973; Brynjolfsson et al., 2000; Ha et al., 2003; Helo, 2004; Lyons, 2004; Shih & Fang, 2005; Lan & Unhekar, 2006; Koschat, 20008; Steel et al., 2013; Fabling, 2015; Potter et al., 2015), it was expected that Model 5 would be the best model for integrating remote printing technology. However, several respondents were indecisive on selecting a model that could be best integrated into the New

Zealand book publishing supply chain, and initially some respondents selected Model 2. Following a discussion with one of the respondents, Model 5.a was developed. The respondents suggested a range of reasons as to why they had initially chosen other models or could not decide, including: (1) the costs involved with the printing technology and the margins they would receive; (2) the affordability for the consumer market; (3) if both lead-time and delivery can actually be significantly reduced as explained; (4) the appeal generated for the technology by different reader markets; and, (5) the compatibility of New Zealand's e-commerce and ordering systems.

Analysis from the interviews provided good support for introducing remote printing technology into the New Zealand book industry. Following further explanation about Model 5 and Model 5.a, these respondents to some extent agreed with the assumption that if these models were integrated into the existing book supply chain in New Zealand: (1) they could help brick-and-mortar booksellers combat the competition of offshore online retailers; (2) enable both publishers and brick-and-mortar booksellers to manage their inventory more effectively (Levy, 1997; Lieberman & Demeester, 1999; Yeh, 2000; Kros et al., 2006); (3) be able to better meet their customers' requirements (Ha et al., 2003; Helo, 2004; Shih & Fang, 2005; Steel et al., 2013); and, (4) provide assisted publishers with the potential to help offer their clients more options when publishing their books, eliminating several barriers to market entry in the process; typically the costs associated with shipping from overseas manufacturers, as well as the lead-time involved with the shipping.

The potential implications with introducing remote printing technology into the New Zealand book publishing industry mentioned, by particular respondents, included: (1) customer demand and expectations will only continue to increase (Hall & Gupta 2011; Ho et al., 2011; Brynjolfsson et al., 2013; Fabling, 2015); (2) New Zealand's small market size (Steel et al., 2013), in relation to the economic viability of the printing technology; (3) the regulations surrounding publishing rights (WIPO, 2013); (4) the capability of keeping demand constant (Lieberman & Demeester, 1999; Yeh, 2000; Lyons et al., 2004; Kros et al., 2006); (5) the quality of reproduction when using the printing technology (Potter et al., 2015) and the potential loss of control for publishers when supplying their titles for Print-On-Demand; (6) the risk of damaging relationships with other players in the supply chain by 'cutting out the middle-men'; and, (7) negotiating with Ingram Books to install and utilise the Global Connect technology (Milliot, 2015). Furthermore, several respondents mentioned one of the problems

with all the models is sending the book directly to the customer as brick-and-mortar booksellers would want the customer to come back into the store, as there is the potential to upsell the customer. However, when considering convenience, some customers may actually prefer to have the book sent directly to their workplace or residential address.

Further, it was mentioned by one of the respondents that Ingram does not quite understand how remote printing technology would function, because rather than using a wholesaler to run the technology and distribution, a local print partner that has the capability and distribution channels for the technology would be utilised. In relation to the other finding that Ingram was not currently looking at other markets for installing the technology, it is presumed that: (1) Ingram do not believe that the technology is economically viable in a small market; and, (2) Ingram are focusing on markets that are recognised for the potential of providing countries with democratise knowledge (The Economist, 2010), and given the rising middle class in China (Wang, 2016), the expected Return-On-Investment (ROI) of running the printing technology in a country such as China proves to be economically attractive. It could also be perceived that because there appears to be no demand for remote printing technology that Ingram are not interested in New Zealand, but the reason there is no demand is because this technology is not available.

7.1.3. Expected Effects of Introducing Remote Printing into New Zealand

A number of authors have suggested that external forces such as technological innovation and consumer behaviour are interrelated to the internal forces of the organisation (structure, strategy, and knowledge) (Tat Keh, 1998; Briggs, 2009; Martin & Tian, 2012). In the process, these phenomena have altered the traditional book publishing supply chain (Brynjolfsson et al., 2013), requiring players along the book publishing supply chain to alter their business models and establish more of an Omni-channel approach (Brynjolfsson et al., 2013). Traditional barriers such as geography and customer ignorance have been eliminated given technologically aware consumers, and access to the global economy. The consumers are now influencing the supply chain, rather than choosing from the previous limited scope of options that were available (Potter et al., 2015). In a New Zealand context, it is assumed because of the country's small market perception and geographical distance (Steel et al., 2013); technologically adapt consumers (Eisenhart, 1996; Doolin et al., 2003); global publisher pull-back (Macdonald,

2013); the convenience offered from online shopping via offshore online retailers (Clay et al., 2002; Chrysostome & Rosson, 2009); and access to greater variety at more reasonable prices (Brynjolfsson & Smith, 2000; Brynjolfsson et al., 2003; Shih & Fang, 2005; Ton & Raman, 2010; Chu et al., 2012), are all factors responsible for hindering the success of New Zealand brick-and-mortar booksellers, while benefiting offshore online retailers.

The respondents suggested that if remote printing technology was to be introduced into the New Zealand book industry, they would expect to witness various improvements occur, as identified in the literature. This included: (1) players in the supply chain being able to reduce risk in relation to conducting large print-runs (Snow, 2001), as Print-On-Demand allows for more flexibility towards better managing costs through conducting shorter print-runs (Szenberg & Ramrattan, 2015), better accommodating to market characteristics (Koschat, 2008); (2) the out-of-print status will be removed because Print-On-Demand enables for titles to remain available (The Economist, 2010), providing greater access and availability to stock (Brynjolfsson et al., 2006), reducing the possibilities of bullwhip effect occurring (Levy, 1997), because titles can be printed as they are demanded (Larsson, 2004); (3) financial ratios will witness noticeable improvement in relation to asset turnover and return on assets (Biggart & Gargeya, 2002); (4) if the printing is conducted locally, both publishers and brick-and-mortar booksellers will have the ability to achieve improved customer satisfaction at reduced overall costs with shorter lead-times (Vanier, 1973; Vokurka & Lummus, 2000), delivering more value to customers (Trkman et al., 2015), as the costs involved with warehousing, inventory, and order processing are improved (Jain & Benyoucef, 2008), while the costs associated with transportation and delivery are also reduced because books are travelling shorter distances (Levy, 1997), as they are printed locally (Helo, 2004), enabling for books to be sold at a more reasonable price (Ha et al., 2003); and, (5) Print-On-Demand enables for more authors to enter the market and have their works published (The Economist, 2010; Frank, 2014).

7.2. Conclusions from the Study

This thesis has sought to answer the three research questions:

1. How can remote printing improve supply chain inefficiencies in the New Zealand book industry?
2. How could remote printing technology be introduced into New Zealand so that brick-and-mortar booksellers have the ability to access older stock?
3. What are the expected effects on different business models? and,
   a. where would this technology be best integrated along the supply chain?

Overall, the New Zealand book publishing industry appears to be managing, as books sales recorded from the New Zealand print book market have increased (Picken, 2015), with some suggesting that like the United States of America, the New Zealand publishing industry is beginning to experience a resurgence in book sales (Gray, 2016). Like other industries, the New Zealand publishing industry is no different, and it too faces difficulty, with a complicated logistics channel (Lin et al., 2005), and competition from offshore online retailers. Both technological innovation and changing consumer trends are considered to be partly responsible for some of the challenges that the publishing industry are dealing with. The question "How to maintain and increase the New Zealand book industry's competitiveness?" is often addressed by individuals, businesses, and the government. The importance of the publishing industry is recognised through its economic and cultural contributions (PwC, 2014), and this study suggests that the answer is largely driven by evaluating alternatives and searching for potential solutions to not only resolve the issues, but employ solutions that can also provide a sustained competitive advantage. Given the unique circumstances of the New Zealand's economy, it is assumed that if remote printing technology was introduced and integrated into the existing book publishing supply chain, that this technology would address the current challenges faced by the New Zealand book publishing industry. It is also assumed that remote printing technology further provides the potential to develop the publishing industry into new market avenues, increasing its appeal.

E-commerce continues to create new business opportunities, while allowing for existing businesses to expand their offerings and market reach. In this research it was found that e-commerce is both benefiting and hindering the New Zealand book publishing industry. None

of the respondents in this study suggested that their survival was in danger, rather they acknowledge that offshore online retailers are a threat, but they are focusing on their business and their customers. This suggests that they have recognised that the method of online selling is here to stay, and it will only continue to grow.

For New Zealand brick-and-mortar booksellers, the urge to remain competitive in order to grow drives the need to find out how remote printing technology could be utilised to improve customer relationship management. The concept of Print-On-Demand is rather similar to the theory of Just-In-Time manufacturing, and this study has theoretically confirmed Kros et al., (2006) conclusion that JIT systems can be modified to meet the needs of other industries, as the system can be altered to a certain extent allowing for greater efficiencies to be achieved.

Almost all of the respondents agreed that if remote printing technology was to be introduced into the New Zealand book industry, and it suited their needs, they would approach the opportunity if given to them and integrate the technology into their existing business models. This research largely focused on evaluating where remote printing could be integrated along the book publishing supply chain, and it aimed to find out the expected effects on different business models, and what various people associated with in different sectors of the New Zealand publishing industry thought about the potential idea of remote printing technology being introduced. Based on the criteria from Table 1, it helps assess where remote printing technology can be best placed along the book publishing supply chain. When considering the needs of more stock availability, access to greater variety, shorter lead-times, and reduced costs, this study identified that remote printing technology can meet these requirements if it is operated around Model 5 or Model 5a. In this regard, two sources for competitiveness were identified and studied in this research, namely greater availability to stock and shorter cycle times. Greater availability to stock was one reason suggested as to why consumers shop online, and in this research it was found that greater availability to stock was a core issue for brick-and-mortar booksellers. A greater variety of stock offers consumer more choice. Cycle times were recognised as often hindering brick-and-mortar bookseller's business operations, and it is suggested that because of the global publisher pullback, that this is partly to blame for longer waiting times. If brick-and-mortar booksellers had the ability to offer their customers more variety, and order books in shorter time frames, it would enable them to provide their customers a better service. The research focused on these two sources of competitiveness, and aimed to

find out how remote printing technology would help competitiveness and improve customer relationship management.

In general, by interviewing six respondents associated within the New Zealand book industry, mostly in Wellington, this research has presented an exploratory empirical study into the New Zealand book industry, identifying the expected effects on business models by introducing remote printing technology. Based on empirical findings drawn from interviews, the effects that technological innovation and consumer behaviour were having on the New Zealand book publishing supply chain, and how remote printing technology could be integrated to improve on the current industry challenges were discussed.

Reflecting on the data collected from interviews, the research revealed that if remote printing technology is introduced into the New Zealand publishing industry, it could help improve on certain circumstances reflective in the New Zealand context; given its geographical isolation, population, and market size. These characteristics can also help explain another distinct finding, that the New Zealand book publishing supply chain is rather different when compared to that of the United States of America and the United Kingdom. In a way, it is suggested that those associated to both the publishing sector and the bookselling sector of the industry in New Zealand, have recognised the differences and adapted their businesses, accommodating to the unique characteristics reflective of the New Zealand economy.

Respondents identified several means in which they have adopted their business practices to accommodate to the New Zealand market conditions including:
1. Knowledge of their market;
2. Conducting shorter print-runs;
3. Establishing an online presence;
4. Purchasing off competitors to meet customer demands;
5. Utilising already available technology.

Several issues associated with the New Zealand market were also identified by the respondents:
1. Technological innovation;
2. Consumer behaviour;
3. Geographical isolation;
4. Small market size;

5. Competition from offshore online retailers;

6. Global publisher withdrawal from New Zealand.

This research also examined which model for remote printing technology could be best integrated into the New Zealand book publishing supply chain based on a specific set of developed criteria from the literature. The criteria were used to analyse several different business models that had been developed, and based on the theory from the literature. Model 5 was identified as being the most effective. However, the research found that publishers initially chose Model 2, while booksellers tended to choose Model 5. Further discussion saw a slight alteration of Model 5, and therefore Model 5a. was developed. After further explanation regarding Model 5, five out of the six respondents agreed that Model 5 and Model 5a. are the most appropriate models to operate remote printing in a New Zealand context.

With regard to the findings on remote printing technology, innovation of this digital technology has seen many improvements especially in the areas of ink quality and the finished product. It is now suggested that unless you look closely at the finished product, you are unable to distinguish if it has been printed using the traditional offset equipment, or the more modern digital equipment. However, respondents concern over quality and standardisation prevail. Another respondent was unsure if this technology would be suitable for all markets, or just select niche markets. Most of the respondents in this study did appear to recognise how remote printing technology works, what it is capable of offering, as well as the perceived implications presented by the printing technology. Indeed, remote printing technology continues to be developed, but it is has already reached a level in which it can be used to supply the mass market. But because this technology is yet to be introduced, little is known about how effective it will actually be. Therefore, we can only go by what has been observed in overseas markets and what other people perceive. Impacts of the e-commerce business model have already changed New Zealanders methods of conducting business and purchasing goods and services. However, given the unique context of the New Zealand market, the idea of introducing remote printing technology offers another alternative to combating offshore online competition, as well as dealing with several other issues such as stock availability, greater variety, and long lead-times. Thus, the overall support for introducing remote printing technology into the New Zealand publishing industry was moderate to strong.

Challenges affecting the New Zealand book industry, and why the traditional book supply chain appeared to be inefficient were key questions that were grounded in the responses of the respondents. Questions about how remote printing technology would operate, and how it could benefit the New Zealand book industry were also asked. The JIT theory was applied in the discussion of the research. The main factors from supply chain inefficiencies, and the introduction of remote printing technology were discussed separately to identify their effects on the existing New Zealand book industry supply chain.

The study also observed that technological innovation and customer behaviour are somewhat interrelated due to the e-commerce business model. Mutual effects were found between these two aspects. The research investigated the expected effects on business models by investigating remote printing integration into the New Zealand book publishing industry. This study revealed how remote printing technology could be utilised to help deal with the threats imposed by the e-commerce business model, and the challenges from global publisher pull-back. The assumption was that, given New Zealand's unique circumstances, remote printing technology would prove a viable mechanism to address the New Zealand market context.

7.3. Implications

7.3.1. Theoretical Implications

The research committed to filling several theoretical gaps:

1. An empirical study of the current situation of the New Zealand book publishing industry's current challenges, and how technology could be introduced as mechanism to combat these challenges, improving on business operation efficiencies, as well as providing a more effective service in relation to customer relationship management.

2. Introducing remote printing technology into a geographically isolated country, deemed as a small market economy, and a practical analysis of the factors influencing remote printing technology integration using Just-In-Time (JIT) theory and Supply Chain Management (SCM).

3. Exploring the mutual effects between remote printing technology adoption and the expected effects on various business models.

The study gave a comparatively integrated view of these three issues in the New Zealand context and evidence-based theoretical findings were presented. Theoretical findings from the study will be of interest to other scholars and may be useful for further research.

7.4. Limitations and Further Research

This study builds on previous research findings from an Honours project. However, whilst the research conducted is relevant, the factor of time constraints inhibited the research, as the duration was 9-months not 12-months. Although, the research builds on previous research, a whole new study was conducted. Another literature review was needed; before the identified participants could be approached, Human Ethics needed to be re-approved; and the data collection phase meant that not all identified participants could take time to answer some interview questions.

The present research involved a small sample of six respondents with a majority of the respondents residing in one geographic area, Wellington, with the exception to one respondent being located in Auckland. Therefore, any conclusions drawn can be considered ex parte. Although the focus of the research was on one industry, it drew across several sectors of the industry ranging from CEOs of the book industry, publishers, assisted-publishers, and brick-and-mortar booksellers. This means that the depth of study of a particular industry was limited as most of the respondents from the book industry sectors were predominantly based in Wellington. Although identifying respondents that were associated to the New Zealand book publishing industry in different sectors provided a more all-rounded view, perhaps the study could have extended out to brick-and-mortar booksellers located in other areas of New Zealand including rural areas. In addition, participants that were deemed ideal for the study, such as major global publishers were rather difficult to get in contact with. Several attempts were made via email and telephone, but proved unsuccessful. On several occasions, participants from these major publishing houses replied, stating that they had to seek further approval to engage in the study from upper management, but nothing eventuated. The publishers that were interviewed were much smaller in scale.

Some suggestions regarding further research were brought up during this study. Selecting participants associated within the New Zealand book publishing industry in different sectors that are from other New Zealand regions would provide valuable insights. Selecting a specific sector of the New Zealand book publishing industry in further research would provide a greater depth to the research and have more practical implications for that particular industry sector. The sectors of both self-publishing and assisted publishing would be appropriate avenues to consider. Future research may well experience the utilization of remote printing technology in New Zealand and how this technology has actually benefited the New Zealand book publishing industry, as well as further implications that have been identified as a result of making this technology more readily available, enabling issues related to these areas to be explored more accurately. More importantly, technological innovation and changing consumer trends are two fast-changing phenomena, and hence, researchers need to keep their awareness and knowledge of them up to date. Connecting prior theories with the actualities of evolving technology and changing consumer trends phenomena would be a key area for further research.

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Appendices

Appendix 1. Paperback Printing Options and Costs

Paperback Print Pricing for Black and White						
Format	Page Count	Number of Pages	Cost Per Unit	Cost Per Page	Total Cost	Cost after 10% Discount
Small Paperback	18-46	30	$2.32	$0.02	$2.89	$2.60
Small Paperback	48+	240	$3.50	$0.02	$8.06	$7.25
Large Paperback	18-46	30	$3.19	$0.02	$3.76	$3.38
Large Paperback	48+	240	$1.95	$0.03	$8.43	$7.59

Paperback Print Pricing for Colour 50/75 Paper						
Format	Page Count	Number of Pages	Cost Per Unit	Cost Per Page	Total Cost	Cost after 10% Discount
Small Paperback	18-46	30	$2.91	$0.03	$3.87	$3.48
Small Paperback	48+	240	$1.45	$0.03	$9.13	$8.22
Large Paperback	18-46	30	$3.81	$0.03	$4.77	$4.29
Large Paperback	48+	240	$1.95	$0.04	$11.79	$10.61

Paperback Print Pricing for colour 70/105 Paper						
Format	Page Count	Number of Pages	Cost Per Unit	Cost Per Page	Total Cost	Cost after 10% Discount
Small Paperback	18-46	30	$3.13	$0.03	$4.16	$3.75
Small Paperback	48+	240	$1.45	$0.03	$9.71	$8.74
Large Paperback	18-46	30	$4.10	$0.03	$5.13	$4.62
Large Paperback	48+	240	$1.95	$0.04	$12.53	$11.28

Paperback Print Pricing for Premium Colour						
Format	Page Count	Number of Pages	Cost Per Unit	Cost Per Page	Total Cost	Cost after 10% Discount
Small Paperback	4-18	15	$2.80	$0.07	$3.85	$3.47
Small Paperback	20-900	210	$1.40	$0.07	$16.10	$14.49
Medium Paperback	4-18	15	$3.80	$0.12	$5.60	$5.04
Medium Paperback	20-900	210	$1.40	$0.12	$26.60	$23.94
Large Paperback	4-18	15	$4.80	$0.14	$6.90	$6.21
Large Paperback	20-900	210	$2.00	$0.14	$31.40	$28.26

Appendix 2. Hardcover Printing Options and Costs

Hardcover Print Pricing for Black and White						
Format	Page Count	Number of Pages	Cost Per Unit	Cost Per Page	Total Cost	Cost after 10% Discount
Small Hardcover	18+	60	$7.95	$0.02	$9.09	$8.18
Small Hardcover	18+	270	$7.95	$0.02	$13.08	$11.77
Small Hardcover & Jacket	18+	270	$9.95	$0.02	$15.08	$13.57
Large Hardcover	18+	60	$7.95	$0.03	$9.57	$8.61
Large Hardcover	18+	270	$7.95	$0.03	$15.24	$13.72

Hardcover Print Pricing for Colour 50/75 Paper						
Format	Page Count	Number of Pages	Cost Per Unit	Cost Per Page	Total Cost	Cost after 10% Discount
Small Hardcover	18+	60	$7.95	$0.03	$9.87	$8.88
Small Hardcover	18+	270	$7.95	$0.03	$16.59	$14.93
Small Hardcover & Jacket	18+	270	$9.95	$0.03	$18.59	$16.73
Large Hardcover	18+	60	$7.95	$0.04	$10.41	$9.37
Large Hardcover	18+	270	$7.95	$0.04	$19.02	$17.12

Hardcover Print Pricing for Colour 70/105 Paper						
Format	Page Count	Number of Pages	Cost Per Unit	Cost Per Page	Total Cost	Cost after 10% Discount
Small Hardcover	18+	60	$7.95	$0.03	$10.01	$9.01
Small Hardcover	18+	270	$7.95	$0.03	$17.24	$15.51
Small Hardcover & Jacket	18+	270	$9.95	$0.03	$19.24	$17.31
Large Hardcover	18+	60	$7.95	$0.04	$10.60	$9.54
Large Hardcover	18+	270	$7.95	$0.04	$19.86	$17.87

Hardcover Print Pricing for Premium Colour						
Format	Page Count	Number of Pages	Cost Per Unit	Cost Per Page	Total Cost	Cost after 10% Discount
Small Hardcover	18-840	60	$7.95	$0.07	$12.15	$10.94
Small Hardcover	18-840	270	$7.95	$0.07	$26.85	$24.17
Small Hardcover & Jacket	18-840	270	$9.95	$0.07	$28.85	$25.97
Medium Hardcover	18-840	60	$7.95	$0.12	$15.15	$13.64
Medium Hardcover	18-840	270	$7.95	$0.12	$40.35	$36.32
Medium Hardcover & Jacket	18-840	270	$9.95	$0.12	$42.35	$38.12
Large Hardcover	18-840	60	$7.95	$0.14	$16.35	$14.72
Large Hardcover	18-840	270	$7.95	$0.14	$45.75	$41.18

Appendix 3. Interview Guides

CEO's in the New Zealand Book Industry

1. The traditional book supply chain is considered to be inefficient, why?
    a. What sorts of solutions have been considered to improve on this?
    b. Why do you believe remote printing technology could be used to improve on these inefficiencies?

2. Given publisher withdrawal from New Zealand, how would the adoption of remote printing technology be of benefit to New Zealand booksellers?

3. Which model do you believe fits best in to the New Zealand publishing supply chain?
    a. Why do you think this model will be the most effective?

4. What are some of the implications of remote printing technology?
    a. Why do you believe POD will not necessarily be affected by country geographic and market size?
    b. What are some of the cost benefits associated with POD technology?
        i. How will these cost benefit the New Zealand book industry?

5. How would remote printing to be implemented?
    a. Will books be printed when demand materializes, or will this technology be used to replenish stock?
    b. How will demand be kept constant?
        i. How many books would need to be printed roughly?
        ii. How will backlog be prevented?
    c. How competitive will this service be on costs?
    d. How will brick-and-mortar booksellers be stopped from relying on remote printing technology supply, instead of the publisher's supply?
    e. How will remote printing be marketed to the readers?
        i. How big would the catalogue of POD books be?
    f. How will the process of remote printing function?

6. If remote printing is adopted, how will the supply and distribution of books change?
    a. What are some of the implications?
    b. How will trade-offs between quality and cost, and efficiency and cycle time be managed?

7. Where would remote printing be facilitated?
    a. How many remote facilities will there be?
        i. Why are theses locations considered to be suitable?

8. How will publishers be influenced to agree to provide their titles to be printed locally?
    a. How will publishers maintain control?
    b. What about copyright?

9. Why do you believe remote printing will benefit the New Zealand book industry as a whole?
    a. How is extra value being created?

10. What are some other potential business avenues for the POD service?
    a. How would these other avenues generate revenue for the book industry?

11. Are there any other comments you would like to make?

Book Publishers

1. The traditional book supply chain is considered to be inefficient, why?
   a. What sorts of solutions have been considered to improve on this?
   b. Why do you believe remote printing technology could be used to improve on these inefficiencies?

2. How has digital technology affected your business?

3. In order to cope with digital publishing, how has the structure of the publishing supply changed?

4. Which model do you believe fits best in to the New Zealand publishing supply chain?
   a. Why do you think this model will be the most effective?

5. If remote printing is adopted, how will the supply and distribution of books change?
   a. What are some of the implications?
   b. How will trade-offs between quality and cost, and efficiency and cycle time be managed?

6. What are some the differences between the traditional supply chain and the digital supply chain?
   a. Which supply chain do you consider to be the most effective? Why?

7. If a remote printing facility was introduced into New Zealand, what would have to be done if you provided your catalogue of titles?

8. How would this business use remote printing?
   a. Will POD be used to replenish stock?
   b. How would and order be processed?
   c. Would customers be able to choose how the book is formatted and printed?

9. Are there any other comments you would like to make?

Brick-and-Mortar Retailers

1. The traditional book supply chain is considered to be inefficient, why?
   a. What sorts of solutions have been considered to improve on this?
   b. Why do you believe remote printing technology could be used to improve on these inefficiencies?
   c. How could the supply chain be altered so that brick-and-mortar booksellers can compete with Amazon's virtual inventory?

2. Given publisher withdrawal from New Zealand, how would the adoption of remote printing technology be of benefit to New Zealand booksellers?

3. What are the trade-offs associated with inventory curation?

4. How has digital technology affected your business?

5. How has changing consumer behaviour affected your business?

6. How would the adoption of remote printing technology enable your business to expand into other avenues?
   a. How will this technology improve your business operations?

7. Why do you believe the adoption of remote printing technology will be of significant benefit to the New Zealand publishing industry?

8. Which model do you believe fits best in to the New Zealand publishing supply chain?
   a. Why do you think this model will be the most effective?

9. Why do you believe remote printing will benefit the New Zealand book industry as a whole?
   a. How is extra value being created?

10. Are there any other comments you would like to make?

Appendix 4. Participant Information Sheet

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI

VICTORIA
UNIVERSITY OF WELLINGTON

?

An investigation of the expected effects on business models of introducing remote printing into the New Zealand book industry

INFORMATION SHEET FOR PARTICIPANTS

Thank you for your interest in this project. Please read this information before deciding whether or not to take part. If you decide to participate, thank you. If you decide not to take part, thank you for considering my request.

Who am I?

My name is Tim Fabling and I am a Masters student in Management at Victoria University of Wellington. This research project is work towards my Thesis.

What is the aim of the project?

This project is designed to identify how the implementation of Print-On-Demand (POD) technology will be of potential benefit to the New Zealand book industry. The research is interested in identifying and evaluating different business models that would be suitable as a result of incorporating POD technology in the New Zealand book industry. This research has been approved by the Victoria University of Wellington Human Ethics Committee [approval number: 0000022711].

How can you help?

If you agree to take part I will interview you in a public place, such as a café. I will ask you questions about Print-On-Demand (POD) technology. The interview will take up to 1 hour. I will record the interview, and a transcriber will be present. You can stop the interview at any time, without giving a reason. You can withdraw from the study up to four weeks after the interview. If you withdraw, the information you provided will be destroyed or returned to you.

What will happen to the information you give?

This research is confidential. I will not name you in any reports, and I will not include any information that would identify you. Only my supervisors and I will read the notes or transcript of the interview. The interview transcripts, summaries and any recordings will be kept securely and destroyed 3 years after the research ends.

What will the project produce?

The information from my research will be used in my Masters report. You will not be identified in my report and pseudonyms will be used. I may also use the results of my research for conference presentations, and academic reports. I will take care not to identify you in any presentation or report.

If you accept this invitation, what are your rights as a research participant?

You do not have to accept this invitation if you don't want to. If you do decide to participate, you have the right to:

- choose not to answer any question;
- ask for the recorder to be turned off at any time during the interview;
- withdraw from the study up until four weeks after your interview;
- ask any questions about the study at any time;
- receive a copy of your interview recording;
- read over and comment on a written summary of your interview;
- agree on another name for me to use rather than your real name;
- be able to read any reports of this research by emailing the researcher to request a copy.

If you have any questions or problems, who can you contact?

If you have any questions, either now or in the future, please feel free to contact either:

Student:	**Supervisor:**
Name: Tim Fabling	Name: Bronwyn Howell
University email address: fablintimo@myvuw.ac.nz	Role: Academic, NZ Institute for the study of competition and regulation
	School: Management
	Phone: 04 4635563
	Bronwyn.howell@vuw.ac.nz

Human Ethics Committee information

If you have any concerns about the ethical conduct of the research you may contact the Victoria University HEC Convener: Associate Professor Susan Corbett. Email susan.corbett@vuw.ac.nz or telephone +64-4-463 5480.

Appendix 5. Participant Consent Form

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI

VICTORIA
UNIVERSITY OF WELLINGTON

An investigation of the expected effects on business models of introducing remote printing into the New Zealand book industry

CONSENT TO INTERVIEW

This consent form will be held for 3 years.

Researcher: *Tim Fabling, School of Management, Victoria University of Wellington.*

I have read the Information Sheet and the project has been explained to me. My questions have been answered to my satisfaction. I understand that I can ask further questions at any time.

I agree to take part in an audio recorded interview.

I understand that:

I may withdraw from this study up to four weeks after the interview, and any information that I have provided will be returned to me or destroyed.

The information I have provided will be destroyed 3 years after the research is finished.

Any information I provide will be kept confidential to the researcher and the supervisor. I understand that the results will be used for Masters report and a summary of the results may be used in academic reports and/or presented at conferences.

My name will not be used in reports, nor will any information that would identify me. Pseudonyms will be used instead.

I would like a summary of my interview: Yes ☐   No ☐

I would like to view the abstract of the final report before it is submitted: Yes ☐   No ☐

I would like to receive a copy of the final report and have added my email address below. Yes ☐   No ☐

Signature of participant: _____

Name of participant: _____

Date: _____

Contact details: _____