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**Using accounting information systems
to benefit micro businesses**

A thesis
submitted in partial fulfilment
of the requirements for the Degree of
Doctor of Philosophy
at
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by
Pamela Benbow

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Abstract of a thesis submitted in partial fulfilment of the requirements for the Degree of Doctor of Philosophy.

Using accounting information systems
to benefit micro businesses

by

Pamela Benbow

Ninety percent of all businesses in New Zealand are micro businesses, defined as having zero to five employees. This sector is critical to New Zealand's economy. Micro businesses create opportunities for new entrepreneurial talents, provide employment and offer consumers choice and variety including specialist goods and services. Central to all businesses is the need for information, managed by the accounting information system (AIS). The AIS supports decision-making, achieving business objectives and managing limited resources.

Prior studies and government reports call for further research of micro businesses so that this sector of the economy can be strengthened. This research addresses this call by exploring the benefits of using AIS in micro businesses using multiple methods, including desk-based research, semi-structured interviews with professional accountants, a survey of micro business and finally semi-structured interviews of micro business owners.

Findings show that a variety of tools are used, ranging from manual record keeping, to spreadsheets, to computerised AIS, and including a mixture of these tools. The majority of microbusinesses use computerised AIS tools, of which two software providers dominate. Some accounting firms specialise their practice either through industry or choice of AIS. Other accountants accommodate any AIS approach, focusing on the individual micro business needs.

AIS use by micro businesses is primarily focused on monitoring cash flow, sales and income activities and compliance reporting (GST and income tax). The greatest utilisation of computerised AIS and add-on tools are observed with these activities. Micro businesses could utilise other features more, especially reporting, as a basis for decision-making.

The decision to adopt computerised AIS includes factors affecting the individual business owner (generation, individual knowledge and skill and personal attitude to technology), internal business

factors (financial costs, time costs and the business purpose and future) and external business factors (supply chain, regulatory bodies and supporting services).

The benefits of using computerised AIS include connectivity, autofill, automated calculations and drilldown. Connectivity through cloud technology provides accessibility to a single version of the data between users regardless of location. Autofill populates data entry screens with information previously captured, reducing the need for typing. Automated calculations automatically completes basic arithmetic in the creation of invoices, supplier bills and reports. Finally, drilldown enables direct access to supporting detail for information provided on screen. These benefits may not be available in older versions of computerised AIS, or versions that only include a subset of the features.

This research increases the understanding of factors impacting micro businesses in their decision to implement computerised AIS, and the benefits from doing so. The findings support accountants, government agencies and AIS software developers to devise strategies to support micro businesses. Findings from this research are applicable to micro businesses throughout New Zealand and more globally and will benefit other small businesses outside of the micro definition, both locally and globally.

Keywords: micro business, accounting information systems (AIS), very small businesses, business management, accounting software, computerisation

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Abbreviations

AI	Artificial Intelligence
AIS	Accounting Information System
Apps	Applications
Aus	Australia
CAQDAS	Computer-Assisted Qualitative Data Analysis Software
CRM	Customer Relationship Management
DOI	Diffusion of Innovation
EFTPOS	Electronic Funds Transfer Point of Sale
EU	European Union
GAAP	Generally Accepted Accounting Principles
GDP	Gross Domestic Product
GST	Goods and Services Tax
HBB	Home-Based Business
ICT	Information and Communications Technology
IS	Information System
ML	Machine Learning
NZ	New Zealand
RQ	Research Question
ROI	Return on Investment
SaaS	Software as a Service
SBA	Small Business Act
SPFR	Special Purpose Financial Reports
TOE	Technology-Organisation-Environment
US	United States

Chapter 1

Introduction

1.1 Statement of the Problem

Every business enterprise, regardless of industry or sector, has three things in common as shown in Figure 1-1. The first aspect is a “stated purpose and objective” (Langfield-Smith et al., 2015, p. 5), with the intention to create value for key stakeholders. For many, profitability will be the main objective, but there may be other objectives such as providing a charitable service. To achieve the objectives, many decisions will need to be made, which is the second common aspect between enterprises. The decisions are supported by data and information, aiding the monitoring of the progress in achieving the objectives. The last common aspect is the “need to manage their resources effectively and efficiently” (Langfield-Smith et al., 2015, p. 5). All businesses are faced with scarce resources, including time, finances, raw product, skills and labour units. Much of the decision-making will address the use of the limited resources and how they impact the ability to achieve the goals of the enterprise.

Information is central to decision-making for the enterprise (Figure 1-1), and the predominant source will be the enterprise’s own accounting information system (AIS) as it captures and records data, i.e. business transactions. The data is summarised and transformed to provide information to measure how well a business is achieving its goals and objectives. Information from the AIS provides support for decision-making for the enterprise. Finally, the AIS monitors the limited resources of the enterprise. The quality of the source data is important, and it is desirable for the transactions captured to be accurate, valid and complete, but at the same time the data must be timely and cost effective to record (Gelanis et al., 2014, p. 15).

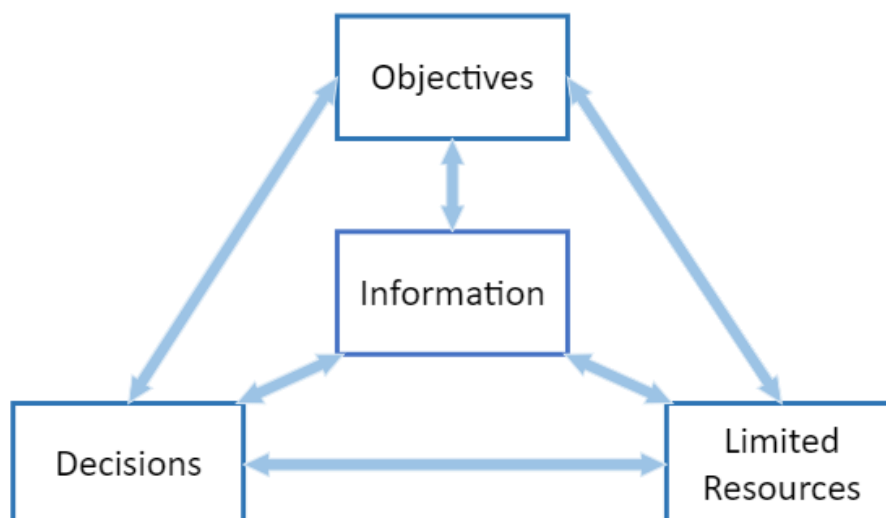


Figure 1-1 Common aspects of all businesses
Source: Author’s own compilation

The stakeholders using the information may be internal or external to the enterprise. Examples of stakeholders and their usage of business information include governments for the calculation of taxes; owners and investors for gauging security and profitability of their investment and future decisions; managers for measuring performance; and lenders in the surety of the repayment of loans. Other non-financial information may be sought by stakeholders, but typically, the core ability of a business to continue trading depends on profitability and cash flow.

A distinguishing factor between enterprises which may impact the way they use AIS is business size. Small businesses are typically challenged by resource poverty (time and money), limited employee skills and knowledge (Sellitto et al., 2017), and access to the right tools affects how businesses implement and operate an AIS in their normal business processes.

The examples shown in Figure 1-2 and Figure 1-3 highlight how different approaches to AIS and accounting software can affect businesses. Each of the two scenarios describes the regular task of reconciling a bank statement in a micro business. Business 1's AIS, depicted in Figure 1-2, has a high level of manual processes, whereas Business 2, depicted in Figure 1-3 and showing the differences from Figure 1-2, has incorporated accounting software into their AIS.

In these scenarios, both businesses have an AIS and are able to complete the bank reconciliation process. However, with a higher use of technology, Business 2 is able to complete the task of bank reconciliation more effectively and efficiently, therefore increasing the benefits they receive from their AIS.

The purpose of this research is to identify how micro businesses use AIS. Micro businesses in New Zealand are defined as having zero to five employees (Ministry of Business Innovation & Employment, 2014a) and they account for 89% of businesses contributing 41% of value-add to the economy (Ministry of Business Innovation & Employment, 2021). Given the resource limitations, especially time and money, it is important to utilise AIS to benefit the micro business.

Benefits of computerised AIS include improved effectiveness and efficiency of the use of the resources within a micro business. Effectiveness considers whether the goals of the micro business are being met. Efficiency compares the inputs to the outputs. Each micro business will have individual goals and different motivators that will affect the ways in which they use AIS and information and communications technology (ICT). Likewise, the way in which efficiency is measured may include aspects of profitability (financial) or productivity (time). The bank reconciliation example from Figure 1-2 and Figure 1-3 highlights how effectiveness and efficiency are harnessed with a computerised AIS.

Business 1:

The monthly bank statement is received in the mail. Each transaction recorded in their accounting software must be matched to the bank statement transactions line by line. Debtor receipts need to be recorded against open invoices in accounts receivable. Creditor payments are recorded against open supplier invoices in accounts payable. Any other bank account transactions, outside of debtors and creditors, need to be added to the accounting software. When adding transactions to the accounting software, care must be taken with the amount and date, in particular, to avoid introducing inaccuracies. Any transactions not yet cleared through the bank, e.g. unpresented cheques or receipts not yet deposited, need to be noted. Finally, a manual calculation is completed to report on the reconciliation of the general ledger bank balance to the bank statement balance.

Source: Author's own compilation

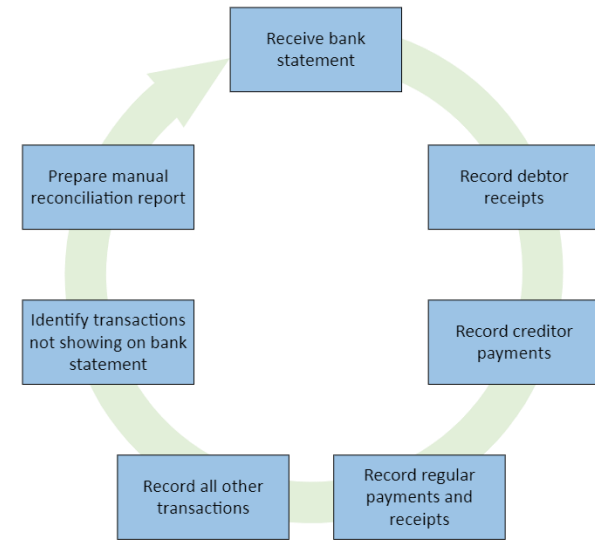


Figure 1-2 Bank reconciliation process using a manual AIS

Business 2:

The bank transactions are automatically provided daily to the accounting software directly from the bank through an internet connection. Debtor receipts are automatically recorded against open invoices in accounts receivable. Creditor payments are automatically recorded against open supplier invoices in accounts payable. Any transactions that occur regularly are automatically coded by the software, such as bank fees and loan payments. It is only the few irregular transactions that need to be added to the accounting software. As the transaction data is loaded into the accounting software automatically, transactions are created with the correct details including amount and date, increasing accuracy of the entries. A reconciliation report is available through the accounting software, automatically calculating any differences between the general ledger bank balance and the bank statement detailing any unpresented cheques or receipts not yet deposited.

Source: Author's own compilation

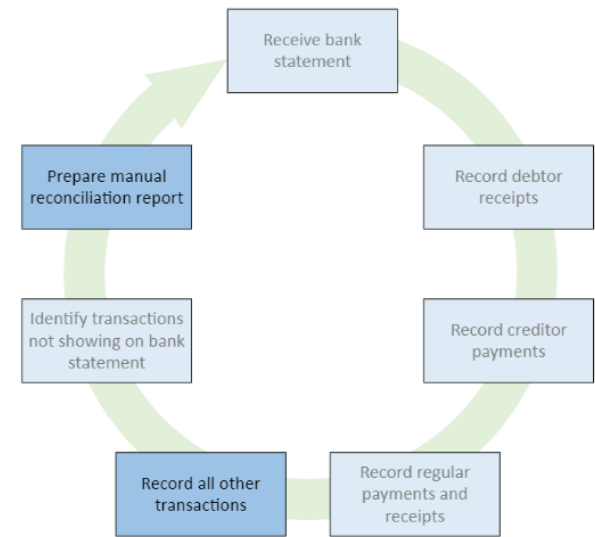


Figure 1-3 Bank reconciliation process using a computerised AIS

With larger business, where there is a degree of separation between the management of business activities and the ownership, AIS supports the information needs of both parties, acting as a means of control and communication, as well as an aid in decision-making (Shields & Shelleman, 2016). With micro businesses, the owner and manager are likely to be the same person, and so there is less reliance on AIS for control and communication. Making decisions without the support of any recorded information is common as found by Coman and Coman (2013) in their survey of 53 Romanian SMEs, where 44.4% of micro businesses do not use accounting information. Dyt and Halabi (2007) found in their Australian qualitative study of small and micro businesses, that 31% of micro businesses used a manual recording system, compared with only 11% of small businesses.

A more recent American survey of 144 small businesses by Shields and Shelleman (2016) contradicts this, finding that accounting software is being used for both planning and control, which may suggest a change in how small businesses are using technology. Interaction with the government has also influenced changes, providing more online pathways for payment of fees and licences, as well as filing taxation returns (Breen et al., 2004; Igbaria et al., 1998; Ministry of Business Innovation & Employment, 2014a).

Often the literature considers aspects of the use of AIS in micro businesses in the context of the slightly larger sized businesses labelled “small businesses”. Other studies have focused on ‘home-based businesses’ which are likely to be micro businesses, but the definitions used are based on location rather than size and number of employees. The adoption of a variety of ICT tools, beyond just AIS, was assessed by Burgess and Paguio (2016) as they applied the innovation-decision process to their qualitative study on adoption of ICT in 30 Australian home-based small businesses. The differences in the defining business-size criteria challenge the ability to interpret and make international comparisons of businesses based on size.

The literature identifies that there is insufficient research on small businesses, especially concerning their digital needs. This was noted by Cragg and Zinatelli (1995), reiterated by Igbaria et al. (1998), and continues to be highlighted in more recent studies (Burgess & Paguio, 2016; Jay & Schaper, 2003; Pulakanam & Suraweera, 2010; Shields & Shelleman, 2016). The smallest of the small businesses, being micro businesses and the closely related home-based business, are considered to be invisible in the official statistics of many countries, including New Zealand despite micro businesses accounting for nearly 90% of New Zealand’s businesses (Clark & Douglas, 2014; Small Business Council, 2019b). The need for further research on micro business models was identified by Clark and Douglas (2014) to support policy makers, advisors and practitioners, specifically related to the use of ICT for business operations and activities.

This research will address the gap in the literature on micro businesses and their use of AIS as stated by the research objectives and questions below.

1.2 Research Objectives and Questions

The objective of this current research is to:

Explore the benefits of using accounting information systems (AIS) in micro businesses.

To achieve the above objective, the following research questions (RQ) will be addressed:

RQ 1 What accounting information systems (AIS) tools are available and being used to manage accounting information processes for micro businesses?

RQ 2 What is best practice for micro businesses using accounting information systems (AIS)?

RQ 3 How are micro businesses using their accounting information systems (AIS)?

RQ 4 What factors affect micro businesses in the decision to adopt or not to adopt a computerised accounting information system (AIS)?

RQ 5 What are the benefits of using computerised accounting information systems (AIS) in micro businesses?

Through addressing these questions, support and guidance can be provided to micro businesses to improve the benefits received from AIS usage.

1.3 Research Method

Given the limited prior studies on the use of AIS by micro businesses, this research lies between exploratory and descriptive (Cavana et al., 2001). The focus of the current research is to gain an in-depth understanding of best practice implementation of AIS in a micro business using professional opinion and experiences, as well as an appreciation of how and why micro businesses are using AIS in their business management. A qualitative methodology is most appropriate for this research as it aims to gain an understanding of behaviours, describing variations in experiences (Ang, 2014).

Questions of “why”, “how” and “what” were posed to micro business owners, managers, and accountants with the goal of gaining a holistic appreciation of AIS usage for micro businesses. These questions were addressed through both mono methods and mixed methods research designs by completing desk-based research, interviews, and survey. Chapter 3 provides further details on the research methods used.

1.4 Research Context

Small businesses, and in particular the “*micro business*” – which in New Zealand is defined as a business with less than five employees (Ministry of Business Innovation & Employment, 2014a, 2014b, 2017, 2019, 2021) – are a significant sector of most economies. In New Zealand 89% of all businesses are micro businesses, a rate consistent since 2014 (Ministry of Business Innovation & Employment, 2014b, 2017, 2019, 2021). This classification encompasses businesses with one to five employees (400,488 businesses in 2021, increased from 326,000 businesses in 2014) and those with zero employees (102,099 businesses in 2021, increased from 97,400 businesses in 2014) as shown in Figure 1-4 (Ministry of Business Innovation & Employment, 2014a, 2014b, 2021). These same businesses make a strong contribution to the country’s gross domestic product (GDP). A 2018 New Zealand Government report states that 28% of New Zealand’s GDP comes from small businesses (employing 0-19 employees) (Ministry of Business Innovation & Employment, 2018). More detailed data from 2011 shows \$56,616 million GDP (28%) generated by small businesses, approximately two thirds of this is contributed to micro businesses (Ministry of Business Innovation & Employment, 2014a, 2014b). Current statistics on small businesses now present “economic value” instead of GDP, reporting that small businesses produce 41% of “economic value-add” (Ministry of Business Innovation & Employment, 2021). Micro businesses are important contributors, offering communities employment and unique opportunities that are not provided by larger businesses.

Similar economic importance is reported by other countries and further discussed in section 2.4. The need for more research is noted in New Zealand (Clark & Douglas, 2014; Pulakanam & Suraweera, 2010; Small Business Council, 2019b) and is likewise echoed in Australian studies (Burgess & Paguio, 2016; Jay & Schaper, 2003) and American studies (Shields & Shelleman, 2016). While focused on micro businesses in New Zealand, the universally shared characteristics, importance and challenges for all micro businesses support the global relevance of this research.

Small business numbers are aligned to population size of each region in New Zealand (Ministry of Business Innovation & Employment, 2014a; Small Business Council, 2019a). The province of Canterbury is the “second most populous region in New Zealand” (Environment Canterbury Regional Council, n.d., Key Facts section) with 66,378 people located in Canterbury in 2017 (includes the Waimakariri, Christchurch, Selwyn, Ashburton and Timaru districts) (Statistics New Zealand, n.d.). For the purposes of this research, participants were limited to micro businesses and accountants in the province of Canterbury, New Zealand.

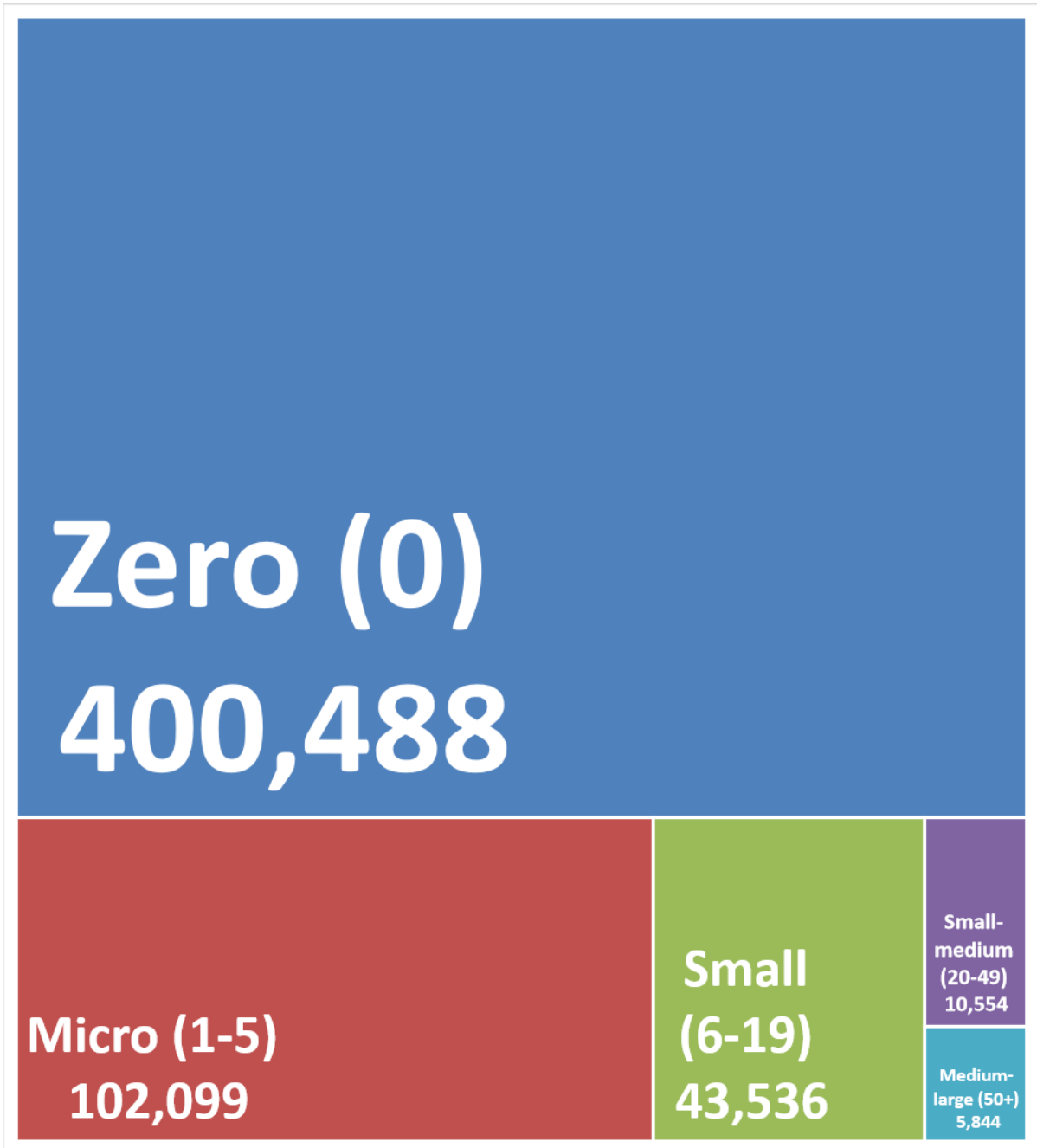


Figure 1-4 Number of New Zealand enterprises in 2021

Source: Modified from Ministry of Business Innovation & Employment (2014a); Ministry of Business Innovation & Employment (2021)

1.5 Research Design

In order to achieve the research objective stated in section 1.2, this current research employed a multi-phase approach as shown in Figure 1-5.

The knowledge gained in each phase builds on the knowledge gained from the previous phase as shown in Figure 1-5, with the final phase directly addressing the research objective *explore the benefits of using accounting information systems (AIS) in micro business*.



Figure 1-5 Research phases of AIS used by micro businesses
Source: Author’s own compilation

The five research questions presented in section 1.2 were addressed by at least one phase, with some research questions being addressed by two or more phases offering a means of verifiability. Table 1-1 illustrates the research questions that were addressed by each phase, with the darker colour indicating a stronger connection and no colour indicating no direct link between a research question and phase. Each phase is discussed in more detail in Chapter 3.

Table 1-1 Research questions addressed by phases of this current research

Research Questions	Phase 1 <i>AIS tools available to micro businesses</i>	Phase 2 <i>AIS best practice in micro businesses</i>	Phase 3 <i>AIS use by micro businesses</i>	Phase 4 <i>Exploring the benefits of AIS in micro businesses</i>
RQ 1: <i>What AIS tools are available and being used to manage accounting information processes for micro businesses?</i>	Dark blue	Dark blue	Dark blue	Light blue
RQ 2: <i>What is best practice for micro businesses using AIS?</i>	White	Dark blue	White	White
RQ 3: <i>How are micro businesses using their AIS?</i>	White	Light blue	Light blue	Dark blue
RQ 4: <i>What factors affect micro businesses in the decision to adopt or not to adopt a computerised AIS?</i>	White	Light blue	Light blue	Dark blue
RQ 5: <i>What are the benefits of using computerised AIS in micro businesses?</i>	Light blue	Light blue	Light blue	Dark blue

Legend: Dark blue – phase predominantly addresses RQ; Light blue – phase partially addresses RQ; White – does not address RQ

1.5.1 Phase 1: AIS Tools Available to Micro Businesses

Phase 1 provides an inventory of AIS tools available to micro businesses in New Zealand. This is the groundwork for all other phases as it builds a thorough knowledge of tools used by micro businesses and provides a basis for conversation and exploration in the survey and interviews undertaken in later phases.

This phase is conducted primarily through internet research, searching for marketing and instructional information from the various tool providers. Other sources were sought, such as promotional pamphlets and trade shows, but the internet was the predominant source as it is the main platform for accounting software companies to reach out to new and current users, as described in section 3.2. The information gathered here supports knowledge gained in the following phases specifically Phase 2: AIS Best Practice in Micro Businesses. Findings from Phase 1 are discussed in Chapter 4.

1.5.2 Phase 2: AIS Best Practice in Micro Businesses

Phase 2 data collection was achieved through semi-structured interviews with professional accountants. Accountants in their professional capacity, are in the best position to determine best practice in the use of AIS in micro businesses, as it is accountants that micro business owners turn to for advice in matters of accounting, business management and taxation (Jay & Schaper, 2003). Accountants selected to participate were from various locations, urban and rural, within the New Zealand region of Canterbury, as described in section 3.3. Preference was for accountants from third tier accounting firms as they predominantly service smaller businesses. Key themes were identified for use in subsequent phases. Findings from Phase 2 are discussed in Chapter 4.

1.5.3 Phase 3: AIS Use by Micro Businesses

Phase 3 was predominantly based on positive accounting theory. The focus is on *what is* actually done in the real world, with comparisons made to the normative approaches already established (Godfrey et al., 2000) from Phase 2.

An online questionnaire was emailed to micro businesses about their use of AIS tools in the management of their micro businesses, as described in section 3.4. Themes identified from Phase 2 were presented in a variety of styles including Likert scale, open and closed questions. Participant responses were evaluated using quantitative analysis in Excel spreadsheets and qualitative analysis in NVivo. Findings from Phase 3 are discussed in Chapter 5.

Micro businesses selected to participate were from various locations, urban and rural, within the New Zealand region of Canterbury.

1.5.4 Phase 4: Exploring the Benefits of AIS in Micro Businesses

The final phase, Phase 4, was an extension of the survey in Phase 3, further exploring the viewpoints and experiences of micro businesses using AIS. This phase was predominantly based on positive accounting theory, being *what is* and *why* something is done in the real world (Godfrey et al., 2000; Wolk et al., 2004). Results from earlier phases were further explored through semi-structured interviews with micro businesses, as described in section 3.5, to develop an in-depth understanding

of what AIS is used, how it is used, factors in deciding what to use, and benefits of using computerised AIS. Findings from Phase 4 are discussed in Chapter 5.

1.6 Contributions

This current research concentrates on the smallest of our small businesses. The importance of micro businesses to the economy is significant, both in New Zealand and globally. In managing a micro business, AIS tools can support business decisions by collecting and collating data for compliance and business management purposes.

Despite the key importance to the economy, it is recognised that more research is needed to better understand micro businesses and the challenges they face. This research will contribute to understanding the AIS tools available and used by New Zealand micro businesses, how micro businesses should be using their AIS (best practice), and how the AIS is actually used. There will be a greater awareness of the factors affecting adoption of computerised AIS and the benefits of doing so. An in-depth understanding is gained, exploring “how”, “why” and “what” regarding the benefits of using AIS by micro businesses. Through combining surveys and semi structured interviews, the body of knowledge is extended by this current research through the perspectives of both business owners and accountants as their advisors. The results from this current research have implications in New Zealand and globally for a variety of stakeholders including:

- **Micro business owner/managers** – quality advice on the use of AIS will result in strengthened business performance and encourage business confidence. It is especially important to build the understanding of the information available within the AIS that will support their business decisions.
- **Accountants and advisors to micro businesses** – a greater understanding of the limited resources and challenges faced by micro businesses will strengthen the quality of their advice and support in matters of AIS and adoption of computerised AIS.
- **Governing bodies** – increased awareness of the importance of micro businesses and the challenges they face will enable them to promote policies that support and benefit micro businesses and minimise any burdens. Through championing micro businesses, benefits will flow through the economy.
- **AIS software providers** – encourage the development of new AIS software that is functional, flexible, easy to use, and priced to be affordable by micro businesses.

1.7 Thesis Structure

The remainder of this thesis is organised in five chapters, with appendices and references. Chapter 2 considers theoretical foundations and literature related to micro businesses and AIS, from both New Zealand and global studies. Chapter 3 describes the research methods, including the design and steps taken in selecting research participants, data gathering and subsequent analysis. Chapter 4 and Chapter 5 present the findings from the four phases, discussing micro businesses and their use of AIS from both the accountants' perspective and the micro business owners' perspective. Chapter 6 concludes the thesis with key findings, contributions, and potential areas for future research. The appendices include supplementary information related to data collection as discussed in Chapter 3.

Chapter 2

Theoretical Foundation and Literature Review

2.1 Introduction

Chapter 1 introduced the fundamental need for all businesses regardless of size to maintain record keeping of financial transactions. The importance of the very smallest of businesses, the micro business, was highlighted, as were the potential benefits of using computerised AIS systems to support business management. This chapter considers the theoretical perspectives pertaining to adoption of computerised AIS and accounting research (section 2.2), prior studies on AIS and its purpose, in particular computerised AIS (section 2.3), and the significance of micro businesses to the economy (section 2.4).

2.2 Theoretical Foundation

Theoretical foundations provide guidance and framework to research, and may include direction for data collection and analysis (Leeming, 2018). In the case of exploratory qualitative research, application of theory may be used reflectively to make sense of the findings (Burke & Jarratt, 2004; Leeming, 2018) and build knowledge in what takes place in reality, rather than what 'should' occur (Halabi et al., 2010).

Previous studies in AIS adoption have referred to literature and general concepts such as normative accounting (Halabi et al., 2010), IT adoption (Pulakanam & Suraweera, 2010), agency costs and decision making (Oosthuizen et al., 2020; Shields & Shelleman, 2016), however these studies lack specific discussion of the theoretical foundations. Theoretical foundations were also lacking in other previous studies on AIS and its adoption (Breen et al., 2002; Breen et al., 2004; Clark & Douglas, 2010; Clark & Douglas, 2014; Dimitriu & Matei, 2014a, 2014b, 2014c, 2015; Dyt & Halabi, 2007; Evans et al., 2014; Gooderham et al., 2004; Jay & Schaper, 2003; Lignier, 2006, 2009a, 2009b; Lignier & Evans, 2012; Lignier et al., 2014; Mason et al., 2011; Sibanda & Manda, 2016; Woodley et al., 2015; Yong & Freudenberg, 2020)

As this current research is multi-disciplinary, it draws on multiple theoretical perspectives. Specifically, insights are sought from the diffusion of innovation (DOI) theory, the technology-organisation-environment (TOE) framework, and normative and positive accounting theory. These are discussed in the following sections.

2.2.1 Diffusion of Innovations

Diffusion of innovations (DOI) has been used in a variety of contexts to explain the speed at which a new idea or innovation gains acceptance within a community. Multiple facets of DOI theory extend its versatility to a wide range of innovations, and it is not just limited to the field of ICT. These facets include:

- Stages of the innovation-decision process (Figure 2-1).
- Adopter categorisation on the basis of innovativeness (Figure 2-2).
- Characteristics affecting organisational innovativeness (Figure 2-3).

There are five stages of the innovation-decision process (Rogers, 2003) as shown in Figure 2-1. The decision to adopt is firstly influenced by an awareness and knowledge about an innovation. Opinions and perceptions are formed, influenced by other factors, resulting in persuasion. A decision is made to adopt or reject the innovation. During the period of implementation and learning, there may be uncertainty about the decision. The final period of confirmation looks for reinforcement of the decision regarding the innovation.

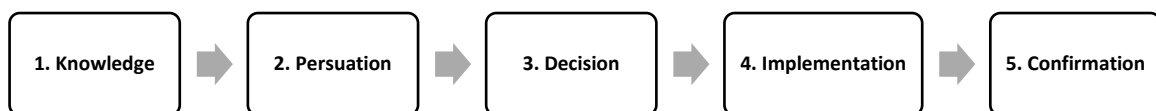


Figure 2-1 Innovation-decision process
Source: Modified from Rogers (2003, p. 170)

An individual's readiness to adopt an innovation was observed by Rogers (2003) to follow normal distribution within a population. The categories within the distribution curve include: innovators, early adopters, early majority, late majority and laggards, as shown in Figure 2-2. The leading group are the innovators. These are individuals who are risk takers and adventurers who launch the innovation to a community. Early adopters whose opinion and evaluation of the innovation is respected, trigger the majority, early and late, to adopt the innovation. The tail of the acceptance curve are the laggards who are suspicious and resist changes, therefore the last of the population to adopt (Rogers, 2003).

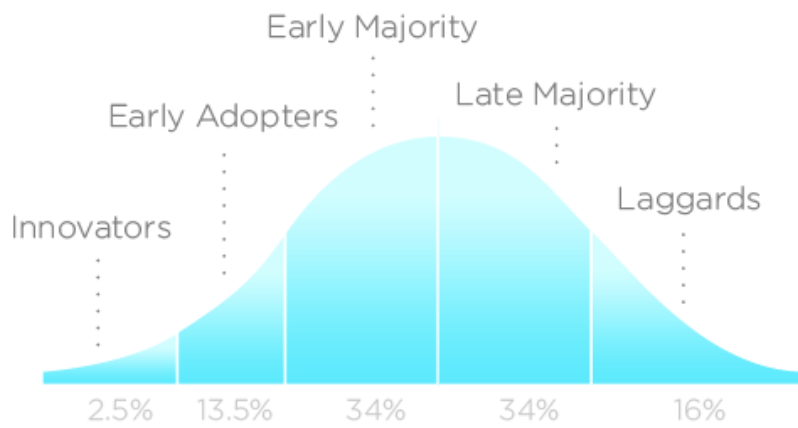


Figure 2-2 DOI adopter categorisation on the basis of innovativeness
 Source: Modified from Wikimedia Commons (2011, CC BY 2.5)

Applying DOI to organisations, there are several factors or characteristics that impact willingness to innovate. An organisation is affected by characteristics of the individual leader of the organisation, characteristics of the organisation and characteristics external to the organisation as shown in Figure 2-3.

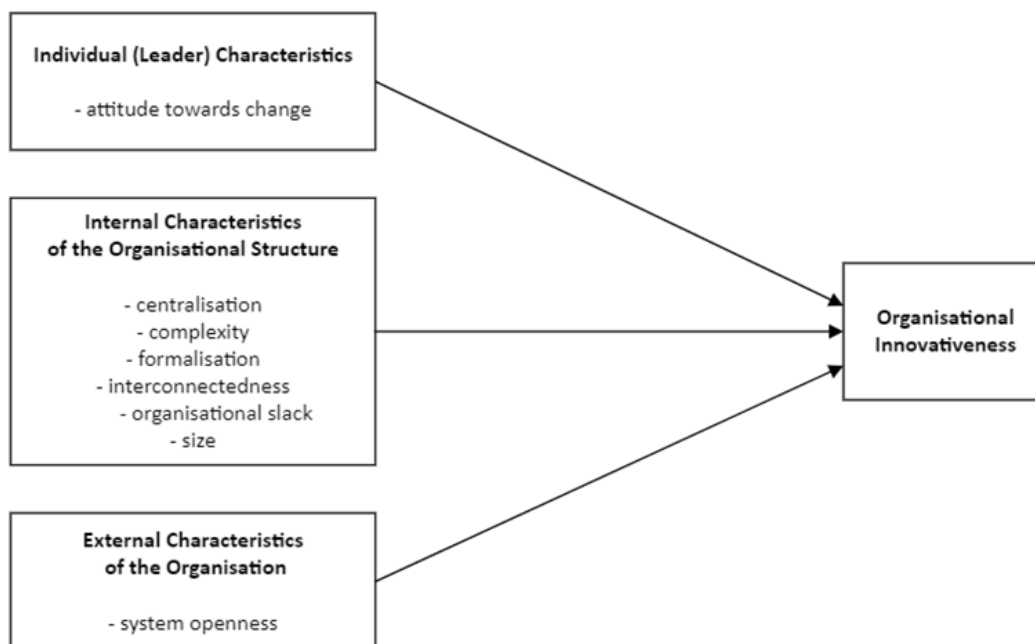


Figure 2-3 Characteristics affecting organisational innovativeness
 Source: Modified from Rogers (2003, p. 411)

Burgess and Paguio (2016) applied the innovation-decision process to their qualitative study on adoption of ICT in Australian home-based small businesses. Their study assessed a variety of ICT tools, and concluded that the penetration, maturity, and usefulness differ with each tool.

Technologies such as email and online banking rated highly on all three metrics. Mobile business and computerised AIS held a lower penetration despite a high level of maturity and usefulness. Whereas social media rated much lower for all three metrics.

Amidu et al. (2011) used the DOI lens of characteristics affecting organisational innovations for their study. Attributes of the individual leaders and the organisation were used to characterise the small and medium sized businesses on their use of computerised AIS. External influences that challenged the use of the AIS were identified.

In a study of micro businesses and their use of AIS, all three elements of DOI (described above) are applicable. This current research will capture individual business owners in different stages of the innovation- decision process. Their adoption decision will be influenced by their individual adopter category (early adopter through to laggard), as well as the characteristics of the individual owner and business (internal and external).

2.2.2 Technology-Organisation-Environment

The technology-organisation-environment (TOE) framework was introduced by Tornatzky and Fleischer (1990). It is consistent with DOI in that individual and organisational (internal and external) characteristics are present, but it also brings in an element of technology (Oliveira & Martins, 2011). The framework identifies three elements that influence an organisation in technology adoption and implementation (refer to Figure 2-4) being the external environment, the organisation, and the technology.

The external environment acknowledges the impact of the arena in which the organisation conducts its activities and includes the industry, competition, relationships with suppliers and customers, available resources (skilled labour and financial), market conditions, access to suppliers of technology, and government regulation (Tornatzky & Fleischer, 1990). The organisation element includes the structure and hierarchy within the organisation, the established channels of communication, leadership behaviours (including behaviours concerning change management), organisational size, and slack or excess capacity (including financial and human resources) (Tornatzky & Fleischer, 1990). The final element is technology. This element reflects what new technology is available and suitable to the organisation, and the current technology used by the organisation (Tornatzky & Fleischer, 1990)

The list of variables within each element is expansive, and previous studies may only focus on a subset or adapt the variables to those relevant to the study. A prior study on the internet and e-business technologies by Ifinedo (2011) focused on: external pressure, IS vendor support and pressure, and financial resources availability (environmental); management commitment and support, and organisational IT competence (organisational); and perceived benefits (technological). Comparing this to the work of Lutfi et al. (2016) on AIS usage we see they focused on different variables, namely: competitive pressure, government support and networking (environmental); organisational readiness, and owner/manager commitment and support (organisational); and relative advantage, and compatibility (technological).

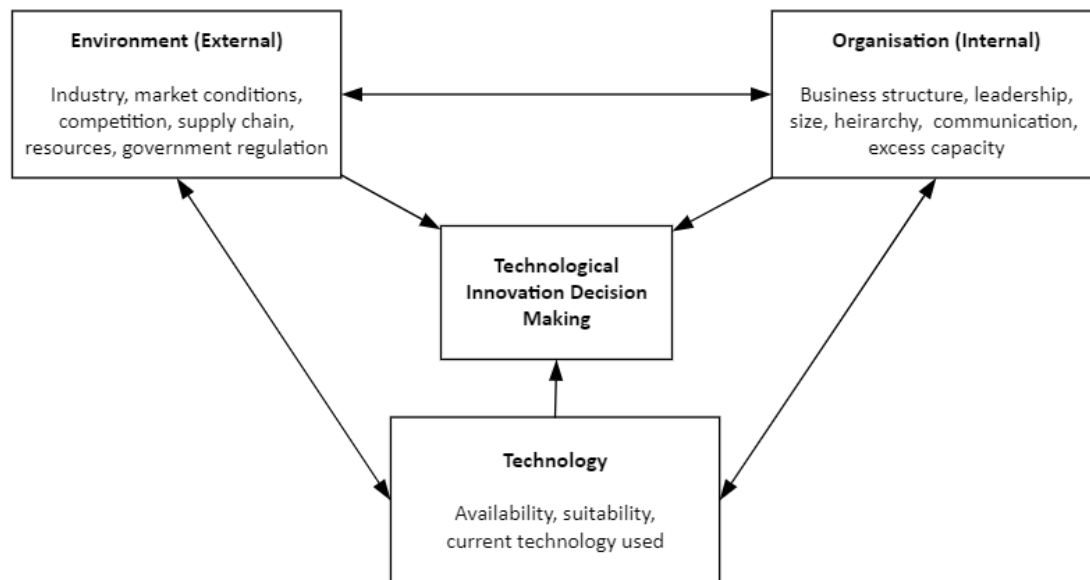


Figure 2-4 Technology, organisation, and environment framework
Source: Modified from Tornatzky and Fleischer (1990, p. 153)

In this current research of micro businesses and their use of AIS, all three elements of the TOE framework are applicable. The individual variables applicable are detailed and discussed in the results (refer to Chapter 4 and Chapter 5).

2.2.3 Normative and Positive Accounting

Normative and positive accounting theories emerged from the tenor in accounting practice, education and research during that time period. Normative accounting emerged from the 1950s and 1960s, followed by positive accounting in the 1970s.

The normative accounting period promoted norms and policy dictating best accounting practice (Godfrey et al., 2000; Patty et al., 2021; Wolk et al., 2004). Normative accounting theory is prescriptive, and “explain[s] what accounting information should be communicated to users of accounting information and how accounting information will be presented” (Patty et al., 2021, p. 186). The conceptual framework, based on normative accounting, is an example of accounting research during this period. Based on generally accepted accounting principles (GAAP), the conceptual framework provides guidance on all aspects of financial reports including recognition, measurement and presentation provided (Deegan, 2016; Patty et al., 2021). Similarly, other examples of normative accounting methods concerning measurement and valuation include current cost accounting, exit-price accounting and deprival-value accounting (Deegan, 2016).

A change in focus for accounting research came about in the 1970s (Godfrey et al., 2000; Patty et al., 2021), incorporating an “economic and behavioural approach” (Patty et al., 2021, p. 188) and an interest in real experiences and facts in accounting practice (Godfrey et al., 2000). The focus on what ‘is’ rather than ‘should be’ is known as positive accounting theory, defined by Deegan (2023, p. 11)

as “a theory that seeks to predict and explain why managers and/or accountants elect to adopt particular accounting methods in preference to others”. Examples of positive accounting theories include stakeholder theory and legitimacy theory (Deegan, 2016).

Prior studies have not been explicit in the use of normative or positive accounting theory in their exploration of financial information for small businesses. However, an examination on how financial information is collected and how it is used in business decisions and performance evaluation was completed by Halabi et al. (2010). The focus on “understanding what happens in reality, rather than what ‘should’ happen” (Halabi et al., 2010, p. 165) clearly aligns their study with normative accounting theory, differentiating themselves from positive accounting theory.

The theoretical foundations of DOI, TOE, normative and positive accounting provide insights in the adoption of computerised AIS and accounting research. The next section (section 2.3) will consider prior studies on AIS and its purpose, in particular computerised AIS, followed by the significance of micro businesses to the economy (section 2.4).

2.3 Accounting Information Systems (AIS)

All businesses regardless of size (refer to section 2.4 for discussion on business size) need to keep a record of what business activities they do and the transactions they incur. Managing these records occurs via an information system (IS), which is defined as “a man-made system that generally consists of an integrated set of computer-based components and manual components established to collect, store, and manage data and to provide output information to users” (Gelanis et al., 2014, p. 14). The different components of an IS are shown in Figure 2-5, including how users interact with the system, adding data which in turn provides meaningful information useful for decision-making. Gelanis et al. (2014, p. 15) further define an accounting information system (AIS) as a subset of an IS with a specialised focus on “financial aspects of business events”, but acknowledge contemporary computerised systems obscure the distinction between and IS and AIS.

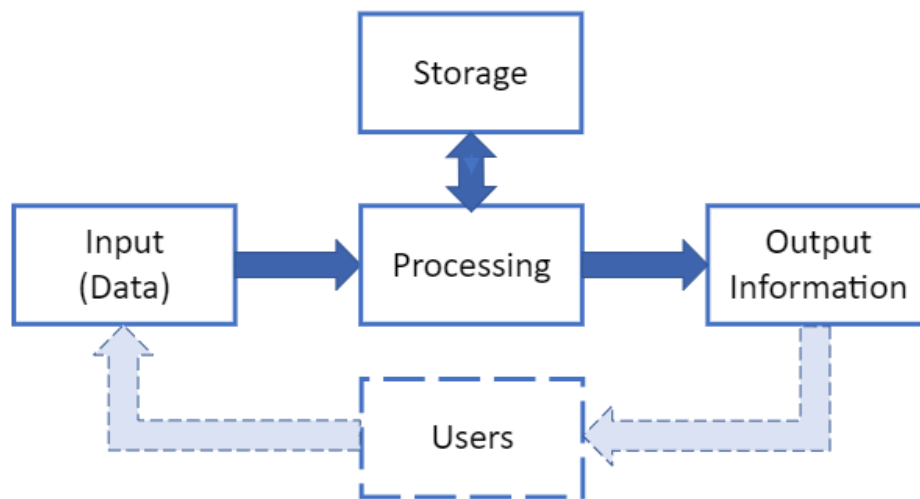


Figure 2-5 Functional model of an information system
 Source: Modified from Gelanis et al. (2014, p. 14)

Section 1.1 discussed the importance of information produced from a business's AIS for stakeholders. Examples of those transactions include customer invoices, bank account transaction statements and counts of inventory on hand. Processes within an AIS are set to ensure the capturing of data, but tools to enable the capture may vary from business to business (Figure 2-6). Some systems may be predominantly manual, with handwritten notes, others employ computerised accounting software. The computerised tool may operate as a stand-alone system in isolation or may interact with other information and communication technology (ICT) such as the internet, email and other digital applications. Using any system, information gathered supports decision-making for that business, and as a result impacts business performance, as found by Shields and Shelleman (2016) in their survey of 144 American small businesses.

Alternative sources of information may be market information, financial media or business instincts as determined by Coman and Coman (2013) in their survey of 53 Romanian SMEs. Additional sources include networks of competitors and customers as found by Emsfors and Holmberg (2015) in their qualitative study of six Swedish firms.

The benefits of using accounting information are well documented (Breen et al., 2004; Burgess & Paguio, 2016; Dyt & Halabi, 2007; Halabi et al., 2010; Igbaria et al., 1998; Lignier, 2009a, 2009b; Liu, 2012; Shields & Shelleman, 2016) and implementing computerised accounting software can support this, especially when used for management accounting extending beyond compliance purposes. Benefits include increased efficiency and improved access to information (Amidu et al., 2011; Breen et al., 2004). Shields and Shelleman (2016) found that return on investment (ROI) in the business improved with increased monitoring of profitability KPIs for products, services, and customers.

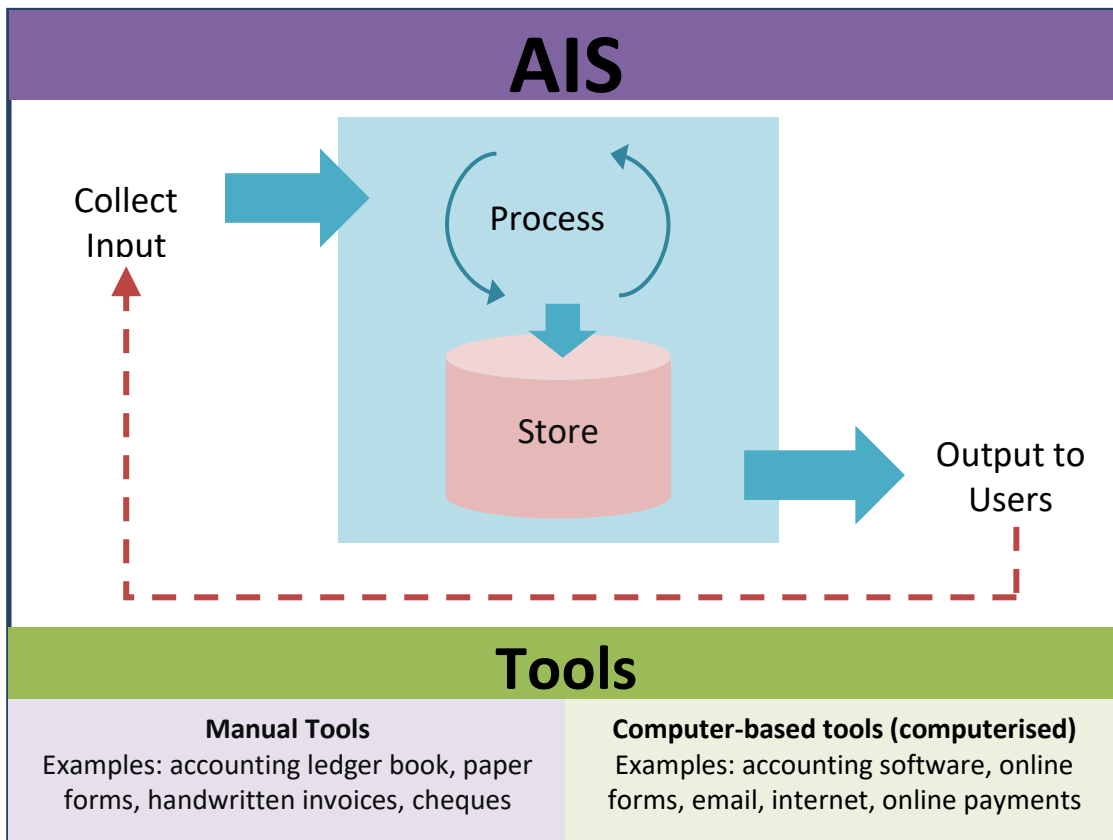


Figure 2-6 Elements of an AIS
 Source: Author's own compilation

The introduction of computerised applications in businesses that have few employees is reliant on the level of managerial interest and the skills and capabilities of management and the small number of employees within the business (Bishop, 2017; Douglas, 2005; Dyerson et al., 2016; Sellitto et al., 2017). Typical barriers, in addition to those above, include constrained financial resources, limited time to determine which technologies to implement and time requirements for training and daily use of the chosen tool (Bishop, 2017; Bowles, 2013; Breen et al., 2004; Cragg & Zinatelli, 1995; Sellitto et al., 2017; Woodley et al., 2015). Furthermore, changing demands of those who interact with the business (suppliers, customers, governing agencies) can challenge the ability to stay relevant (Business Mentors, 2017; Small Business Council, 2019a).

These resource constraints are why small businesses require a different approach to management than big businesses (Small Business Council, 2019a; Welsh & White, 1981). Limited managerial skills combined with constrained financial resources to invest and improve skill or access consultants to breach the gap, expose small businesses to risks and external factors such as competition, regulatory changes, and interest rates. "Many costs associated with running a business, including compliance and regulatory costs, are not scaled for business size and can have a disproportionate impact on small businesses" (Small Business Council, 2019a, p. 11). The inability to survive managerial mistakes or miscalculations is more likely to threaten the survival of small businesses than large businesses (Welsh & White, 1981).

The adoption of new software may have proactive motivations, such as the desire to invest in new products or services, or have reactive motivations such as supply chain requirements, legislative requirements, or changes in competitor activities as found by Dyerson et al. (2016) in a survey of 117 small and medium manufacturing firms in the United Kingdom. E-commerce encourages an online presence with business websites and providing customers with the ability to purchase online. Likewise, the ease of making purchases from suppliers online requires the use of internet banking (Ministry of Business Innovation & Employment, 2014a). The use of ICT in small businesses is typically focused on operational matters such as invoicing, cashbook, payroll and purchasing as found by Breen et al. (2004) in a survey of 221 small businesses in Australia. Other areas include payroll, inventory management and fixed assets, however there was very little use of ICT in planning and strategic decisions for the future of the business, for example, budgeting (Amidu et al., 2011).

The decision of which AIS tools to adopt, and how to use these tools in business operations, and therefore the benefits received from AIS adoption, will differ by business. A number of factors could affect the decisions about AIS implementation and use, the top reasons being owner-manager attitude to computerised AIS, perceived benefits of adoption and business resources available (Brouthers et al., 1998; Chao & Chandra, 2012; Emsfors & Holmberg, 2015; Ifinedo, 2011; Liberman-Yaconi et al., 2010; Lutfi et al., 2016; Pramuka & Pinasti, 2020; Pulakanam & Suraweera, 2010; Shiau et al., 2009; Yong & Freudenberg, 2020). These factors have been found to be specific to micro businesses especially where there is a single owner-manager responsible for making decisions, as larger firms with greater resources will involve a wider team in making decisions, reducing the effects of individual biases (Liberman-Yaconi et al., 2010).

Where the owner-manager views record keeping as a “necessary evil” to satisfy compliance and external stakeholder needs, there will be great resistance to commit financial and time resources to the adoption of computerised AIS, as found in the Swedish qualitative study of six small businesses by Emsfors and Holmberg (2015, p. 59) . A lack of understanding of the benefits of computerised AIS results in a traditional view of IT being a cost instead of an investment (Shiau et al., 2009). A fear of computers will also affect computerised AIS adoption as reported by Pulakanam and Suraweera (2010) in their qualitative study of 16 New Zealand small businesses and IT advisors, and may be related to owner-manager age and exposure to technology. The majority of SME owners in New Zealand are from Generation X being 40 to 54 years old (37%) or Baby Boomers being 55 to 74 years old (40%) (MYOB Research Analysis, 2022).

The quality of decision-making can be enhanced by actively seeking information and systematically capturing data using computerised tools (Brouthers et al., 1998; Liberman-Yaconi et al., 2010), such as computerised AIS. Triggers for decision-making, including the decision to implement new technology, may manifest from internal or external influences (Ifinedo, 2011; Lai, 2017; Liberman-Yaconi et al., 2010). Due to limited business resources, the loss or gain of a single employee with

specialised skills is an example of an internal influence. A significant external influence is compliance requirements for taxation and reporting (Yong & Freudenberg, 2020).

2.3.1 AIS and Compliance Reporting

The introduction of Goods and Services Tax (GST) in Australia and New Zealand has affected the uptake of accounting software in small businesses (Breen et al., 2002; Breen et al., 2004; Lignier, 2006, 2009a, 2009b). A computerised system simplifies recording GST collected and paid through sales and purchases and automating the preparation of documentation necessary for reporting to the respective taxation departments (Yong & Freudenberg, 2020). Regular filing of returns (monthly, bimonthly or six monthly in New Zealand (Inland Revenue, 2021b); monthly, quarterly or annually in Australia (Australian Taxation Office, 2018)) can be an encouragement to keep records up to date. In New Zealand, businesses who earn over \$60,000 (Inland Revenue, 2021b) need to register for GST, while in Australia the limit is set to A\$75,000 (Australian Taxation Office, 2018). Micro businesses who earn less than these thresholds are not required to register for GST and are more likely to keep simplified manual accounting systems. Contradictory to this, Clark and Douglas (2014) discovered that 76% of the New Zealand micro businesses surveyed were GST registered when 51% had annual revenue of less than \$50,000. This group of micro businesses who voluntarily register for GST would benefit from the structured and regular record keeping encouraged by the taxation authorities. Lignier (2006) labelled these as *managerial benefits*, stating that the legislative rules enforce strict, accurate and up-to-date record keeping which would support improved decision-making (Kirkley, 2005). A further prior Australian study of small businesses by Lignier (2009b) identified that 75% of survey respondents who were required to file GST valued the information obtained from their AIS and its usefulness for internal management. In another study by the same researcher, Lignier (2009a), cites 28% of small businesses used statements prepared for taxation purposes for providing information to banks and lenders. Both findings were on the same study including a survey of over 300 small businesses and 12 managers of small businesses.

In 2015, New Zealand legislators “recognised that SMEs often produce financial statements only for the purposes of meeting the user needs of owners, tax authorities or banks” (New Zealand Institute of Chartered Accountants, 2014, p. 10), making an allowance for less stringent rules in preparing reports. Providing that the SME is not publicly accountable and is determined to be ‘large’ (External Reporting Board, 2015) (total assets exceed \$60 million and total revenue exceeds \$30 million) (External Reporting Board, 2014, p. 5), general purpose financial reports prepared according to GAAP are not required. Instead Inland Revenue has set minimum requirements for special purpose financial reports (SPFR) with the intention of reducing compliance costs for smaller businesses (Inland Revenue, 2013) but still producing meaningful reports for the users noted above, specifically for the determination of income tax.

Typical tax compliance applicable to small businesses includes GST, income tax and payroll related deductions as found by Lignier and Evans (2012) in their Australian survey of 159 small and medium businesses. Income tax may be either personal or corporate depending on the business structure. Accounting software used for recording GST will typically support the record keeping requirements for income tax. Ma et al. (2021) found in their New Zealand qualitative study of 8 accounting firms, an increase in small businesses preparing their own GST and payroll with the implementation of computerised AIS, but no change to the completion of annual financial reports and income tax. Accounting software may also support reporting for payroll, otherwise, another stand-alone product may be used. These compliance costs generally apply to all businesses, regardless of the specific industry that the business operates in (Evans et al., 2014; Lignier & Evans, 2012), but there may also be other taxes or regulations that apply to a specific activity, product, location or industry of the individual business (Kirkley, 2005; Lignier & Evans, 2012).

While legislation may not directly apply to some micro businesses, an AIS, manual or computerised, will be beneficial for internal management, decision-making and reporting to external entities. Using accounting software creates further benefits for the micro business.

2.3.2 Computerised AIS

The terminology used to describe the AIS varies in previous studies. Systems that are paper-based are referred to as “manual” (Dyt & Halabi, 2007; Lignier & Evans, 2012). Where a computer is used, the most frequently used term is “accounting software” (Abra, 2015; Baker, 2010; Bishop, 2017; Burgess & Paguio, 2016; Chao & Chandra, 2012; Lenthén & Stanton, 2001; Lignier & Evans, 2012; Pulakanam & Suraweera, 2010) or “accounting applications” (Igbaria et al., 1998). More descriptive labels include “computerised accounting systems” (CAS) (Amidu et al., 2011; Breen et al., 2004; Halabi et al., 2010; Lignier, 2009a, 2009b), or similar variations “computerised accounts” (Burgess & Paguio, 2016), “computerised system” (Lignier & Evans, 2012) or simply “computerised” (Dyt & Halabi, 2007). Other terminology highlights the electronic aspect of the AIS, with “e-accounting” (Amidu et al., 2011) or “internet and e-business technologies (IEBT) (Ifinedo, 2011).

This research used “computerised AIS” to describe the management of information using an accounting software or application on a computer. “Spreadsheet AIS” is used to describe accounting information recorded in spreadsheet software. Also used is the term “manual” to describe systems handwritten on paper, and the term “hybrid” is used when there is more than one approach in the AIS.

Traditionally a computer program, or software, was purchased and there was a perpetual licence and perceived ownership by the business. Changes in modern technology have seen the introduction of applications where there are charges of regular fees for usage. Versatility has increased the ability to access these programs through the internet, irrespective of device or operating platform. This

current research is not intended to focus on the differences between software and applications, other than recognising that the more modern tools will naturally incorporate additional functionality than their predecessors. Most significant of these includes a seamless interface with online banking, reporting to the taxation department, internet, email and other computerised tools used by the business.

Burgess and Paguio (2016) focussed their case study of 30 Australian home-based businesses on a list of eight ICT applications that businesses may employ including: (1) email; (2) web portals/directories; (3) online banking; (4) mobile business (portable devices including mobile phones, smart phones, laptop computers, personal digital assistants and tablets); (5) websites; (6) computerised accounts; (7) online buying/selling; and (8) social media. They found that email was the most useful and had the greatest level of adoption by small businesses, followed by online banking and mobile business. Although computerised accounts were perceived as having a high level of usefulness, their level of adoption was just over 50%.

The integration of many of these technologies strengthens the small business. For example, websites used to sell products, incorporate functions to create sales invoices, collect payments and notify the business for shipping purposes. Invoices and payments received are also captured by accounting software, which can be used to prepare GST returns. There is a need for longitudinal case studies indicated by the Dyerson et al. (2016) belief that there is a need for further investigation of firms as they move through the stages of ICT readiness and the implementation of ICT solutions, as determined by their survey of 117 small and medium-sized businesses in the United Kingdom. Government programs have promoted the use of ICT in small enterprises aiming to encourage business growth (European Commission, 2020; Small Business Council, 2019a). Success with government initiatives is varied and challenged by the ever-changing range of technologies available (Woodley et al., 2015), and New Zealand's Small Business Council (2019a) are urging the government to improve data collection, so that policy makers are informed and meet the needs of small businesses.

More sophisticated accounting software incorporates detailed records and improved controls, especially in the areas of cash flow monitoring, inventory control and credit management as observed by Lignier (2009a) in their mixed methods study of Australian small businesses including a survey of over 300 businesses and interviews of 12 managers. Although Mauricette et al. (2022) reported negative feedback concerning ease of use with payroll, inventory and reporting, basic programmed checks ensure that at a minimum, debits equal credits, increasing the confidence in the accuracy of the records (Lignier, 2009b). Where businesses complete their own bookkeeping internally, there will be a level of confidence in the programmed controls shared by the accountant which may result in lower accounting and audit fees (Lignier, 2006, 2009a).

The tendency of small businesses to implement off-the-shelf generic accounting software, typically due to time and resource constraints, with very few businesses implementing a customised software solution was noted by Bishop (2017) in their literature review. Bishop identified the importance of mapping the business imperatives with the functions provided by accounting software. The dominance of particular AIS software brands was observed in an Australian survey of 64 micro and small business by Lenthen and Stanton (2001), where they found that 50% of their survey respondents used one specific off-the-shelf accounting software. Similar results were noted by Halabi et al. (2010), Breen et al. (2004) and Burgess and Paguio (2016). The use of spreadsheet software to support recording business information was also observed (Burgess & Paguio, 2016; Halabi et al., 2010). Typical features of off-the-shelf products such as MYOB and QuickBooks, include subsidiary ledgers for accounts payable and accounts receivable, and simplifying the process for preparing Aged Debtors and Aged Creditor reports (Lignier, 2006). Xero, a cloud-based product, is another accounting application that is newer to the market but well-established.

There are choices for a small business in implementing a computerised AIS. Selection is a compromise between the features and benefits offered by the accounting software and resource costs (time and money) for both implementation and day-to-day operations. Where the computerised AISs include a full complement of integrated features, they are described as “full function systems” (Baker, 2010) or “full accounting systems” (Cragg & Zinatelli, 1995).

The chosen AIS solution needs to be aligned with the business’s own specialised needs, and for this to happen, there needs to be a greater understanding between the micro business and ICT advisors (Bishop, 2017; Burgess & Paguio, 2016).

Advice to small businesses on ICT is available from a variety of sources. Given the resource poverty, specifically the lack of diversity of skills, small businesses can fill this internal gap through advisors (Barbera & Hasso, 2013; Blackburn & Jarvis, 2010; P. J. Carey, 2015; Oosthuizen et al., 2020; Sibanda & Manda, 2016). The specialised skills and knowledge in the areas of accounting, business processes and information systems, position accountants as the best candidates for advising small businesses (Ma et al., 2021). Benefits to the small business are amplified by the quality of the relationship and frequency of contact between the accountant and small business (Barbera & Hasso, 2013; Oosthuizen et al., 2020; Stone, 2015). Accountants are particularly skilled advisors in financial literacy (Blackburn & Jarvis, 2010; P. J. Carey, 2015; Stone, 2015). This includes the selection of accounting programs and third party add-ons Ma et al. (2021) as found in their New Zealand qualitative study of eight accounting firms. The membership of certification and partner programs where accountants act as agents for specified accounting programs benefit small businesses, as the accountants undergo advanced training in that program. A conflict of interest may apply as financial rewards may be given to accountants when their business clients use the program (Ma et al., 2021). This may lead to situations where the lack of independent advice results in the wrong choice of accounting software,

as small businesses are advised to use what the accountant knows best, and not necessarily the best tool for that business, as found in the New Zealand qualitative study by Pulakanam and Suraweera (2010) of 16 small businesses and IT advisors.

Beyond the various products and features they support, two main technologies are currently available, influencing the accessibility of the program, and therefore AIS preferences. These are cloud computing and desktop applications.

Cloud computing

Cloud computing programs are accessed through an internet browser, from any device able to connect to the internet (Abra, 2015; Brandas et al., 2015; CCH, 2013; Cloud Accounting Institute, 2014; Cohen, 2015; Dimitriu & Matei, 2014a, 2014b, 2014c, 2015; Ernst & Young, 2011; Ma et al., 2021). There is no program downloaded onto a user's computer and changes and updates to the program by the provider are made frequently and the user is always accessing the most recent version of the program available (Abra, 2015; Baker, 2010; Cohen, 2015; Dimitriu & Matei, 2015). Data is stored in the cloud enabling simultaneous access from multiple users (Abra, 2015; Brandas et al., 2015; Cloud Accounting Institute, 2014; Dimitriu & Matei, 2014a, 2014b, 2014c, 2015; Ernst & Young, 2011; Johnston, 2013; Ma et al., 2021) in real-time, and all users for that business access the same single version of the data (Cloud Accounting Institute, 2014; Cohen, 2015; Ma et al., 2021). Full functionality is typically available from laptop and desktop computers and supporting applications (apps) with less functionality are available for mobile phones, tablets and other portable devices (Cloud Accounting Institute, 2014).

Cloud computing AIS are typically provided under a software as a service (SaaS) subscription model (Brandas et al., 2015; Dimitriu & Matei, 2014b, 2015; Ernst & Young, 2011), and access is only granted if the user is currently paying for the subscription (Baker, 2010). The usual pricing plans allow for scalability, and the user only pays for the level or resources required (Baker, 2010; Chao & Chandra, 2012; Cohen, 2015; Dimitriu & Matei, 2014a; Ernst & Young, 2011; Ma et al., 2021). Standard programs can be enhanced with the third-party add-ons that share data with the core AIS (Ma et al., 2021) but these come as an additional cost, which may be a deterrent to adoption despite the efficiency and productivity benefits (Chao & Chandra, 2012).

Security is a typical concern of users with cloud computing (Banerjee & Saraswat, 2022; CCH, 2013; Dimitriu & Matei, 2014c; Ernst & Young, 2011; Ma et al., 2021; Pramuka & Pinasti, 2020), as the data is not within the users' immediate control and so they are reliant on security protocols set by the software provider. Typically, these will be at a much higher standard than any small business (Abra, 2015; Brandas et al., 2015; Cloud Accounting Institute, 2014; Dimitriu & Matei, 2014a, 2014b, 2014c), as the software provider's reputation will be negatively impacted by a security breach (Cloud Accounting Institute, 2014; Dimitriu & Matei, 2014b).

Ease of use and perceived usefulness have been found in prior studies to be the largest determinants in selecting AIS (Banerjee & Saraswat, 2022; Ma et al., 2021; Pramuka & Pinasti, 2020) The ease of use and accessibility of cloud computing have buoyed its popularity and outweighed any concerns by users.

Desktop application

A desktop application is a program loaded and saved onto the user's computer storage. Data is also physically stored on this same device. When program updates are available from the software providers, it is the user's responsibility to install them, and the security of the data is also the responsibility of the user. Fees for desktop applications may be one-off at the time of the purchase or a periodic subscription where the user is entitled to receive any updates released in the subscription period (Dimitriu & Matei, 2014c).

The limiting factor with desktop applications is version control. With changing computer environments (i.e., Windows platform, security), users with older AIS versions may be faced with having to continue using old hardware to support the AIS or faced with the need to update both the hardware and AIS to maintain compatibility. These changes are further magnified by software providers moving to cloud computing and SaaS and subsequently phasing out their support for desktop applications (Dimitriu & Matei, 2014c).

A variation of desktop applications exists, a hybrid model, where the AIS program is installed directly on the computer, but the data is stored in the cloud (Baker, 2010). This provides greater flexibility than a desktop application in terms of accessing information but is still restrictive as manual updates of the program are required, limiting the AIS to a specific computer.

As can be seen from the discussion above, there are various considerations that are needed when adopting computerised AIS. These considerations differ by business size. The following section (section 2.4) will define micro and small businesses, and identify the unique characteristics and challenges faced by these enterprises, with specific reference to those that affect how micro businesses implement and use AIS.

2.4 Micro Business

Terminology commonly used to describe the size of businesses include '*small business*', '*SME*' (small to medium enterprise), '*micro business*', '*entrepreneur*' and '*home-based business*', amongst others. In general, each of these terms indicates the business is small in stature, and the terms are often used interchangeably. A closer assessment of the terms and definitions used by various nations throughout the world identified a wide discrepancy in the usage of the terms as found by (Anastasia,

2015) in an American survey of 388 business academics and professionally qualified accountants. Table 2-1 shows a comparison of enterprise size definitions between New Zealand, Australia, European Union and the United States. Some countries, including New Zealand and Australia, base their definitions solely on the number of employees (Australian Small Business and Family Enterprise Ombudsman, 2016; Ministry of Business Innovation & Employment, 2021), whereas others incorporate an element of income, or balance sheet measurement (European Commission, 2016). Measuring by employee number raises questions about whether there is a conversion to a full-time equivalent value such as used by the European Union (European Commission, 2016), or if there is no differentiation between full and part time employees as is the case in the United States (US Small Business Administration, 2017a).

Some countries use multiple definitions. The governing body who oversees small businesses in the United States, the US Small Business Administration, uses a size definition linked with the industry of the business (US Small Business Administration, 2017b), with approximately 1,100 sub classifications of industries. Using this system, measuring business size may be based on either employee numbers (ranging from 100 to 1,500) or annual income (ranging from US\$0.75 - 38.5 million), except for financial institutions which are measured on asset value (US\$550 million). Other American organisations use a simpler definition for an SME, being an enterprise with less than 500 employees (Headd, 2015, 2017; Schwinn, 2016; US Small Business Administration, 2017a). Australia similarly has differences between governing agencies (Australian Securities & Investments Commission, 2013). In contrast, the European Commission has accomplished uniting all its member countries in one definition (European Commission, 2016).

Anastasia (2015) explored the definitions of small business and microenterprises. Through a survey of 388 American academics and professionally qualified accountants, Anastasia attempted to identify an appropriate definition according to academics and experts in accounting and business management. The study did not conclude on any agreement on definitions, but an understanding of the difficulties faced by regulatory bodies in setting the characteristics that identify who qualify for small business status was provided.

Some countries recognise multiple size categories when defining the size of small businesses. For example, the European Commission (2016) classifies business as medium-sized, small or micro. Other countries, such as the United States, only officially recognise the overarching SME category (US Small Business Administration, 2017b) and information on micro or small businesses is difficult to find (Shields & Shelleman, 2016). The Australian Bureau of Statistics recognises a level smaller than micro businesses called 'nano business', but as reporting only includes GST registered entities, this excludes this extensive group of businesses (1.2 million) (Australian Small Business and Family Enterprise Ombudsman, 2016).

2.4.1 Significance to the Economy

Table 2-2 details the significance of small businesses through the number of businesses, GDP, value-added and number of people employed in New Zealand, Australia, the European Union and the United States. As there is no consistent definition of SME or micro business, international comparisons are limited and conclusions drawn from the existing body of literature or statistics from government agencies must be mindful of the differences as found in a study by Evans et al. (2014) comparing small business and tax compliance costs between Australia, Canada, South Africa and the United Kingdom. Regardless, there is a common view that SMEs are critical to the economy with strong descriptive references to small businesses such as the “backbone of a flourishing economy ... they provide a solid foundation on which the rest of nation can grow” (Business Mentors, 2017, p. 2), “foundation of economies” (Bishop, 2017, p. 37), “cornerstone of the New Zealand economy” (Ministry of Business Innovation & Employment, 2014a, p. 3), “drive job creation and economic growth and ensure social stability” (European Commission, 2016, p. 3) and “an integral role in the New Zealand economy” (Business Mentors, 2017, p. 5). SMEs are considered “the backbone of [Europe’s] economy, creating more than 85% of new jobs in Europe” (European Commission, 2016, p. 3).

The framework, Small Business Act (SBA), was established to promote entrepreneurship and innovation, with the aim of alleviating the burden of legislative compliance and support access to finance and markets (European Commission, 2008). In New Zealand, the Small Business Council was established for one year (2018-2019) and tasked to make recommendations to the Government on “strategic opportunities for improving the small business sector” (Small Business Council, 2019b, p. 2) and . The ensuing Small Business Strategy and recommendations acknowledged the “enormous contribution” and “value to the economy” (Small Business Council, 2019a, p. 3) from small businesses, and also acknowledged the persistent climate of change and exposure to risk and that small business size enables agility to respond to these challenges (Small Business Council, 2019a, 2019b). Twenty recommendations were made, under four headings:

1. Understanding the needs of small businesses
2. Easier access to finance
3. Building capacity and skill
4. Shifting from compliance to enablement

The recommendations by the Small Business Council (2019a), supported by other prior studies, identify a lack of research on SMEs (Pulakanam & Suraweera, 2010; Shields & Shelleman, 2016). SMEs face higher risk than larger businesses (Welsh & White, 1981), affecting their ability to access external financing which may be alleviated by maintaining good AIS systems (Amidu et al., 2011). There is a strong need for investment in owner and management skills, including financial literacy,

computerised AIS and other productivity tools (Shields & Shelleman, 2016). Support in this area is a joint effort between government and other professional advisors, and accountants are particularly well placed to provide this support (Alam & Nandan, 2010; Barbera & Hasso, 2013; P. J. Carey, 2015; Ma et al., 2021; Oosthuizen et al., 2020; Sibanda & Manda, 2016; Stone, 2015). Compliance costs are disproportionately high for SMEs, and changes are needed to alleviate this burden (Yong & Freudenberg, 2020). Overall, small businesses “lack profile and a coherent voice” resulting in under representation by government (Small Business Council, 2019b, p. 2).

The European Commission has also published communication to the European Parliament, making similar recommendations including support for improving sustainability and digitalisation, reducing regulatory burden, and improving access to financing (European Commission, 2020). The communication notes that a partnership between authorities, SMEs and investors is necessary for successful implementation, and will benefit the entire European Union economy.

Much of the prior literature focusses on the wider category of SME, but the statistics show that the micro businesses are a major portion of SMEs. Likewise, the above statements on the importance of small businesses are also supported by the statistics. Locating current information on micro businesses is challenging and as noted by the Small Business Council (2019a) there is a need to collect more data on micro businesses in New Zealand. From Table 2-2, 51% of New Zealand’s value-added is attributed to SMEs with 41% from businesses with less than 20 employees (Ministry of Business Innovation & Employment, 2021). Of all businesses, 89% are micro (0 to 5 employees) and the wider business definition of SMEs employ 43% of New Zealand’s workforce, amounting to nearly one million people (Ministry of Business Innovation & Employment, 2021). The other countries in Table 2-2 show similar numbers based on their own size definitions.

The SME definition used by New Zealand partially aligns with the definition set by the Australian Bureau of Statistics, as shown in Table 2-1. As stated earlier, Australia has more than one official definition (Australian Securities & Investments Commission, 2013), but this is the one that is most widely used in Australia (Australian Securities & Investments Commission, 2013; Australian Small Business and Family Enterprise Ombudsman, 2016; Dyt & Halabi, 2007; Jay & Schaper, 2003; Woodley et al., 2015), and allows for making comparisons between the two countries (Ministry of Business Innovation & Employment, 2017, 2019, 2021) who are close trading partners. Both New Zealand and Australia’s small businesses (less than 20 employees, being the micro and small categories) make up 97% and 98%, respectively, of all enterprises (New Zealand 89% micro and 8% small; Australia 89% micro and 9% small) (Table 2-2). Australia’s small businesses employ a greater portion of the workforce, 42% (5 million people) compared with 30% (11% micro businesses and 19% small businesses being a total of 0.7 million people) in New Zealand. As the other size definitions, such as SME, are different, less than 200 employees for Australia and 50 employees in New Zealand, other comparisons need to be mindful of these differences.

SMEs create opportunities for new entrepreneurial talents and offer consumers choice and variety including specialist goods and services (Ministry of Business Innovation & Employment, 2014a) that larger business enterprises may consider uneconomical to provide. At times, when finding employment is difficult, starting a new micro business provides an alternative and economic independence (Burgess & Paguio, 2016; Igbaria et al., 1998; Ministry of Business Innovation & Employment, 2014a) and in turn, employment. In 2020, 45% of jobs (262,610, an increase from 115,360 being 42% in 2015) created in New Zealand, were from small businesses with less than 19 employees (Ministry of Business Innovation & Employment, 2017, 2021). The diversity in services, markets and locations that the numerous SMEs offer may also provide a level of stability to a national economy as the risk of failure spreads throughout the enterprises (Igbaria et al., 1998).

Table 2-1 Comparison of definitions for enterprise size

Country	Definition			
	Micro	Small	Medium	SME
New Zealand ^a	0 - 5 employees	6-19 employees	20 - 49 employees (labelled as Small to Medium)	< 50 employees
Australia ^b	0 - 4 employees	5-19 employees	20 - 199 employees	< 200 employees
European Union ^c	0 - 9 employees; < €2 million turnover; < €2 million balance sheet total	10 - 49 employees; < €10 million turnover; < €10 million balance sheet total	50 - 249 employees; < €50 million turnover; < €43 million balance sheet total	< 250 employees; < €50 million turnover; < €43 million balance sheet total
United States	< 9 employees ^{d,e}			< 500 employees ^e (Specific definition depends on industry ^f)

^a Ministry of Business Innovation & Employment (2017)

^b Australian Small Business and Family Enterprise Ombudsman (2016)

^c Muller et al. (2016)

^d Headd (2017)

^e US Small Business Administration (2017a)

^f US Small Business Administration (2017b)

Table 2-2 Country comparison of small businesses

Country	Number of Enterprises				Value-Added (NZ, Aus, EU) / GDP (US)				People Employed			
	Micro	Small	Medium	SME	Micro	Small	Medium	SME	Micro	Small	Medium	SME
New Zealand ^a	89.3%	7.7%	1.9%	99.0%	41.0%		9.7%	50.7%	10.5%	18.8%	13.6%	43.0%
	502,587	43,536	10,554	556,677					243,900	435,100	315,100	994,100
Australia ^b	88.7% ^b	8.8% ^b	2.3% ^b	99.8% ^b	32.7% ^c		21.1% ^c	53.8% ^c	42.0% ^d		24.0% ^d	66.0% ^d
	2,279,828 ^b	226,184 ^b	59,355 ^b	2,565,367 ^b	A\$438 billion ^c		A\$284 billion ^c	A\$722 billion ^c	5.0 million ^d		2.8 million ^d	7.9 million ^d
European Union ^e	93.3%	5.7%	0.9%	99.8%	18.7%	17.0%	17.3%	53.0%	29.2%	20.0%	15.9%	65.0%
	21.0 million	1.3 million	0.2 million	22.5 million	€1.2 trillion	€1.1 trillion	€1.1 trillion	€3.3 trillion	37.0 million	25.3 million	20.1 million	82.4 million
United States	*81% ^f			99.9% ^f				*43.5% ^f *GDP	11% ^g			47.8% ^h
	*26.5 million ^f *zero employees			32.5 million ^f					13 million ^g			57.9 million ^f

Note: Size is based on region's own definition

^a Ministry of Business Innovation & Employment (2021)

^b Australian Small Business and Family Enterprise Ombudsman (2022a)

^c Australian Small Business and Family Enterprise Ombudsman (2022c)

^d (Australian Small Business and Family Enterprise Ombudsman, 2022b)

^e Muller et al. (2021)

^f US Small Business Administration (2021)

^g Headd (2017)

^h US Small Business Administration (2017a)

2.4.2 Home-Based Business

Related to SMEs and micro business is the home-based business (HBB). Monin and Sayers (2005, p. 7) in their book of case studies on New Zealand HBBs, define a HBB as “a business entity operated by a self-employed person working at or from home selling commodities or services in the market”. The definition specifically excludes people employed by a business that choose to work from home (Clark & Douglas, 2010; Clark & Douglas, 2014; Monin & Sayers, 2005). Clark and Douglas (2014) note that the HBB definition has been consistently applied internationally. Some prior studies may specifically exclude farms (Monin & Sayers, 2005) given the dominance of this industry within HBBs.

For the purposes of this research, the location of the business activity of the HBBs is not the focus. The diverse skill set required by the owner and small number of employees to cover all aspects of the business and AIS has a greater impact on the tensions faced by both HBB and micro entities that are of interest to this research. For this reason, literature on HBBs must be considered.

New business ventures are often based at a home residence as a temporary measure until the business is established with size and cash flow to support a separate premises as noted by Clark and Douglas (2010). Their online survey of 522 HBBs found 44% of HBBs were in operation for less than 5 years, and 72% of HBBs were in operation for less than 10 years, indicating that there are some HBBs who value the lifestyle of operating from a home residence. Their study also found that 93% of HBBs were seeking business expansion within the next two years. Levels of voluntary GST registration support HBB growth aspirations with 76% registered for GST, with 51% of these businesses voluntarily registering as they did not meet the regulatory threshold (Clark & Douglas, 2010).

Many HBBs will also meet the definition of a micro-business, and occasionally be as big as a small business. Jay and Schaper (2003) identified HBBs as the largest proportion of SMEs in Australia in their postal survey of 68 HBBs. Sayers (2005, p. 20) details a comparison of HBBs and SMEs, identifying typical characteristics shared by both business types: “personal ownership and management; few, if any specialist managerial staff; not being part of a larger business enterprise, and including under twenty employees”. It is these commonalities that create an overlap between SME and HBB research. A prior study by Clark and Douglas (2014), who surveyed HBBs in New Zealand, found that 36% of their sample had no employees, 51% had one full-time, and 11% had 2 full-time employees. These results indicate that their findings will also apply to micro-businesses.

2.5 Summary

This chapter provided an overview of DOI, TOE, normative and positive accounting theoretical perspectives and highlighted a lack of theoretical foundation in prior studies. The literature in ICT and AIS adoption and micro businesses was discussed, Key findings include the official statistics on the number of businesses and their contribution to the economy support the consensus in the literature on the importance of micro businesses. This sector supports local communities in ways that larger businesses may not be able to, including employment opportunities, and the supply of unique goods and services. Despite the differences between business size, all businesses have the need for information in order to govern their enterprise and to satisfy compliance requirements, in particular, taxation. The literature supports the use of computerised AIS tools to manage information but recognises that there is insufficient research on micro businesses and their use of these tools. In particular, no prior studies could be found to support the benefits to micro businesses of the use of AIS. Chapter 3 provides details on the research design, including data gathering and data analysis methods used in this current research.

Chapter 3

Research Method

3.1 Introduction

The literature in Chapter 2 identified the importance and need to further understand how AIS is used by micro businesses, given the importance of small businesses to the economy. This research contributes to understanding benefits of using AIS in micro businesses. This research will contribute to understanding the AIS tools available and used by New Zealand micro businesses, how micro businesses should be using their AIS (best practice), and how the AIS is actually used in their business. There will be a greater awareness of the factors affecting adoption of computerised AIS and the benefits of doing so. Addressing the “how”, “why” and “what” focuses on understanding the viewpoints of micro businesses, their accountants as advisors to the business, and defines this current research as exploratory in nature. Exploratory studies allow for discovery of what is happening, and to gain insights about a topic. This can be achieved through qualitative methods. A multi-phase approach was used, which included desk-based research, in-depth semi-structured interviews of the subjects (micro businesses) and experts (accountants) as the primary means of discovery (Saunders et al., 2012), and complimenting this descriptive research, through an online questionnaire, which further strengthens the research as it provides a clear snapshot of “what” is happening at that point in time (Saunders et al., 2012). The inclusion of both qualitative and quantitative questions in the questionnaire enriches the data collected, providing opportunity to explore beyond the concepts considered by the researcher.

Each phase included multiple methodological choices in answering the research questions. Explained by Saunders et al. (2012), the two main methodological choices include the mono method and multiple methods (refer to Figure 3-1). Mono method is where the research method is focused on either qualitative or quantitative data collection. Multiple methods may be multimethod or mixed methods. Multimethod includes more than one data collection method, but each stage of data collection is either quantitative or qualitative. Mixed methods include a combination of both quantitative and qualitative in each stage of data collection.

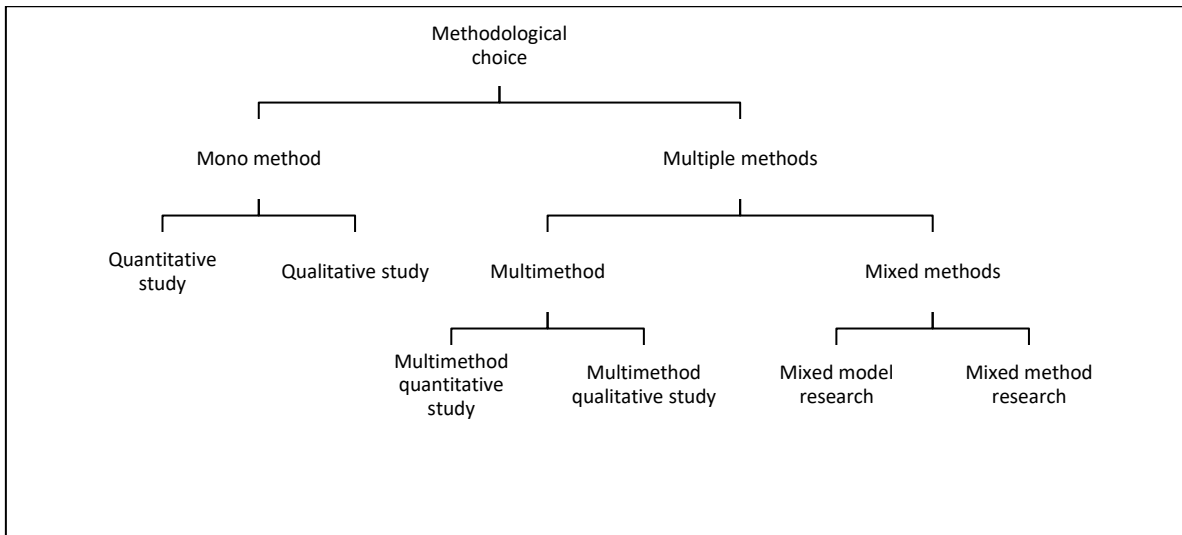


Figure 3-1 Methodological choice
 Source: Modified from Saunders et al. (2012, p. 165)

Considering the research questions presented, Table 3-1 identified the methodological choice for each individual question in the design of this research. Qualitative methods dominate this current research through the interviews and desk-based research, and the surveys are a concurrent embedded design where both quantitative and qualitative questions are included (Saunders et al., 2012).

Table 3-1 Research design

Research Questions	Methodological Choice	Data Collection Technique
<i>RQ 1: What AIS tools are available and being used to manage accounting information processes for micro businesses?</i>	Mixed methods	Phase 1 - Desk-based research Phase 2 - Interviews (accountants) Phase 3 - Survey (micro businesses) <i>Phase 4 - Interviews (micro businesses)</i>
<i>RQ 2: What is best practice for micro businesses using AIS?</i>	Mono method	Phase 2 - Interviews (accountants)
<i>RQ 3: How are micro businesses using their AIS?</i>	Mixed methods	<i>Phase 2 - Interviews (accountants)</i> <i>Phase 3 - Survey (micro businesses)</i> Phase 4 - Interviews (micro businesses)
<i>RQ 4: What factors affect micro businesses in the decision to adopt or not to adopt a computerised AIS?</i>	Mixed methods	<i>Phase 2 - Interviews (accountants)</i> <i>Phase 3 - Survey (micro businesses)</i> Phase 4 - Interviews (micro businesses)
<i>RQ 5: What are the benefits of using computerised AIS in micro businesses?</i>	Mixed methods	<i>Phase 1 - Desk-based research</i> <i>Phase 2 - Interviews (accountants)</i> <i>Phase 3 - Survey (micro businesses)</i> Phase 4 - Interviews (micro businesses)

Note: Data Collection Technique – bold type indicates primary data collection, italics type indicates supplementary data collection.

Chapter 1 introduced the four phases of this current research as shown in Figure 3-2 (modified from Figure 1-5). Each research phase is described sequentially in the remainder of this chapter.

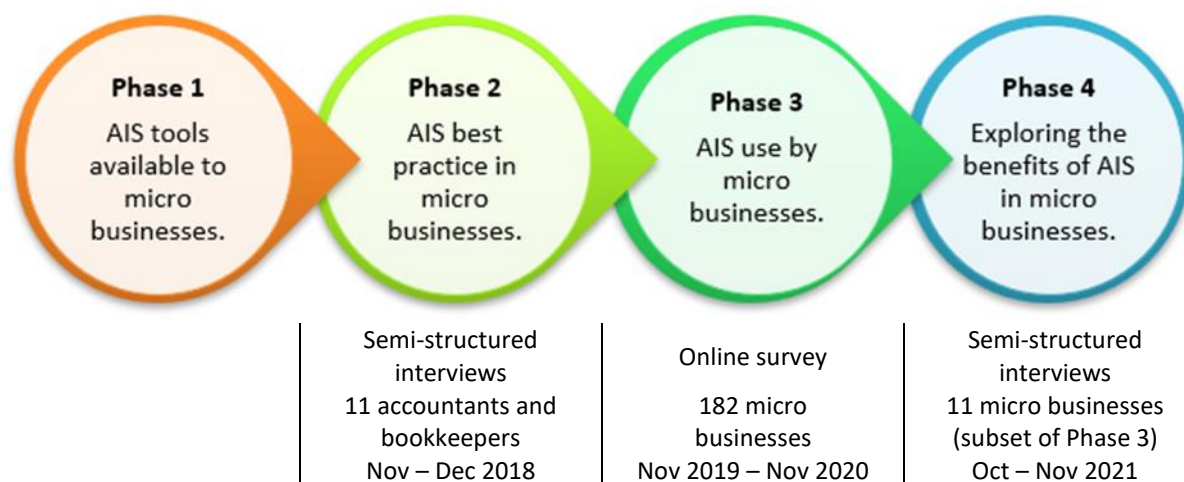


Figure 3-2 Research phases of AIS used by micro businesses and summary of data collected
Source: Author’s own compilation

3.2 Phase 1: AIS Tools Available to Micro Businesses

Phase 1 primarily answers RQ 1, but also addresses and contributes to RQ 5 as shown in Table 1-1. In this phase, desk-based research was used as the primary data collection method.

Desk-based research allows for the researcher to gather a wide variety of qualitative data from a range of sources. This approach is particularly useful to gain an overview of a topic and the existing information readily available (Guerin et al., 2018). Initially, desk-based research was conducted to provide background information for the researcher to gauge the variety of tools available to NZ micro businesses. Additional desk-based research was conducted during the subsequent phases to provide further supportive detail on information provided by interviewees (accountants in Phase 2 and micro businesses in Phase 4) and survey participants (Phase 3).

In undertaking the desk-based research on existing AIS, academic literature, published white-paper reports, media reports, promotional information, instructional information and circulars (Bassot, 2022; Guerin et al., 2018) were accessed from a range of sources including scholarly databases, media outlets, software companies, accounting professional bodies, government institutions, accountants and technical advisors. The use of the internet and Google searches enabled immediate and inexpensive access to information (Guerin et al., 2018) that will be used to corroborate and strengthen the data gathered from future phases of the research (Bassot, 2022).

3.3 Phase 2: AIS Best Practice in Micro Businesses

Phase 2 primarily addresses and contributes to RQ 1 and RQ 2, but also contributes to RQ 3, RQ 4 and RQ 5 as shown in Table 1-1. In this phase, accountants and bookkeepers in their professional capacity share their perspective on best practice in the use of AIS in micro businesses.

Semi-structured interviews were chosen as the predominant source of data collection for this phase as collecting data through interviews creates an opportunity to explore and understand the point of view of the participant, their reasoning and opinions (Saunders et al., 2012). This phase is predominantly based on normative accounting theory. Policy and rules are used to make an assessment according to their own standard or priority on what *should* be done (Godfrey et al., 2000; Wolk et al., 2004). The semi-structured interviews encourage professional accountants to draw on their knowledge of accounting and taxation policy to advise what they judge as best practice for AIS use in micro businesses.

The format of the interviews involved the interviewer asking non-specific questions that prompted the interviewee. The questions on the interview guide (further discussed in detail in section 3.3.2) were designed to provide some structure for comparing answers between interviewees (Bryman & Bell, 2011), yet allow the interviewee freedom and the conversation to flow (Ang, 2014). As this current research was exploratory, it was desirable to provide an opportunity for candour to the interviewee on the topic and allows opportunities to discuss related areas that had not been considered by the interviewer.

For the convenience of interviewees, interviews were conducted face-to-face with interviewees from various locations, urban and rural, within the New Zealand region of Canterbury. Interviews were conducted at a location selected by the interviewee, typically their own place of business or at a local café. All interviews were recorded which enabled the interviewer to focus on the visual cues and responses of the interviewee, as well as capture the interviewees responses verbatim (Bryman & Bell, 2011).

3.3.1 Interview Population

Previous studies identified accountants as the primary advisors to small businesses (Barbera & Hasso, 2013; Blackburn & Jarvis, 2010; Carey & Tanewski, 2016; P. J. Carey, 2015; Gooderham et al., 2004; Jay & Schaper, 2003; Oosthuizen et al., 2020; Sibanda & Manda, 2016; Stone, 2015). Other studies have found that accountants are valued as an advisor but typically limited to areas in which they hold key skills for example, taxation and financial reporting, as found by (Blackburn et al., 2018) and (Burke & Jarratt, 2004) in their interviews of small and medium-sized accounting firms in Australia and United Kingdom. An AIS captures the data required by the accountant to fulfil their role and

therefore accountants in turn are also users of the AIS selected by their clients. On this basis, accountants were chosen as the foremost appropriate participants in this phase. This is further supported by Ma et al. (2021) who argue that the skills and knowledge held by accountants in the areas of accounting, business processes and information systems position them as preferred advisors to micro businesses. Additionally, whilst bookkeepers may not hold the same professional qualifications and membership as accountants, the services they provide, particularly with AIS support, overlap those services provided by accountants. Bookkeepers were also identified as forming part of the participant population to recruit from.

The online version of Yellow Pages provided a listing of accountants and bookkeepers in New Zealand. The list was further refined to focus on the region of Canterbury, including both rural and urban areas within the region. Given the observed relationship between the numbers of each SME category (i.e. micro, small, medium) to the population of each region (Ministry of Business Innovation & Employment, 2014a; Small Business Council, 2019a), an area sampling in New Zealand should be representative of the country. The largest accounting firms, being the Big 4 (Tier 1) and Tier 2 accountants were removed from the list of possible participants consistent with a previous Australian/United Kingdom study based on interviews of small business owners and professional accountants by Blackburn et al. (2018). This is on the basis that small businesses have a preference for using accountants from small firms (Blackburn & Jarvis, 2010; Gooderham et al., 2004) as they share experiences of owning businesses of a similar size, and are located within the community.

Each accountant (or bookkeeper) may have clients outside of their immediate community, for example an accountant located in the city may have rural clients, and vice versa, however many of the clients will be from within their own community. To achieve equal representation between urban and rural, the lists of potential participants were kept separately. "Urban" is defined as within the boundary of Christchurch City Council region and "rural" is outside of this, extending to a distance of 100 kilometres.

The random function in Microsoft Excel was used to randomly select specific accounting firms. Further information on the firm was gathered from the internet, and where there were multiple partners in the firm, one accountant was chosen randomly from their website and invited to participate. The invitation list included fourteen accountants (seven rural and seven urban) and six bookkeeping services (three rural and three urban). Once contact had been made with each potential participant, removing those unable to be contacted or unable to participate, the final interview sample was eleven participants which included nine accountants (five rural and four urban) and two bookkeepers (one each of rural and urban).

3.3.2 Interview Instrument

The interview package provided to accountants included the initial email invitation (Appendix A.1), research information sheet (Appendix A.2), participant consent form (Appendix A.3), and interview guide (Appendix A.4). The interview package for this phase of the research was approved by The Lincoln University Human Ethics Committee (approval number 2018-37).

The interview guide (Appendix A.4) was structured into four main themes, including eight questions serving as prompts for the discussion. Theme 1 establishes the background of the participant, and the nature of their services to clients. Theme 2 ascertains the participant's understanding of key phrases to be discussed during the interview. These first two themes do not directly answer any research questions but establish a foundation for the balance of the interview. Theme 3 (including four questions) specifically addresses the research questions. Theme 4 concludes the interview and provides an opportunity for any additional information. The relationships between the research questions and the questions from the interview guide are illustrated in Figure 3-3.

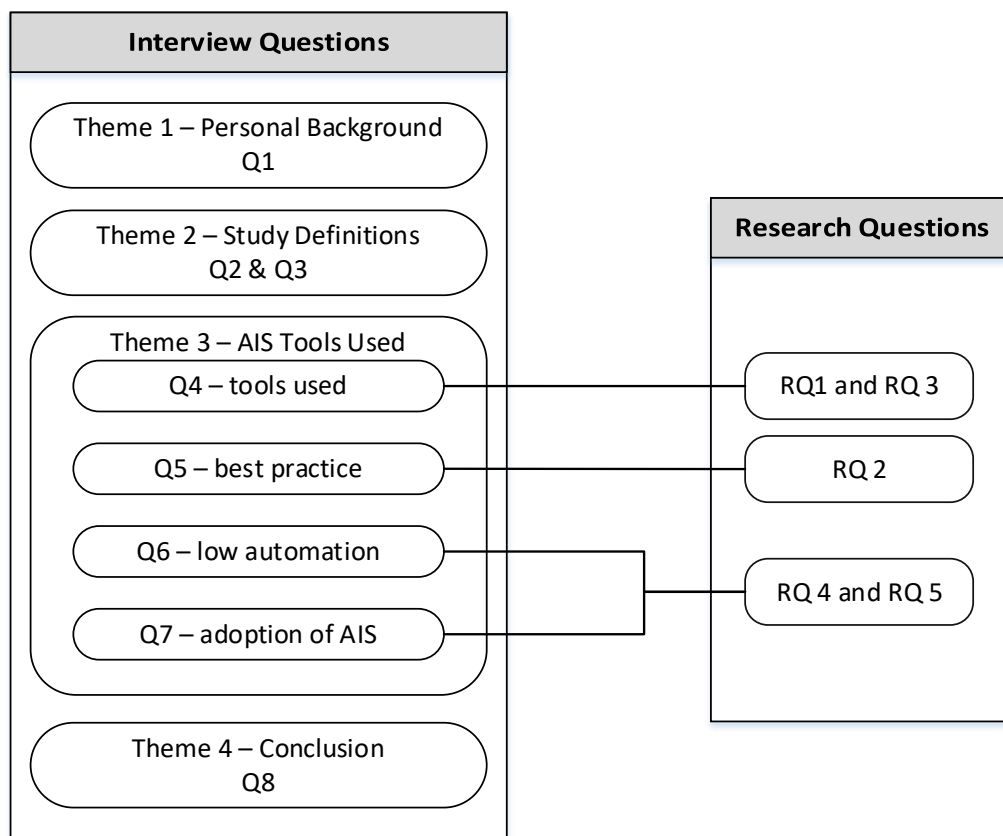


Figure 3-3 Relationship between the Research Questions and Phase 2 Interview Questions
Source: Author's own compilation

3.3.3 Data Collection

For those accountants who publicly advertised their email addresses (sixteen of the twenty selected), the initial contact was by way of a personalised email (Appendix A.1) on 13 November 2018 briefly introducing the research topic and invoking interest in participation. The email indicated an expected interview time of 45 to 60 minutes, and that confidentiality will be upheld. Two days later, the email was followed up by a phone call to confirm interest in participating and for affirmative answers, to establish a meeting time and place convenient to the interviewee. Contact was initiated with the four other accountants by phone. Only one accountant responded to the invitation email, whereas all other participants only confirmed willingness to participate verbally on the phone.

Up to three attempts were made to contact the accountants, leaving messages where possible. Eleven accountants agreed to be interviewed, four others were too busy or uninterested in participating, and no response was received from the other five accountants contacted.

Confirmation emails were sent to those willing to participate, including confirmation of time and place for the interview, and the research information sheet (Appendix A.2). All interviews took place between 20 November and 2 December 2018.

Before each interview started, participants were provided with a printed copy of the research information sheet (Appendix A.2) and participant consent form (Appendix A.3). Signed consent was obtained before commencing the interview. The interview guide (Appendix A.4) was used by the researcher to prompt the conversation, to ensure all themes were discussed, and to provide a level of consistency between interviews. Interviews were recorded using the audio record feature on a smart phone, while the researcher took handwritten notes to supplement the recordings.

3.3.4 Data Analysis of Interviews

The recorded interviews were transcribed verbatim into Microsoft Word. This was completed by the researcher to facilitate closeness to the data and to ensure the anonymity of the interviewee. Where requested, a copy of the transcript was provided to the interviewee for review. All interview data has been securely stored in accordance with the requirements set by the Lincoln University Human Ethics Committee. A summary of the interviews completed, along with the pseudonym assigned to each interviewee is included in Table 3-2. Pseudonyms have been assigned to each interviewee based on their role (A = accountant; B = bookkeeper) and business location (R = rural; U = urban), for example, AU3 is the third accountant based in an urban location.

Table 3-2 Summary of accountant interviews

No.	Advisor	Location	Pseudonym	Interview Length (Minutes)	Transcript Length (Words)
1	Accountant	Rural	AR1	27	3,812
2			AR2	78	11,813
3			AR3	47	6,349
4			AR4	72	10,025
5		Urban	AU1	51	7,910
6			AU2	73	7,993
7			AU3	60	6,120
8			AU4	128	16,256
9			AU5	37	4,559
10	Bookkeeper	Rural	BR1	43	7,145
11		Urban	BU1	62	9,679

Transcripts of the interviews were imported into NVivo 12, a CAQDAS (computer-assisted qualitative data analysis software) program to enable coding and analysis. A variety of coding techniques were applied including attribute coding, structural coding and descriptive coding (Saldana, 2021) to uncover the themes as they apply to the research questions. Coding was an iterative process, as codes were examined, compared, and re-examined to identify emerging patterns. The themes identified in this process are shown in Table 3-3 and used as the basis for the sections and subsections presented in Chapter 4.

Table 3-3 Accountant interviews - themes and codes

Demographic (background for all questions)
<ol style="list-style-type: none"> 1. Professional experience 2. Ownership in firm 3. Size of firm (staff numbers) 4. Firm specialisation - industry 5. Firm specialisation – client size
AIS tools used by micro businesses (RQ1)
<ol style="list-style-type: none"> 6. Manual AIS 7. Spreadsheets 8. Computerised AIS 9. Hybrid manual- computerised AIS 10. Extending functionality
Best practice in using AIS (RQ2)
<ol style="list-style-type: none"> 11. Manual AIS 12. Computerised AIS
How AIS tools are used (RQ3)
<ol style="list-style-type: none"> 13. Meeting compliance requirements 14. Managing the business
Factors in adopting a computerised AIS (RQ4)
<ol style="list-style-type: none"> 15. Business owner 16. Internal business factors 17. External business factors
Benefits of computerised AIS (RQ5)
<ol style="list-style-type: none"> 18. Connectivity 19. Autofill 20. Computerised calculations 21. Drilldown detail

3.4 Phase 3: AIS Used by Micro Businesses

Phase 3 primarily answers RQ 1, but also contributes to RQ 3, RQ 4 and RQ 5 as shown in Table 1-1. In this phase, micro and small businesses are surveyed to determine how they are using their AIS.

Surveying businesses enables the researcher to confirm whether a set of ideas are held by a wide group of subjects. This type of data gathering extends the knowledge gained from interviewing a few people, to understanding what the wider population may value (Cavana et al., 2001).

A survey enables data to be collected from a large number of respondents, allowing for the examination of relationships and variability within the data (Saunders et al., 2012). The questionnaire included a variety of question styles, including Likert scale, closed and open responses. The different question styles have the advantage of simple data analysis (Likert and closed questions) (Bryman &

Bell, 2011) but also the flexibility of providing answers and opinions that may not have been considered by the researcher (open responses) (Ang, 2014).

The survey targeted micro businesses from the New Zealand region of Canterbury. An online questionnaire was chosen over distribution through postal services for cost efficiencies, access to contact information and sampling method. Postal distribution would have included costs for printing and postage, as well as data input for analysis of the responses (Campbell et al., 2018; Dillman, 2017; Dillman et al., 1999). Invitations to participate were distributed via an email, including a hyperlink to facilitate easy access to the questionnaire. This also enabled participants to snowball the questionnaire and forward the invitation to other small businesses they were connected to.

3.4.1 Survey Population

Determination of a sampling frame was challenging due to the lack of a freely accessible database of small or micro businesses in New Zealand. Without the ability to identify the population, alternative strategies for difficult to reach populations (also known as invisible or hidden populations) needed to be used (Salganik & Heckathorn, 2004). The problems of invisibility of small and home-based business was identified in previous studies by Jay and Schaper (2003) in Australia and Mason et al. (2011) in the United Kingdom. For this reason, non-probability sampling techniques were employed, using volunteer purposive sampling including both self-selection and snowball techniques (Mauricette et al., 2022; Pramuka & Pinasti, 2020; Pulakanam & Suraweera, 2010; Saunders et al., 2012; Shields & Shelleman, 2016; Yong & Freudenberg, 2020).

A quota based on statistical inference was set as a guide to achieving saturation on the basis that SMEs are distributed throughout New Zealand, reflecting the dispersion of the population throughout the regions (Ministry of Business Innovation & Employment, 2014a; Small Business Council, 2019a). In 2017, the total number of businesses in New Zealand was 567,771, with 66,378 located in Canterbury (in the Waimakariri, Christchurch, Selwyn, Ashburton and Timaru districts) (Statistics New Zealand, n.d.). This current research is focused on micro businesses, but small businesses (6-19 employees) were also included to ensure sufficient data was gathered, and allowing for the data collected to be used in future analysis, resulting in an estimated population of Canterbury small businesses of 64,387 (97% of businesses in Canterbury as per Ministry of Business Innovation & Employment (2017)). Using a 95% confidence level, a quota of 196 was set (7% margin of error).

Due to the challenges of this difficult to reach population, balanced with constraints on resources, the internet and emails were used to locate potential participants. Email addresses were accumulated by the researcher from a variety of sources including council websites, business

directory websites, small business group directories and local printed newspapers. Participants were invited to share the questionnaire with other small business contacts they were associated with, thus employing the snowball technique. The accountants and bookkeepers interviewed in Phase 2 were also invited to share the questionnaire with their clients.

3.4.2 Survey

The survey package provided to micro businesses included the initial email (Appendix B.1), follow up email, research information sheet and consent (Appendix B.2), and the questionnaire (Appendix B.3). The survey package for this phase of the research was approved by The Lincoln University Human Ethics Committee (approval number 2019-64).

The questionnaire (Appendix B.3) included a variety of question styles, including Likert scale, and closed and open responses. The different question styles have the advantage of simple data analysis (Likert and closed questions) (Bryman & Bell, 2011) but also the flexibility of providing answers and opinions that may not have been considered by the researcher (open responses) (Ang, 2014). The initial screening questions confirmed that the participant was the owner or person responsible for the financial processes in the business, the number of employees in the business, and the location of the business. The screening questions addressed the possibility that the snowball effect and emailed survey invitations may have reached willing participants that did not meet the criteria of this study. Further questions explored areas of business tools, computerised AIS tools, business processes (i.e. GST, payroll, invoicing, supplier payments, budgets and management), advisors, the general opinion of computerised AIS tools, and the business in the community. Respondents could also opt in to participate in the Phase 4 interviews of micro businesses. The relationship between the research questions and the questions from the interview guide is illustrated in Figure 3-4.

Automation within Qualtrics was used to improve the user experience and flow of questions. This included skip-questions, where the answer to a previous question was used to control the flow of the questionnaire. For example, a business with zero employees was not asked about payroll. Identifying questions about the business owner and further participation were optional, all other questions were required to be answered, but included options such as “unsure” or “other (please specify)” followed by a text box for providing additional detail.

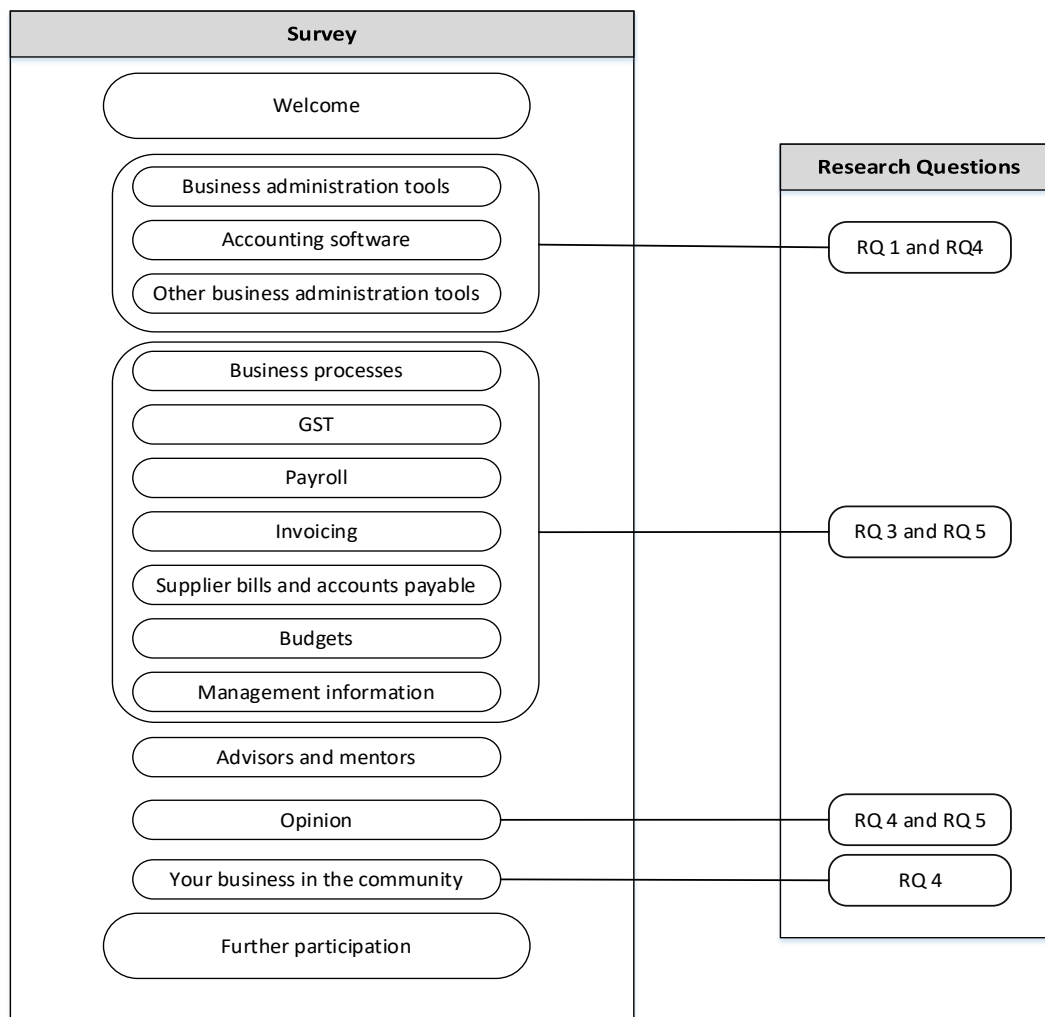


Figure 3-4 Relationship between the Research Questions and Phase 3 Survey Questionnaire
Source: Author's own compilation

3.4.3 Pre-test of Questionnaire

The questionnaire was pre-tested with five owners of different micro businesses that were outside the research population. The first three pre-tests were conducted with the researcher observing the participants, taking notes on user experience and the interpretation of questions. The final two pre-tests were completed in the same manner as the final questionnaire, independent of the researcher, offering suggestions to the researcher afterwards. This process identified refinements to the questionnaire, addressing terminology, flow of the questions, and user experience (Bryman & Bell, 2011; Cavana et al., 2001; Cooper & Schindler, 2011).

3.4.4 Data Collection

The online questionnaire delivered through Qualtrics was made available from November 2019 through to November 2020. Initial contact was made by way of an email (Appendix B.1) briefly introducing the research topic and invoking interest in participation. The email indicated an expected participation time of approximately 20 minutes and provided a hyperlink to facilitate easy access to

the questionnaire. The first screen presented the research information sheet and consent (Appendix B.2) to respondents. The email invitations were sent to small businesses in five different batches as contact information for the businesses was gathered. The batch sizes ranged from 215 to 725 emails, with a total of 2,314 emails. The first batch was sent 12 January 2020 and the last 21 September 2020. A follow-up email was sent four to eight weeks later in the event the first email was not read, or intention to participate had not yet been acted on. The follow-up email was sent to those who had valid email addresses and who had not specifically requested to be removed from the list. A total of 2,199 follow-up emails were sent.

A total of 316 responses were received and after eliminating businesses with greater than 20 employees (22), incomplete questionnaire (46), responses outside of Canterbury (9), and response attempts by someone not responsible for financial processes (1), 238 valid responses remained. A further group of 56 responses from businesses with 6 to 19 employees was set aside for future research projects beyond this current research, as although these are small businesses, they are not micro businesses. In total, there were 182 usable responses, close to the target quota of 196. Based on the total emails sent, this is a response rate of 7.9% without accounting for the snowball effect. Previous studies indicate typical response rates ranging from 0.9% to 12.2% for online surveys (Coman & Coman, 2013; Dyerson et al., 2016; Evans et al., 2014; Lignier & Evans, 2012), 5.8% to 11.8% for small business postal surveys (Ifinedo, 2011; Jay & Schaper, 2003) and 20.5% for a postal survey with three postings (Shields & Shelleman, 2016).

3.4.5 Data Analysis of Survey

The survey responses were initially reviewed in Microsoft Excel to isolate the valid responses. Closed and Likert questions were analysed using Microsoft Excel. Respondent's answers to the open questions were imported into NVivo 12 (a text analysis software) for coding and analysis. Descriptive coding was applied (Saldana, 2021) to identify themes from the responses. Coding was an iterative process, as codes were examined, compared, and re-examined to identify emerging patterns. The initial coding structure was guided by, but not restricted to, those codes from the accountant interviews in Phase 2 (Chapter 4) to facilitate comparisons between the phases. The themes identified in this process are shown in Table 3-4 and used in conjunction with Phase 4 themes as the basis of the sections and subsections presented in Chapter 5.

To maintain the confidentiality and anonymity of the respondents, all survey data has been securely stored in accordance with the requirements set by the Lincoln University Human Ethics Committee. Where respondents were willing to be interviewed for Phase 4 of this current research, names and contact information were optionally provided, and these details were used solely for that purpose.

Table 3-4 Micro business surveys - themes and codes

Demographic (background for all questions)
<ol style="list-style-type: none"> 1. Business ownership 2. Business location (regions in NZ) 3. Number of staff employed 4. Business age 5. Business owner age 6. Use of advisors and mentors 7. Participation in business and community groups 8. Advertising formats 9. Business purpose and future direction 10. Interest in participation in Phase 4 interview
AIS tools used by micro businesses (RQ1)
<ol style="list-style-type: none"> 11. No recording 12. Manual AIS 13. Spreadsheet AIS 14. Computerised AIS 15. Hybrid methods 16. Extending functionality and other management tools
How AIS tools are used (RQ3)
<ol style="list-style-type: none"> 17. Meeting compliance requirements 18. Managing the business
Factors in adopting a computerised AIS (RQ4)
<ol style="list-style-type: none"> 19. Business owner 20. Internal business factors 21. External business factors 22. Changing computerised AIS
Benefits of computerised AIS (RQ5)
<ol style="list-style-type: none"> 23. Connectivity 24. Autofill 25. Computerised calculations 26. Drilldown detail 27. The micro business opinion

3.5 Phase 4: Exploring the Benefits of AIS Tools in Micro Businesses

Phase 4 primarily addresses and contributes to RQ 3, RQ 4 and RQ 5 but will also contribute to RQ 1 as shown in Table 1-1. In this phase, owners of micro businesses are asked to share from their perspective the factors that affect their decision in using AIS, the benefits and challenges that they encounter in using AIS, and how they are using AIS.

Researching Phase 4 is best addressed through discussions with owners of micro businesses. It is an exploratory phase, and qualitative methodology is most appropriate. Qualitative research aims to gain an understanding of behaviours, describing variations and experiences (Ang, 2014). Through

semi-structured interviews, micro business owners are encouraged to share their experiences with AIS and be candid with the reasons for their choices on the systems that they have implemented.

In this phase, there are many similarities to the methods used in Phase 2 as semi-structured interviews were also chosen to be the predominant source of data collection. The format of the interviews and interview guide are founded on the same reasoning as for Phase 2 discussed in section 3.3. The interviews were conducted with micro business owners from various locations, urban and rural, within the New Zealand region of Canterbury. The locations of the interviews were selected by each interviewee, typically their own place of business. Each interview was audio recorded.

3.5.1 Interview Population

The questionnaire completed in Phase 3 included a question to capture the participant's willingness to participate in an interview. Where survey respondents were willing, they could voluntarily provide their name and contact details.

The Phase 3 survey data identified 84 willing respondents (of the 182 usable survey responses) throughout the region of Canterbury who were further classified according to their use of AIS within their business (details of the AIS tools used is discussed later in section 5.3). Five respondents indicated that they do not have any form of recording system and so were removed from the population. Respondents who indicated that their business was of an accounting or bookkeeping nature (five) were eliminated due to the role of accountants as advisors to micro businesses including matters such as AIS and IT use (Blackburn & Jarvis, 2010) and because accountant views are captured in Phase 2. Additionally, nine respondents who indicated that they were nearing the end of their business life through retirement, or the sale of their business, were also eliminated on the assumption that they would have less incentive to invest in AIS. After eliminating these two groups, 63 willing respondents were available for interview selection. None of the willing respondents were participants from Phase 2. The population for the interview selection according to each AIS tool used type is summarised in Table 3-5.

From each of the groups in Table 3-5, three to five participants were contacted based on the order in which they submitted their survey responses. A total of sixteen business owners were invited to be interviewed, but five were unable to be contacted or unable to participate. The final interview sample included eleven micro business owners including two who used computerised AIS, four who used spreadsheets, two who used a manual AIS process and three who used a mixture of AIS.

Table 3-5 Survey respondents selected for interviews

AIS tool used	Indicated willing to participate in interview	Adjusted population for interviews	Contacted for interview	Interviewed
No recording	4	0	0	0
Manual	4	4	3	2
Spreadsheet	15	13	5	4
Computerised	41	31	4	2
Hybrid*	20	15	4	3
Total	84	63	16	11

*Hybrid includes a combination of AIS tools: Manual-Spreadsheet Hybrid, Manual-Computerised Hybrid, Spreadsheet-Computerised Hybrid and Computerised-Hybrid

3.5.2 Interview Instrument

The interview package provided to micro business owners was very similar to that provided to accountants (refer to section 3.3.2). The package included the initial email invitation (Appendix C.1), follow up phone call, research information sheet (Appendix C.2), participant consent form (Appendix C.3), and interview guide (Appendix C.4). The interview package for this phase of the research was approved by The Lincoln University Human Ethics Committee (approval number 2021-39).

The interview guide (Appendix C.4) was structured into three main themes, including five questions serving as prompts for the discussion. Theme 1 establishes the background of the participant, and the nature of their services to clients. This first theme does not directly answer any research questions but establishes a foundation for the balance of the interview. Theme 2 includes three questions based on the level of AIS computerisation as indicated in the participant's survey response. Typically, only one of these questions would be presented, for example a business using only manual AIS processes would not be asked about computerised AIS, but a business using a hybrid system would be asked about all or some of computerised AIS, spreadsheets and manual AIS as appropriate. Each question included sub questions about the AIS used, the decision to or not to computerise and the benefits of their chosen system. Theme 3 concludes the interview and provides an opportunity for any additional information. The relationships between the research questions and the questions from the interview guide is illustrated in Figure 3-5.

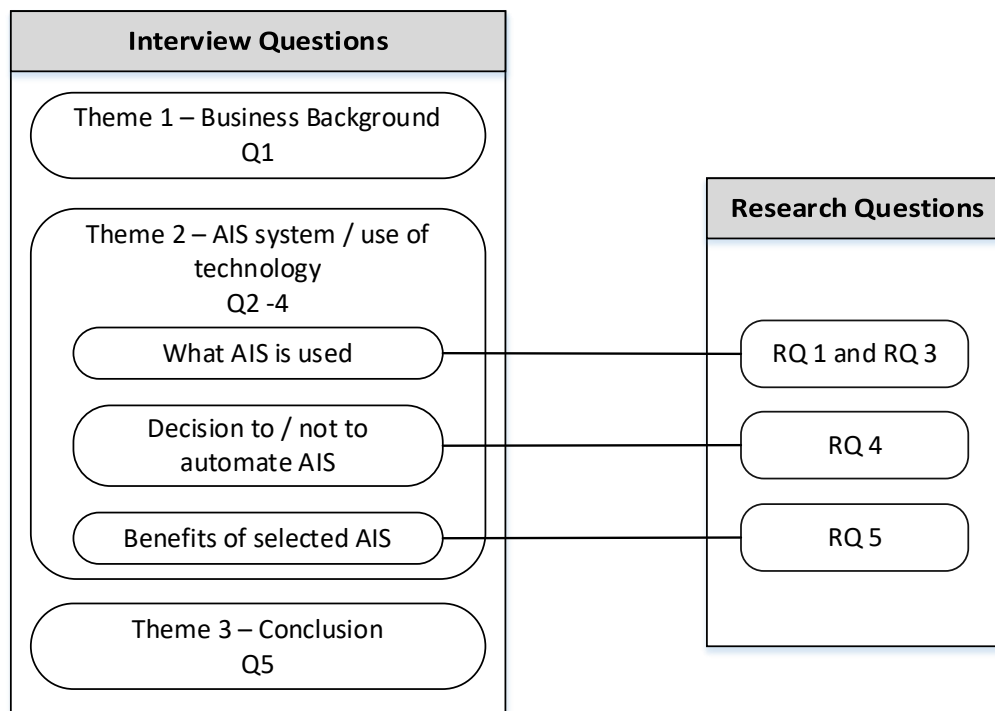


Figure 3-5 Relationship between the Research Questions and Phase 4 Interview Questions
Source: Author’s own compilation

3.5.3 Pre-test of Interviews

The interview guide was pre-tested with two separate owners of micro businesses that are outside of the research population. The pre-test was conducted in the same manner as the final interviews, in-person by the researcher and one-to-one. This process identified refinements to the interview guide, addressing continuity and flow of the prompts, terminology, and fitness of the interview questions (Bryman & Bell, 2011; Cooper & Schindler, 2011).

3.5.4 Data Collection

For the selected participants, the initial contact was by way of a personalised email (Appendix C.1) on 15 October 2021. Three days later, the email was followed up by a phone call to firstly confirm interest in participating and for affirmative answers, to establish a meeting time and place convenient to the interviewee. An option to conduct the interview via Zoom (a video conferencing software) as an alternative to meeting in-person was provided to all, due to the COVID-19 pandemic (Canterbury was at Alert Level 2 at that point in time).

Up to three attempts were made to contact the businesses, leaving messages where possible. Eleven micro business owners agreed to be interviewed – seven responded to the invitation email, and the remaining five confirmed willingness to participate verbally on the phone. Four others were too busy, or their circumstances had changed, and they were no longer running the business, and no response was received from one other micro business owner.

Confirmation emails were sent to those willing to participate, including confirmation of time and place for the interview, and the research information sheet (Appendix C.2). All interviews took place between 24 October and 1 November 2021.

Before each interview started, participants were provided with a printed copy of the participant consent form (Appendix C.3). Signed consent was obtained before commencing the interview. The interview guide (Appendix C.4) was used by the researcher to prompt the conversation, to ensure all themes were discussed, and to provide some consistency between interviews. Prompts included the background and experience of the interviewee, the current AIS tools used, how they came to decide on their chosen AIS, and the use of their AIS. Additional discussion was tailored to their level of AIS computerisation. The effects of losing automation were explored with computerised micro businesses, and with micro businesses with manual AIS the barriers to automation were explored. Interviews were recorded using the audio record feature on a smart phone, while the researcher took handwritten notes to supplement the recordings.

3.5.5 Data Analysis of Interviews

The recorded interviews were transcribed verbatim into Microsoft Word. This was completed by the researcher to facilitate closeness to the data and to ensure the anonymity of the interviewee. Where requested, a copy of the transcript was provided to the interviewee for review. All interview data has been securely stored in accordance with the requirements set by the Lincoln University Human Ethics Committee. A summary of the interviews completed, along with the pseudonym assigned to each interviewee is included in Table 3-6. Pseudonyms were assigned to each micro business (MB) and AIS (AH = computerised-hybrid; SAH = spreadsheet-computerised hybrid; S = spreadsheet; M = manual), for example, MBS2 is the second micro business using spreadsheets for their AIS.

Transcripts of the interviews were imported into NVivo 12 to enable coding and analysis. A variety of coding techniques were applied including attribute coding, structural coding and descriptive coding (Saldana, 2021) to uncover the themes as they apply to the research questions. The initial coding structure was guided by, but not restricted to, the codes from the accountant interviews in Phase 2 (refer to section 3.3.4) and the micro business survey responses in Phase 3 (refer to section 3.4.5) to facilitate comparisons between the phases. The iterative coding process included the examination of codes, comparisons, and re-examination to identify emerging patterns. The themes identified in this process are shown in Table 3-7 and used in conjunction with Phase 3 themes as the basis of the sections and subsections presented in Chapter 5.

Table 3-6 Summary of micro business interviews

No.	AIS level of automation	Pseudonym	Interview Length (Minutes)	Transcript Length (Words)
1	Computerised-Hybrid	MBAH1	62	10,812
2		MBAH2	54	6,908
3		MBAH3	49	6,998
4		MBAH4	55	8,353
5	Spreadsheet-Computerised Hybrid	MBSAH1	92	11,369
6		MBSAH2	40	6,585
7	Spreadsheet	MBS1	72	8,520
8		MBS2	57	7,095
9	Manual	MBM1	27	3,573
10		MBM2	43	6,093
11		MBM3	45	6,075

Table 3-7 Micro business interviews - themes and codes

Demographic (background for all questions)
<ol style="list-style-type: none"> 1. Business industry 2. Business ownership 3. Business location – home-based business or other location 4. Business age 5. Business owner age 6. Business owner remuneration - drawings vs wages 7. Payroll – frequency and number of staff employed 8. Business purpose and future direction
AIS tools used by micro businesses (RQ1)
<ol style="list-style-type: none"> 9. Manual AIS 10. Spreadsheet AIS 11. Computerised AIS 12. Hybrid methods 13. Extending functionality and other management tools
How AIS tools are used (RQ3)
<ol style="list-style-type: none"> 14. Meeting compliance requirements 15. Managing the business
Factors in adopting a computerised AIS (RQ4)
<ol style="list-style-type: none"> 16. Business owner 17. Internal business factors 18. External business factors
Benefits of computerised AIS (RQ5)
<ol style="list-style-type: none"> 19. Connectivity 20. Autofill 21. Automated calculations 22. Drilldown detail

3.6 Summary

This chapter outlined the methods used in gathering data for this research. Mixed methods were used across the four phases: desk-based research (Phase 1), semi-structured interviews (Phase 2 and Phase 4) and a survey (Phase 3). The research methods in this current research were dominated by qualitative approaches, namely desk-based research, interviews, and a survey, with the survey collecting both quantitative and qualitative data from micro businesses. Interviews were recorded and transcribed verbatim, with analysis of the interview transcripts and survey results was completed with the use of qualitative and spreadsheet software.

The following two chapters will present and discuss the results of the analysis, with Phases 1 and 2 discussed in Chapter 4 and Phases 3 and 4 discussed in Chapter 5, and enable conclusions to be drawn to address the research questions.

Chapter 4

The Accountant Advisor

4.1 Introduction

Previous chapters have set the stage for the context of using AIS in micro businesses (Chapter 1), reviewed prior studies (Chapter 2), and discussed the research methodology of this current research (Chapter 3). This chapter, Chapter 4, begins with Phase 1, exploring the *AIS tools available to micro businesses* using desk-based research. Phase 1 addresses RQ 1 and lays the foundation for the focus of the chapter, Phase 2, *AIS best practice in micro businesses* through the voices of accountant advisors to micro businesses. The research questions addressed by each of the phases are shown in Table 4-1 (modified from Table 1-1).

Table 4-1 Research questions addressed by phases of this current research

Research Questions	Phase 1 <i>AIS tools available to micro businesses</i>	Phase 2 <i>AIS best practice in micro businesses</i>	Phase 3 <i>AIS use by micro businesses</i>	Phase 4 <i>Exploring the benefits of AIS in micro businesses</i>
RQ 1: <i>What AIS tools are available and being used to manage accounting information processes for micro businesses?</i>				
RQ 2: <i>What is best practice for micro businesses using AIS?</i>				
RQ 3: <i>How are micro businesses using their AIS?</i>				
RQ 4: <i>What factors affect micro businesses in the decision to adopt or not to adopt a computerised AIS?</i>				
RQ 5: <i>What are the benefits of using computerised AIS in micro businesses?</i>				

Legend: Dark blue – phase predominantly addresses RQ; Light blue – phase partially addresses RQ; White – does not address RQ

Phase 2 addressed all the research questions, but predominantly RQ 1 and RQ 2. The analysis and discussion of Phase 2 starts with a summary of the interviewees (section 4.2.2) and the following sections address the research questions from the perspective of the accountant advisors: AIS tools used by micro businesses (section 4.2.2), best practice (section 4.4), how the AIS tools are used (section 4.5), factors in adopting AIS (section 4.6), and benefits of computerised AIS (section 4.7).

The research questions are further explored in Chapter 5, from the viewpoint of micro business owners using data collected from the questionnaire (Phase 3) and interviews with micro business owners (Phase 4).

4.2 Data Collection

Initial data collection focused on desk-based research (Phase 1) which provided context for the interviews with the accountants (Phase 2) as they shared their experiences as advisors to micro businesses. This section looks at each of these phases in turn, presenting the findings from the desk-based research and providing background details of the accountants interviewed in Phase 2.

4.2.1 Computerised AIS Tools Available to Micro Businesses

Desk-based research was conducted through Phase 1 to identify *AIS tools available to micro businesses*, addressing RQ 1. Sources included the internet, primarily, as well as marketing and instructional information from the various tool providers and media reports.

The desk-based research identified several computerised AIS tools available in the New Zealand market tools include BankLink, Xero, MYOB, Reckon and QuickBooks, Cashbook Complete and Farm Focus, which align with those tools mentioned by the interviewees of Phase 2. These tools address multiple areas of recording business transactions, organised into modules that are interconnected, seamlessly creating journal entries to record the transaction. Within these modules, users can report and monitor multiple areas of their business including accounts receivables and accounts payables, contacts database for customers and suppliers, inventory control, bank reconciliation and reporting. Depending on the AIS tool, users may also have modules for payroll and fixed assets. The software features supported within the AIS tools discussed in this section are shown in Table 4-2.

Table 4-2 Software features

Feature	BankLink ^a	Xero ^b	MYOB Business ^c	MYOB AccountRight ^c	Reckon ^d	Cashbook Complete ^e	Farm Focus ^f
Compliance							
Financial reports	yes	yes	yes	yes	yes	yes	yes
GST returns	yes	yes	yes	Yes	yes	yes	yes
Payroll	no	yes	yes	no	yes	no	no
Fixed assets	no	yes	no	no	no	no	yes
Business Management							
Cashflow:							
Bank feeds	yes	yes	yes	yes	yes	no	yes
Bank reconciliation	yes	yes	yes	yes	yes	yes	yes
Sales and income:							
Cash receipts	yes	yes	yes	yes	yes	yes	yes
Invoices	no	yes	yes	yes	yes	yes	yes
Accounts Receivable	no	yes	yes	yes	yes	yes	yes
Quotes	no	yes	yes	yes	yes	yes	no
Jobs	no	yes	yes	yes	yes	yes	no
Business expenditure:							
Cash payments	yes	yes	yes	yes	yes	yes	yes
Accounts payable	no	yes	yes	yes	yes	yes	yes
Inventory:							
Stock list	no	yes	yes	yes	yes	yes	yes
Manage inventory	no	yes	no	yes	no	yes	yes
Reporting:							
Management reports	yes	yes	yes	yes	yes	yes	yes
Budgets	no	yes	yes	yes	yes	yes	yes
Contacts:							
Contact list	no	yes	yes	yes	yes	yes	yes
Contact management	no	yes	no	yes	no	yes	no

^a MYOB BankLink (n.d.-a, n.d.-d)

^b Xero Limited (n.d.-d)

^c MYOB Australia Pty Ltd (n.d.)

^d Reckon Limited (n.d.-c, n.d.-d)

^e Acclaim Software Ltd (n.d.-c)

^f Farm Focus (n.d.-a, n.d.-d, n.d.-f)

BankLink

BankLink is a New Zealand product that was introduced in 1986 recognising that “one of the most time-consuming processes for accountants was re-keying their small business clients’ bank

statements into their practice's own computer system" (MYOB BankLink, n.d.-c). Bank transaction data includes dates and transaction amounts, eliminating the need to enter them manually, offering accuracy and efficiency to the micro business (MYOB BankLink, n.d.-d). Coding or categorising the transactions is still required, but the process is simplified. The core BankLink product does not include the ability to create invoices or record accounts payable, but these modules are optionally available (MYOB BankLink, n.d.-b).

MYOB purchased BankLink in June 2013 (MYOB BankLink, n.d.-c), incorporating the bank feed technology into their other products (Madytianos, 2014). BankLink services are gradually being reduced as advised by MYOB to their BankLink users in 2022, with final decommissioning in July 2024 (S. Patel, personal communication, February 10, 2023).

Xero

Xero is a New Zealand AIS product, that started in 2006, and was created specifically for small businesses (Gregersen, 2014; Xero Limited, n.d.-n). Its popularity has grown exponentially with over three million subscribers worldwide (Xero Limited, n.d.-k, n.d.-n) and has "pioneered or popularised many concepts that have become standard features in all cloud accounting software" (Macpherson, 2022, para. 1). Xero has been cloud-based from the beginning, which supports ease of accessing bank information from within the program and sharing accounting information with accountants and other advisors (Gregersen, 2014). Xero has incorporated artificial intelligence (AI) and machine learning (ML) into data entry, such as coding bank transactions (Xero Limited, 2021).

Features supported within Xero are shown in Table 4-2. The subscription is SaaS with the monthly fee reflecting the selected plan. Various pricing plans are available allowing micro businesses choices of functionality and volume of transactions (Xero Limited, n.d.-l). Where functionality is limited, apps can be integrated to extend the program suited to the individual business needs.

MYOB

MYOB was originally developed in the 1980s by an American company but purchased in the 1990s by an Australian company and rebranded in 1999 as MYOB (Scott, 2015). The first versions of MYOB were released at a time when desktop applications were the only option, and micro businesses purchased the software outright. Over time, MYOB has moved to their current SaaS subscription model (MYOB Australia Pty Ltd, n.d.) and the two main products offered to small and medium-sized businesses are AccountRight and MYOB Business (MYOB Australia Pty Ltd, n.d.).

Harnessing the benefits of connectivity of the internet, MYOB AccountRight has developed into a hybrid model. There is still the option to work on the desktop application, or the data can be stored in the cloud, allowing access and sharing via the internet (Macpherson, 2014; MYOB Technology Pty

Ltd, n.d.-c). MYOB Business (formerly MYOB Essentials and LiveAccounts) was introduced in June 2010 (CIO New Zealand, 2010) for micro businesses looking for a simple cloud-based solution (Madytianos, 2014). Functionality was limited when initially introduced but has been enhanced throughout the years (M. Carey, 2015). While both products cover almost the same areas of functionality as shown in Table 4-2, differences and limitations exist, with AccountRight having a fuller list of features (MYOB Technology Pty Ltd, n.d.-c). Where functionality is limited, apps can be integrated to extend the program to suit the individual business needs.

Reckon and QuickBooks

Reckon QuickBooks was originally released to Australia and New Zealand through Reckon Limited in 1994 (Reckon Limited, n.d.-a), under an agreed licence with the American company Intuit Inc. (Reckon Limited, 2016). The relationship between Intuit and Reckon ended in February 2014 (Reckon Limited, n.d.-a, n.d.-b) resulting in an independent operation and product for Australia and New Zealand, separate from the American business. Reckon Limited currently provides their own AIS, named Reckon Accounts, to Australia and New Zealand (Reckon Limited, n.d.-a).

Reckon Accounts includes a range of functionality as shown in Table 4-2. The features available are dependent on the plan selected by the micro business and reflected in the subscription fee. The basic plan includes payments, receipts, budgets and reporting. Bank feeds, invoicing, payroll and other features are optional extras (Reckon Limited, n.d.-c, n.d.-d).

Also available is QuickBooks Online, owned and created by Intuit Inc. This cloud-based product is designed for American businesses. There is an Australian website, but not one specifically for New Zealand (Intuit Inc, n.d.).

Cashbook Complete

Cashbook Complete is an AIS program developed and released in New Zealand in 1997 by Acclaim Software Limited (Acclaim Software Ltd, n.d.-a). This program offers a variety of levels of functionality, enabling it to be used as an electronic cashbook or full-functionality AIS. Different to the other AIS mentioned in this section, Cashbook Complete is a desktop application, with a one-off lifetime fee, and not a SaaS (Acclaim Software Ltd, n.d.-d). This AIS is promoted to users who are sensitive to costs, where internet speed and connectivity may be an issue, and where the user has internet security concerns, as Cashbook Complete is not cloud-based (Acclaim Software Ltd, n.d.-b).

Farm Focus

Farm Focus is an AIS tailored specifically to the New Zealand agricultural industry. Previously known as Cashmanager RURAL, this is a New Zealand designed program, released by CRS Software in 1981 (Farm Focus, n.d.-c). Functionality includes similar features as other generic products (refer to Table

4-2) such as invoicing, GST reporting, and payroll (Farm Focus, n.d.-f), but with additional capability to capture livestock data, forecasting and financial planning sought by farmers and their advisors. The AIS originally started as a desktop application, but in 2021 the platform was changed to cloud-based technology coinciding with their rebranding to Farm Focus (Farm Focus, 2021, n.d.-c).

4.2.2 Interviews of Accountants

Phase 2 data collection was based on accountant interviews. The research methods for the face-to-face semi-structured interviews were described in section 3.3, using the interview guide included in Appendix A.4.

Eleven interviews were held with qualified accountants and bookkeepers from the region of Canterbury, including businesses located in both urban and rural locations. The researcher held the interviews at the participant's place of business, or a local café as chosen by the interviewee. All interviews took place over a two-week period in November 2018, and ranged from 27 to 78 minutes, except for one interview which was 128 minutes. Audio recordings were taken, and handwritten notes were made during the interview by the researcher.

The professional experience of those interviewed ranged from five to over forty years, with four accountants having 10-15 years of experience. All interviewees except one, held an ownership position in the accounting firm where they were employed. The majority (seven) of the accounting firms employed one to five staff, with the largest firm employing more than 20 staff. The location of the accounting firms was divided equally between rural (five) and urban (six) areas.

The client base of six firms focused on commercial clients, three firms focused on agricultural farming clients, and two firms held a mixture of both commercial and agricultural farming clients. Five of the firms stated their client base as being 90 to 100% micro businesses, and for four firms, only 50% of their clients were micro businesses (one accountant did not provide an answer).

As noted in section 3.3.4, to maintain confidentiality and anonymity of the interviewee in this research, pseudonyms were assigned as shown in Table 3-2.

4.2.3 Chapter Structure

The remaining sections of this chapter address the research questions presented in this current research, drawing on the information gleaned from the interviews with accountants. Where necessary, findings from the desk-based research have been added to support and compliment the accountants' narratives. The analysis starts with section 4.2.2, identifying the various AIS tools used by micro businesses (RQ 1). Next, in section 4.4 the accountants describe what they consider to be best practice in the use of AIS by micro businesses (RQ 2). In section 4.5, the accountants reveal how

the micro businesses are using their AIS (RQ 3). The factors affecting adopting a computerised AIS (RQ 4) are considered in section 4.6. And finally, section 4.7 identifies several benefits of using computerised AIS (RQ 5).

4.3 AIS Tools Used by Micro Businesses (RQ1)

During the interviews, the accountants and bookkeepers highlighted many examples of the AIS tools used by their clients, addressing RQ 1. The tools identified cover a variety of functionality, ranging from minimal or no technology as seen in manual record keeping, to highly automated in multiple areas of recording transactions. The spectrum of the use of technology by micro businesses in AIS is represented in Figure 4-1, and the following sections will discuss these in the same order.

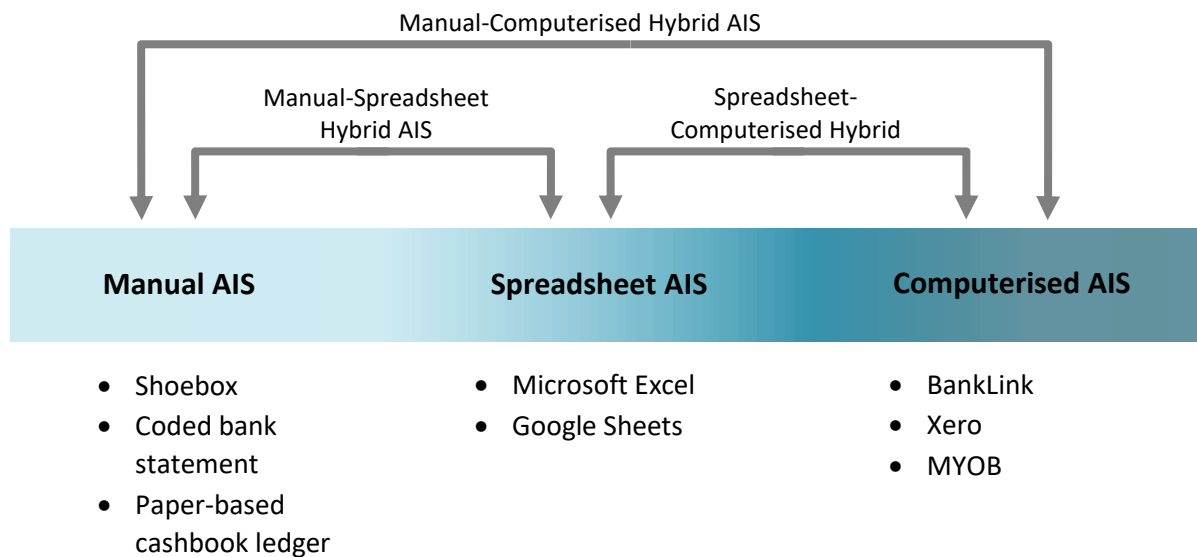


Figure 4-1 Levels of automation in AIS
Source: Author's own compilation

A summary of the number of interviews that mentioned the various AIS tools throughout the interview is shown in Table 4-3.

Table 4-3 AIS tools mentioned in interviews

AIS Tools	Number of interviews mentioned
Manual AIS	10
Spreadsheets	9
Computerised AIS	
• Electronic cashbook	8
• Full-functionality computerised AIS	11
Hybrid Manual – Computerised AIS	5

The core component of data required for any AIS is the financial transactions moving through a bank account, as “the bank account is the centre of the information system” (AU2). As this information is sourced from the bank, it offers independence and a lack of bias in the data presented, “... it’s accurate. If it’s gone through the bank account, it’s happened ... if you’re reconciling everything with the bank account, you’ve got to account for it” (AU2). While micro businesses are encouraged to operate a separate bank account for their business transactions (AU2), this is not always the case (AR4). Regardless, it is the bank transactions of the micro business that are the focus of AIS data.

Transactions are presented including the transaction date, amount, and limited description.

Accountants readily rely on bank statements as the critical elements (date and amount) are accurate and are automatically shown in chronological order.

4.3.1 Manual AIS

Recording transactions manually using handwritten notes on paper continues to be the method of choice for some businesses. All interviewees, except one (AU1), commented on the use of manual AIS, by both past and present clients. Three forms of manual AIS recording were identified: shoebox, coded bank statements or a manual cash ledger, as discussed below.

Shoebox

The most simplistic is “... the shoebox people that just stick all their receipts in a shoebox and give it all to you at the end” (BR1). This approach was described by two interviewees (AR1, BR1) and is supported by a prior study by Halabi et al. (2010). Any information deemed somewhat relevant to the business is collected with minimal or no organisation to the documents gathered and a limited attempt to communicate or explain to the accountant about the nature of the transactions unless queried. Managing business processes, such as tracking outstanding receivables, is simple, for example for the business owner “who’s got a debtors book where she just writes everything in and keeps track of who’s paid” (BR1). Ensuring the completeness of the data was the biggest concern for accountants. The accountant may address this by comparing to the bank statement or entering the data into a computerised AIS or electronic cashbook on the client’s behalf, “... they would be dropping in a shoe box to us. We’re using BankLink to have their bank transactions” (AR1).

Coded bank statements

Six of the eleven interviewees (AR3, AR4, AU2, AU3, AU4, AU5) mentioned businesses “... bring in their bank statements, sometimes they’ve written on them ...” (AR3) adding information, or “coding” to supplement any description captured by the bank, thereby communicating with the accountant the nature of the transaction. The date and amount are automatically shown on the statement in chronological order. This method recognises that the foundations of the data required are delivered

by their bank in the form of bank statements. Reliance on the bank statement adds greater assurance of completeness and accuracy of data. The following describes how one small business used the bank statement to calculate GST returns:

... when she does her GST, she gets the bank statement, she adds up the debits and she adds up the credits and writes the number at the bottom. And then she does that on each page and then she adds them together. You can see what she's claimed and what she hasn't, which is quite good, because you know the numbers are right. (AR4)

Manual cash ledger

Six of the eleven interviewees (AR2, AR3, AR4, AU4, AU5, BR1) discussed clients using a manual cash ledger. This is a paper-based cashbook or ledger which incorporates a structured template for grouping common sources of income or expenses into columns. Additional columns for date, description and amount prompt the user for information. The layout provides a greater level of communication with the accountant about the transactions that took place.

I've had another customer that had the big old cashbook, you know, the one we used to use with all the columns. He's still had that going too. Write it all in and add it all up. (BR1)

By creating totals for each column and a comparison to the bank statement, a basic level of control is added to this method. The totals provide basic information on total income and expenses.

Frustration is common for accountants as "a reconciled cashbook that never reconciled ... [is] now on Xero" (AR4), and without the automation, mathematical errors may occur, and accuracy is lost.

Minimal costs for the micro business are associated with using the manual AIS, especially when records are kept on paper notepads or printed bank statements, but this approach is likely to increase accountancy costs as extra time is required to check the accuracy of information presented. Additional one-off costs may be incurred if a printed cash book is purchased from a stationery supplier.

Interviewee opinions on these systems vary. The shoebox was not favoured, but there was a recognition that the costs of time and money needed to be balanced against the needs of the client (AR2) and complexity of the business (AR3, AU3) and so interviewees were either somewhat indifferent or supportive of coded bank statements or a manual cash ledger. As mentioned above, completeness of data (AR3) and errors (AR4) were the primary concerns, but also the lack of summarised information (AR1, AU4) on which to base decision-making.

... they don't have access to totals ... they don't know what their total income from stock sales is. They don't really know what their total income is compared with a previous year or a previous month because they don't

have something they can print out ... they just don't have the same finger on the pulse. Not just income, but expenditure as well. (AU4)

Changes over time have been noted by half of the interviewees (AR1, AR4, AU2, AU3, AU4 and AU5) who "only had a handful of clients that were left on a really manual system" (AU5). One accountant observed that "all the new businesses set up recently have all gone into Xero" (AU3).

4.3.2 Spreadsheets

Spreadsheets are extremely useful and versatile for multiple applications. Nine of the eleven interviewees discussed how their clients used them within their businesses, with four of them specifically naming Microsoft Excel (AR4, AU1, AU3, BU1). Other spreadsheets are available including Google Sheets. Six interviewees commented about the use of spreadsheets for recording transactions. Other uses include budget preparation (further discussed in section 4.5.2) and extending the functionality of a computerised AIS.

Accountants and advisors are hesitant about the use of spreadsheets by their clients for recording transactions, as "there's errors in addition" (BR1) and:

When it's someone's cashbook that they've built, like everyone has a slightly different style ... staff are always hesitant about picking up something like that because they know they have to spend an hour or so just getting their head around what the client's done, exactly ... if it doesn't balance in some way then it can be quite time consuming to work out why it doesn't. (AU5)

While there is increased automation, the flexibility of design affects the assurance of accuracy and completeness, and additional scrutiny is required by the accountant before any reliance can be placed on the information.

At its most basic use, micro businesses will use a spreadsheet to create lists, sometimes with calculated totals, but the presentation provides limited management information to the micro business:

... you may have a spreadsheet of everything that's happened but normally what happens with people who are using spreadsheets, is they record all their invoices here and they record all of their transactions and expenses here, but they are not necessarily capturing every single thing that has happened in the business in those spreadsheets. (BU1)

This can be a cost-effective method, if there is no "dedicated bank account that they're only using for the business ... you're not reconciling the whole bank statement" (BR1), but there are greater efficiencies to be gained for both the micro business and the accountant by using an electronic cashbook or computerised AIS (AU4, AU5, BR1, BU1).

Six of the accountants interviewed (AR4, AU1, AU4, AU5, BR1, BU1) saw the use of a spreadsheet for recording transactions as something that has considerably reduced over recent years, but “going back 20 years ... we then encourage[d] them to do some analysis ... with a spreadsheet” (AU4) as an alternative to manual AIS (section 4.3.1). Those clients who continue to use spreadsheets, with support from their accountant, have some skills in using them, “some of the older clients that tend to use the spreadsheet ... they’ve had finance roles in the past, so they’re good at using the spreadsheets” (AU5). These clients “don’t see the benefit in using or paying \$600 to Xero” (AU5), when they already have access to spreadsheets.

The use of spreadsheets for other purposes, such as extending the functionality of the computerised AIS for budget preparation or other performance analysis is supported by the accountants interviewed (AR3, AR4, AU2, AU3, BR1, BU1) and aligns with previous studies (Breen et al., 2004; Burgess & Paguio, 2016; Halabi et al., 2010). The ability to “export most things” (BR1) from the computerised AIS and “import one into the [spreadsheet] and just compare” (AR4) is seen as a strength of using spreadsheets as demonstrated by this interviewee:

... we would take it into Excel ... Xero is not doing quite everything that we would want it to do, but it’s getting better. They’ve just come out with a feature that you can see the percentage. There’s never been a percentage there before so you couldn’t see what the gross profit was, so you had to take it into Excel and do a formula ... (BU1)

Improvements with reporting and budgeting in computerised AIS have reduced the need for using spreadsheets to access this management information (AU3, BR1, BU1).

4.3.3 Computerised AIS

Research completed in Phase 1, the desk-based research, provided background on the computerised AIS tools available to New Zealand micro businesses (refer to section 4.2.1). This section explores these tools in greater detail as observed by the accountants interviewed. At the highest level of automation in AIS (Figure 4-1) are accounting software products specifically designed to collect and summarise financial transactions. Two levels of computerised AIS are observed, being electronic cashbooks with limited functionality and those with full functionality.

Electronic cashbook

Electronic cashbooks are computerised AIS, but a simplified version with limited features. The electronic cashbook captures transactions through a bank account (BR1) and functionality typically includes bank reconciliation, GST and basic reporting. The simplicity of an electronic cashbook is key here and was mentioned by eight accountants (AR1, AR3, AR4, AU1, AU3, AU4, AU5, BR1) for use by either the micro business or the accountant themselves.

An electronic cashbook is well suited to businesses that have simple AIS needs, such as a cash business that does not create invoices or has so few invoices that they can be managed outside of the electronic cashbook (AR3, AR4, AU3, BR1). The simple approach also makes the program easier to learn (AR2, AR3, AU4):

The most common one I push is BankLink because it is simple, almost idiot proof and it is cheap ... I have yet to find a good reason for them to go any more complicated than a decent electronic cashbook. (AR3)

Some electronic cashbooks include bank feeds, which link “your business transaction details for your eligible business banking facilities to your business accounting software” (Westpac Banking Corporation, n.d., What is a bank feed? section). Bank account transactions are electronically transferred into your AIS, including dates and transaction amounts, eliminating the need to enter them manually. Coding or categorising the transactions is still required, but with reduced data entry, efficiency is created in addition to the accuracy of the transactions. Missing and inaccurate information was noted as one of the biggest frustrations for accountants (refer to section 4.3.1), “it’s got to at least be BankLink or another program ... we’re just sick of people not giving us the information” (AR3). As a result, accountants will use an electronic cashbook to re-record client information presented in a manual format (AR1, AR3, AR4, AU2, AU4).

So, they would be dropping in a shoe box to us. We’re using BankLink to have their bank transactions ... And then we transfer that BankLink data into APS [Accounting Practice Solutions] and produce a GST return. (AR1)

BankLink (refer to section 4.2.1 for the desk-based research on this AIS) was the electronic cashbook program predominantly discussed by the accountants interviewed (AR1, AR2, AR3, AR4, AU2, AU5, BR1). Also mentioned was Xero’s simplified version, mentioned by four accountants as an electronic cashbook (AR2, AR3, AR4, AU5), and MYOB and Reckon also provide comparable simplified versions (refer to section 4.2.1). These accountants mentioned the cost of an electronic cashbook as minimal compared with full-functionality computerised AIS (discussed later in section 4.3.3) but acknowledged that there is a regular ongoing cost.

I don’t think people really see the cost as being prohibitive... I guess they see the value that they get, it’s a significant time saver with all the live feeds, they can do the GST quite quickly, effectively ... they can easily see the benefits. (AU5)

Where additional functionality is not required by the micro business, accountants promote the use of an electronic cashbook.

Full-functionality computerised AIS

Beyond electronic cashbooks are accounting software products that include the functionality to manage a range of business processes beyond just capturing the bank transactions. Full-functionality computerised AIS's may support processes such as sales and income, business expenditure, and inventory as shown in Table 4-2. The accountants observed that within the small business community in New Zealand, two software companies providing full-functionality computerised AIS dominate the market, namely Xero and MYOB. Although it was also noted that there was strong usage of computerised AIS designed specifically for the agriculture industry. Previous studies noted the preferences of small business to lean towards off-the-shelf generic accounting software as found by Bishop (2017) in their study of the available literature. Tendencies are for particular brands of AIS software to dominate the market (Breen et al., 2004; Burgess & Paguio, 2016; Halabi et al., 2010; Lenthen & Stanton, 2001). Observations by the accountants align with these previous findings.

Xero was the most widely mentioned AIS product, being discussed in every accountant interview, with comments like that of AR4: "Xero seems to be the preference at the moment". Xero's main strength is being a cloud-based product, and the flexibility offered by this is favoured by both businesses and advisors. In addition to the benefits of Xero being cloud-based, the accountants interviewed saw how artificial intelligence (AI) and machine learning can create efficiencies for the users in data entry, such as coding bank transactions as "its AI is certainly getting much better... and the more that happens the more consistency you get and the better the data" (AR1). There is a downside though as "it learns off what you are doing. If you're doing it wrong, it's going to learn to do it wrong. So, one day it will learn the fix that we put over it at the end, and it'll get better at it" (AR2). Xero is future thinking in this area, but oversight and guidance from an accountant or another advisor is still important for a business.

The second most discussed computerised AIS was MYOB. Eleven of the twelve accountants interviewed mentioned MYOB (AR2, AR3, AR4, AU1, AU2, AU3, AU4, AU5, BR1, BU1), but far fewer comments were made (one MYOB comment for every three Xero comments). The timing of the release of cloud-based products will have contributed to this difference, with MYOB LiveAccounts released in 2010 (CIO New Zealand, 2010), four years after Xero was released in 2006 (Gregersen, 2014; Xero Limited, n.d.-n). A strength of MYOB is their purchase and inclusion of the technology of BankLink into their other products (refer to section 4.2.1), "MYOB or the bank feeds they bought from BankLink are the best bank feeds, by a long stretch" (AR2). Comparing between the two MYOB products, AccountRight and MYOB Business, interviewees found that client choice was "probably more the AccountRight, but if they want the Essentials [MYOB Business] ... it just depends on what it is that they require" (AR4).

During the desk-based research (Phase 1), Reckon and QuickBooks were identified as alternative AIS tools available in New Zealand suitable for micro businesses. QuickBooks was briefly mentioned in the accountant interviews (AR3, AU3), demonstrating a familiarity with the name but little more. Given the entwined history between Reckon and Intuit (refer to section 4.2.1), it is difficult to determine which tool they had encountered.

The computerised AIS tools mentioned above are generic and appropriate for a wide range of industries. For some micro businesses, it is desirable to use AIS that is tailored specifically to their industries' needs, for example, the retail industry has requirements for a strong inventory system, whereas a service industry may need stronger functionality for time scheduling. Tailored functionality can achieve this through add-on apps (discussed later in section 4.3.5) or a computerised AIS tool designed specifically for that industry.

Farm Focus (previously Cashmanager RURAL) is one such product available to the New Zealand agricultural industry (refer to section 4.2.1). Cashmanager RURAL was mentioned in six interviews (AR1, AR3, AR4, AU4, AU5, BR1), and came highly recommended for that industry:

And if they are a farming client, I would certainly say CRS is where we should go ...They should use it for certainly their cashbook, certainly their GST and certainly their budgeting. (AU4)

These interviews took place before the cloud-based Farm Focus was released, and at that time, the only cloud-based alternative specifically for farming was using Xero with the add-on Figured, "... it has a continuous livestock reconciliation, and especially for tax planning you need to know what livestock you have on hand" (AR1). Despite the convenience of increased accessibility, one accountant had an opinion on the continued support for Cashmanager RURAL:

I think that the banks are still in a Cashmanager mind-set. Farm advisors and manager mind-set haven't made the shift yet. And I suppose that's where it's driven from. If your advisors don't understand it, then you're not going to use it. (AR1)

The additional benefits of the new version will no doubt strengthen the position of this program as "... going online makes it so much easier. The client can do it. I've still got access to it. The bank manager still has access to it. But they're [the client] doing it and it's theirs" (AU4).

4.3.4 Hybrid Manual – Computerised AIS

While computerisation has some clear benefits with efficiency and controls, the AIS methods must be appropriate for the needs of the business. There are numerous factors that affect the decision of which method to use and these will be discussed in section 4.6. Five accountant interviews (AR2, AR3, AR4, AU2, AU5) mentioned scenarios where the AIS used was a mixture of approaches.

Predominantly it was to do with additional functionality not included within the computerised AIS adopted, such as the use of an electronic cashbook which does not include an invoice module, so invoices are created manually (AR3, AU2). Another example is payroll prepared manually, as it is not included in the computerised AIS (AR3, AU5). The following anecdote highlights how manual elements could be incorporated to tailor the AIS system to the business, the skill set of those using it and the available technology:

I've got an auto sparky, and he puts a computer system in, and the guys that are out working on the cars have to walk into the office, log onto the computer to do everything. And then while they're logged in, they have a look at Facebook. You're stopping them from working to use an automated system that's supposed to be saving them time. If they've got an order book sitting on their bench, they can write the ordered part in it and carry on working. It means that they may have to collate it later, but the bit that they get to charge out is when that guy's head is under the hood, not when he's ordering something on the computer. (AR2)

Through tailoring the overall system to the needs of the micro business, the best results can be achieved for the business. There may be a small duplication of resources, such as the manual capture of raw data as mentioned above, and then batch data entry by someone suitably skilled so that the full benefits of the computerised AIS are still available.

4.3.5 Extending Functionality

Influenced by the industry or individual needs of a business, apps, sometimes referred to as “add-ons,” can further extend the functionality and reporting of the AIS product. “I think if Xero doesn't do it, there's certainly an app in the marketplace that would cover it. There's so many hundreds of add-ons [apps] that you can have to work along with Xero” (BU1).

The app can be used as a stand-alone program or interface with the computerised AIS directly, often transferring data seamlessly between the two. Some apps are developed by the same company as the AIS product, whereas others are from a third-party supplier (MYOB NZ Limited, n.d.-b; Xero Limited, n.d.-o). Functionality covers a wide range of needs, including areas of customer relationship management (CRM), inventory management, time tracking, e-commerce, point of sale (POS), budgeting, and manufacturing, just to name a few (MYOB NZ Limited, n.d.-b). Two apps were mentioned frequently by the interviewees – WorkflowMax (AR2, AU1, AU3, BU1) and Figured (AR1, AU5, BR1). Figured is an industry-specific tool, aimed at agriculture and interconnects with other areas of the industry such as “dairy production just feeds into there through a live link ... from Fonterra ... [and] ... Figured are working with the red meat producers to try and get automated kill sheet information feeding into Figured” (AU5). WorkflowMax coordinates customers, scheduling, invoicing, job costing and document management (WorkflowMax, n.d.). This app can be used on

mobile devices, for example, for a builder with staff, “each of the guys has to put his time [in] their cell phone and the invoice can go out tomorrow. And it’s just keeping the cash turning over” (AU3).

Other apps discussed in the interviews are shown in Table 4-4. While apps were only discussed as being used by Xero clients, MYOB also interfaces with many apps (MYOB NZ Limited, n.d.-b). With hundreds of apps available, there are numerous ways to customise and meet the needs of individual businesses.

Table 4-4 Apps mentioned in interviews

Application	Function ^a	Compatible with Xero and/or MYOB	Number of interviews mentioned	Number of times mentioned
WorkflowMax	Invoicing and jobs, time tracking	Xero	4	8
Figured	Agricultural, reporting	Xero	3	8
Timely	Time tracking and rostering	Xero, MYOB	2	1
Unleashed	Inventory management	Xero, MYOB	2	2
Vend	Inventory management, Point of sale	Xero, MYOB	2	2
ServiceM8	Invoicing and jobs, time tracking and jobs, inventory management	Xero, MYOB	1	1
DEAR Inventory	Ecommerce, inventory	Xero	1	1
Deputy	Time tracking and rostering	Xero, MYOB	1	1
Shopify	E-commerce, inventory management	Xero, MYOB	1	1

^a MYOB NZ Limited (n.d.-b); Xero Limited (n.d.-h)

4.4 Best Practice In Using AIS (RQ2)

The accountant’s business direction and their personal experience strongly relates to RQ 2. The views of the accountants interviewed are considered in the following sections: manual AIS (section 4.4.1) and computerised AIS (section 4.4.2).

4.4.1 Manual AIS

Nine of the eleven accountant interviews supported businesses using manual AIS systems (AR1, AR2, AR3, AR4, AU1, AU2, AU3, AU4, BR1). These accountants recognised a range of factors affecting businesses choosing to adopt an AIS, including that the skill and expertise of many micro businesses is associated with the industry or purpose of the business, and likely not in business administration:

The problem is 90% at least of what I would consider small business owners have no interest in doing accounting. Or no ability to do it. They don’t understand it ... they’re far better doing more of what they do well. (AR2)

In recognition of the unique skills and talents of their clients, these accountants generally worked with whatever form of information provided to them by their clients. For these businesses, the accountant was not concerned with AIS best practice, but rather adopted a more holistic attitude on what is achievable by the micro business:

I would chat with the client, and find out about (a) what they do and how they process stuff now; (b) what time they have available to do bookwork or accounting information, because do they have young kids or elderly parents or what? Do they have to travel in and out for work each day?
(AR4)

Two accountants (AU5, BU1) only worked with clients on a computerised AIS, “we’ve really pushed to get 100% of our clients onto a system of some sort” (AU5), and others have reduced their base of manual clients to only a few (AR4, BU1).

The quality and flow of information are key factors in support of manual AIS clients. The accountant may have prepared annual accounts and income tax, as well as GST on a more frequent basis, and if the information is manually presented by the client, often the accountant will have reprocessed the data using computerised AIS, “we do a lot of GSTs in the office, those shoebox type clients, using BankLink” (AR1). This is more likely to happen with client businesses where the volume of transactions is high (AR3, AU2), or accuracy and completeness of the information is low, for instance, a client that was “on a reconciled cashbook that never reconciled, [is] now on Xero” (AR4) or “a spreadsheet or a cashbook ... [with] errors in addition, so we use Xero” (AU4). Through the computerised AIS, a complete set of bank transactions are automatically imported through bank feeds creating efficiencies for the accountant “99% of them would go into something like Xero. Even if it’s just the ledger to reconcile it” (AU4). Where the accountant completes the work, best practice is thus, some form of computerised AIS (AR3, AR4, AU4, BR1).

4.4.2 Computerised AIS

Accountants understand and embrace the benefits of computerised AIS. Promotion or favouring of one product over another, for example, Xero over MYOB, depends on the industry, the accountant’s expertise, and the needs of the micro business. Once computerised AIS has been set up for a micro business, there are certain functionalities considered best practice.

Specialisation of the accounting firm

The accountant and the accounting firm may specialise in a particular industry or may focus on a single computerised AIS product.

Industry specialisation – Agricultural accounting is a recognised speciality for accountants in New Zealand. Of the accountants interviewed, three were in accounting firms (AR1, AU4, AU5) that

predominantly focused on farming and agricultural businesses. These accountants advise “if [they are] a farming client, I would certainly say CRS [Farm Focus]” (AU4). These firms support other computerised AIS, but as a large portion of their clients are involved in agriculture, Farm Focus is considered best practice for their farming clients. An alternative computerised AIS solution for the agricultural industry is Xero with the add-on Figured and this is the recommendation from accounting firms specialising in Xero. Other industry specialisations are likely to exist, but agriculture was the only one identified in the interviews undertaken.

AIS specialisation – Three accountants came from firms that specialised in one computerised AIS product (AU1, AU5, BU1), all focused on using Xero. One other accountant (AR1) worked in a firm with a more generalised approach, but the accountant specialised and favoured Xero. These accountants carry recognised accreditation, are considered experts in Xero, and streamline their firm processes centred on Xero. “We’ve got a lot of processes in place to manage people through Xero. We don’t want to have completely different processes for working through MYOB” (BU1).

In some instances, clients who do not align their systems are encouraged to change their AIS or asked to move on.

We specialise in Xero. And we’ll say that to people as well. They say to us “I’d like you to do [an hour of] work for me on MYOB”. And we’d say to them “maybe it’s not the right fit”. (BU1)

We have grandfathered out existing clients, but if anyone knocks on the door who is using MYOB, I’ll sit them down and say these are the reasons we use Xero, and we’re not supporting MYOB. (AU1)

As there is less variability for the accountant, there is less time required to familiarise themselves each time they work with the client. While specialisation can benefit their clients with advanced knowledge in that product, the advice on AIS selection may be biased and result in the wrong choice of computerised AIS for the client (Ma et al., 2021; Pulakanam & Suraweera, 2010)

Client needs

While some accountants specialised with a single computerised AIS tool, others recognised the needs of the business (AR3, AR4, AU2, AU3, AU4), the skills of the micro business owners and staff, and the limited resources: “trying to find the product that fits them, not the other way around” (AR4).

Many have asked over the years what sort of computer system should I use? They say ‘what suits you best?’ And I say ‘what suits you best is what we need! And we will work with it, whatever you’ve got. Not what’s best for me’. (AU3)

The accountant, as an expert in accounting and AIS needs, should be the most adaptable and be able to understand the information provided by their client, in whatever format it is presented.

They are all producing the same information in the end. It is just a question of familiarising oneself with the reports that they produce. From which we can then enter data into our system. (AR3)

Accountants in this group are experienced and consult on a wider range of systems, and while many have preferences, they are flexible in their advice on AIS selection.

It's got to be the right product for them, and if they need help, we've got to make sure that we've got the expertise to help them ... it's more about what they need and time they have ... Xero seems to be the preference at the moment, but then if they are a farmer, then you'd go for Cashmanager RURAL [Farm Focus] ... if they've had experience with MYOB in the past then I'll suggest ... stay with it ... there's nothing wrong with it, it's just different. (AR4)

Best practice for these accountants is less focused on the AIS program used, and more on how their clients are using the various functions with the AIS.

Functionality within the computerised AIS

Bank account reconciliation is simplified with bank feeds, is one of the most important functions: "... why wouldn't you set all the bank feeds up? ... [it] just saves so much time of all that data entry" (BR1). This is supported in the earlier discussion on best practice for micro businesses using manual AIS which are then entered into a computerised AIS by the accountant (refer to section 4.4.1).

Through bank feeds, "it's important that they're doing the coding. There's no point us telling them what they've done, and they need to have some understanding of what and how the accounting system works and how it relates to the business" (AR1). Through this understanding of the AIS and its transactions, micro businesses are better positioned for informed decision-making. Previous studies found that where micro businesses completed the AIS data collection themselves, there was increased confidence in the AIS, which may result in lower accounting fees incurred (Lignier, 2006, 2009a). Through increased involvement, growth in management skills can be attained:

If they've taken more control, so they understand more, which drives them to want to understand more. If they understand the GST and all the minor stuff, then they want to understand more about business and management and all the other things that aren't even in the accounting scope, more the mentoring business advisory scope. So, once you've taken away all the pain of the accounting side of things, they're much more open to learn more about everything else that they need to know. (AR1)

The second functionality valued by accountants is invoicing. Computerised AIS provides numerous efficiencies (refer to section 4.7), that micro businesses can benefit from. This means micro businesses should "take a full system, not a cashbook" (AU3), and where higher quantities of invoices are issued, then ensure the ability to support growth by using add-ons (AU3).

Tracking accounts payable is also important (AR1, BU1), so that at “any point in time you know where you are at” (AR1) but is an area for growth for accountants to work with their clients: “I think over time we’ll work more with clients to enter all of their invoices into Xero and do a more accurate sort of expense reconciliation” (AU5).

Preparation of GST by the micro businesses themselves was seen as an important process in their business management (AR4, AU4, AU5). “Doing GST for clients is the best thing that they can do to maintain their current knowledge of their business and how it’s going” (AU4). When an accountant has filed the GST, the micro business is “one step removed, they don’t understand it to the same level of detail” (AU5). Filing GST is simplified through the automation and reporting features within the computerised AIS (refer to section 4.7.1). Preparation for the GST includes recording all transactions which are supported through the bank feeds.

Budgeting was encouraged by the accountants interviewed (AR1, AR2, AR3, AU1, AU2, AU4, BU1), with a view that “budgeting is a valuable tool if it’s done well” (AR2). Using computerised AIS, it is easy to track performance “here’s your actual income, here’s your budget, there’s the variance between them. So that they can take that information to make informed decisions” (BU1), as the computerised reports present comparative information.

It’s a discipline and they need to have some sort of target. And it gives them a measure as to how they’re going on a weekly, monthly basis ... if they’re not doing that, the warning bells are ringing. (AU2)

Outside specific AIS functions, accountants placed importance on general business administration and keeping the computerised AIS up to date:

We’re really big on doing everything regularly, and... don’t wait until your GST’s due and then reconcile two months of your bank statements. Do it every other day. And then you know exactly where you are. (BR4)

The computerised AIS supports this through regular (typically daily) bank feeds. Information that is current and accurate provides a solid foundation for decision-making.

When summarising best practice from the accountant’s viewpoint, overall “it’s important that [micro businesses] see that the computer system is a tool for them. It’s not a tool for the accountant” (AU3). Accessibility of client AIS has been enhanced with cloud-based AIS, “it’s the cloud that’s the real strength” (AR4). The ability of an accountant to regularly access client information throughout the year provides for more accurate and timely advice (AR1, AR4).

My preference is to have a full accounting service, so every two months we’d review the GST, do a look through the Xero and Figured system, then

report to them against budget, and then provide some advice on top of that so there's a contact point there. (AR1)

"Xero seems to be the preference at the moment" (AR4) and has often been the basis for an accountant's recommendation, but this will change with other competing AIS moving to a cloud-based platform.

4.5 How AIS Tools are Used (RQ3)

Some accountants struggled to answer RQ 3 given the wide variety of their clients, the range of industries and the variety of factors that affect their client's AIS selection (refer to section 4.6):

There is no such thing as an average client. They're all different ... I haven't found one client that has the same system ... They might be in Xero and a bank account, but they are all using it in a different way. (AU1)

Despite this challenge, overall, the accountant interviews highlighted some of the better-used functional areas of business management as well as areas not well utilised. Areas governed by Inland Revenue and tax laws (compliance requirements) are discussed first, and then followed by more general business management activities.

4.5.1 Meeting Compliance Requirements

Compliance requirements depend on characteristics specific to an individual business, such as industry, size and location. The main compliance that affects any business is the GST, payroll and income tax requirements from Inland Revenue (Lignier & Evans, 2012). An AIS can collate the data to prepare summaries to satisfy the compliance requirements.

Goods and Service Tax (GST)

Businesses who exceed the annual turnover threshold of \$60,000 (Inland Revenue, 2021b) must be GST registered in New Zealand, and the benefits from computerised AIS (refer to section 4.7) when filing GST returns, make GST a strong motivator for micro businesses to use computerised AIS (Breen et al., 2002; Breen et al., 2004; Lignier, 2006, 2009a, 2009b). All eleven interviewees discussed GST. Very few accountants saw businesses completing GST returns manually (AU2, AU4), and where a business had the accountant complete the GST return, the accountant introduced, at a minimum, an electronic cashbook (AR1, AR3, AU2), "we do very, very few manual GST returns. It's got to at least be BankLink or another program" (AR3). Five accountants encouraged micro businesses to complete their own GST returns (AR3, AR4, AU3, AU4, AU5) as it "is the best thing that they can do to maintain their current knowledge of their business and how it's going" (AU4), or at least, code their transactions (AR1, AR2, AR3, BU1) before the accountant reviewed and filed the GST return on their

behalf. The benefit of connectivity (refer to section 4.7.1) in computerised AIS supports sharing this process between accountants and micro businesses and provides an opportunity for regular contact and oversight (AR1, AR2, AR3, AR4, AU1, AU2, AU4).

Payroll

Payroll is generally viewed as challenging (AR1, AU1, AU2, AU4, AU5) with complex legislation governing the employment of staff and annual changes to tax rates. This has been further impacted by the introduction of PayDay Filing in 2019 (Ministry of Business Innovation & Employment, n.d.). This has affected the use of computerised AIS with payroll functionality, and it was noted that there “seems like a large uptake just in the last 12 months of that type of software” (AU5). PayDay Filing has made it easier to submit payroll information with computerised AIS, using connectivity via the internet between the computerised AIS and Inland Revenue’s online portal (further discussed as a benefit in section 4.7.1), but the frequency of filing has increased for many. Micro businesses “generally have trouble doing the payroll, and really, you’ve got to have a computer-based system to put the stuff into the IRD” (AU2).

Alternatively, where there is just the owner working in the micro business, “a lot just take drawings” (AR4), leaving the tax calculations to be completed by the accountant at year end. Other businesses have chosen to rely on the specialist knowledge and skills of others and outsource this process rather than to use a computerised AIS themselves (AR3, AU2, AU3, AU4, AU5, BU1).

Year-end reports and Income Tax

The accountants in their professional capacity, are engaged by their clients to complete year-end financial statements and file income tax returns with Inland Revenue on their behalf. The following describes how AU3 used the client’s AIS to prepare annual reports (note the AIS in this instance is computerised):

We get authority to look at the accounts [in the computerised AIS] as an advisor and we actually put whatever entries are necessary through, so that their accounts are actually prepared within their system ... they get a full profit and loss, balance sheet, fixed assets register in their own system. And once we’ve agreed [with the client], that is the basis of what we then use for the [income] tax return. (AU3)

More common, eight accountants interviewed (AR1, AR2, AR3, AR4, AU1, AU2, AU4, AU5) “download the information into [the accounting firm’s practice management software] and manipulate it and then give it back to [the client]” (AU3).

Access to client information has been made possible using computerised AIS. Where information has been prepared using manual AIS methods, manual transfer methods are required to input the

information into the accountant’s own practice management software to complete the compliance requirement (AR1, AR3, AR4, AU2). This costs time, and therefore is likely to be more expensive for the micro business (AR3, AR4, AU2, BR1), especially where accuracy is a concern (AR4, AU2).

Although, one accountant disagreed, stating “I can still do a set of accounts probably cheaper from a cashbook ... journal the columns and check it off ... It’s hard to beat that for speed, and time’s money” (AR2).

The number of clients using computerised AIS has grown over time (AR1, AR4, AU2, AU3, AU4 and AU5) with one accountant commenting they “only had a handful of clients that were left on a really manual system” (AU5). For one accountant “all the new businesses set up recently have all gone into Xero” (AU3). Table 4-5 shows the percentage of clients for each interviewee using computerised AIS varies from 50-100%, compared with a previous Australian quantitative study of 121 small and micro businesses by Dyt and Halabi (2007) that found that 65% of micro businesses used a computerised AIS.

Table 4-5 Percentage of micro business clients using computerised AIS

Accountant	Clients using computerised AIS
AR1	50%
AR2	Not stated
AR3	60%
AR4	99%
AU1	95%
AU2	Not stated
AU3	80%
AU4	Not stated
AU5	100%
BR1	100%
BU1	Not stated

Xero also provides functionality for micro businesses to manage their asset register and depreciation “but I haven’t seen a client do that yet” (AR1). Instead, this is typically adjusted at year-end by the accountant when annual financial reports and income tax are prepared.

4.5.2 Managing the Business

The tools used for the different functions needed to manage the business day-to-day vary. While a micro business may use a computerised AIS, they may not use all the features available to them.

Electronic cashbooking for GST purposes ... that would actually be the predominant use. And then some of them are, more and more are starting to use the invoicing system, on them, because they're finding that efficient. (AR3)

This section looks at the various functions, within computerised AIS, to support managing the business.

Cash flow

Monitoring cash flow is about ensuring that enough cash is entering the business to meet normal operating expenditures and to apply to any future investments or financing commitments. "How much money have I got in my bank account? If you don't have enough money in your bank account, nothing else is going to work" (AU1).

The form of transactions has transformed from writing cheques to online banking. The transition has come from pressure from Inland Revenue and the banks (AU1 AU2, AU4), but is also impacted by the attitudes of the micro business owner:

We've still got a few clients who don't use [internet banking], who are frightened of it ... then one day, they started using it and they love it ... internet banking is so good if you're going to go away because you can set things up and ... do it from overseas. (AU4)

The main benefit of online banking is the speed of the transaction, with wait times for cleared funds reducing to hours from weeks when previously the cheque payment was typically delivered to the micro business through the postal system, presented physically to the bank, and then funds cleared through the banking processes (AU2, AU4). Uncleared cheques can create confusion as "the bank statement says you've got \$2,000 in the bank and you think 'oh that's good' but you've forgotten you've written cheques for \$3,000, but some of them are still in the pipeline somewhere. Then suddenly you get dishonoureds" (AU2).

So, with "the majority of our clients [using] internet banking" (AU5), managing cash flow based on the bank account balance means it is easier to access timely information. Internet banking is accessible via computers and portable devices, but additionally, bank feeds update the bank transactions to the computerised AIS typically daily. A frustration of accountants was that many micro businesses seem to only manage their businesses solely on the bank account balance (AR1, AR3, AR4, AU1, AU2, AU4), and other tools available to them are neglected, such as accounts receivable, accounts payable and other management reports.

Sales and income

Depending on the business industry, revenue from normal business operations may be received immediately in cash, or on credit. Cash-based businesses have simpler requirements for computerised AIS and may only require an electronic cashbook (AU1, AU2, AU3) (refer to section 4.3.3). Micro businesses with a very small number of credit sales “might have a handwritten invoice book” (AU2) and manage their accounts receivable manually. Where there is a high quantity of credit sales, “there are more and more who are using some software ... [that has] an invoicing feature” (AU2) to support invoice creation and monitoring until payment is received.

Using computerised AIS to create customer invoices “mainly to present a better product in the form of the invoice, it looks more business-like rather than a scruffy handwritten one which you might struggle with legibility on” (AU2). The efficiencies and interconnectedness (refer to section 4.7) of invoicing to many other areas of the AIS was cited by the accountant interviews as one of the strongest motivators for micro businesses to use computerised AIS (AR3, AR4, AU1, AU2, AU3, BR1, BU1). Accessing the computerised AIS on portable devices is a benefit for trade businesses, speeding up cash flow (AR2, AU3) and reducing the costs of managing outstanding debtors. For example, one accountant gave an example of a client who can “pull in the list of stock items that [they’ve] used plus [their] time [and] email [their client] the invoice, and then ask them to do an internet payment straight away ... Before [they’ve] even left the property” (AR3). Where debtors exist, businesses can easily “see who owes them what” (AR4) through reports, onscreen information, and dashboards (AR2, AR4, AU2, BR1, BU1).

Business expenditure

As with sales and income, some expenditure is paid immediately in cash, and other payments are deferred to a future period. Tracking upcoming payments is connected to managing cash flow. While there are many benefits in tracking accounts payable using computerised AIS (refer to section 4.7), this was a function underutilised by many micro businesses (AR1, AR3, AR4, AU2, AU5). The reasons cited include:

- Skill of the micro business:

We don't recommend clients keep a creditors ledger unless they have got either an accountant on the staff or someone who's learned on the job. (AU2)

- The perceived costs compared with the information benefits:

A lot of people just aren't interested ... Because of the time involved in doing it ... they don't have that many, so it's just in their heads. (AR3)

- The size of their business, where the GST return basis does not require tracking accounts payable:

Ninety-five per cent of our clients would be on the payments basis for GST. If they are of a size that they have to be on the invoice basis, then they have to run a creditors ledger and so on ... but if that's the case, they're probably going to have a sufficiently qualified person not to make a mess of it. (AU2)

One accountant interviewed saw this as a potential area for increased use "as technology changes ... we'll work more with clients to enter all of their invoices into Xero and do a more accurate sort of expense reconciliation" (AU5), which will see benefits introduced to micro businesses in the information available to them for managing their business.

Inventory

The accountants interviewed commented that few of their clients carried stock (AR3, AU5) and that it was dependent on the industry of the micro business.

Managing inventory for farming businesses is highly specialised, and farmers would either use Farm Focus (refer to section 4.2.1) or Xero with the Figured add-on (refer to section 4.3.5) which "has a continuous livestock reconciliation" (AR1), but "most of our clients they just tell us the livestock at the end of the year" (AR1), and let the accountant reconcile it as part of the year-end processes.

In a trade industry, micro businesses use inventory items to maintain a list of items sold or charged to customers when invoicing, but do not carry stock (AR3), benefiting from the efficiencies in creating invoices (refer to section 4.7). For these businesses, there is no requirement for specialised functionality in managing stock levels.

For retail businesses, inventory has "got to be accurately inputted. Like all computer systems, it ain't no good if the information going in and out is no good" (AR3), and so a level of skill is required by the micro business in using inventory in a computerised AIS. "Because Xero doesn't manage inventory

and it's perhaps one feature that its lacking. You have to use an add-on" (AU5) to benefit from the specialised functionality, which is an additional cost to the micro business.

Management reports

Sound decision-making is going to be based on collated information, accessed through reports. Reports on various aspects of any business aid understanding of those areas. For example, monitoring sales, "it gives them a measure as to how they're going on a weekly, monthly basis. Rather than get to the end of the year and saying 'I thought I'd done better than that!'" (AU2). Prior studies found that the quality of decision-making can be enhanced by using information from computerised tools, including computerised AIS (Brouthers et al., 1998; Liberman-Yaconi et al., 2010).

The accountants interviewed generally did not feel that their clients were accessing management reports and using them in their decision-making (AR1, AR2, AR3, AR4, AU1) and instead managed by "rule of thumb" (AR1), making decisions without the support of any recorded information, supporting findings from a prior study by Coman and Coman (2013):

Some people use Xero, but they never ever look at a report. They never look at a report. So why have you got it? They never look at a cash flow report. They never look at a profit and loss. (AR4)

In 2015, when reviewing the Financial Reporting Framework, New Zealand legislators "recognised that SMEs often produce financial statements only for the purposes of meeting the user needs of owners, tax authorities or banks" (New Zealand Institute of Chartered Accountants, 2014, p. 10), providing an optional simpler format for presentation and highlighting that small businesses do not typically utilise financial reports for their own purposes.

A greater concern indicated in the accountant interviews is the financial literacy of their clients (AR1, AR4, AU1, AU4, BR1, BU1), made worse by financial reporting presentation requirements that are interpreted by their clients as complicated (AR2, AU4). There were concerns that these barriers negatively impact the relationship and trust between accountant and client (AR4, AU1, AU4) which is critical for the accountant to successfully advise their client in significant matters. There are some inherent limitations of financial reporting, such as the focus on historic events (AR1), and that draft reports generally do not include accurate inventory values or depreciation (BR1). Overcoming these hurdles means focusing on the client:

... what information you need to make decisions. Do you want to know how much this specific business stream is bringing in? Or this business stream? Do you want to know what your cost of sale is? How much your employees are costing you? All of these different things. Figure that out with them, and then set up Xero accordingly. (BU1)

With education and support, management reports will be used, although with computerised AIS, dashboards and on-screen information remove the need to prepare some reports (AU5) such as bank reconciliations, aged receivables, and aged payables. Clients with manual AIS are clearly at a disadvantage (AR1, AR2, AR4, AU3, AU4, BR1) as:

They don't know what their total income from stock sales is. They don't really know what their total income is compared with a previous year or a previous month because they don't have something they can print out. It's all there. Yes, they probably use their bank statements really well, but they just don't have the same finger on the pulse. (AU4)

Only one example shared during the interviews contradicted this view, regarding a client who manually prepares regular sales analysis (AR4). Through manual preparation, while not efficient and potentially including errors, the client had greater knowledge and understanding of their sales than they would have if no reporting was undertaken.

Budgets

Budgets extend from reporting, to creating a plan for the future of the business. "Budgets, a lot of people do them reluctantly. They do them when they need to, to keep the bank happy" (AR3). Nine of the eleven interviewees shared this view (AR1, AR2, AR3, AR4, AU1, AU2, AU3, AU4, BR1), that typically budgets were only completed if required by the bank or other external stakeholders such as Inland Revenue where outstanding amounts are to be paid over a period of time (AR3). "But generally, they're not doing it, simply I think because of the cost. No one's telling them they have to do it, so they don't do it" (AU1).

For most clients that do prepare budgets, they create them in a spreadsheet, typically MS Excel (AR3, AR4, AU2, AU3, BR1, BU1). The budget function in Farm Focus (AR3, AU4) and Figured (AR1, BR1) were viewed as good and farming clients with budgets would typically enter the budget directly into the computerised AIS. There are benefits in doing this (refer to section 4.7) as comparisons could be easily made between budget and actuals. Xero's budget functionality was not well supported (AR3, AU4, BU1), although with regular improvements to the program and increasing user skills it could be useful:

Probably more and more are just using it within their accounting system. Within Xero and within MYOB. They enter their budgets, and it comes out and they can report against budget on a monthly basis. (AU3)

For those who do create their budgets, there are clear benefits to having all the information in the computerised AIS, where actual amounts are updated automatically.

Overall, computerised AIS is used by micro businesses, especially if they are GST registered or create a high number of invoices. Cash flows are managed either through online banking or through the AIS, and bank feeds are used to reconcile their bank accounts. The computerised AIS is underutilised in managing supplier bills and amounts owing, as are management reports. Inventory and budgets are also not well used, but this may be due to the design of the AIS features.

4.6 Factors in Adopting a Computerised AIS (RQ4)

Many factors were discussed in the interviews with accountants, highlighting various considerations businesses face in selecting an AIS addressing RQ 4. The factors will be discussed by looking at the owner, issues internal to the micro business and issues external to the business.

4.6.1 Business Owner

Given the size of micro businesses, the direction of the business falls heavily on the business owner. The owner may draw on the skills of employees or outsource services, but without the owner placing value on that service, it is unlikely to happen. The accountant interviews highlighted three main characteristics of business owners that influence the decision to adopt computerised AIS as being the generation of the business owner, their knowledge and understanding of AIS, and their attitude towards AIS.

Generational influences

Eight of the accountants interviewed (AR1, AR3, AU1, AU2, AU3, AU4, AU5, BR1) identified the age of the micro business owner as a factor in adopting computerised AIS. Older business owners “have got left behind” (AU1). “They’ve done the same thing for twenty years. They don’t have any idea what they need to do” (AR1). The manual process continues to work for them, and there is no incentive to invest time or money to computerise. Examples of what they are using include manual cashbooks (AU4, AU5) and cheque payments (AU2, AU5). These are “... people that have just grown up without computers and they don’t see the need to suddenly start using them” (AU5).

In contrast to the older generation:

The younger generation want to understand more and there’s certainly a push for better technology and understanding. And the way that other farm technologies moved, they’re also putting pressure on the accounting systems to move with it. In terms of moisture measurement and grass measurement and all that kind of stuff is automated. They want their accounting to be better as well. (AR1)

There are business owners who will have grown up with technology in multiple aspects of their lives, so using portable devices and mobile phones is natural for them.

He is so up to date, not just with his accounting package but he does everything on his phone. He does his PAYE, all his wages ... he does his animal health on his phone. He does his pasture management on his phone. He's got little software packages for everything including water usage.
(AU4)

For the younger generation, the decision to computerised AIS will require less commitment to learning as they already have a basic understanding of technology and are likely to own the technical devices required to operate computerised AIS (AU3).

Knowledge

To adopt and adeptly use computerised AIS, knowledge is needed in two distinct, yet related areas: understanding the computerised AIS and financial literacy.

Understanding the computerised AIS is about the "how-to". Users need to be able to record transactions and to be able to retrieve information. All accountant interviews considered knowledge and training as key. The design of the software plays a role here (AR3, AU4, AU5) and "they [software providers] understand that the easier it is to use, the more likely they are to sell. So, they've got to be user friendly" (AR3). Problem areas can exist with the initial set up of the program (AU3, AU4), understanding the various functions to record transactions (AR3, AR4, AU2, AU3, AU4, BR1, BU1), and producing reports and GST returns (AU2, AU4, AU5). Accountants can influence these areas by supporting and improving client knowledge (AR1, AR4, AU1, AU3, AU4). "It also comes back to us, we don't educate the clients. We don't help to improve them or try to improve them" (AR1).

Cloud computing is an advantage here as accountants can easily access and monitor their client's AIS regularly (AR2, AU2, BR1), but the nature of the ability for software providers to update AIS also creates challenges:

The problem with software, especially in the cloud, is that it can be changed day to day, and it can be quite frustrating when you're coming in and your screen's changing all the time and you're advising clients, 'you go there to that particular function,' and you go there, and it's not there, it's been moved somewhere else. So, in the old days you used to have training for software changes in large companies. Out there in the micro business world, there's no such thing as training really, you just have to keep up.
(AU1)

The level of financial literacy in business owners can influence not only the choice of implementing computerised AIS, but also the quality of data recorded and therefore the quality of information available, as demonstrated by the comments that "if you put garbage in, you get garbage out" (AR4)

and similarly, “bad information is worse than no information” (AU2). Data entry errors can be caught through reviewing reports and understanding what they represent (AR4, AU3, AU4, BU1):

... they just didn’t do some basic quantity or analysis ... If you’d clicked on the debtors report, you would’ve got a different number ... just no critiquing or understanding of the numbers that [the AIS] puts out. (AR4)

Financial literacy improves the accuracy of data entry, resulting in better information for micro business owners to use in their decision-making. Previous studies supports this observation, highlighting that the introduction of computerised AIS relies on the skills and capabilities of those within the business (Bishop, 2017; Douglas, 2005; Dyerson et al., 2016; Sellitto et al., 2017; Yong & Freudenberg, 2020).

Attitude towards technology

All accountants interviewed shared their opinions on attitudes of their micro business clients towards technology. Issues that caused resistance to adopting automation (discussed by ten accountants: AR1, AR2, AR3, AR4, AU1, AU3, AU4, AU5, BR1, BU1) were noted separately from those issues encouraging clients to change (discussed by ten accountants: AR1, AR2, AR3, AR4, AU1, AU2, AU3, AU4, AU5, BU1).

Most of the issues that caused resistance to adoption were intertwined with age and generation (discussed earlier in this section). Clients from an older generation “have just grown up without computers and they don’t see the need to suddenly start using them” (AU5). This perspective was shared by two other interviewees (AR2, AU1). Three accountants (AR3, AR4, AU4) identified clients nearing retirement “... in a really comfortable position, virtually at retirement age, and no real incentive to do it differently” (AU4). Where clients have used their AIS for a long time (AR1, AU5, BU1), “they’ve done the same thing for twenty years ... they’re happy with this, let’s just keep doing this” (AR1). Not strictly related to age, but more aligned with the costs of implementing a new AIS, both financial and time, (refer to section 4.6.2) is the client’s opinion that their AIS still works (AR4, AU1, AU3, AU4). An example of this is where:

Some are still on old versions [of computerised AIS], and they haven’t upgraded, and won’t upgrade. ... I’ve still got one that is on 12.5% GST, so every time he has to do his GST return, he takes the number, and he changes the calculation on the front sheet ... but he says, ‘my system still works’. (AR4)

GST in New Zealand changed from 12.5% to 15% on 1 October 2010 (Inland Revenue, n.d.), nearly ten years before the interviews were conducted. Two accountants (AU4, AU5) mentioned a fear of technology, including that some clients are “a little bit hesitant and anti-computers” (AU5), which would be expected where there was a lack of knowledge of technology in general.

Where micro business clients did embrace the change, it was to take advantage of the efficiencies that computerised AIS has to offer (AR3, AR4) (refer to section 4.7). Previous studies found increased computerised AIS adoption where the micro business perceived benefits (Ifinedo, 2011; Pramuka & Pinasti, 2020; Pulakanam & Suraweera, 2010; Shiau et al., 2009). Data entry can be “done at a push of a button ... saving [clients] a lot of time” (AR4). A willingness to change may need to be fostered by the accountant by providing some education for the client (AR1, AR2, AR4, AU1, BU1). For example, a micro business client of one accountant interviewed was still writing cheques: “And I said, ‘why aren’t you on internet banking?’ ‘We just don’t know how.’ I said ‘right! Let me show you!’” (AR4).

There may be other forces contributing to a micro business’s attitude toward technology (AR1, AR2, AR3, AR4, AU1, AU4). Some of these may relate to the business environment (refer to section 4.6.3), as highlighted in this example by AR1, who talked about their farming client: “They’re also putting pressure on the accounting systems to move with it ... moisture measurement and grass measurement and all that kind of stuff are automated. They want their accounting to be better as well.”. Additional pressure was applied through marketing campaigns from AIS software providers (AR2, AU4) who are “convincing the public that they can do it themselves” (AR2), with mixed success due to factors such as the business owner’s knowledge and time required to upskill in learning the new computerised AIS (refer to section 4.6.2) (AR2).

The final issue concerning the attitude of micro business owners adopting computerised AIS straddles the two areas mentioned above and is the case of a forced change (AR1, AR3, AR4, AU1, AU2, AU3, AU4, AU5, BU1). Micro businesses need to change and adopt automation, but they are reluctant. Examples of this include software companies stopping support for outdated versions (AR3, AU4), accounting firms streamlining their processes (AU1, AU5, BU1), integration of GST and PAYE filing between Inland Revenue and the AIS (AU2, AU4), and Inland Revenue and banks refusal to pay or receive money in cheque format, promoting electronic banking (AU1, AU3, AU4).

4.6.2 Internal Business Factors

With limited resources, specifically time and money, micro businesses will consider these issues when selecting an AIS. The accountant interviews identified factors including financial costs of AIS and the time cost of using AIS.

Financial costs of AIS

Nine accountants (AR2, AR3, AR4, AU1, AU3, AU4, AU5, BR1, BU1) shared their views on the financial cost of computerised AIS. The issue for micro businesses is the “cost of the program itself” (AR4), but with a variety of levels available ranging from an electronic cashbook to a full-functionality computerised AIS (refer to section 4.3.3) there are a variety of choices.

The cashbook's version is \$21 a month, so I don't think people really see the cost as being prohibitive. I guess people do make decisions to not go on the full version, which is \$55 to \$60, but at \$21 people see that as perfectly appropriate sort of cost. (AU5)

The accountant interviews (AR2, AR3, AR4, AU3, AU5, BR1, BU1) "encourage the efficiencies" (AR4) to their clients, making a comparison (AR2, AU1, AU3) with the earning ability of the business "I can guarantee that I can save you an hour a month, and you can use that hour to go and charge one of your clients" (AU1).

The micro business may also have concerns about setting up the computerised AIS, but one accountant expressed how they did not view this as an issue:

Most people these days in business have a computer anyway. Because you've got your internet system and your emails and everything, so it's all there. And if you've got that, you can set up a Xero system, you don't even have to expand your ... or an MYOB online system ... you don't even have to get a server or anything. It's just online. And it's in the cloud. (AU3)

The financial cost of computerised AIS, especially versions with limited functionality, are considered by the accountants to be minimal.

Time costs of AIS

Six accountants (AR2, AR3, AR4, AU3, AU5, BR1) shared the view that micro businesses struggled with having time to record data in a computerised AIS.

These people are savagely time poor ... they're working in their business ... and then they're going to have to do this afterwards. So, what do they want to do? They want to do it as painlessly and as quickly as possible. And for a lot of them, it's writing it on a bit of paper. Or tapping a few numbers into a spreadsheet. Not logging onto Xero and trying to figure out how to reconcile and when they go to fix something, they don't know how to undo it and do it again. And that's not what they're trained in. (AR2)

The time required to use computerised AIS is intertwined with the level of knowledge of a micro business owner (refer to section 4.6.1). The more micro businesses struggle with understanding the processes, the longer it is going to take them to complete what is required, contributing to the perception that "a computer system is time-consuming" (AU3).

This argument is countered by the accountants interviewed (AR2, AR3, AR4, AU3, AU5, BR1, BU1) who encourage computerised AIS based on efficiencies achieved. For example, cash flow for tradespeople can be improved by invoicing before leaving the job (AR3), or the bulk of transaction data flowing through the bank feeds into the AIS (AR3, AU5, BR1). Where a micro business is unable to complete all or some of their data entry into a computerised AIS, cloud-based AIS facilitates easy access to the shared data between the business and accountant or bookkeeper. This allows

experienced users supporting the business to benefit from the automated efficiencies (AR3, BR1, BU1) (discussed in section 4.7).

Previous studies support these findings, having identified the typical barriers as constrained financial and time resources in researching, implementing and daily use of computerised AIS (Bishop, 2017; Bowles, 2013; Breen et al., 2004; Cragg & Zinatelli, 1995; Sellitto et al., 2017; Woodley et al., 2015).

4.6.3 External Business Factors

Interactions with business partners along the supply chain may influence the micro business's decision to implement computerised AIS. Business partners include suppliers of goods and services, customers and regulatory bodies including Inland Revenue. All the accountant interviews commented on factors external to the business.

Supply chain

Interactions between the micro business and its suppliers and customers are influenced by industry. A cash-based business, such as a small dairy or grocery store, has a limited need for invoicing and tracking accounts receivable and may have very simple needs (AU1). A business carrying large quantities of goods for resale has a greater need for support in inventory control.

The accountant interviews identified that Xero and MYOB were the main computerised AIS used (refer to section 4.5), aligning with findings by Bishop (2017) on the use of off-the-shelf generic software as found in a study of the available literature. With the option of add-ons to Xero or MYOB (refer to section 4.3.5) the micro business can take advantage of cost and support for a mainstream AIS yet customise according to their individual needs such as inventory, time scheduling, workflow, job costing or web-based sales. Xero has the feature 'Xero to Xero' invoicing, enabling two businesses using Xero to communicate directly (BU1). Using 'Xero to Xero', the sales invoice is created and then shared electronically with the business receiving the goods or services (Xero Limited, n.d.-m), reducing the amount of data entry required to complete the transaction in the second business's Xero.

For some industries, a specific AIS is available. Six accountants (AR1, AR3, AR4, AU4, AU5, BR1) talked about the agricultural industry, "if they are a farmer, then you'd go for Cashmanager RURAL [Farm Focus]" (AR4) (refer to section 4.2.1). Alternatively, a farmer may instead opt to use Xero plus the add-on Figured (refer to section 4.3.5), information on "dairy production just feeds into [Figured through a live link... from Fonterra" (AU5). This link is also available for Farm Focus (Farm Focus, n.d.-b), as are links to rural suppliers who provide credit facilities, similar to a credit card (Farm Focus, n.d.-e; MYOB NZ Limited, n.d.-a; Xero Limited, n.d.-g).

Another example of industry-specific software is Synergy used by micro businesses in the automotive industry (BR1). These businesses typically have fuel pumps, workshops and retail. Synergy is designed specifically for this industry, and features include automated support for EFTPOS (electronic funds transfer point of sale), barcode scanning, timeclock, and stock control (Synergy Business Solutions Limited, n.d.).

Regulatory bodies

Inland Revenue has worked with New Zealand AIS providers to streamline the filing of returns for GST and payroll information. Five accountants (AU2, AU3, AU4, AU5, BU1) mentioned this in their interviews, sharing the opinion that “really you’ve got to have a computer-based system to put the stuff into the IRD” (AU2). This aligns with previous studies that identified government influences in the adoption of computerised AIS for filing tax returns (Breen et al., 2002; Breen et al., 2004; Igbaria et al., 1998; Lignier, 2006, 2009a, 2009b; Ministry of Business Innovation & Employment, 2014a). Inland Revenue does provide for businesses to file returns manually, but efficiencies and accuracy are enhanced by filing through computerised AIS (refer to section 4.7.1).

Supporting services

Other business environment considerations may be location and the available supporting services. Deficiencies in the internet network are an issue for rural communities in particular (AR1). Cloud-based systems require a constant internet connection to use the computerised AIS, which may not be available when needed by the micro business, discouraging a micro business to computerise their AIS (AR1, AR4).

4.7 Benefits of Computerised AIS (RQ5)

Using an AIS that is computerised, creates benefits for micro business owners as data is collected and used in decision-making. Benefits of time savings, efficiency and accuracy are discussed in the following sections on connectivity, autofill, automated calculations, and drill-down details, addressing RQ 5.

4.7.1 Connectivity

A micro business’s computerised AIS can connect with other interested parties in multiple ways providing the AIS can access the internet. For micro businesses who use older versions of computerised AIS the benefit of connectivity is limited, and many of the features described here may not be available. With AIS based on cloud computing (refer to section 4.2.1), connectivity is possible with banks, key business suppliers, customers, Inland Revenue, and the accountant or other advisor. Access is not restricted to a single device or location, creating greater flexibility as highlighted by this

comment: “At Christmas time, she doesn’t need to come in [to the office] to do it, she can log in from home and do it” (AR4).

Bank feeds automated the data entry of transactions (refer to section 4.3.3) through bank accounts, bank loan accounts, credit cards and other credit suppliers (Farm Focus, n.d.-e; MYOB NZ Limited, n.d.-a; Xero Limited, n.d.-g). As many of the transaction details are automatically uploaded from another source, “the information is more accurate and more efficient because we were getting bank feeds rather than relying on information that was provided by her that was possibly missing some things” (BU1). Bank feeds “just saves so much time of all that data entry” (BR1). Four accountants interviewed (AU2, AU5, BR1, BU1) shared this view on the benefits of bank feeds. Previous studies found an increased use of bank feeds with increased adoption of Xero, noting ease of use of this feature and the timeliness of access to the bank transactions (Ma et al., 2021).

Similar integration exists for farmers using computerised AIS such as Farm Focus or the Xero app Figured. Information is received from industry partners, such as Fonterra’s dairy information supporting AIS functionality specific to various farming activities.

Providers of AIS services (i.e. Xero, MYOB, and Farm Focus) have worked together with Inland Revenue to make significant changes, using technology to ease the communications between businesses and Inland Revenue. The changes started with the introduction of Payday Filing on 1 April 2019 (business.govt.nz, n.d.). “The thing with PayDay Filing is that it ... will send that [payroll] information straight to the IRD so that the tax information is correct as well” (BU1). Similar improvements have been made to GST filing and these were implemented after the accountant interviews were completed. Previously, the options were for manual data entry into the Inland Revenue’s website or transferring a file between the AIS and the Inland Revenue’s website (BU1). Manual entry is still an option, but the ease, efficiency and accuracy of filing from within the AIS for payroll was commented on by five accountants (AU1, AU2, AU4, AU5, BU1).

The ability for accountants to support their clients in preparing for taxes due or other advice is enhanced with a computerised AIS, “you can just look in Xero and go ‘how are you going?’ checking what sort of year this person had” (AR4). Eight accountants (AR1, AR2, AR4, AU2, AU4, AU5, BR1, BU1) mentioned regularly reviewing their client’s AIS during the year. Cloud computing allows multiuser access from multiple locations (refer to section 4.2.1), enabling current information to be available to everyone with access to that business’s AIS, with “one common set of data” (AU5). It also provides an opportunity for micro businesses to take ownership of their data, with regular support and reassurance from their accountant:

They do all the entries, and we review their GST prior to them filing the return. We actually go into the return and look it up and say 'yes, it looks ok'. Or say 'hey, you've charged your GST on your bank fees or whatever doesn't apply'. (AU3)

Delivering invoices to customers can be timely without the cost of printing and postage, "the other thing I do is send out all my invoices by email ... I don't have to worry about posting them ... it does two things, (1) the cost of postage is not there, but (2), if I look at my emails, I can guarantee they've got it" (AU3). As cloud technology also allows access to the AIS on portable devices (AR3, AR4), when at a customer site, the micro business "can sit out in the drive and [their] invoice is in the [customer's] inbox before [they've] driven out" (AR4).

Further efficiencies exist for two businesses that both use Xero (refer to section 4.6.3) with:

Xero to Xero invoicing that pulls through the system. Where a supplier sends an invoice to a person here, they're sending all of their information through and the only thing that you are needing to enter in there is the account code. The invoice number is already raised, all of that automation side of Xero is really handy, and it saves ... accurate ... because you're pulling through that information that they've already supplied. (BU1)

Payments to suppliers can be triggered through the AIS (MYOB Technology Pty Ltd, n.d.-d). The AIS already holds all the information on the recipient and the amount of the payment. Where the AIS also holds bank account details for the recipient, bills to pay are selected, and a batch file is created by the AIS which can be electronically imported into the relevant bank's internet application. Efficiencies support the micro business using this feature, as the amount and banking details are only entered once into the AIS, also ensuring accuracy and "... saving that risk of human error" (BU1).

The last demonstration of connectivity is not as automated, but for micro businesses in the "trade industries ... all of their stock stuff you can import that in to get your inventory for your invoicing" (AR4). Thus, the supplier to the micro business can provide a list of stock available with current prices, which can be electronically imported into the AIS, eliminating the need for manual edits or data entry for each item.

4.7.2 Autofill

Autofill is a "software feature that automatically enters previously stored information into a data field" (Merriam-Webster Incorporated, n.d.). Using Xero and MYOB as examples, as these were the programs mentioned the most by all the accountants interviewed, the desk-based research undertaken for Phase 1 identified numerous examples of where autofill occurs within the software.

The function of completing the bank reconciliation (Xero Limited, n.d.-f) in computerised AIS includes numerous variations of autofill. The first is where invoices or supplier bills have already been entered

into the AIS, the receipts or payments through the bank are automatically matched. For other payments or receipts, there may be an existing “bank rule” (Xero Limited, n.d.-a) (also called “memorised transactions” or “saved transactions”) which completes the remaining information for the transaction automatically. For remaining transactions, the AIS uses artificial intelligence (AI) to recall details on previous similar transactions that have been entered into the AIS (Xero Limited, 2021). Any transaction created accesses the list of contacts (customers, suppliers and other contacts) within the AIS and automatically completes the name and other details about the contact. These variations of autofill within bank reconciliation were viewed as benefits by the accountants interviewed, “it’s so intuitive ... Xero makes it so straightforward with live bank feeds” (AU5) and it “just saves so much time of all that data entry” (BR1).

Using Xero ... the other day, I looked in the bank rec [reconciliation] and I had 31 items to reconcile, and I probably did it in 10 minutes. I would have never done it that fast in any other system. (AU3)

Consistency and accuracy are added through other functionality in creating transactions through bank feeds. “Bank rules have been around for a while, but some of the artificial intelligence that Xero is playing with, sometimes it gets it right, sometimes it doesn’t. Early days for that” (AU1). Improvements are continuous, “Xero with its AI is certainly getting much better at that ... the more that happens, the more consistency you get and the better the data” (AR1).

In the Xero fixed assets register (not available in MYOB, refer to Table 4-2), any purchases of fixed assets coded to a fixed asset general ledger code create a draft entry in the asset register (Xero Limited, n.d.-j). Additional details are required to complete the entry.

Creating entries for customer invoices and supplier bills in a computerised AIS have similar autofill features (MYOB Technology Pty Ltd, n.d.-a). As mentioned above for bank reconciliation, the list of contacts (customers, suppliers and other contacts) is accessed when an invoice or bill is created. With a few keystrokes, the customer’s name and address are inserted into the invoice or bill. This feature is considered beneficial by the accountants interviewed, as demonstrated by this comment from BU1:

It was more accurate in terms of sending out the invoices because we had a system that was going to keep a record of all her contacts accurately, whereas she would each time change the information. You know, she might have the person’s name spelt wrong when she goes to send an invoice, whereas we already have all their details correctly in Xero. It helped for her. And because all we’re needing to do is enter in number of hours, work done, send, that’s much more efficient than having to go in and type in the customer’s name every time and change a lot of information from manual invoicing.

Similar autofill features exist between customer invoices and supplier bills with inventory items. A master list of items bought or sold is accessed, and details such as description and price populate the invoice screen, providing consistency and accuracy in creating invoices and bills.

Some invoices or bills occur repeatedly (Xero Limited, n.d.-c), maybe weekly or monthly, and so “the reoccurring invoices are quite good ... So, if you are sending invoices to the same customer every month for the same thing, in Xero you can make it repeating and automatically generate itself ... It all just saves time” (BR1). The electronic invoice “present[s] a better product in the form of the invoice, it looks more business-like rather than a scruffy handwritten one which you might struggle with legibility on” (AU2).

Where expenses are incurred on behalf of a customer or job, there is a feature for transferring these to customer invoices (Xero Limited, n.d.-b). The expense is added to the computerised AIS, and then linked “to each specific job which then pushes it through ... [and] on charged to customers” (BU1).

All these examples show areas of autofill, where data that is already entered in the system is used to complete other transactions. As data entry is reduced, autofill saves time, creates efficiencies and improves accuracy as there are reduced opportunities for human error.

4.7.3 Computerised Calculations

Several calculations take place within the computerised AIS. The two main places these occur are in data entry and the preparation of reports.

When entering data, such as a customer invoice (MYOB Technology Pty Ltd, n.d.-a) or supplier bill, the invoiced items may be for multiple quantities charged at a price per item. This is basic arithmetic as the charge for that item is multiplied by the quantity. A similar process is applied where many different items are charged, each on a separate invoice line. The AIS calculates a total for the invoice and calculates GST where applicable. The basic arithmetic is automatic and so offers accuracy to a wider range of users including this example from BR1:

... he’s dyslexic ... at the moment he can write the invoice out, but when it comes to adding them up and putting the GST on, that’s where he struggles, and the program is going to do that for him. So, for the likes of him, it will make a huge difference.

The AIS streamlines this process with computerised calculations, eliminating the need for manual calculations which may introduce errors.

Reports summarise the data entered in the AIS, with the summaries and totals based on automatic calculations. As with the data entry of an invoice, automating calculations offers accuracy to the report, and the speed at which a computer can complete this is almost immediate.

As an extension of the management reports, budgets can be entered into the computerised AIS, enabling reports to show budgeted amounts compared to actual. Useful calculations include differences between each amount and percentage changes:

We can put a budget into something like Xero for them so that they can see 'here's your actual income, here's your budget, there's the variance between them', so that they can take that information to make informed decisions. (BU1)

Some reports and functions require more complex calculations, such as GST and payroll. The AIS makes it easier for micro businesses to complete the process: "You get the young ones ... if you told her to do a GST manually, she wouldn't have a clue. Because they've never done it. They've only ever done it with the program" (BR1).

For the calculation of payroll, the micro businesses "can work out the gross easy enough. PAYE's not too bad. But then you've got the KiwiSaver and the ESCT and all that sort of stuff ... it's a bit of a struggle doing it" (AU2). Using computerised AIS saves time, increases accuracy and provides an audit trail to support compliance (AU1, AU2, AU5, AU1).

4.7.4 Drilldown Detail

Not mentioned specifically in any interviews with accountants but identified through the Phase 1 desk-based research, is the benefit of being able to drill down to access detail. Reports can be customised to show summaries only, or as much detail as required. The functionality to drill further into each item to access details and the transactions that make up the item offer further insights into that report (MYOB Technology Pty Ltd, n.d.-f) and are useful for the management of micro businesses.

Data screens, other than reports, may also offer similar detail. An example of this is the customer invoices summary screen, listing out invoices outstanding. From here, there is the ability to drill down to see or edit the details of the invoice (MYOB Technology Pty Ltd, n.d.-b), and even to drill into the customer details for contact information. Computerised AIS eases the task of "trying to track what people have paid, who's overdue. Where if you have something like Xero, half of it is done for you already ... It adds it up, it matches it when they pay" (BR1).

The same functionality exists for supplier bills and there is also the ability to attach an electronic copy of the source document (Xero Limited, n.d.-e). One accountant noted that they are "using Xero for

storing documents. So, we keep electronic copies of all of the invoices in Xero” (BU1). This provides a well-organised means of archiving information, which is easily accessed by the accountant.

To summarise, the range of features used by a micro business will depend on the factors in adopting a computerised AIS (refer to section 4.6), but significant benefits are available from using a computerised AIS. The electronic connectivity with external sources of information, autofill within the AIS, automated calculations and drilldown functionality offer increased efficiency, a reduction in human error, improved accessibility, increased accuracy and timeliness as found by Breen et al. (2004) in a survey of 221 small Australian businesses on their use of computerised AIS.

4.8 Summary

The accountant’s expertise and their professional relationship with micro business owners provided useful insights for addressing RQ 1 *What accounting information systems (AIS) tools are available and being used to manage accounting information processes for micro businesses?* and RQ 2 *What is best practice for micro businesses using accounting information systems (AIS)?*

The AIS tools available and used by micro businesses (RQ 1) were identified in section 4.2.1 through the desk-based research and interviews with accountants. Accountants saw micro businesses using a range of tools, covering different levels of automation as described in section 4.3 from manual record keeping through to spreadsheets and computerised AIS (BankLink, Xero and MYOB). The technologies behind the automation can determine the full extent of functionality, with cloud computing offering greater functionality than desktop applications. Industry-specific tools are available, and many accountants shared experiences with the use of Farm Focus by their farming clients. The functionality of computerised AIS can further customise the computerised AIS using add-ons. Mixing manual and computerised AIS allows for tailoring of the system to the needs of a micro business.

Best practice (RQ 2) depends on the micro business needs. As detailed in section 4.4 some micro businesses are suited to a manual system, but there are clear benefits to using computerised AIS. Some accountants specialised in a particular computerised AIS product, and their systems are streamlined around that product, viewing this as their preferred solution. Where computerised AIS is used, functions that accountants viewed as important for micro businesses to complete included bank reconciliation using bank feeds, customer invoices, and GST. Recording supplier bills and budgets in the AIS was also recommended but not considered essential. Accountants believed that overall it is important that micro businesses view their AIS as a tool for managing their business rather than solely meeting compliance requirements.

To a lesser degree, accountants were also able to share their insights into the remaining three research questions: RQ 3 *How are micro businesses using their accounting information systems (AIS)?*, RQ 4 *What factors affect micro businesses in the decision to adopt or not to adopt a computerised accounting information system (AIS)?* and RQ 5 *What are the benefits of using computerised accounting information systems (AIS) in micro businesses?*

Accountants have an awareness of how their clients' use AIS tools within their micro business (RQ 3). Section 4.5 details how AIS tools were used by micro businesses to meet compliance requirements and to manage the day-to-day operations of their business. To meet compliance requirements (GST and income tax) the majority of micro business clients are using computerised AIS. Banking and monitoring cash flow are mainly electronic through online banking or AIS. Within computerised AIS, bank reconciliation and invoicing are used the most. Management reports and managing supplier bills and amounts owing are underutilised. Inventory management tools are not well utilised by micro businesses due to business characteristics and weak functional design of inventory within computerised AIS. Budgeting is encouraged but is not prioritised by many micro businesses.

The factors that affect a micro business's decision to computerise (RQ 4) as viewed by the accountants are detailed in section 4.6. The accountant interviews identified choices being made based on factors of the individual business owner (including generation, individual knowledge, and attitude towards technology), issues from within the micro business (financial and time costs of implementation and use of computerised AIS) and from outside of the micro business (supply chain, regulatory bodies and supporting services). Business owners were likely to be influenced by multiple interrelated factors.

Lastly, section 4.7 described several benefits of using computerised AIS (RQ 5). RQ5 was predominantly addressed through the Phase 1 desk-based research and supported by the views of the accountants interviewed. Benefits include electronic connectivity to external sources (for example banks, customers, suppliers, and Inland Revenue), autofill to support data entry (such as in bank reconciliations, creation of customer invoices and recording supplier bills), automated calculations (on customer invoices, supplier bills, reports, GST returns and payroll calculations), and the ability to access further supporting detail through drill-down functionality. These benefits create efficiencies for the micro business and improve the accuracy of their AIS data.

To further address the research questions, Chapter 5 draws experiences directly from the micro businesses through data collected from a questionnaire (Phase 3) and interviews of micro business owners (Phase 4).

Chapter 5

The Micro Business

5.1 Introduction

This chapter continues to explore the research questions, addressing them from the perspective of the micro businesses using data collected in Phases 3 and 4. The research questions addressed by each of the phases are shown in Table 5-1 (modified from Table 1-1 and Table 4-1).

Table 5-1 Research questions addressed by phases of this current research

Research Questions	Phase 1 <i>AIS tools available to micro businesses</i>	Phase 2 <i>AIS best practice in micro businesses</i>	Phase 3 <i>AIS use by micro businesses</i>	Phase 4 <i>Exploring the benefits of AIS in micro businesses</i>
RQ 1: <i>What AIS tools are available and being used to manage accounting information processes for micro businesses?</i>				
RQ 2: <i>What is best practice for micro businesses using AIS?</i>				
RQ 3: <i>How are micro businesses using their AIS?</i>				
RQ 4: <i>What factors affect micro businesses in the decision to adopt or not to adopt a computerised AIS?</i>				
RQ 5: <i>What are the benefits of using computerised AIS in micro businesses?</i>				

Legend: Dark blue – phase predominantly addresses RQ; Light blue – phase partially addresses RQ; White – does not address RQ

Phase 3, a survey of micro businesses, primarily addressed RQ 1, but also supported RQ 3, RQ 4, and RQ 5. Phase 4, interviews of micro business owners, focused on RQ 3, RQ 4 and RQ 5, and also supported RQ 1. As in Chapter 4, the Phase 1 desk-based research supported findings from Phases 3 and 4.

This chapter starts with a summary of the data collected (questionnaire and interviews) (section 5.2), then follows with addressing the research questions from the perspective of micro businesses: AIS tools used by micro businesses (section 5.3), how AIS is being used (section 5.4), factors in adopting AIS (5.5) and the benefits of computerised AIS (section 5.6).

The final chapter, Chapter 6, will look at the similarities and differences between accountants and micro businesses.

5.2 Data Collection

Focusing on the voices of micro businesses, data was sourced from a questionnaire (Phase 3) and interviews (Phase 4). This section looks at each phase in turn, providing background details of the respondents and interviewees. This section concludes with an analysis of the survey data.

5.2.1 Micro Business Surveys

Micro businesses were invited by way of an email to complete an online questionnaire (Appendix B.3), The research methods for this phase of the research, Phase 3, are described in section 3.4.

Invitations to the survey were sent via email to businesses in Canterbury using email addresses gathered from a variety of sources including council websites, business directory websites, small business group directories and local printed newspapers. Participants were also invited to share the link with other small business contacts they were associated with. The questionnaire was open from November 2019 to November 2020. A total of 182 usable responses were received from micro businesses in the region of Canterbury. Of these, 50% of respondents (92 of 182) were from micro businesses with zero employees, and 50% of respondents (90 of 182) were from micro businesses with one to five employees.

5.2.2 Micro Business Interviews

Face-to-face semi-structured interviews were held with eleven micro business owners, using the interview guide (Appendix C.4). The research methods for Phase 4 are described in section 3.5 and follows a similar process as for the interviews of accountants (refer to section 3.3).

The interviews were held at the participant's place of business, or place of their choosing. Only two of the businesses operated from a location other than the owner's home, aligning with previous studies noting the overlap between home-based businesses and micro businesses (Clark & Douglas, 2014; Monin & Sayers, 2005) (refer to section 2.4.2). All interviews took place during a ten-day period in October 2021 and ranged from 27 to 92 minutes (an average of 54 minutes).

All interviewees were owners of micro businesses and were also survey respondents. The length of time operating the micro business ranged from one to over twenty years, with an average of eight years. The average age of the business owners was 56 years, the youngest being 37 years old, and the oldest 67 years old (one interviewee did not provide an answer but has adult children).

All the interviewees remunerated themselves through drawings from the business, and four micro businesses employed staff, preparing weekly or fortnightly payroll. The purpose of the business was to provide the main income for six of the interviewees, supplementary income for two interviewees, and for three interviewees the business was only a hobby. Six of the interviewees sought to expand their business, four interviewees were maintaining the current size, and one interviewee wished to wind-down the business.

Confidentiality and anonymity of the interviewee is maintained through separate storage of names and contact information voluntarily provided in the questionnaire and the interview transcripts. Pseudonyms are assigned to each (refer to section 3.5.5) for example, MBS2 is the second micro business using spreadsheets for their AIS.

5.2.3 Chapter Structure

The remaining sections of this chapter address the research questions, drawing on the information directly from micro businesses through the survey (Phase 3) and interviews (Phase 4). Where necessary, findings from the desk-based research (Phase 1) have been added to support and compliment the micro business owners' voices. The format of this chapter follows a similar structure to Chapter 4. The analysis starts with section 5.3 identifying the various AIS tools used by micro businesses (RQ 1). Next, in section 5.4, the micro businesses share how they use their AIS (RQ 3). Section 5.5 identifies the factors affecting AIS adoption (RQ 4), and finally, section 5.6 identifies several benefits in the use of computerised AIS (RQ 5).

5.3 AIS Tools Used by Micro Businesses (RQ1)

Addressing RQ 1 provides a base understanding of AIS tools and how they are used by micro businesses. From the survey, micro businesses were asked about the frequency of how they record transactions in their business. The options presented were "accounting software", "spreadsheets" and "manual paper-based recording", with frequency options being "never", "some of the time", "most of the time", and "all of the time". The analysis of the survey is presented in Table 5-2 and Figure 5-1.

Table 5-2 AIS level of automation

AIS tool used	Survey responses	Description of AIS type
No recording	16	Transactions predominantly not recorded by the business. Very little use (if any) of typical techniques (AIS accounting software, spreadsheets and paper-based (manual) processes).
Manual	11	Paper-based (manual) recording predominantly used for transactions, with very little (if any) use of AIS accounting software or spreadsheets.
Manual-Spreadsheet Hybrid	4	A hybrid of spreadsheets and paper-based (manual) techniques used to record transactions, with very little (if any) use of AIS accounting software.
Spreadsheet	24	Spreadsheets predominantly used for recording transactions, with very little (if any) use of AIS accounting software or paper-based (manual) processes.
Manual-Computerised Hybrid	4	A hybrid of AIS accounting software and paper-based (manual) techniques used for recording transactions, with very little (if any) use of spreadsheets.
Spreadsheet-Computerised Hybrid	23	A hybrid of AIS accounting software and spreadsheets used for recording transactions, with very little (if any) use of paper-based (manual) processes.
Computerised-Hybrid	5	A range of techniques used for recording transactions, including AIS accounting software, spreadsheets and paper-based (manual) processes
Computerised	95	AIS accounting software predominantly used for recording transactions, with very little (if any) use of spreadsheets or paper-based (manual) processes.
Total	182	

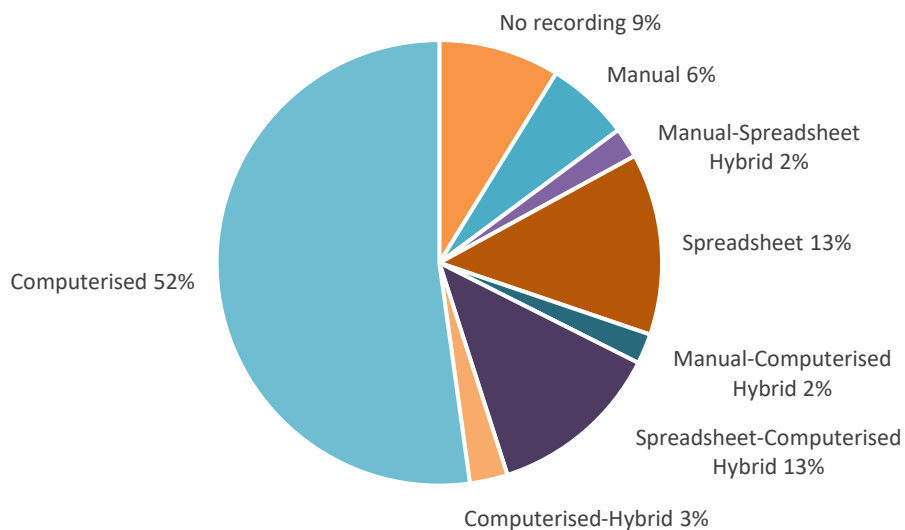


Figure 5-1 AIS level of automation (Phase 3 survey)

The spectrum of the use of technology by micro businesses in AIS was first introduced in section 4.2.2 and is included here in Figure 5-2. The following sections will discuss these tools through the voices of micro businesses in the questionnaire and interviews.

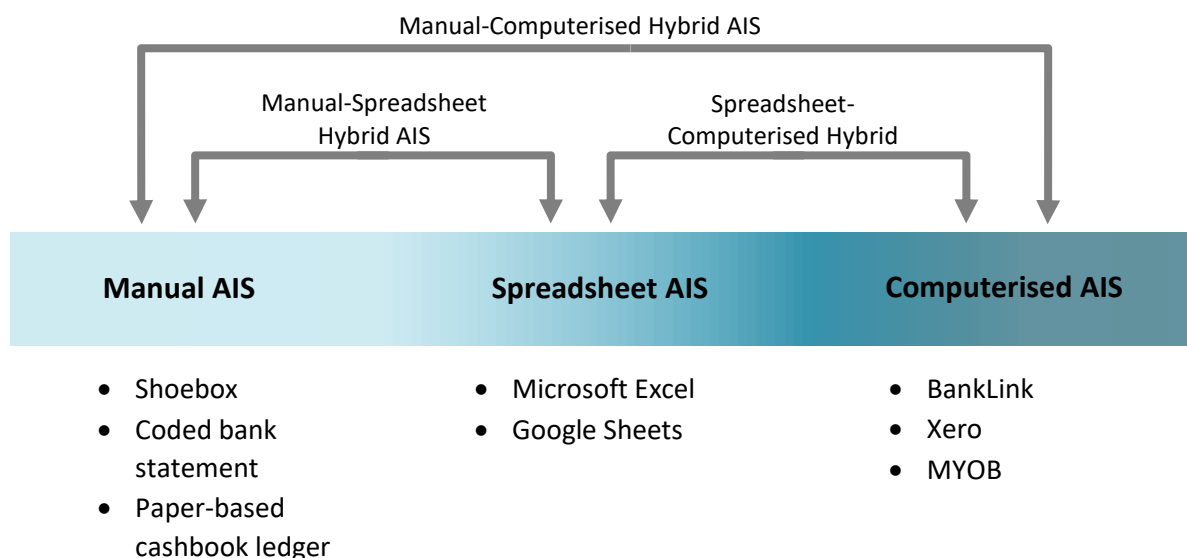


Figure 5-2 Levels of automation in AIS
Source: Author's own compilation

5.3.1 No Recording

From the micro businesses survey, 9% percent of respondents (16 of 182) are identified as “no recording” (refer to Table 5-2 and Figure 5-1). Further analysis of this group shows that 31% (5 of 16) indicated that they never record any transactions using either accounting software, spreadsheets or manual paper-based records. The legal and compliance requirements for income and expenses to be accounted for suggests that this is unlikely, but that the respondents may employ such a simplistic method that they do not recognise it, for example, the shoebox method (discussed in section 5.3.2). The other 11 (of 16) used one or more of these methods “some of the time” of which seven included computerised AIS, and eight included spreadsheets. The accountant’s involvement is mentioned by five respondents, with one stating: “it is more beneficial that i [sic] do what im [sic] good at which is not accounting which leaves me to run the other parts of the business”.

5.3.2 Manual AIS

A manual AIS is where micro businesses record transactions using handwritten notes on paper. From the survey, 6% of respondents (11 of 182) identified as using only a manual system (refer to Table 5-2 and Figure 5-1). This compares with 31% in a previous Australian qualitative study by Dyt and Halabi (2007), the difference likely to be from generational influences of the business owner given the time

period of the previous study. The two main reasons for this method are “small volume of transactions; easy for me to do myself” (a sentiment shared by 5 respondents) and “have always done it that way ... an age thing perhaps” (shared by 4 respondents). Also mentioned was “I find it easy”, “cheapest option” and “I prefer to use paper”. From the accountant interviews in section 4.3.1, three levels of manual recording were identified: shoebox, coded bank statements or a manual cash ledger, as discussed below.

Shoebox

The simplest manual AIS is a shoebox system where documents are collected, but almost no recording takes place. One of the interviewees, MBM1, is a new business trying to grow a customer base, and therefore their AIS system was not well developed. The current AIS aligned closer to the shoebox approach, but the micro business did create lists of incoming and outgoing cash “I’ve got a book ... It’s very manual. And it’s just [customers] coming in, stuff going out” (MBM1). The main administrative recording focus for this micro business was on maintaining the customer appointment book. With business growth, this business was willing to be guided by the accountant into computerised AIS, and so using this AIS tool was likely to be transitional.

Coded bank statements

Coded bank statements are where bank transactions are briefly annotated on printed bank statements indicating the purpose of the transactions. This approach was used by MBM3:

So, that's what I give to the accountant. Through the bank statement ... it's colour coded. This is a business expense, this is mine ... I kind of try and do as much, so, she doesn't have to spend too many hours sifting through it. Because it's just one [bank] account for me and so, all my business things go through that.

A similar method of coded bank statements was previously used as a transitional AIS tool for MBAH1:

When [we] were doing manual, when we didn't have the computer, we used to sit with every bank statement and write the code beside each payment. And then you scan it away and send it [to the accountant].

The decision to change to computerised AIS was “because the accountant wanted it” (MBAH1).

Manual cash ledger

A manual cash ledger is a paper-based template used to group transactions in columns and it provides a basic summary for the micro business. This method was used by MBM2 and MBM3:

... quite a simple cashbook. So, I just record sales, stock that I pay for, ... photocopying and office supplies, shop supplies, EFTPOS, bank fees,

advertising, miscellaneous and then drawings and KiwiSaver. It's like 10 columns or something. (MBM2)

The information was structured and categorised, including GST calculations for MBM2, who had only recently deregistered for GST. As with the surveys, age and being comfortable with established systems supported the interviewee's use of manual AIS, even though benefits could be gained by adopting computerised AIS given the size of their businesses and previous GST status.

Types of manual information

Both the survey and micro business interviews identified a wide range of manual information recorded. The responses are shown in Table 5-3 and are from respondents who recorded anything manually (including hybrid AIS methods). From these respondents, 63 answered this question, indicating one or more types of information. This table shows that most of the manual records are for supporting business management processes, rather than compliance records. Many of these types of data would be easily captured within a computerised AIS or are physical copies of the electronic data kept within the computerised AIS. Analysis of the "other" category highlights industry-specific records that typically fall outside the functionality of standard computerised AIS programs such as historic land records, transportation schedules, investment plans, logbooks, and production records.

Table 5-3 Information captured using manual (paper-based) AIS

Types of information	Responses
Compliance	
• Payroll and PAYE	5
• Other compliance	1
• GST	1
Management	
• Invoices	33
• Expenses	26
• Sales information	10
• Orders, jobs and quotes	9
• Bank statements	7
• Customer information	3
• Inventory information	4
• Reports	3
• Appointments	3
Paper copies of auto AIS	5
Other	8
Invalid response	4
Total	122

Examples of types of manual records from the micro business interviewees align with the survey results and are discussed further in section 5.3.5 on hybrid methods of AIS.

5.3.3 Spreadsheet AIS

As initially introduced in the accountant interviews (section 4.3.2), spreadsheets are extremely versatile for recording lists of data and presenting them in an organised way. Previous studies also observed the use of spreadsheets to support business management (Breen et al., 2004; Burgess & Paguio, 2016; Halabi et al., 2010). Mathematical functionality supports basic automated calculations, and the versatility of the spreadsheet lends this tool to a range of purposes. From the survey, 13% of respondents (24 of 182) were identified as using only spreadsheets for their AIS (refer to Table 5-2 and Figure 5-1).

Data collected in the survey address the use of spreadsheets in the administration of the micro business. The survey responses are shown in Table 5-4 and are from respondents who record anything in spreadsheets (including hybrid AIS methods). There were 106 responses to this question, with some respondents indicating multiple uses of spreadsheets.

Table 5-4 Use of spreadsheets by micro businesses

Use of spreadsheets	Responses
Alternative to computerised AIS	43
Analysis	37
Data collected from other sources	29
Budget and forecasting	18
Extend AIS functionality	6
Alternative to payroll program	5
Unclear purpose or invalid response	3
Total	141

Interestingly, only 24 respondents identified as using spreadsheets as their AIS (Table 5-2), yet 43 respondents used spreadsheets as an “alternative to computerised AIS,” the difference being those who used a hybrid AIS method (SS-Manual: 4 respondents; Auto-SS: 23 respondents; and Auto-Hybrid: 5 respondents) indicating that while they use functionality within their computerised AIS, they choose to complete some AIS tasks using spreadsheets.

The interviews identified two micro businesses (MBS1 and MBS2) that used spreadsheets as their AIS. After encountering technical issues with computer hardware and AIS software, MBS1 “went to Plan B to a spreadsheet that I had. I keep track of everything on there... And then I tally it up and send them to the accountant”. In this instance, the accountant also used BankLink to capture the bank transactions to complete GST and year-end compliance. The spreadsheets for MBS1 were a transitional AIS tool, providing a quick alternative to a problem, but MBS1 had intentions to move to computerised AIS with extra functionality through an add-on.

MBS2 used spreadsheets favouring the visual capabilities of colour and graphs, “I love my charts... I chart everything” and “I colour code the clients”. This micro business owner’s AIS needs are simple due to the business size and lack of GST registration, therefore the micro business owner was content with the flexibility of a spreadsheet. Manual data entry of bank transactions was not a concern, enabling analysis of customised lists of income and expenditure.

Further examples of spreadsheet use from the interviews align with the survey results in Table 5-4 and are discussed further in section 5.3.5 on hybrid methods of AIS.

5.3.4 Computerised AIS

From the survey, 52% of respondents (95 of 182) were identified as using only a computerised AIS (refer to Table 5-2 and Figure 5-1). Additional respondents included computerised AIS as part of a hybrid AIS method (Manual-Computerised Hybrid: 4 respondents; Spreadsheet-Computerised Hybrid: 23 respondents; and Computerised-Hybrid: 5 respondents).

Including those who used computerised AIS “some of the time”, 131 valid responses indicated a range of computerised AIS tools were used, as shown in the survey data in Figure 5-3. Xero and MYOB (MYOB Business and MYOB AccountRight) dominate the computerised AISs used by micro businesses, with a small variety of other computerised AIS. This supports the findings from the accountants’ interviews that also identified Xero and MYOB as the main computerised AIS used by micro businesses (refer to section 4.3.3), and previous studies that noted the tendency of micro businesses to use generic AIS programs (Bishop, 2017), which are dominated by a few brands (Breen et al., 2004; Burgess & Paguio, 2016; Halabi et al., 2010; Lenthen & Stanton, 2001).

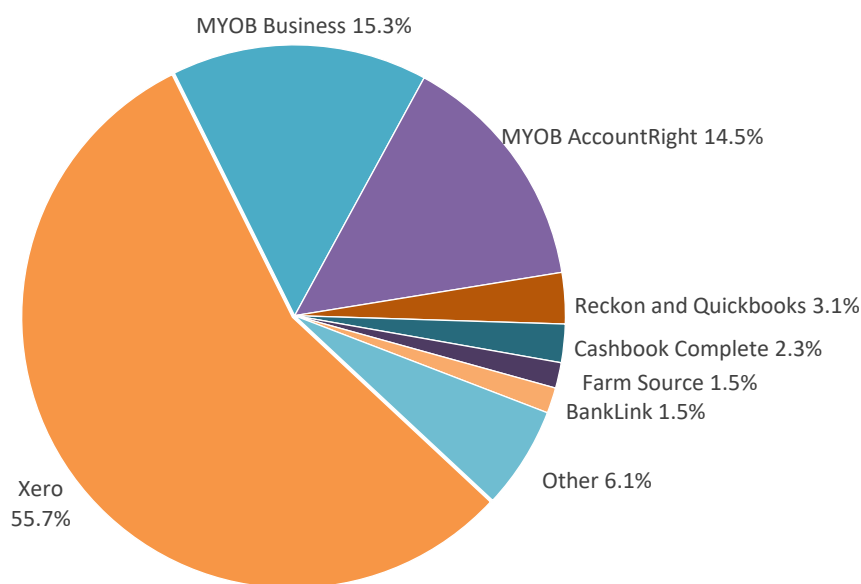


Figure 5-3 Computerised AIS used by micro businesses

From the micro business interviews, two interviewees used electronic cashbooks (MBAH3, MBS1) and five interviewees used full-functionality computerised AIS (MBAH1, MBAH2, MBAH4, MBSAH1, MBSAH2), equating to a total of seven (of 11) interviewees using computerised AIS.

Electronic cashbooks

Electronic cashbooks are a simplified form of computerised AIS and functionality predominately focuses on presenting the bank account information (refer to section 4.3.3).

One of the most common examples of an electronic cashbook identified by the accountants interviewed (refer to section 4.2.1) is BankLink, where the core program does not include the ability to create invoices or record accounts payable, but these features are optionally available (MYOB BankLink, n.d.-b). As shown in Figure 5-3, the use of BankLink is very low, with only 2% of respondents (2 of 131) with computerised AIS using this program. Interviewee MBS1 did not use BankLink for recording transactions and business management but used a spreadsheet instead. However, BankLink is used by their accountant, for capturing the bank account information and preparing GST on their behalf.

Simplified versions with limited functionality are also offered by many other full-functionality computerised AIS such as Xero, MYOB and Reckon. MBAH3 uses MYOB Business as their accountant “persuaded us that going to MYOB would actually not cost anymore because it would save enough of our time to offset the cost of the program ... We were quite happy with spreadsheets ourselves”. MYOB is used predominantly by the accountant for preparing GST, and as:

Every business transaction come[s] out of that bank account ... the transactions come up in MYOB, if they aren't obvious what they are then either we'll remember to go in and make a note about [it] or the accountant will nag us for one later. (MBAH3)

MBAH3 prepares “an invoice every three months or something,” but does not use their AIS in their business management, “although we're technically using MYOB, we virtually never look at the thing” (MBAH3).

Full-functionality computerised AIS

Computerised AIS that provides a wide range of functions to micro businesses was previously identified through desk-based research and discussed in section 4.2.1. The accountants interviewed in Phase 2 identified two main companies, Xero and MYOB, dominating the New Zealand market and this finding is supported by the micro business survey (Phase 3) as shown in Figure 5-3. These companies, along with Reckon, QuickBooks, Cashbook Complete and Farm Focus were introduced in section 4.2.1. The “other” category represents Hnry (online accounting service), industry-specific AIS

(Gensolve (medical), and iAgri (agriculture)), or international AIS not customised specifically for New Zealand (Account Edge (USA); Bookipi (Australia); Wave (Canada) and Manager.io (unknown)).

Xero was the most popular amongst micro businesses using computerised AIS, with 55% of respondents (73 of 131) choosing this program. Xero's strength of being a cloud-based program from its onset (Gregersen, 2014) offered many efficiencies which are discussed further in section 5.6 with the benefits of computerised AIS. Inherent with cloud-based technology is that the program used is always up to date. Compare this to the second most popular, MYOB, with 15% of respondents (19 of 131) choosing the AccountRight product, and 15% of respondents (20 of 131) choosing MYOB Business (refer to Figure 5-3). MYOB Business is also a cloud-based product (Madytianos, 2014), but MYOB AccountRight has a longer history and began as a desktop application (refer to section 4.3.3), with more recent versions harnessing the benefits of data stored in the cloud (Macpherson, 2014; MYOB Technology Pty Ltd, n.d.-c).

From the micro business interviews, it was highlighted that not all MYOB AccountRight users use the most recent version, choosing to remain on older versions having originally purchased the program and not wanting to pay a monthly subscription fee for support and updates of the program. Of the five interviewees using full-functionality computerised AIS (MBAH1, MBAH2, MBAH4, MBSAH1, MBSAH2), only two interviewees used MYOB AccountRight (MBAH1, MBSAH2) with one interviewee using an older version: "it works for us, so why change it?" (MBSAH2).

The survey of micro businesses attempted to ascertain the number of computerised AIS users that were still using older versions through the question "Is the accounting software you currently use cloud based?". The responses were somewhat misaligned. Of the micro businesses using Xero and MYOB Business (both of which are cloud-based), 19% of respondents (14 of 73) of Xero users were "unsure" if their software was cloud-based, and for MYOB Business users, 5% of respondents (1 of 20) replied "no" and 10% of respondents (2 of 20) were "unsure" indicating that micro businesses are somewhat unclear about the terminology "cloud-based". This confusion was explored in the interview with MBAH1, indicating that cloud-based software was accessed through a web browser but was met with equal confusion "I don't understand what you mean by web browser. I've got MYOB on my screen. I just click on it". So, while the survey results show that of the MYOB AccountRight users, 68% of respondents (13 of 19) indicated "no" or "unsure" about being cloud-based, given the above examples of confusion, no conclusion can be drawn about how many micro businesses are using older versions, limiting the benefits available to them (discussed further in section 5.6).

5.3.5 Hybrid Methods

From the micro business survey, four groups indicated using a form of hybrid AIS (out of 182 respondents): Manual-Spreadsheet Hybrid with 2% of respondents (4); Manual-Computerised Hybrid with 2% (4); Spreadsheet-Computerised Hybrid with 13% (23); and Computerised-Hybrid with 3% (5) (refer to Table 5-2 and Figure 5-1). Overall, 20% of respondents used more than one method to capture data for their accounting and management needs.

The micro business interviews found that six of the 11 interviewees (MBAH1, MBAH2, MBAH3, MBAH4, MBSAH1, MBSAH2) used hybrid methods, none of them relying solely on their computerised AIS. Three of these interviewees use a mixture of computerised AIS, spreadsheets and manual recording (MBAH1, MBAH2, MBAH3), one interviewee (MBAH4) used the computerised AIS supported by manual records, and two interviewees used computerised AIS and spreadsheets (MBSAH1, MBSAH2). The reasons for not relying entirely on the computerised AIS relate to the skill and interest of the business owner (MBAH1, MBAH3) and specific information traits relevant to the micro business industry that fall outside of the computerised AIS functionality (MBAH2, MBSAH1, MBSAH2):

I'd still use spreadsheets. Definitely! Especially because within my [industry], you divide the fee up into different stages. And that's hard to do ... Well, I don't know how to do it in AccountRight. (MBAH2)

Access to internet, necessary with cloud-based AIS, for mobile businesses or where the internet was unstable was also included as a reason for manual methods to be included in the AIS (MBAH1, MBAH4, MBSAH2):

... the fact that he [the customer] said he hasn't been here recently means he's not in [the current customer folder] ... took me 30 seconds because even after all that time, I found him ... That took me quicker time than you imagine. I'd be like 'I don't know who you are. Don't know when you've been here. I don't know anything about you because I can't get on the computer'. It's just hopeless! Absolutely hopeless! (MBAH4)

These reasons are discussed in further detail in section 5.5.

5.3.6 Extending Functionality and Other Management Tools

From the accountants' interviews, section 4.3.5 introduced several add-on apps that extend the functionality of computerised AIS, Xero and MYOB in particular. The app enables the micro business to capture data or present information specific to that business's individual needs, working seamlessly with the computerised AIS. Other management tools assist in the micro business processes but do not integrate with the AIS. From the micro business survey, 107 responses were

received identifying the types of apps or other software used in their micro business management, shown in Table 5-5.

MYOB (2022) have found that in managing their businesses, 40% of SMEs depend on four or more computerised tools. Of those using computerised tools, 57% suffer from problems where the apps and tools do not integrate with each other. The result is wasted time in duplicated data entry, manual checks of data accuracy, manual corrections, decision making using incomplete or erroneous information, and business errors.

Table 5-5 Apps or other software used in micro business management

Software or apps used	Responses
Industry-specific	27
Marketing and social media	22
Scheduling, workflow and project management	18
Ing Sales tools	17
Document presentation	10
Electronic document capture	9
Mapping and GIS	6
Website content management	6
Cloud file storage	6
Internet banking	6
Client relationship management	5
IT security	3
Database	3
Music	1
Total	139

The largest category of apps or other software were those designed specifically for industry, and the next top categories relate to marketing, and supporting income-generating activities (i.e. sales or scheduling appointments and customer projects).

Apps that could integrate with computerised AIS that were identified by the respondents include (MYOB NZ Limited, n.d.-b; Xero Limited, n.d.-h):

- **Workflow and project management** – WorkflowMax, Deputy, Service M8, SAM, Fergus, Trello
- **Sales tools** – Vend, Stripe, Shopify, PayPal, RepairShopr, Tradevine
- **Electronic document capture** – Hubdoc, Receipt Stash, Receipt Bank (Dext)
- **Customer relationship management** – Capsule, Cliniko

Information was electronically transferred for 26% of respondents (18 of 68) between the app and their computerised AIS. Another 9% of respondents (6 of 68) listed some of these same apps that could be integrated with their computerised AIS, but this group did not utilise this connection.

Two micro business interviewees (MBS1, MBM1) also discussed apps they were looking to implement soon. Both participants did not use computerised AIS but were more focused on the benefits they could gain from supporting their sales (Vend) (MBS1) or setting customer appointments (Timely, Appointfix) (MBM1) than they were on computerised AIS.

Other software being used by interviewees also focused on the areas of sales and managing customer appointments (MBAH1, MBAH2, MBAH3). Examples of how the software or app was used include:

- Traditionally, sales at markets or events would be on a cash basis, but AWOP and Wave are two examples that offer payment options to customers. Event organisers assume control of the payments, which can be a necessary factor to satisfy the legal issues impacting the sale of some goods such as alcohol (i.e. wine or beer) at an event. This technology also captured data on the event for organisers and provided alternative fee structures where organisers charged micro businesses at the events (MBAH1).
- Many platforms exist for accommodation providers to advertise “we’ve got Airbnb, Expedia, Booking.com and our website” (MBAH2). Coordinating between each of these platforms can be challenging, “Some of them will talk to each other. Some of them won’t. And if you miss a booking, you can end up with a double booking” (MBAH2). Channel booking systems automate the communication between platforms, but the cost of this was a barrier, so a simplified and manual approach was necessary, “... [we do] a lot of her planning through Google Calendar ... If [we] get a booking come by Airbnb, [we’re] straight onto Expedia, booking.com and the website to try and block out those dates” (MBAH2).

A simplified manual approach was the best for other micro businesses:

I've tried lots of systems for organising my time and at the moment I've ended up going back to having a diary ... I actually use that. All this online stuff, I don't use. I've done all sorts of task management apps and all sorts of things in the past and they always get abandoned through neglect.
(MBAH3)

In summary, there is a wide range of apps and other software available to micro businesses to complement their selected AIS. Many factors impact which system is adopted and the various

benefits to the micro business from their use. These will be discussed in sections 5.5 and 5.6. First, section 5.4 will discuss how AIS tools are used by micro businesses.

5.4 How AIS Tools are Used (RQ3)

This section progresses from examining what AIS tools are being used by micro businesses (RQ 1) to examining how micro businesses are using their AIS (RQ 3). Taking a closer look at the functional areas of business management highlights how well micro businesses are utilising their AIS. As previously shown in Table 4-2, computerised AIS provides a range of functions to micro businesses. This section will address how those functions are utilised by first looking at how micro businesses are using their AIS to meet compliance requirements, followed by addressing areas of general business management.

5.4.1 Meeting Compliance Requirements

Certain compliance requirements may be specific to individual businesses, dependent on industry, size and location. New Zealand's tax compliance set by Inland Revenue, applicable to nearly every business (Lignier & Evans, 2012), includes GST, payroll and income tax. The AIS used needs to be able to collate and summarise data to satisfy any compliance requirements.

Goods and Services Tax (GST)

From the survey of micro businesses, 68% of respondents (123 of 182) met the annual turnover threshold of \$60,000 (Inland Revenue, 2021b), as shown in Figure 5-4, and were obligated to be GST registered in New Zealand. Another 18% of respondents (34 of 182) opted to be registered, giving a total of 86% of respondents (157 of 182) being registered and filing regular GST returns. Clark and Douglas (2014) found a similar, but larger at 25, difference in their study in New Zealand. Previous studies (Breen et al., 2002; Breen et al., 2004; Lignier, 2006, 2009a, 2009b) found that filing GST returns was a strong motivator for micro businesses to use computerised AIS tool, due to the benefits from computerisation (refer to 5.6.1).

Of the GST registered micro businesses, 72% of respondents (113 of 157) completed the GST return internally (by the owner or employee of the business). For these micro businesses, computerised AIS is used by 80% of respondents (91 of 113), 17% (19) used spreadsheets, and 3% (3) used a manual AIS, as shown in Figure 5-5. Ma et al. (2021) found that with the implementation of Xero and cloud computing, there was an increase in small business completing their own transaction coding and GST preparation.

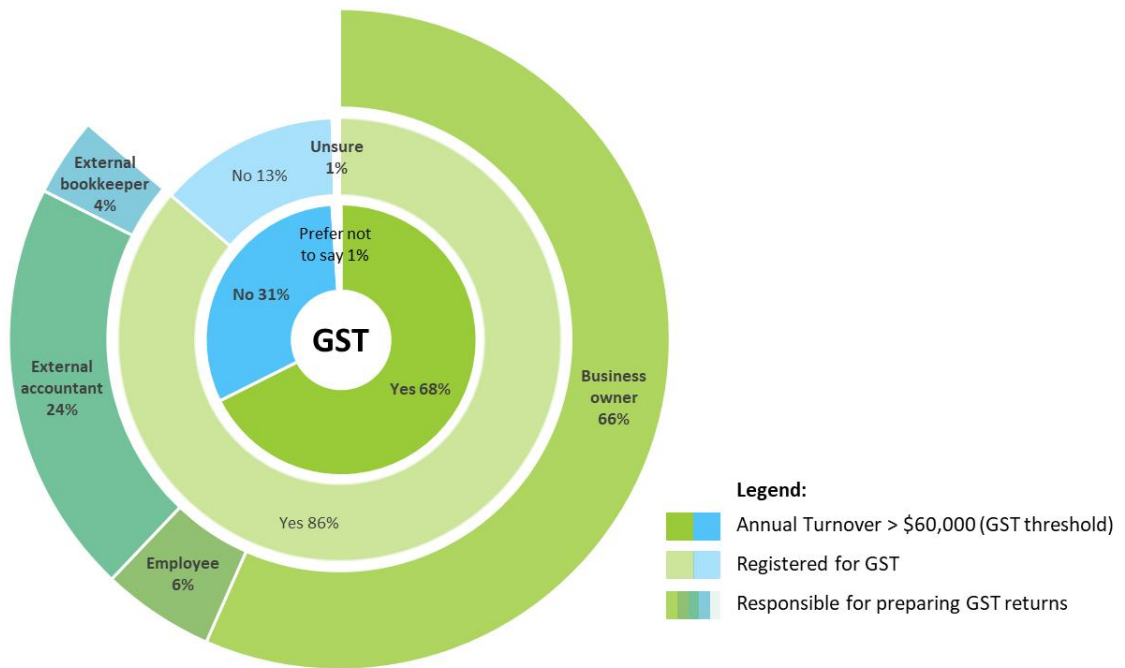


Figure 5-4 GST registration and return preparation

Further automation is available through electronically filing the GST returns via an internet portal (myIR), and 96% of respondents (108 of 113) of micro businesses who prepare their own GST returns used this portal with the remaining 4% (5) mailing paper-based GST returns to Inland Revenue, as shown in Figure 5-6. Some computerised AIS tools provide additional functionality, linking the computerised AIS to the myIR portal, to enable the GST return to be uploaded without any need for retyping the information (MYOB Technology Pty Ltd, n.d.-e; Xero Limited, n.d.-i). Only 48% (52 of 108) of those who file their GST returns electronically utilise this functionality, as shown in Figure 5-6

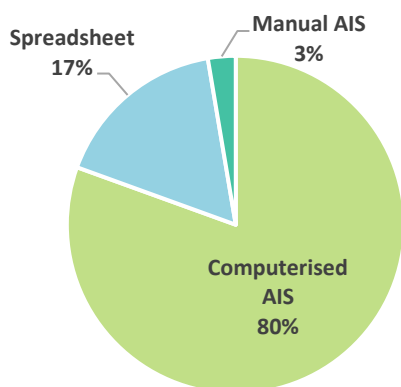


Figure 5-5 AIS used by micro businesses who prepare their own GST returns

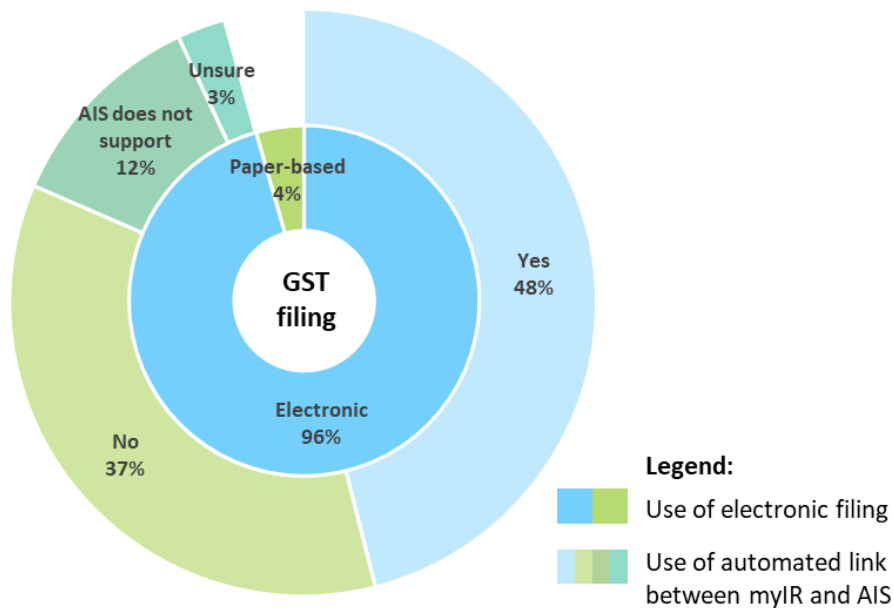


Figure 5-6 Use of automation to file GST

Micro businesses have options as to the frequency of filing GST returns. As the AIS information is needed to prepare GST returns, the GST return frequency defines the longest timeframe to update the information in their AIS, with many micro businesses opting to do this much more often (i.e. weekly or daily). From the survey, of the businesses that are GST registered, 82% of respondents (128 of 157) filed their GST every two months, 4% (7) filed each month, 13% (20) filed GST every six months, and 1% (2) were unsure.

Of the micro businesses interviewed, three were not GST registered (MBM1, MBM3, MBS2), one was recently deregistered (MBM2) and the remaining seven were GST registered. Of those GST registered, four used their accountant to prepare the GST returns (MBAH1, MBAH2, MBAH3, MBS1). Where the accountant was involved, computerised AIS was used to access the bank information, and features such as bank rules automatically identified and coded transactions that were typical for that business (i.e. electricity, bank fees), “they set up rules to make it work” (MBAH3).

[The accountant’s] on bank feeds, so she's got everything on the bank statement and if she's got any queries at the end of the GST period when she does the GST, she flicks them straight through to me, ‘what's this? what's that?’ (MBAH1)

Three of the four interviewees who prepared their own GST returns used computerised AIS, of which two interviewees used the automated link between the AIS and myIR to file the GST return (MBAH4, MBSAH1), finding the process simple and straight-forward:

But who wouldn't? Come on, push button A. Go down, select GST Report. And we have it set up, so if there's a mistake one month it's picked up the next time we do the GST. And I usually do the GST on the first of the month. We're doing it monthly. Well, it's so easy! I reconcile in the morning, on the first of the month, and then by 10 o'clock, I've got the GST application in. Period. And then we don't get it late, and we don't miss payments or requesting credits. It's just done. (MBSAH1)

The fourth micro business interviewee (MBSAH2), preparing their own GST return with computerised AIS, used an older version of MYOB which does not have this feature but still found the process simple, including typing the information into the myIR portal "they have improved it, each time I've done it. They seem to be more user friendly" (MBSAH2).

The micro business interviewee who had deregistered for GST (MBM2) used a manual AIS, and when filing the GST return would manually calculate the required information and type it into the myIR portal.

Payroll

Of the survey respondents, 47% had employees (85 of 182) and prepared regular payroll and PAYE returns. As highlighted by the accountants' interviews (refer to section 4.5.1), preparing payroll is challenging due to complex legislation, and therefore the accountants encouraged the use of a specialist computerised AIS for payroll. There are various options available to micro businesses. Accountants will provide this service for their clients, and 20% of respondents (17 of 85) with employees used their accountant, as shown in Figure 5-7. A lesser-used option (9%, 8 of 85) is to employ the services of a PAYE intermediary service, such as Thankyou Payroll and iPayroll, both approved by Inland Revenue (Inland Revenue, 2021a) to manage PAYE services on behalf of clients in addition to preparing the payroll and PAYE. However, the majority (71%, 60 of 85) prepared payroll and filed the PAYE return themselves. Of these 60 micro businesses that prepared payroll themselves, some used a payroll AIS tool (40%, 34 of 85) while others took a manual approach (31%, 26 of 85).

Using a payroll AIS tool usually comes with an additional cost over and above the computerised AIS. For this reason, it is most beneficial for those micro businesses with a greater number of employees. AIS such as Xero Payroll and MYOB Business Payroll were the most popular (refer to Figure 5-7) and were integrated with the computerised AIS used for other business records. Most micro businesses that used computerised payroll AIS (85%, 29 of 34) also filed the PAYE returns through Inland Revenue's online portal, myIR. Only 9% of survey respondents (3 of 34) did not use the feature which enabled the PAYE information to automatically transfer from the payroll AIS to myIR as an alternative to manually entering the information, and 6% of respondents (2 of 34) were unsure if they used this feature.

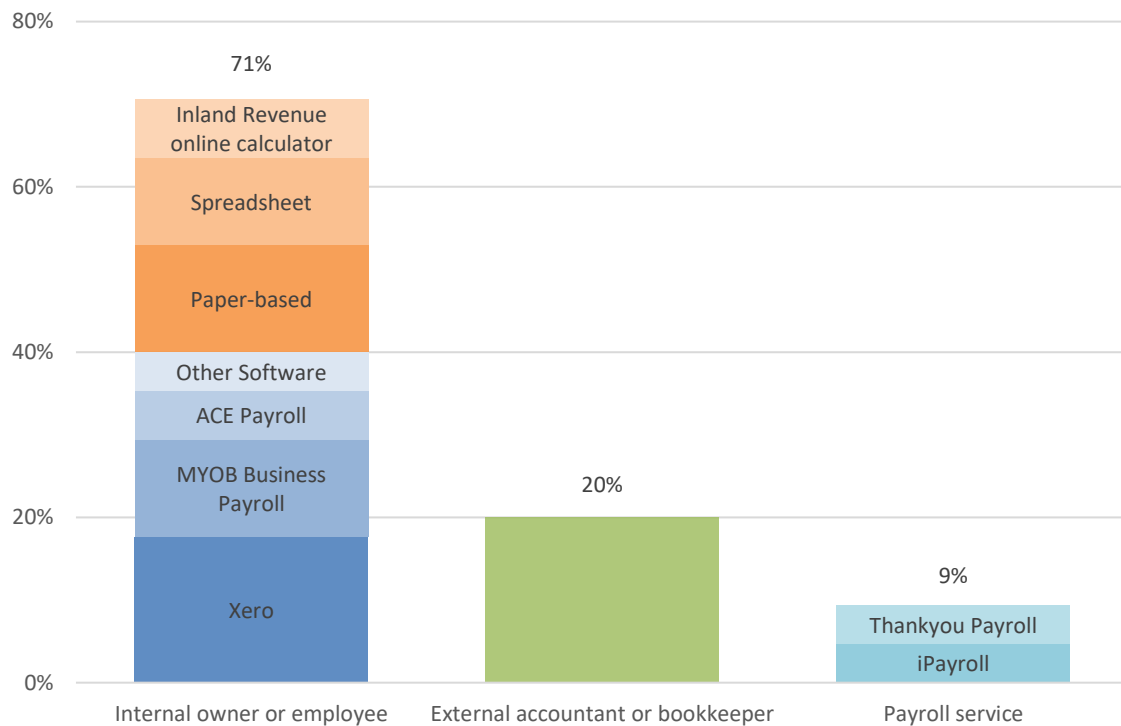


Figure 5-7 AIS tool for payroll preparation, by payroll preparer

Manual options for micro business owners in preparing payroll include keeping manual paper-based calculations, recording in a spreadsheet, or using Inland Revenue’s online calculator. These options are very low cost but require more time to complete and there is a risk of inaccuracies. They are therefore, better suited for payroll that does not change from pay to pay, or for businesses with casual or seasonal employees. Filing PAYE returns can still be done electronically through myIR, but the information must be manually entered. This is the selected filing method of 73% of respondents (19 of 26) who prepared payroll manually. Only a small number of micro businesses (12%, 3) chose to file paper-based PAYE returns, with delivery to Inland Revenue through the postal services, and another 15% of respondents (4 of 26) were not sure how they filed the returns.

Only four interviewees had employees and prepared payroll. Two of these micro businesses (MBAH1, MBS1) had their accountant prepare the payroll and file the PAYE returns, and one (MBSAH1) used the PAYE intermediary service, Thankyou Payroll:

I feed it in ... Thankyou Payroll, it says this person, how many hours. And behind it is their rates and everything they get. It spits me out a figure. I pay the figure to them, and they pay it to the [employee] the following day. Nice and easy. (MBSAH1)

The fourth micro business (MBSAH2) used a spreadsheet and Inland Revenue’s online calculator to prepare the payroll, and submitted the PAYE return electronically through myIR:

I do just on an Excel spreadsheet. We did buy the payroll, but it was all too much. For one person, an Excel spreadsheet just works fine. And I've just got my columns for how many hours he's worked, how much we pay him, whether it was holiday or sick or bereavement leave or anything like that, and then PAYE and what we've paid him, and the dates he's paid. (MBSAH2)

Year-end reports and Income Tax

Preparing year-end reports and income tax is a specialist task, typically left to accounting professionals to complete, although with the simplest of micro businesses, sometimes the business owners take on this task themselves. With the implementation of Xero and cloud computing, Ma et al. (2021) found that there was an increase in small businesses completing their own transaction coding and GST preparation, but there was no change to the preparation of year-end reports.

The micro business survey identified that most micro businesses used accountants to complete year-end reports (75%, 137 of 182) and income tax returns (80%, 147 of 182) as shown in Figure 5-8. Typically, both these tasks are completed by the same person, but it is interesting to note that 9% of respondents (16 of 182) prepared the year-end reports themselves and sent the information to their accountant to file the income tax return. Another 3% of respondents (6 of 182) did this in reverse with the accountant preparing the year-end report and the micro business filing the income tax return.

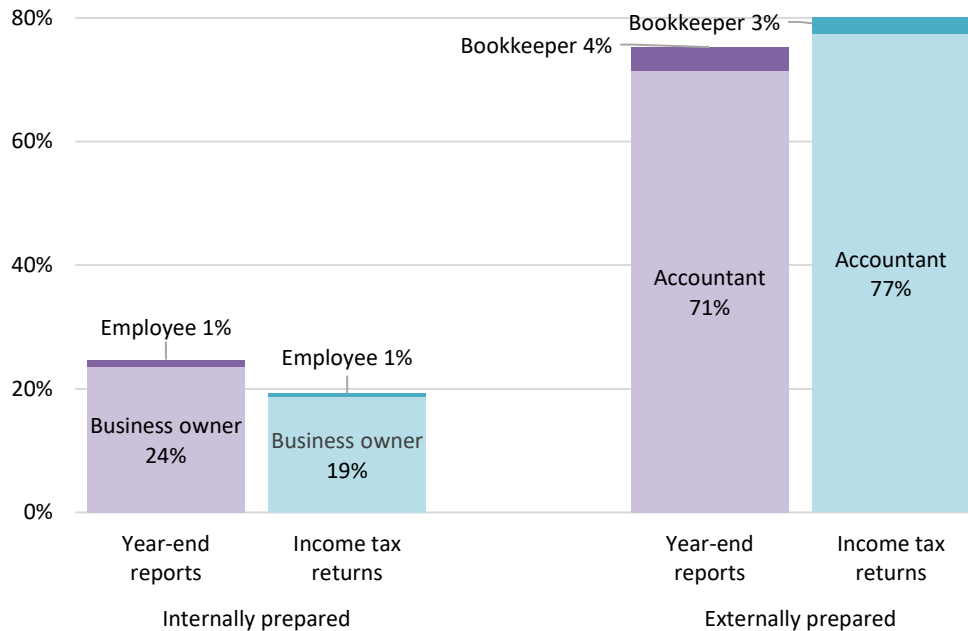


Figure 5-8 Responsibility for year-end reports and income tax returns, by preparer

All eleven micro businesses interviewed used an external accountant to prepare year-end reports and file their income tax with Inland Revenue.

5.4.2 Managing the Business

Day-to-day management tools are available to support the AIS. Where the AIS is computerised, many of these tools are available within the computerised AIS program. The micro business survey asked respondents to “indicate the main person responsible for completing each of the following tasks”. The responses to this question are shown in Table 5-6 and indicate that the majority of micro businesses complete these management functions internally, with only a few outsourcing these services to accountants or bookkeepers. Each function is discussed in more detail below.

Table 5-6 Responsibility for business management functions

Business management function	Internal		External		No one / not applicable	Total
	Business owner	Employee	Accountant	Bookkeeper		
Recording bank transactions	156	13	7	5	1	182
Bank reconciliation report	130	13	24	7	8	182
Creating customer invoices	153	15	0	3	11	182
Paying suppliers	167	10	1	2	2	182

Cashflow and banking

The ability to monitor cash flow and the bank account balance is easier and can be done more frequently with internet banking. Of the respondents, 98% (178 of 182) said that they have internet banking and use it often. All eleven micro businesses interviewed used internet banking, with four preferring to use the mobile app instead of the web browser access on their computer (MBAH2, MBAH4, MBSAH2, MBS1), “honestly, I would use the app over the PC. The ASB app is so much better than their online web version” (MBAH2). However, contrastingly one interviewee noted they would never use the mobile app (MBAH1).

From the micro business survey, shown in Table 5-6, 93% of respondents (169 of 182, being business owners and employees combined) record the bank transactions themselves with 7% of respondents (12 of 182) employing the services of their accountant or bookkeeper to do this for them. Fewer bank reconciliation reports are prepared internally by the micro businesses (79% of respondents, 143 of 182), with accountants and bookkeepers doing more (17% of respondents, 31 of 182). The businesses that indicated “no one / not applicable” were all using manual systems, so it is logical that there would be no report to print. Businesses that use a manual AIS system or an older version of computerised AIS do not have the benefit of bank feeds delivering bank account transactions into their AIS. This feature reduces the effort to record bank transactions and simplifies reconciling the bank account.

From the micro businesses interviewed, only three “use the bank feeds and auto coding” (MBAH2) to reconcile the bank account information daily in their AIS (MBAH2, MBAH4, MBSAH1). Two others had the functionality with their AIS to do this (MBAH1, MBAH3), but lacked the skills or had concerns about utilising this feature “... as long as there's enough money in there for things to not to be declining, I don't look at it unless I have to actually make a payment to someone” (MBAH3). For these two micro businesses, coding and reconciling is considered the responsibility of the accountant “when the transactions come up in MYOB, if they aren't obvious what they are, then either we'll remember to go in and make a note about [it] or the accountant will nag us for one later” (MBAH3). This suggests reconciling the bank account is viewed as an obligation instead of a source of business information “I'm about to start and be nice to my accountant and code everything for her, on a two-monthly basis” (MBAH1).

Sales and income

Sales and related activities are a primary focus for many micro businesses. This includes invoicing and monitoring outstanding amounts due, but also providing convenient options for receiving customer payments, scheduling appointments and monitoring workflow. The needs of micro businesses from their AIS concerning sales can depend on the industry of the micro business, payment methods offered, payment terms (at the time of the transaction versus credit), and the number of invoices issued. Section 5.3.6 highlighted apps and tools used by the micro businesses (in both the surveys and interviews), the most common being those that assisted in sales, receiving income, and scheduling workflow for their customers, with two interviewees more concerned about apps that would support setting appointments and tracking sales than a computerised AIS (MB1, MBS1).

From the micro business survey, 92% of respondents (168 of 182) kept the responsibility for invoicing within the business (business owner or employee) as shown in Table 5-6, compared with 2% of respondents (3 of 182) who use a bookkeeper to issue invoices. All the micro businesses interviewed took responsibility for their own invoicing.

Different formats of payment are available, including historically cash and cheques, and more current electronic forms (i.e. EFTPOS, credit card, direct debit). The micro business survey found that cash and cheques were becoming obsolete with 70% of respondents (128 of 182) “never” or “rarely” receiving cash and 92% of respondents (168 of 182) “never” or “rarely” receiving cheques. Instead, 97% of respondents (176 of 182) were receiving some form of electronic income “most of the time” or “all of the time”. While this does not paint a clear picture of how often each payment form is received, it suggests that most of the time payments are received in an electronic format. This was supported by the micro business interviewees, with all of them mainly receiving income electronically, though cash was also noted by five interviewees (MBAH1, MBAH2, MBSAH1, MBM2,

MBS1) reflecting their individual industries. An example is the retail industry (MBAH1, MBM2, MBS1), where a simple payment process for customers is viewed as good service:

I know ... [the competition], they don't have EFTPOS. There's a money machine next door. All three of them are very close to a money machine. Now, we are too. It's right next door, but there's something lame about saying [to customers], 'oh, you can just go get money from that machine and pay me'. (MBS1)

Accepting EFTPOS and credit cards created assurance of receiving customer payments, "that's why I did credit cards because it made it more convenient, and it meant I wasn't chasing people for money" (MBAH4). For rural businesses, access to financial services was a challenge with the nearest bank branch being forty kilometres away, "banking cash can be a pain" (MBAH2). While there are costs with travelling to the bank, various payment formats could also create additional costs for the micro business. These could either be absorbed by the micro business or passed on to the customer:

And our EFTPOS is just a card reader app for our cell phone ... If we had a mobile EFTPOS machine ... but it's the same thing again, it's added cost ... So, when you have a mobile EFTPOS machine, you've got to have a mobile SIM in it. So, you go and do that through EFTPOS New Zealand or Verifone. That's another \$15 a month for the mobile SIM. And then on top of that ... if you don't own it, it's another fee per month. (MBAH1)

The accountant told me I'd lost \$1,500 one year because of the charges ... I felt why should the others have to pay more just to absorb that cost? So, I found that EFTPOS machine ... says, 'you've used a credit card, a surcharge of ... \$1.20 will apply. If you agree with this, press the green button.' (MBAH4)

Invoices are created by 79% of respondents (143 of 182) each month. The largest group of respondents (40%, 73 of 182) created one to ten invoices per month, and only a few respondents (11%, 20 of 182) created a large number (51 to 350) of invoices as shown in Figure 5-9. In the accountant interviews, seven of the eleven accountants commented on the benefits to micro businesses from using computerised AIS for invoicing, and this is therefore a strong motivator to implement computerised AIS (refer to section 4.5.2). Focusing on those respondents who create a large number of invoices, 95% of them (19 of 20) have computerised AIS, yet 15% of those micro businesses (3 of 20) created invoices either using spreadsheets or paper-based invoices.

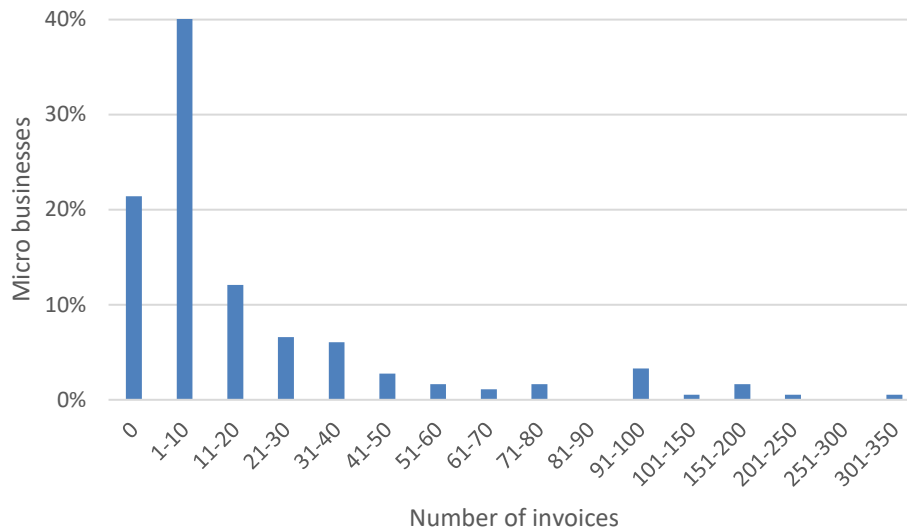


Figure 5-9 Number of invoices per month created by micro businesses

Of the micro businesses interviewed, three did not create any invoices (MBSAH1, MBM1, MBS1), six created one to twenty invoices per month (MBAH1, MBAH2, MBAH3, MBM2, MBM3, MBS2), and two created large quantities of invoices (MBAH4, MBSAH2). Of the latter two micro businesses, MBAH4 opted for paper-based invoices even though the business used computerised AIS. Hand-written invoices provided greater flexibility and timeliness as the semi-rural location of the micro business is affected by poor internet services that hindered the use of the computerised AIS. As payments were typically received at the time of invoicing, tracking outstanding invoices was not an issue. The other micro business (MBSAH2) used their computerised AIS to generate invoices, to benefit from the efficiencies in creating the invoices and monitoring outstanding payments. Also affected by poor internet services, they used an older version of MYOB which does not offer the most recent interconnectivity benefits in the process of emailing invoices:

The only trouble [MYOB AccountRight] has is talking to Outlook. Outlook thinks it's a program that interfering. So, every email comes up going 'are you sure you want to send this?' So, I have to sit here and go 'ok' to each one. But it's still quicker than printing. (MBSAH2)

Interviewee MBAH2 is also hindered by invoice creation, as this micro business incurred expenses on behalf of customers, but their version of MYOB did not include the functionality to track costs. MBAH2 instead paid less for fewer features in the computerised AIS, having to "run a little spreadsheet off the side, if I've bought some stuff for some clients, to be able to bill that on" (MBAH2).

Of the surveyed micro businesses who create invoices, 70% of respondents (84 of 120) said they did this "most of the time" or "all of the time" using computerised AIS on their computer. Far fewer, 6%

of respondents (7 of 120) said: “most of the time” or “all of the time” for creating customer invoices through a mobile app of their AIS. Using higher levels of technology through automatically generated invoices via a micro business’s website or AIS is more common with 17% of respondents (24 of 138) stating, “most of the time” or “all of the time”. Micro businesses are also using efficiency features within the computerised AIS, such as “recurring transactions” (depending on the AIS this feature may also be called “bank rules,” “saved transactions,” “memorised transactions,” or similar). Micro businesses who use both computers and mobile devices use efficiency features for recording customer invoices (45% of respondents, 13 of 29) or recording their receipts of income (36% of respondents, 17 of 47) selecting either “most of the time” or “all of the time”. Only micro businesses who use both computers and mobile devices to create invoices responded to these questions.

Business expenditure

Micro business management includes monitoring the costs of business activities and payment of those expenses. From the micro business survey, 97% of respondents (177 of 182) kept the responsibility for making payments within the business (business owner or employee) as shown in Table 5-6, compared with 2% (3) who used an accountant or bookkeeper to create payments. All the micro business interviewees were responsible for their own supplier and bill payments.

The regularity of recording expenses in the AIS is shown in Figure 5-10. Of the surveyed micro businesses who record the expense “as soon as a bill is received” or soon afterwards (i.e. “some other point after a bill is received but before it is paid”, or “once a week”), a total of 61% of respondents (110 of 182) were monitoring their future payments due. For these, 81% of respondents (79 of 98) used their computerised AIS to monitor payments “most of the time” or “all of the time”. The remaining micro businesses were using other manual paper-based methods, spreadsheets or relying on their own memory. Of the respondents that monitor their expenses using computerised AIS, 43% of respondents (37 of 87) indicated they used efficiency features such as “recurring transactions” “most of the time” or “all of the time”. The same efficiency features were used for recording payments by 36% of respondents (46 of 127).

While the monitoring and payment of business expenditure was recognised by all interviewees as a necessary part of business operations, it did not have the same focus as sales and income (discussed in the previous section). Of the micro businesses interviewed, only MBSAH1 and MBSAH2 used the “bills received” functionality in their computerised AIS, although they were not using the accounts payable report to monitor their payments due:

... if it's something that's like the phone bill comes in and it's due to be paid in two weeks' time, we'll pay it straight away. I don't even enter that, because it's invoiced and paid in the same month. (MBSAH1)

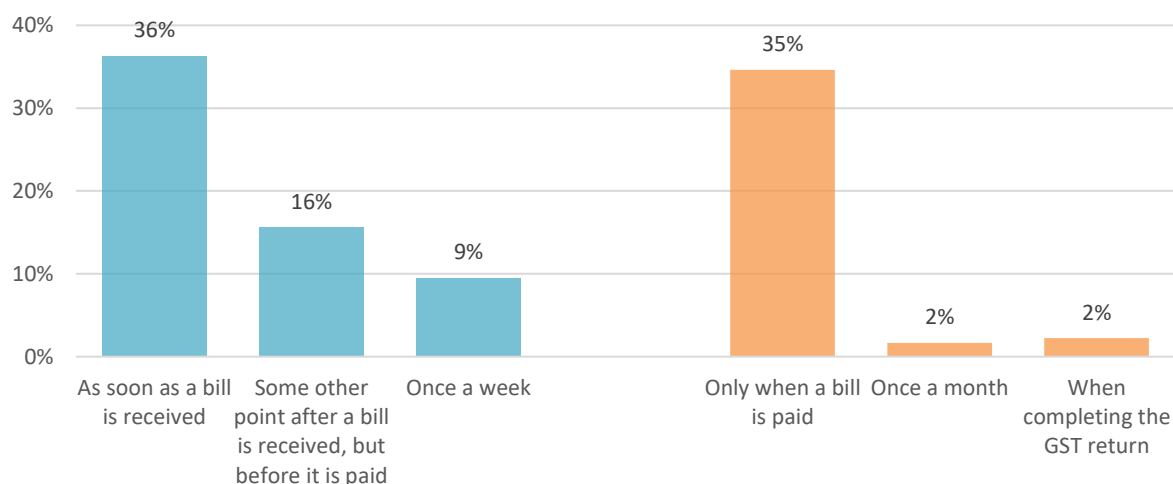


Figure 5-10 Regularity of bill payment

I don't go off MYOB for the other people that need to be paid. I've got the file. The paper file works better for me. I just go through the pieces of paper, pay them, write that they're paid and then file them. (MBSAH2)

More common for those who used computerised AIS was to wait until after the payment had been made and the transaction had appeared in the bank feeds before recording the expense (MBAH1, MBAH2, MBAH3, MBAH4). "I don't really record expenses through that side of it, not bill payments" (MBAH2). The interviewees who maintained manual or spreadsheet AIS, recorded expenses after the payment had been made and the transaction appeared through the bank account.

Showing a similar trend to receiving customer payments, payments to suppliers in the form of cash and cheques are becoming obsolete with 95% of respondents (172 of 182) stating they "never" or "rarely" made payments in cash and 99% of respondents (181 of 182) "never" or "rarely" paid by cheque. Instead, 98% of respondents (179 of 182) were paying business expenses using a form of electronic payment (i.e. EFTPOS, credit card, direct debit) "most of the time" or "all of the time". All the interviewees commented on their preference for making electronic payments.

Inventory

Only three of the micro businesses interviewed (MBAH1, MBM2, MBS1) kept inventory and used computerised AIS, paper-based AIS and spreadsheet AIS systems, respectively to track their inventory. For MBS1 using spreadsheets, selling inventory was secondary to the services they provide, so visual monitoring of inventory levels was considered adequate. While MBM2's micro business was centred on selling inventory items, the business size and management style allowed for

visual monitoring “my stock control is in my head. You know, I can see when something is getting low” (MBM2).

Contrastingly, MBAH1 did need to regularly monitor inventory movements, being in an industry regulated by the New Zealand Customs Service. They could have used their computerised AIS to do this but “everybody says that it’s just too hard” (MBAH1), so they manually monitored inventory on hand to meet their compliance requirements. Additional challenges were met as they sold partial units at special events, adding a complexity that required a higher level of functionality than available in the computerised AIS introduced in section 4.2.1. Business size and technical skills were factors that led to using alternative manual records for monitoring inventory rather than seeking alternative computerised apps.

MBSAH1 also discussed monitoring inventory levels using computerised AIS for a previous business in manufacturing. This micro business did have the technical skills, but again, standard computerised AIS did not provide the functionality required for manufacturing processes to track variable material costs and overheads in the manufacturing process:

There’s a program within MYOB that can handle stock changes, but I was cutting rolls of ... [raw material]. We were then adding ... [more raw materials]. We were adding labour to it and the simplest and easiest thing for me is to do a physical stock-take every month. It took me a couple of hours. (MBSAH1)

Ideally the computerised AIS would provide detailed information to determine an overhead rate to apply to each product:

We tried to set up that system, but it was just about impossible to get to figure out like how much ... [variable overhead] should I add in ...? And you know the different sized ... [products]. It just got too complicated. (MBSAH1)

Without the functional support from the computerised AIS, spreadsheets and logic were used to closely monitor the micro business and determine the value of the inventory:

... it's much easier to do a physical [stocktake], and then you just look at the last month’s stock, this month’s stock, any stock in. And the only way stock can get out is through the sales. So, you have all the records for that. And the only way stock can get in is through purchases, and you have records of that. And so, really simple. (MBSAH1)

Management reports

Summaries and reports aid decision-making for micro businesses. Computerised AIS has the benefits of creating reports instantaneously including calculated totals (refer to section 5.6). Summaries can

also be prepared with manual or spreadsheet-based AIS, but due to their laborious nature, they are not prepared as frequently as they are for micro businesses using computerised AIS.

The respondents were asked to indicate how often specific reports were prepared for their business. The responses indicate that financial reports, such as profit and loss and balance sheet are most frequently prepared on an annual basis for micro businesses using either computerised or manual AIS as shown in

Figure 5-11. Annually, the profit and loss report was prepared using computerised AIS by 35% of respondents (45 of 127) and prepared using manual or spreadsheet AIS by 44% of respondents (24 of 55). Likewise, the balance sheet was prepared using computerised AIS by 47% of respondents (60 of 127) and using manual or spreadsheet AIS by 42% (23 of 55) of respectively. Although, 30% of respondents (38 of 127) using computerised AIS prepare the profit and loss report monthly compared to 9% of respondents (5 of 55) using manual or spreadsheet AIS.

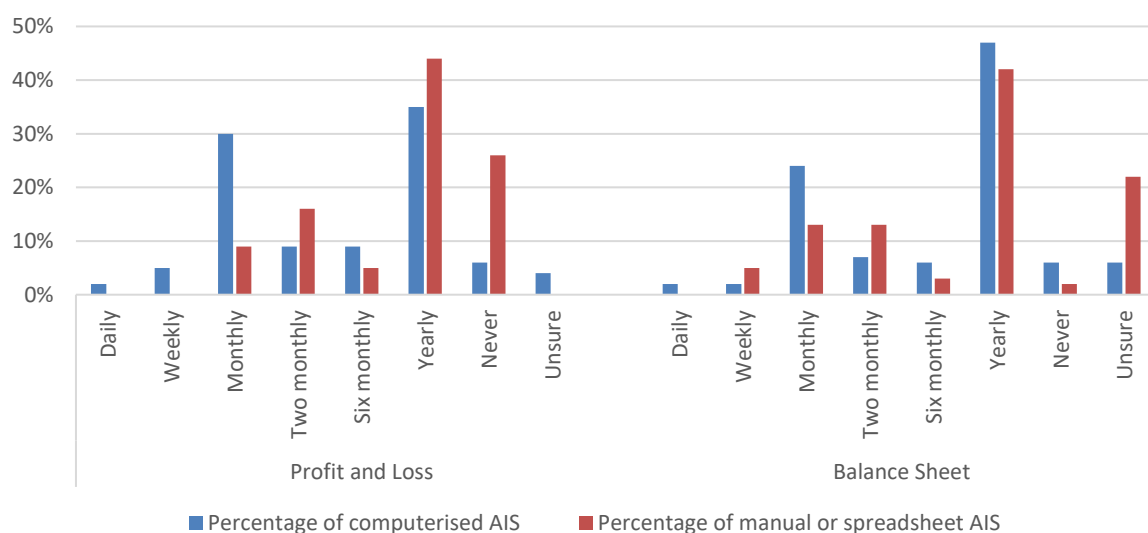


Figure 5-11 Preparation frequency of financial reports

Reports designed to manage specific aspects of the business, such as accounts receivable, accounts payable and sales reports, were prepared much more frequently than the financial reports, as shown in Figure 5-12, especially where the micro business used computerised AIS. Accounts receivable and accounts payable are prepared monthly by 40% of respondents (44 of 110) and 42% of respondents (35 of 84), respectively, who used computerised AIS, compared with 17% of respondents (6 of 36) and 19% of respondents (5 of 26), respectively, using manual or spreadsheet AIS. Preparation of sales reports was much more frequent, where micro businesses using computerised AIS prepared these daily (28% of respondents, 36 of 127), weekly (23% of respondents, 30 of 127) and monthly (24% of respondents, 29 of 127). Manual or spreadsheet AIS sales reports were also more frequently

prepared; daily for 13% of respondents (7 of 55), weekly for 22% of respondents (12 of 55) and monthly for 16% of respondents (9 of 55).

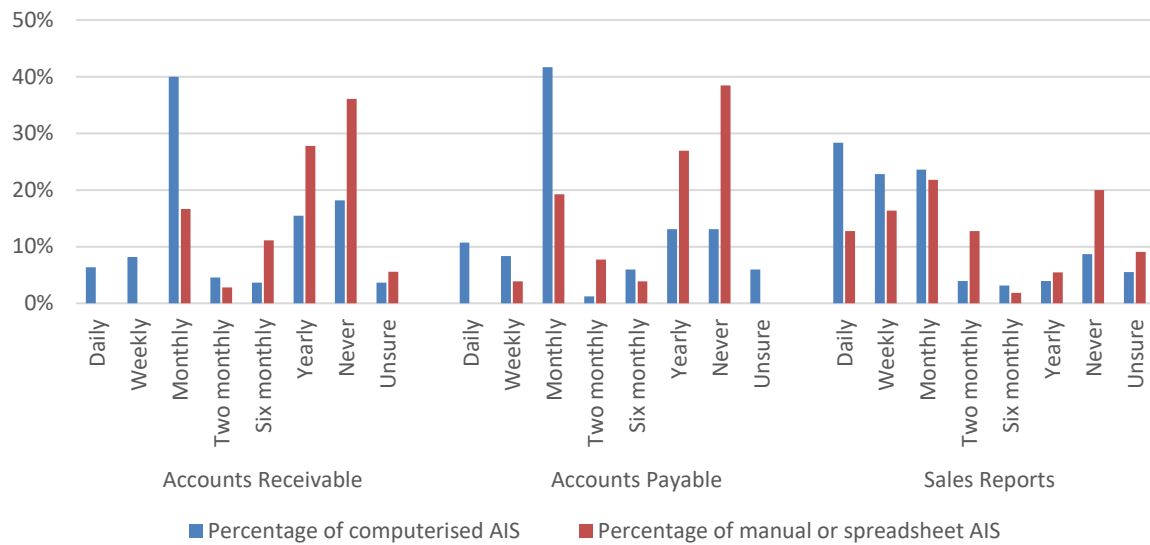


Figure 5-12 Preparation frequency of management reports

Previous studies (Brouthers et al., 1998; Liberman-Yaconi et al., 2010) identified that information from computerised AIS improved decision-making. While judgement on the quality of decision-making is beyond the scope of this current research, the more frequent access to information by those micro businesses using computerised AIS suggests they find the information useful for decision-making. This compares with Coman and Coman (2013) who found that 44% of micro businesses (zero to nine employees in Romania) did not use the information from their AIS.

A total of 12% of respondents (22 of 182) and 11% of respondents (20 of 182) never prepare a profit and loss and balance sheet reports, respectively, as shown in

Figure 5-11 and 23% (33 of 146), 19% (21 of 110) and 32% (58 of 182) never prepare an accounts receivable, accounts payable or sales report, respectively, as shown in Figure 5-12. This supports a preference for managing by “rule of thumb”, where decisions are made without the support of any recorded information as noted by the accountant interviews (refer to section 4.5.2) and in the finding of Coman and Coman (2013).

Likewise, the time lag between decision-making and report generation when six-monthly or yearly reports are used also supports the observation of a “rule of thumb” management style. A total of 46% of respondents (83 of 182) and 51% of respondents (93 of 182) did not use a profit and loss or balance sheet (i.e. financial reports), respectively (includes responses of “six monthly” and “yearly”). More reliance is placed on the management reports with lower rates of “six-month” and “yearly” report preparation as follows: accounts receivable 18% of respondents (33 of 146), account payable

22% of respondents (24 of 110) and sales reports 15% of respondents (27 of 182). It is equally concerning how many micro businesses were “unsure” about how often they prepared the various reports.

Of those micro businesses interviewed, reliance on reports was very low. Eight interviewees prepared profit and loss and balance sheet reports on an annual basis only (MBAH1, MBAH2, MBAH3, MBAH4, MBSAH2, MSM2, MSM3 MBS1), one interviewee prepared these financial reports monthly (MBSAH1) and two interviewees never prepared these financial reports (MBM1, MBS2). The preparation of management reports (accounts receivable, accounts payable and sales reports) was dependent on the business operations, for example, those businesses that did not provide credit services to customers did not need accounts receivable reports. Three interviewees prepared accounts receivable reports monthly (MBAH1, MBAH2, MBSAH2), and no interviewees prepared accounts payable reports. Sales reports were prepared daily (MBS1), monthly (MBAH1), six-monthly (MBSAH2), and yearly (MBM2).

Despite the lack of report preparation by the interviewees noted above, there was strong evidence that they were accessing, recording, and calculating ad hoc information from the computerised AIS that supported their decision-making. Examples include:

It always worked for us, it was 50% salaries, because we’re selling time, 25% expenses and 25% profit. You could get it down to within half of a percent every year. It made it easy to plan out over the years, say doing a 3-year business plan. (MBAH2)

We don't go and print them [reports] out every month, but if something comes up. Like ‘how many ... [units] did we do last month because they seem to have dropped off’. or things like that. We know how to get that information out of how many we’ve done over a three-month period or something. (MBSAH2)

Alternatively, manual records were noted for future reference:

I want to know what we actually sold. And so events like that ... I still tally up each time when I come back ... so I can go back next year and say ‘oh we went to this event last year, how many [units] did we take, and what did we sell?’ (MBAH1)

MBAH2 used a manual cashbook, regularly recording transactions to support decisions:

I usually do it on a weekly basis. I don't leave it. I don't collect all my receipts and put them in a shoe box and do them at the end of the year. So, I do it on a weekly basis and I also keep a running total of my cash in the bank. So, I always know at any one stage how much money is in the bank so that I can then order stock and pay for it when it arrives. (MBAH2)

Interviewees were asked about the information they used in setting prices for their goods and services. MBAH3 and MBSAH2 firstly considered their expenses, then acknowledged their position within the market:

I have spreadsheets that I have done to work out, first my cost base, and then I have an idea of what the ... [large competition] charge for equivalent work. And then I find a number somewhere between those two. And I've found some numbers that work and that are quite profitable for me, while being still surprisingly cheap enough from others so, they'll be willing to chance it on me ... (MBAH3)

MBM3 used manual AIS, but used available tools, such as online calculators, to support their decision-making:

I use the IRD website to start with ... they sort of said \$45 an hour, and I can't charge people that. But I'm more or less there. I will be there next year ... I know people charge a lot more than me ... double, but because I'm only on my own, I'm not paying ... [to] employ someone ... So, I am a bit cheaper ... I basically charge enough that people are happy. Because if you charge too much, they don't want you back too often. (MBM3)

Others such as MBS1, who used a spreadsheet for their AIS, struggle with setting prices for their services, knowing that costs such as materials and overheads need to be included, but uncertain about how to incorporate these.

The one thing I had an issue with before, is how to cost out ... I put a price on it. But to cost out the materials that I cut out and I'll have to figure out a formula ... We have a minimum price and then as soon as the ... machine is used, the minimum price goes up again. And there's always people that say 'why are we paying? ... why are you charging that much?' ... I used to do little jobs for free and then one day a lady growled at me, because I charged her ... You're stuck in the middle sometimes ... there's a limit, so, we have to try and make it up in other ways. (MBS1)

MBM1 was a new business, without a computerised AIS or structured manual recording system, and thus was purely looking to the competition:

I'm pretty much similar to what everybody else is doing. Well, the lady that I trained with, she charged this, [high hand gesture] so it was like OK well I can't undercut [lower hand level] but my skill level is not quite there, so I'll charge this [indicate middle hand level]. And it seems to be very similar. You get the odd ones there are charging down here [very low and level], but they don't seem to last. (MBM1)

Micro businesses that used computerised AIS access reports and information more regularly than those with manual or spreadsheet AIS, but there was still an overwhelming number of micro businesses who do not access any reports. Micro businesses used a variety of approaches in their

decision-making, including the information they access to support those decisions, not limiting themselves to reports available from computerised AIS.

Budgets

Budgets and plans are seldom prepared by the respondents with only 31% of respondents (56 of 182) currently preparing budgets, as shown in Figure 5-13. Only two interviewees (MBAH2, MBSAH1) prepared budgets. Two other interviewees (MBAH4, MBS1) indicated they do not formally create a budget but are mindful of the minimum weekly income required for breakeven, “more of an income prediction. Staff means I require more income. It's a weekly thing, amount of income required, rather than a budget” (MBS1).

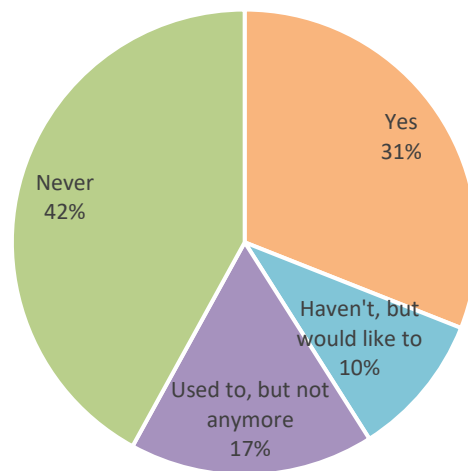


Figure 5-13 Preparation of budgets by surveyed micro businesses

Of the micro businesses currently preparing budgets, 52% of respondents (29 of 55) used spreadsheets to create the budgets as shown in Figure 5-14, and 52% of respondents (16 of 31), as shown by the purple marker, that used to prepare budgets but have since stopped also used spreadsheets. Notable is that preparing budgets manually has reduced from 35% of respondents (11 of 31), as shown by the purple marker, down to 15% of respondents (8 of 55) with a similar increase in the use of computerised AIS from 13% of respondents (4 of 31) up to 33% of respondents (18 of 55).

The number of respondents with computerised AIS that used other tools for budgeting is high. Tools used include spreadsheets (52% of respondents, 24 of 46) and manual paper-based methods (9% of respondents, 4 of 46). These micro businesses are not taking advantage of the automation provided in the accounting software they have adopted, specifically automated calculation and the real-time population of actual amounts into the budget for comparative purposes.

Of the two interviewees who prepared budgets, both (MBAH2, MBSAH1) used spreadsheets, “no, I don't really use the budgeting side of MYOB. I would do that in a spreadsheet because it's just easy to manipulate and play with” (MBAH2).

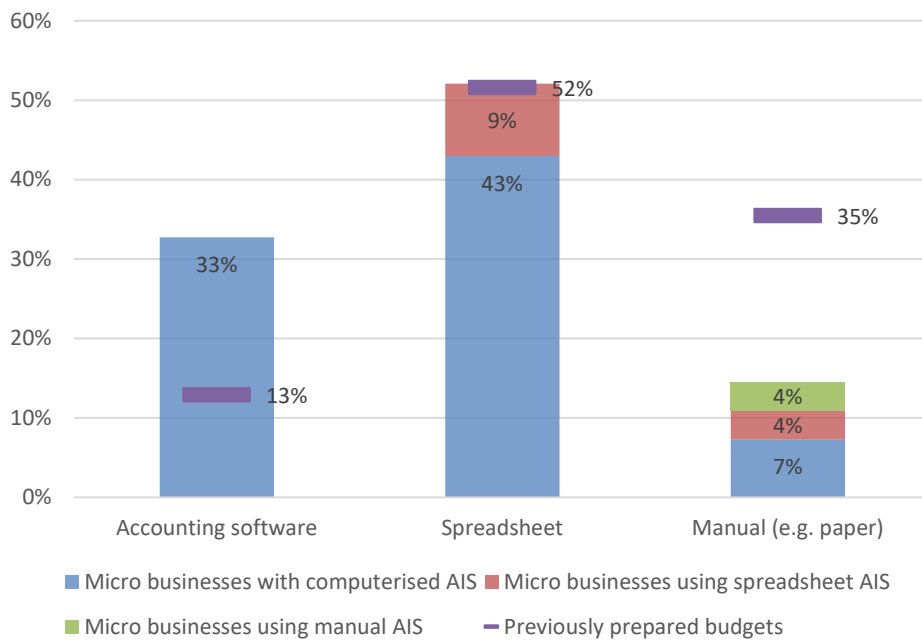


Figure 5-14 AIS tools used to prepare budgets

The most popular reasons for micro businesses preparing budgets are “planning and forecasting” and “cashflow management”, as shown in Table 5-7. Interestingly, those micro businesses who did not currently prepare budgets but would like to, share the same top reasons for budgeting.

Table 5-7 Reasons for preparing budgets

Reasons	Number of responses
Planning and forecasting	23
Cashflow management	21
Performance measurement	10
Finance requirements	5
Good business practice	3
Total	60

MBSAH1, used their budget as a means of communication and approval process with others in the organisation:

I'm getting people coming to me 'can we do this, and can we do that?' And I'm going, 'you've got a budget, just don't even talk to me'. But it's the

behind the scenes, I have to keep an eye on the money flow and stuff like that. And without it, I'd be completely at sea. (MBSAH1)

The reasons the respondents do not prepare budgets are shown in Table 5-8, with the most common reasons being “not seen as necessary” and “business is too small”. The former indicates that micro businesses do not feel that they get value from this planning exercise. These responses align with the top two reasons why micro businesses stopped preparing budgets, “steady income and expenses” and “lack of time” as shown in Table 5-9. Budgets are a tool for monitoring change and thus it is interesting to note that one reason in Table 5-9 is “too many fluctuations”.

Table 5-8 Reasons for not preparing budgets

Reasons	Number of responses
Not seen as necessary	33
Business is too small	25
Monitor other benchmarks	8
Fluctuations and challenging	6
Business is too new	5
Don't know how to	4
Lack of time	4
Too depressing	1
Total	86

Table 5-9 Reasons for no longer preparing budgets

Reasons	Number of responses
Steady income and expenses	11
Lack of time	7
Budget only when needed	6
Business scaled down	3
Too many fluctuations	3
Total	30

Assistance from accountants or advisors is used by 21% of respondents (12 of 56) in preparing their budgets. It is concerning that four respondents said they “don't know how to” prepare budgets. Looking closer at these four responses, three of these micro businesses used accountants and advisors for other areas of business advice, of which one did have plans for addressing this: “don't know how to but working with business mentors at the moment and this is something we will do”. The fourth respondent is stumbling in many regards, indicating that nothing is recorded by any form of AIS, and shared in the final comments: “As this wasn't really planned as such, I've not had a lot of,

or any guidance. It has cost more than any profit gained due to taxes & accountants fees". While this view is only shared by one respondent, it does provide insights into the interrelationship between how micro businesses are using AIS tools (RQ 3), and the factors affecting adoption of a computerised AIS (RQ 4). For this one micro business, knowledge and guidance are considerable factors.

5.5 Factors in Adopting a Computerised AIS (RQ4)

Many factors affect a micro business's decision to adopt a computerised AIS (RQ 4). The interviews with accountants identified some of these factors, as discussed in section 4.6, as being characteristics of the business owner (such as age and generational influences, existing knowledge and experience, and a general attitude towards technology), internal business factors (financial and time costs of computerised AIS) and external factors (such as the supply chain, regulatory bodies and supporting services). This section will consider these factors from the micro business's viewpoint and expand on areas not observed by the accountants interviewed. Also included in this section is a discussion on micro businesses who have previously used one computerised AIS and opted to change to a different computerised AIS.

A summary of the factors affecting adoption of a computerised AIS as identified by the respondents are shown in Table 5-10, summarising three open-ended questions presented in the questionnaire. The reasons for and against computerised AIS overlap between the three parts of Table 5-10, and are further discussed in sections 5.5.1, 5.5.2 and 5.5.3.

5.5.1 Business Owner

Interviews with the accountants identified that the business owner is key to the overall direction of the business (refer to section 4.6.1). As the owner is the main decision-maker of the micro businesses, personal characteristics such as the generation of the business owner, their knowledge and understanding of AIS and their attitude towards AIS will affect the outcome of their decisions and the value that they place on computerised AIS. The influence of the business owner is well documented in previous studies (Bishop, 2017; Douglas, 2005; Dyerson et al., 2016; Sellitto et al., 2017).

Generational influences

The influence of computerised AIS on businesses and everyday tasks has changed rapidly in the last few decades. Older generations did not grow up with technology, whereas people in their twenties and thirties will have been introduced to technology as children. The age of respondents ranges from 24 to 80 years, with the average being 52 years as shown in Figure 5-15.

Table 5-10 Reasons for and against adopting computerised AIS

Reasons for adopting computerised AIS	Number of responses
Ease of use	48
Reasonably priced	29
Integration with accountant's systems	21
Accountant advice	20
Functionality	19
Recommendation	14
Cloud computing, accessibility and connectivity	12
Reputation of software	11
Used in previous role	10
Integration with other applications	8
New Zealand-owned software	6
Tested through free software trial	4
Training and support provided	4
Do not want SaaS, cloud computing, reliance on internet and ongoing costs	3
AIS already set up in the business	2
Total	211
Reasons why computerised AIS not adopted	Number of responses
Financial cost (too expensive)	19
Not interested in changing	13
Business size	10
Too complicated	10
Time to upskill and implement	4
Lack of skills	2
Lack of support and training	2
Nearing retirement and wind-up of business	1
Total	61
Reasons why computerised AIS no longer used	Number of responses
Business size	3
Financial cost (too expensive)	2
Do not want SaaS, cloud computing, reliance on internet and ongoing costs	1
Outsource to accountant	1
Total	7

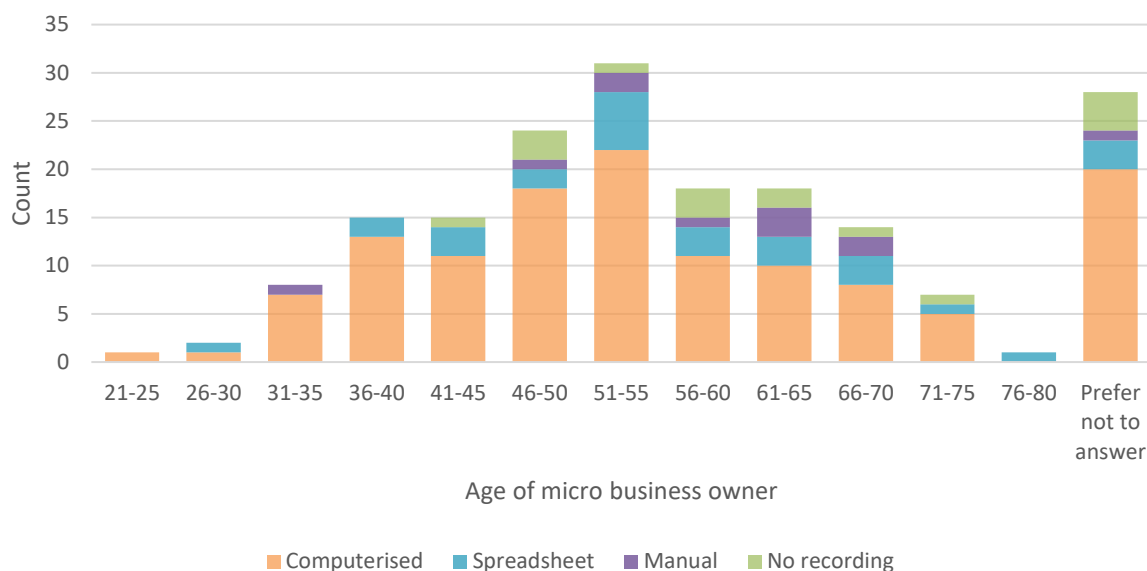


Figure 5-15 Frequency of age of micro business owners surveyed

Similar findings were reported by MYOB Research Analysis (2022) based on 2021 data from Stats NZ. Many small-to-medium businesses are owned by Generation X and Baby Boomers, with 37% of owners aged 45 to 54, and 40% of owners aged 55 to 74. This compares to 36% and 36% respectively, in this current research on micro businesses.

A closer look shows that the average age of micro business owners based on their AIS use, shown in Table 5-11, reveals those adopting AIS are younger on average.

Table 5-11 Average age of micro business owner based on AIS type

AIS used	Average age (years)
Computerised AIS	51
Spreadsheet AIS	54
Manual AIS	57
No recording	57

Age was not mentioned as a factor during the interviews. One of the oldest interviewees, MBSAH1, (age 67 years), used many of the features of computerised AIS in their business, and the youngest, MBAH3 (age 37 years), used the computerised AIS as a cashbook purely to accommodate their accountant and relied on other tools for decision-making and managing the business. These two examples are outliers for the ages presented in Figure 5-15. The average age of the business owners interviewed was 56 years old, with one interviewee not providing an age although they talked about having adult children indicating that they are at least 40 years of age.

Knowledge

The accountant interviews identified two aspects of knowledge necessary to support micro businesses in their use of computerised AIS (refer to section 4.6.1), being the “how-to” for recording transactions and retrieving information from the computerised AIS, and financial literacy to understand the information presented. The top reason for adopting computerised AIS (refer to Table 5-10) stated by respondents was “ease of use” and lower on the list was “used in previous roles” and “training and support provided”. How challenging a system is to use contributes to the knowledge and experience of the micro business, and it is encouraging for the adoption of computerised AIS that they are viewed as being simple and easy. Given the range of respondents, it is not surprising though that a handful disagree, and the same reasons are on the list for not adopting computerised AIS. Computerised AIS was viewed as “too complicated” by 10 respondents and two said there was a “lack of support and training”. While “ease of use” and “too complicated” are statements directed at the AIS product developers, two other respondents acknowledged that they personally “lack skills”.

Through the questionnaire, those micro businesses who used computerised AIS (138 respondents) were asked their opinion on how they viewed their own skills in these two areas of knowledge (“how-to” and financial literacy), as shown in Figure 5-16. Overall, the micro businesses using computerised AIS are positive about their skills and understanding with 87% (120 of 138 respondents) having indicated they “strongly agree” or “agree” they have a high level of skill and knowledge of the computerised AIS, and 88% (121 of 138 respondents) indicated they “strongly agree” or “agree” that they can understand the information and reports from the computerised AIS. These are positive results, but they do not identify the knowledge and skills of those micro businesses that used spreadsheets or manual AIS.

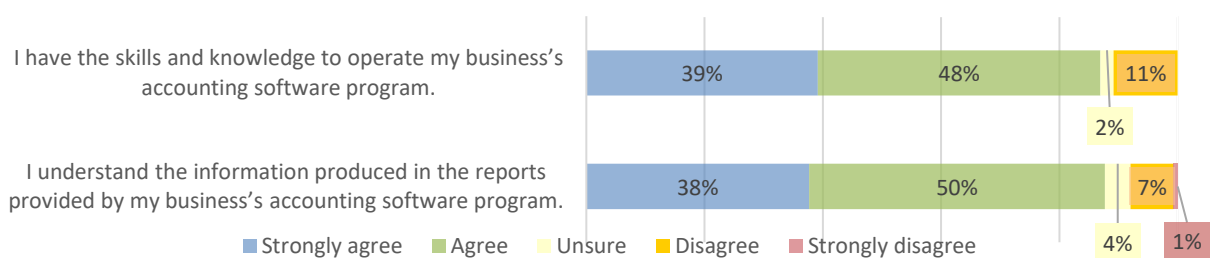


Figure 5-16 Opinions of micro businesses on knowledge of computerised AIS and financial literacy

Training and support are necessary to improve these results. Of the respondents using computerised AIS, 55% (76 of 138) have received training for the computerised AIS they use.

Financial literacy is not limited to those who use computerised AIS. Previous studies (Bishop, 2017; Douglas, 2005; Dyerson et al., 2016; Sellitto et al., 2017) identified that with increased financial

literacy, the accuracy of data entry and resulting summarised information is improved. Deficits in managerial confidence, computing skills and accounting knowledge were found by Pulakanam and Suraweera (2010) to create recurring issues for accountants. Interviewee MBM2 is a trained budget advisor, and their confidence and business knowledge was evident in them undertaking a GST deregistration, a task typically completed by an accountant.

Two other interviewees that used computerised AIS had received training to support their own micro business processes (MBAH4, MBSAH2), but were only focused on what they needed to know:

So, I went to ... see a lady accountant in an accountant's office ... I said, 'I only want to know what I need to know for my business. And I don't care how it works, or the workings behind it. I just need to know that I click this, this and that. Then it feeds the bank, and it does this'. I don't need to do loads of reports and spreadsheets because I'm only accountable to me.
(MBAH4)

MBAH2 and MBSAH1 were self-taught, through previous and current business experiences, but hold a level of curiosity that encouraged them to explore and experiment with the AIS tools at hand. Both micro businesses relied on their computerised AIS for supporting management decisions and regularly reviewed the information at hand. However, MBAH1 and MBAH3 were overwhelmed, "all these systems have too much work on them. It's just mind-boggling" (MBAH1) and were guided by their accountant. They only entered data into their computerised AIS as instructed by the accountant and relied on other sources of information to support their decision-making. These examples identify two extremes in using computerised AIS and highlight that the micro business owner's knowledge is affected by their attitude towards technology.

Attitude towards technology

A micro business owner's attitude towards technology is often intertwined with age and knowledge and introduced in the accountant interviews (section 4.6.1). Where micro business owners of an older generation were not exposed to technology and computerised AIS until later in their lives, they were more likely to be familiar with manual AIS and spreadsheets, more confident in manual systems, and did not see a need to learn or change.

I did look when MYOB first came out ... I'm sort of semi-retired and I'm trying to sort of wind it down ... I don't want to grow the business ... maybe 10 years ago I might have picked up one of the accounting programs, but honestly, I'm happy to do [it manually]. I find it easy. (MBM2)

Productivity and efficiency are measured in terms of contributing to their business products or services and data collection for compliance purposes did not factor into their measurement, "I'd sooner be outside doing something helping ... [partner], than sitting at a computer ticking a box to form a system" (MBAH1).

Previous studies found that when there was a lack of understanding of the benefits of computerised AIS, the business owner maintained the traditional view of IT being a cost instead of an investment (Shiau et al., 2009). Conversely, where the business owner perceived benefits, adoption of computerised AIS was greater (Brouthers et al., 1998; Chao & Chandra, 2012; Emsfors & Holmberg, 2015; Ifinedo, 2011; Liberman-Yaconi et al., 2010; Lutfi et al., 2016; Pramuka & Pinasti, 2020; Pulakanam & Suraweera, 2010; Shiau et al., 2009; Yong & Freudenberg, 2020).

Of the respondents that did not use computerised AIS, 61% (27 of 44) had not considered using computerised AIS. These businesses were not reflecting on ways to benefit their business from the efficiencies of AIS (discussed further in section 5.6). From Table 5-10, the second top reason for not adopting computerised AIS is “not interested in changing” (13 respondents). The challenge of having a conversation with micro business clients when their disinterest created a barrier was noted by the accountants interviewed (refer to section 4.6.1). Conversely, a positive attitude towards supporting “New Zealand owned software” was noted by six respondents as a reason for adopting computerised AIS. Disinterest was observed in two interviewees (MBM1, MBM3), as their primary focus was on the business services provided, and not on record keeping.

Other attitudes towards technology noted in the micro business interviews were closely linked to knowledge (discussed earlier in this section). MBAH2 and MBSAH1 were inquisitive and embraced technology and therefore were more knowledgeable about their AIS. MBAH4 had a positive “can-do” attitude, and so with a bit of encouragement quickly adapted:

Well, the Xero I do embrace, as it does all my GST. Because the accountant persuaded me ... he said, ‘because you've done it on those sort of cathedral books, you know exactly the way Xero's working, because you've done it all manually’. (MBAH4)

MBAH1 and MBAH3 were sceptical and distrusting of technology, creating barriers for themselves and their learning, “everyone's pushing to have security apps on your phone now, and I don't trust any of them, frankly” (MBAH3). One of the reasons identified in the survey (Table 5-10) for choosing a particular computerised AIS was that three respondents “do not want SaaS, cloud computing, reliance on internet and ongoing costs”. This was echoed by one respondent who stopped using computerised AIS. An aversion to SaaS draws together several factors on top of an attitude towards technology, such as financial costs, loss of efficiencies (time costs), and a reliance on the internet (supporting services) and will be discussed further in sections 5.5.2 and 5.5.3.

MBS1 had contemplated changes to their accounting services, which includes their AIS system:

Because I looked at changing accountants at one stage, and one guy said, ‘there's an upfront fee of \$300 because we use Xero’. And I said, ‘can you

not absorb that? What's the deal there?' 'Oh, it's just the way we work'. I said 'well, I'm just walking. I'm not interested'. (MBS1)

As this micro business disagreed with the fee structure set by the accountants, this affected their perception of Xero and the accountants who use Xero. Later in the interview they commented, "I'm not keen on Xero, which excludes a lot of accountants because a lot of them run with Xero" (MBS1).

During the interview with MBAH3, as the interviewee was commenting on issues they had with the computerised AIS, a change in attitude developed from "it just doesn't seem very intuitive to me, but we're always thinking 'how do we do something?' and hunting all over the thing" (MBAH3) to a softened approach, "I suppose it's not too bad when I start poking around. You can figure out where things are. But it's probably just that we don't really see a need for much of it" (MBAH3). Time, support, and building a rapport can alter perceptions and attitudes and remove barriers.

Generational influences, knowledge and attitude towards technology all come from within the micro business owner. There may be other factors that affect the adoption of computerised AIS, some internal to the business, and other factors from outside of the business.

5.5.2 Internal Business Factors

Through the accountant interviews, two factors stemming from within the micro business were identified as influencing the decision to adopt computerised AIS - limitations of money and time (refer to section 4.6.2). The micro business respondents and interviewees also commented on limited resources, both money and time, but also identified that the purpose of running the micro business and the future direction of that operation impacted the adoption of computerised AIS. This finding aligns with previous studies that has identified the typical barriers as constrained financial and time resources in researching, implementing and daily use of computerised AIS (Bishop, 2017; Bowles, 2013; Breen et al., 2004; Cragg & Zinatelli, 1995; Sellitto et al., 2017; Woodley et al., 2015).

Financial costs of AIS

The respondents had contradictory views of the financial costs of computerised AIS. Being "reasonably priced" was the second top reason for adopting computerised AIS (29 respondents), but "financial cost (too expensive)" was the top reason for not adopting computerised AIS (19 respondents), and the top reason for those respondents (2) who stopped using computerised AIS, as shown in Table 5-10. The comments on cost were typically aimed at the cost of the AIS, but also included physical assets as noted by MBAH4 "I even spent \$1,800 on a new laptop". The commitment of a monthly or annual subscription fee was a deterrent for others who "do not want SaaS, cloud computing, reliance on internet and ongoing costs" with one participant no longer using

computerised AIS, and three others indicating regular subscription fees was a factor in their choice of computerised AIS.

The interviews provided insight into the conflicting views. Micro business owners that had previous experience with computerised AIS, and actively used the reports and information available, believed in the usefulness of this tool for business management, and viewed the cost as inconsequential:

You have to know where you are. I remember when we bought the company that the bank said '80% of businesses fail because they don't know where they're at'. And so, I'm saying, simply running MYOB or Xero ... is worth the \$600 ... Now, if you have actually established yourself in 12 months, you can afford \$600. (MBSAH1)

Other micro businesses relied on other sources of information for their business decision-making and considered computerised AIS as necessary to satisfy GST and income tax compliance and appease the accountant. The third top reason for adopting computerised AIS from Table 5-10 is "integration with accountant's systems" (21 respondents). MBAH3 used computerised AIS to meet the needs of their accountant:

[The accountant] ... just did everything through Xero. And we didn't know anything else ... that was expensive and ... we said to them, 'we're not really using this ... can we do something else with you?' and they said 'no, we just do everything through Xero, you'll have to go to someone else'. (MBAH3)

Accountants have embraced the efficiencies that can be gained by using computerised AIS (refer to section 4.7) through the functionality of the program, increased accuracy of the information, and easier accessibility to the information. If the accountant's role in working with their micro business client is streamlined, then it stands to reason that compliance tasks should require less chargeable time, therefore reduced financial costs to the micro business.

We talked to ... [a different accountant], and they said just use spreadsheets. And then later, they persuaded us that going to MYOB would actually not cost anymore because it would save enough of their time to offset the cost of the program ... So, we went with that, because it will make life easier for them. That's the only reason. We were quite happy with spreadsheets ourselves. (MBAH3)

Four of the eleven micro businesses interviewed (MBAH1, MBAH3, MBM3, MBS1) only saw the computerised AIS as a tool for the accountant, and not one for themselves. For MBM3, the cost was the reason not to adopt:

It was the monthly charge, and I thought if I've got the monthly charge and then I'm still giving my books to the accountant at the end of the year, and I add that all up. I appreciate that she probably has less to do, but how much less does she have to do? (MBM3)

Two other interviewees (MBAH2, MBAH4) initially considered the financial cost “when I started this business, we got the cheapest one basically” (MBAH2), but through usage have grown to understand the benefits, such as time savings “maybe it doesn't save me huge amounts of money, but my time, because manually doing all of that was just ...” (MBAH4).

Time costs of AIS

Efficiency and time savings are key benefits of the interconnectedness of cloud computing (refer to section 5.6). The respondents noted the reasons for adopting computerised AIS (Table 5-10) include “integration with accountant’s systems” (21 respondents), “cloud computing, accessibility and connectivity” (12 respondents), and “integration with other applications” (8 respondents).

Information is easier to access, and savings can be measured in both time and money for both the micro business and their accountant, as noted by MBAH4’s comments: “every single transaction, and the busier I got the more work was involved”. All these reasons intertwine with the financial costs stated earlier.

Two respondents stated, “AIS is already set up in the business” as a reason for adopting computerised AIS (Table 5-10). Where an existing micro business is purchased by a new owner, employees, customers, and suppliers are already accustomed to the established AIS. While there may be a time cost for a new owner to learn the AIS, continuing with the existing systems is an easier route than introducing a new system. Related is the “time to upskill and implement” argument against adopting AIS (noted by four respondents). Change and learning can sometimes be the greatest obstacle, especially where characteristics of the business owner create hurdles for computerisation (i.e. generation, knowledge and experience, and attitude towards technology, as discussed in section 5.5.1).

The time invested by micro business owners may be more focused on normal business activities and not on setting up a new computerised AIS:

Yeah, I will. I've been really, really slack. I've contacted an accountant. And I'm going to get back to her. But it'll [computerised AIS] be based on when the accountant says ... Because I've been quite steady, I don't know how long it's going to take to have this conversation. So I'll ring tomorrow and then I get a couple of ... [clients] and I'll ring tomorrow ... I'll ring tomorrow.
(MBM1)

The same time factor applies to extending knowledge where the computerised AIS was already established:

At some point, when I've got time, and if they did a Xero [training session] ... maybe I would go ... as if I was starting from the beginning. Then I might think 'oh, have I missed an opportunity. I could use that. I'm paying for that

and not using that'. Possibly, I would do that. But at the moment ... I'm so crazy busy. But I do believe that you've got to invest time in doing something to make your life easier. It might take you a few hours here, to save you a lot more hours over here. (MBAH4)

The cost of time applied differently to two of the micro businesses interviewed (MBAH2, MBSAH2), where one partner in the micro business takes on the administration and supporting role. Unlike an employee where an hourly rate incurs a financial outgoing, for these two micro businesses using the most efficient AIS available is a lower priority than the financial costs. "Could I halve my time in the office? It might be nice, but is it necessary relative to the money? At the moment, we're quite happy with the amount of time I'm having to spend out here" (MBSAH2).

The costs of time and money are greatly impacted by the reasons for operating the micro business, and what the micro business owner intends for the future of the business.

Business purpose and future

The purpose of the business and the future direction of the business are factors identified through both the survey and the interviews. Two reasons for not adopting AIS (Table 5-10) are "business size" (noted by 10 respondents) and "nearing retirement and wind-up of business" (1 respondent).

Business size was also noted by three respondents as a reason for no longer using computerised AIS.

Survey respondents were also asked about their reason for starting their business, and the future direction of their business. Providing full employment for the owner was the intention of 45% of respondents (81 of 182), as shown in Figure 5-17. Of these businesses, 63% of respondents (51 of 81) used computerised AIS. Further, 18% of respondents (32 of 182) supplemented household income and 17% of respondents (31 of 182) indicated the micro business was a hobby for the owner. For these businesses, the use of computerised AIS was 75% of respondents (24 of 32) and 65% of respondents (20 of 31), respectively. No conclusion can be drawn linking the reason for starting the business and the AIS system they used, but from the survey, 56% of respondents (45 of 81) that intended to provide full employment for the owner also had employees. For those businesses that supplement household income and hobby micro businesses, only 34% of respondents (11 of 32) and 32% of respondents (10 of 31), respectively, had employees, making these the smallest of the micro businesses. There was a higher proportion of micro businesses with one to five employees using computerised AIS (79% of respondents, 71 of 90) than there were micro businesses with zero employees (61% of respondents, 56 of 92), as shown by Figure 5-18, suggesting that business size is a factor in the decision to adopt computerised AIS.

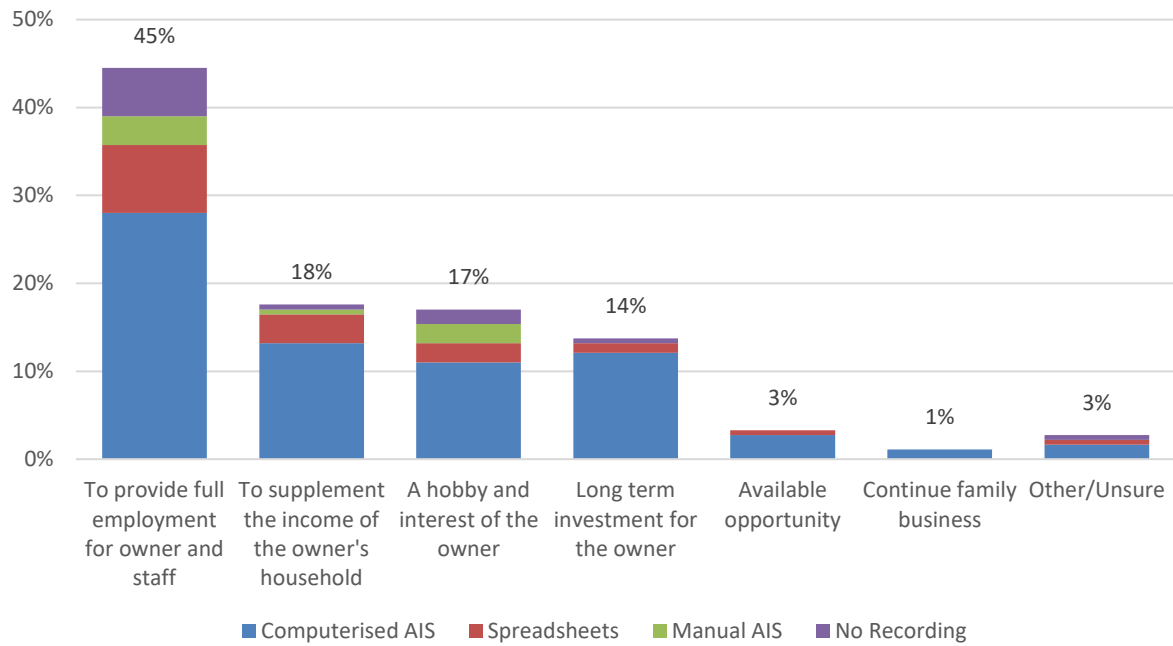


Figure 5-17 AIS used by reason for starting the business

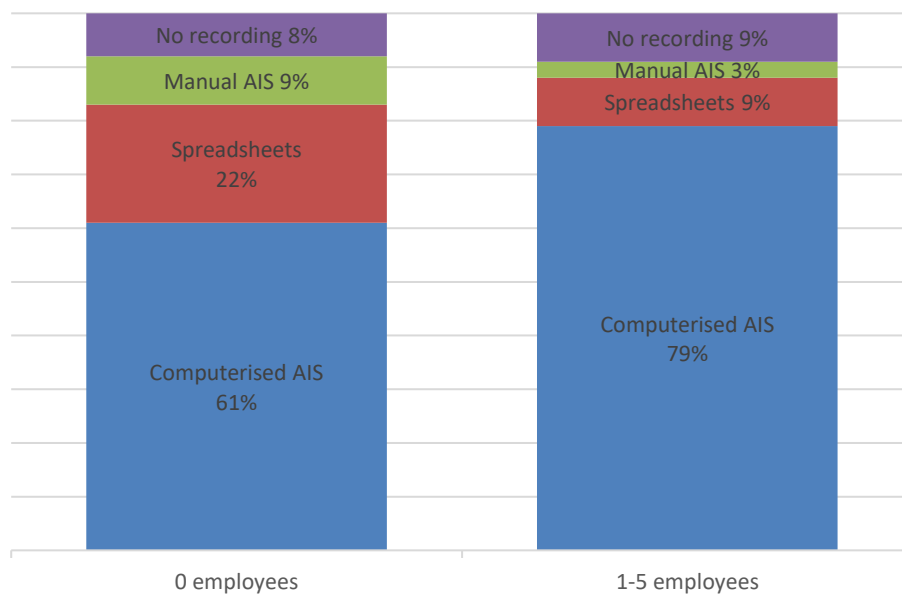


Figure 5-18 AIS system by business size

The intended future of the micro business also determines the level of interest in implementing changes. Of the respondents, 46% (84 of 182) aimed to expand and develop their business, and 38% (70 of 182) wanted to maintain their current size as shown in Figure 5-19. This is lower than a previous study by Clark and Douglas (2010) who found 93% of HBB sought business expansion within the next two years. The differences may reflect changes in attitudes or that this current research is not limited to HBBs. Computerised AIS was used by 83% of respondents (70 of 84) who wanted to

expand and develop their business, and 60% of respondents (42 of 70) who wanted to maintain the current size of the business. Only a few respondents (4% of respondents, 8 of 182) were looking to wind down to retirement, with similar use of computerised AIS (50% of respondents, 4 of 8) and spreadsheets (38% of respondents, 3 of 8).

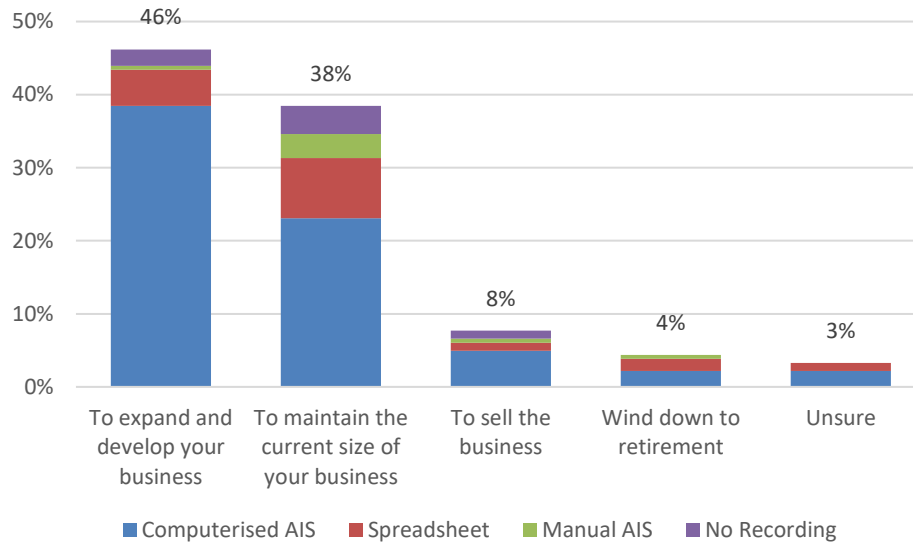


Figure 5-19 AIS used by future direction of the business

Summarising the business purpose and future, from the micro business interviews, six businesses provided full employment for the owners (MBAH1, MBAH2, MBAH3, MBAH4, MBSAH2), with all but one using computerised AIS. The one exception (MBSAH2) used spreadsheets, but their accountant used an electronic cashbook to complete GST and income tax returns, and this micro business owner was looking to retirement and had a succession plan in place.

The remaining five businesses (MBSAH1, MBSAH2, MBM1, MBM2, MBM3) provided secondary income or a hobby, of which only one (MBSAH1) used computerised AIS. These micro businesses did not share any aspiration to expand, and their focus was to provide extra funds to the household for personal goals. MBM2 and MBM3 planned to continue for only a few more years before retiring, “maybe ten years ago I might have picked up one of the accounting programs, but honestly, I’m happy to do it [manually]. I find it easy” (MBM2). These micro businesses are not interested in making changes to their AIS.

5.5.3 External Business Factors

Micro businesses may be influenced in their decision to adopt computerised AIS through interactions external to their business. These may be business partners along the supply chain (either suppliers or customers to the micro business), regulatory bodies including Inland Revenue, and other supporting services (Dyerson et al., 2016; Ifinedo, 2011; Lutfi et al., 2016).

Supply chain

The accountant's interviews identified interactions along the supply chain that may influence a business to adopt computerised AIS (refer to section 4.6.3). Examples noted include the use of add-ons and program features to connect businesses using the same software (i.e. Xero to Xero), or through the use of industry-specific AIS. Little evidence of these examples was noted in the micro business interviews other than the adoption of apps and other tools to support sales, workflow and managing appointments (refer to section 5.3.6). While the micro businesses did not seem to be affected by their suppliers and other partnering businesses, the micro businesses interviewed are mindful of what their competition are doing and the needs of their customers. This aligns with a prior study by Emsfors and Holmberg (2015) that noted that networks of suppliers and customers influenced the decision to adopt computerised AIS and technology. Depending on the app, integration with computerised AIS may be possible and therefore the app may be a factor affecting the adoption of a computerised AIS product.

The micro businesses are focused on providing flexibility for customers in making payments in person (MBAH1, MBAH2, MBAH4, MBS1) as discussed earlier in section 5.3.6. Examples are EFTPOS, credit cards, and AWOP. Online sales offer contactless purchases and payments (MBM2). Enabling customers to book appointments online was discussed by four interviewees (MBAH2, MBAH4, MBM1, MBS2), and finding the right computerised tool was highlighted in these interviews, balancing the needs of the customer with the financial costs and ease of use for the micro business. MBAH4 held the view that automation was not appropriate for their business in this case, critically reviewing and experiencing automation used by competitors. They desired a more personable approach for their customers, despite it being highly manual and paper-based:

... this marketing lady analysed [what] was coming through the internet and how people [customers] were finding me ... I did listen to what she was saying, but a lot of them were 65 to 75 [years old], and they haven't even got smartphones. They wouldn't be able to work their way around a booking system. A lot of them couldn't ... It works for them to just pick up the phone and talk to me, tell me about their new grandchild and everything else. (MBAH4)

Many of these apps support connectivity with the computerised AIS, but of the interviewees noted above, four of them operated a manual or spreadsheet-based AIS (MBM1, MBM2, MBS1, MBS2) meaning there is no computerised AIS to connect to. Those with computerised AIS (MBAH1, MBAH2, MBAH4) were not seeking any connectivity, and therefore while customers and competitors may be influencing the adoption of computerised apps and tools, they are not influencing the adoption of computerised AIS.

Regulatory bodies

Inland Revenue has worked closely with New Zealand's AIS providers to improve and simplify the process of filing GST and PAYE returns (refer to section 5.4.1). Previous studies have identified that the need to process these returns is a strong encouragement for micro businesses to adopt computerised AIS (Breen et al., 2002; Breen et al., 2004; Igbaria et al., 1998; Lignier, 2006, 2009a, 2009b; Ministry of Business Innovation & Employment, 2014a). There was no direct influence on the adoption of computerised AIS from regulatory bodies such as Inland Revenue for either the micro business respondents or interviewees. However, the accountant was identified as the influencer, being an intermediary between the two parties. The specialised skills and knowledge in the areas of accounting, business processes and information systems positions accountants as the best candidates for advising small businesses (Ma et al., 2021).

From the survey of micro businesses, the third, fourth and fifth top reasons for adopting computerised AIS (Table 5-10), are "integration with accountant's systems" (21 respondents), "accountant advice" (20 respondents) and "functionality" (19 respondents). The accountants are well versed in the benefits of computerised AIS (refer to section 4.7) and in the interests of all parties (micro business, Inland Revenue, and themselves) will promote computerised AIS to micro businesses. Interviewees MBAH1, MBAH3, MBAH4 and MBSAH1 are using computerised AIS supported by their accountants:

I'm paying for MYOB, but that's because that's what the accountant preferred to work in. (MBAH3)

Well, the Xero I do embrace, as it does all my GST, because the accountant persuaded me. (MBAH4)

I don't need something that's technically high level, I just need to be able to keep the accountant happy. I just need to keep the auditor happy. (MBSAH1)

MBM1 was a new business, currently focused on business activities, but knew that a decision on AIS needed to be made: "it'll be based on when the accountant says ..." (MBM1).

Micro businesses actively pursued advice on adopting computerised AIS. From the survey, 61% of respondents (84 of 138) with computerised AIS sought advice while deciding on the AIS to use. The mentors that they consulted in this process are shown in Table 5-12, with the accountant being the top mentor (80% of respondents, 70 of 88). Also listed in Table 5-10, is "recommendation" (14 respondents) as a reason for adopting computerised AIS. These recommendations may or may not be from the accountant.

Table 5-12 Mentors consulted in deciding on computerised AIS

Advice on AIS sought from	Number of responses
Accountant	70
Other peers	10
Software company	3
Family	2
Bank/financial advisor	2
Seminar	1
Total	88

The software companies also provided a supporting role here. “Reputation of software” was noted by 11 respondents as a reason for adopting computerised AIS (Table 5-10), as was “New Zealand-owned software” (6 respondents) and “tested through free software trial” (4 respondents). Software companies are also on the list of mentors consulted in the decision-making (Table 5-12). As with the accountants, the software companies understand the benefits of meeting regulatory requirements set by Inland Revenue and can support micro businesses in the decision to automate as well as provide ongoing technical support.

Occasionally, the decision may be focused on maintaining simplicity. Interviewee MBM3 could optionally register for GST due to their annual turnover being below the Inland Revenue threshold requiring GST registration. The benefits would be GST refunds when large capital purchases are made:

Someone said, “but when you bought the car!” and I said “look, it was \$400 here. At the end of the day, the amount of GST I pay over 12 months doesn't justify all that time and effort that I'd have to go to separate everything else”. (MBM3)

With no GST registration, their AIS requirements were much simpler, supporting their preference for a manual system. Additionally, there is no GST to be charged to customers.

Supporting services

The accountant’s interviews identified that there may be other external support services that impact a micro business’s decision to adopt computerised AIS. The quality of internet connections was a particular example noted (refer to section 4.6.3). The reliance on the internet for cloud-based systems restricts the availability of the latest versions of computerised AIS for those micro businesses with unstable internet connections. A consistent supply of electricity was also found to be a factor in computerised AIS adoption in third world countries (Amidu et al., 2011).

Lack of stable internet services was noted by four micro business interviewees (MBAH1, MBAH4, MBSAH2, MBM1). The most rural interviewee also commented on the internet, “no, we can get reasonable internet ... it's not as good as if we were in a town with fibre, but it's slightly more expensive but it's perfectly adequate for us” (MBAH3). Being in a rural location does not appear to be an issue. MBAH4 and MBM1 are semi-rural, located in reasonably populated areas, and without the stability of the internet, MBAH4 continued to use multiple manual paper-based processes despite having Xero. They used a manual diary system, manual invoicing, manual customer records and “I have another piece of paper which has the bank account on it. Or, if I'd already written [the invoice] out, I'd say ‘look, having trouble with my internet. Would it be ok if you pay by internet banking?’ And then I just write the number down” (MBAH4). MBAH4 is highly focused on providing a warm and personable service to their clients and was unwilling to automate processes that hampered the ability to access the information necessary for their business operations.

Internet service was also a factor in MBSAH2's decision about computerised AIS. They continued to operate an older version of MYOB that is not cloud-based:

We've stuck with MYOB. Because it's a really old version, it's not online ... they keep pushing you to do the online one, the internet out here is not the greatest. The speed's ... we're on a satellite radio transmission one, and we were just worried about the reliability of using online ... and we've got a set data per month as well, as opposed to unlimited. (MBSAH2)

The decision to stay with the older version was also intertwined with internal business factors (refer to section 5.5.2) as there are additional costs for monthly AIS subscriptions and increased data levels to be weighed against the efficiencies and savings of time.

The last consideration observed with the micro businesses interviewed is the security features for logging into computerised AIS and other apps. Interviewees MBAH2, MBAH3 and MBAH4 were frustrated by two-factor authentication. While two-factor authentication is designed to increase the security of data and protect users from cyber-attacks, it slows down initial access to the computerised AIS:

I mean, it would be nice if they had a way of saying ... ‘we've got a fixed IP address here. If anyone logs in from here it's fine’. I don't need to get out my phone and find the authenticator app. And generally, you find that you have to log in twice. You log into MYOB and then you log into Essentials [MYOB Business], and sometimes you can log in once, and sometimes it dumps you out ... you log into MYOB, but it says you've expired on your Essentials [MYOB Business], then you have to wait for your authenticator app to refresh, because you can't use the same one, before you can log in again. (MBAH2)

The use of two-factor authentication is particularly frustrating when combined with unstable internet services that spontaneously drop out, requiring the user to log in to the computerised AIS and the two-factor authentication again.

5.5.4 Changing the Computerised AIS

This section (5.5) has primarily focused on the adoption and introduction of computerised AIS, however 21% of respondents (39 of 182) indicated they had changed from one computerised AIS to another. The most notable changes were:

- 20 respondents moved to Xero, 16 of these from MYOB
- 7 respondents moved away from BankLink, of which 5 moved to MYOB
- 5 respondents moved to MYOB from another AIS (excluding BankLink and Xero)
- 1 respondent moved away from Xero

Given the popularity of Xero (refer to section 5.3.4), it is reasonable to expect that some MYOB users may be looking for improved functionality as Xero has been cloud-based for some time (refer to section 4.3.3), and MYOB’s cloud-based product is reasonably new. Likewise, BankLink is a comparatively old product, and being purchased by MYOB has enabled easier transition to other MYOB products.

Reasons for changing computerised AIS provider identified in the survey are shown in Table 5-13 and align closely with those factors identified in earlier parts of this section.

Table 5-13 Reasons for changing the computerised AIS

Reasons for change	Number of responses
Ease of use	13
Seeking new functionality	9
Obsolescence of previously used AIS	7
Integration with the accountant’s system	6
Cloud computing and accessibility	4
Integration with apps	4
Accountant advice	4
Change of business	3
Cost	3
Recommendation	2
Industry specific	1
Problems with internet connectivity	1
Total	57

When adopting computerised AIS, micro businesses consider numerous factors, including the characteristics of the micro business owner, and constraints and considerations originating from within the business (internal business factors) as well as externally. The benefits of computerised AIS need to be included in the overall decision and will be discussed in the next section (section 5.6).

5.6 Benefits of Computerised AIS (RQ5)

The findings of Phase 1, desk-based research, and Phase 2, interviews of accountants, discussed in the previous chapter, identified four benefits of computerised AIS (refer to section 4.7):

- connectivity – increasing accessibility by users to information;
- autofill – reducing data input;
- automated calculations – eliminating the need for manual calculations; and
- drill down detail – the ability to access detail to support calculated values.

The impact of these benefits on micro businesses includes creating efficiencies, easier access to information (Breen et al., 2004) and reducing errors (Lignier, 2009b), thereby providing timely information that is free from errors to support decision-making for micro businesses. These four benefits will now be discussed through the voices of the micro businesses.

5.6.1 Connectivity

Through an internet connection, computerised AIS can connect with other interested parties. Cloud computing (refer to section 4.2.1) enables AIS data to be shared with key business partners, such as banks, accountants, and Inland Revenue. Access is not limited to a single device or location, enabling mobility to micro businesses.

Micro businesses are benefiting from this connectivity with their accountants. Three micro businesses (MBAH1, MBAH2, MBAH3) used this in completing their GST returns. The accountant prepared the returns, but each of these businesses coded transactions and provided information within the AIS to support the accountant in this process,

... [the accountant is] on bank feeds, so she's got everything on the bank statement and if she's got any queries at the end of the GST period when she does the GST, she flicks them straight through to me, 'what's this? what's that?' (MBAH1)

While the other three micro businesses using computerised AIS (MBAH4, MBSAH1, MBSAH2) prepared their own GST returns, the accountant used this connectivity for completing year-end reports and income tax, or monitoring the micro business throughout the year "he can go in and

have a look and see how I'm doing" (MBAH4) and providing advice as required "... if there's anything I'm ever worried about ... 'Can you just look and make sure I've done it right?' ... I can always run anything past him" (MBAH4). An increase in small business completing their own transaction coding and GST preparation was found by Ma et al. (2021) with the implementation of Xero and cloud computing.

Bank feeds automatically bring bank transactions from banks and other credit suppliers into the computerised AIS (Farm Focus, n.d.-e; MYOB NZ Limited, n.d.-a; Xero Limited, n.d.-g). The accountants interviewed (refer to section 4.7.1) identified benefits such as accuracy, efficiency, and completeness of data. Previous studies found an increased use of bank feeds with increased adoption of Xero, noting ease of use of this feature and the timeliness of access to the bank transactions (Ma et al., 2021). The accountants for MBAH3 and MBS1 have instigated using MYOB and BankLink, respectively, to access the bank feeds and bank information. Neither micro business actively used the computerised AIS for managing their business, though MBAH3 did access MYOB to add information to assist the accountant in coding:

We talked to ... [our accountant], and they said just use spreadsheets. And then later, they persuaded us that going to MYOB would actually not cost anymore because it would save enough of their time to offset the cost of the program ... So, we went with that, because it will make life easier for them. (MBAH3)

Some credit suppliers, typically farm suppliers in New Zealand, operate similarly to credit cards and bank feeds also include their transactions (Farm Focus, n.d.-e; MYOB NZ Limited, n.d.-a; Xero Limited, n.d.-g). "Through the bank feeds, we use the bank feeds and auto coding. And we've got a Farmlands card, so we get their feeds" (MBAH2). MBSAH2 also used Farmlands but did not use the latest version of MYOB and so had to manually "enter the information over to a purchase on MYOB" (MBSAH2). This micro business also manually reconciled the bank account devising other ways to create efficiencies but did not benefit from the accuracies and completeness that bank feeds offer as highlighted by their comment that "now I do it on split screen which works quite well. I put the screen up with the bank, the screen up with MYOB, and do it that way" (MBSAH2). Other micro businesses interviewed (MBAH2, MBAH4, MBSAH1) acknowledged how much the connectivity with computerised AIS has benefited the management of their business:

I know how to do [it manually], but I also know how time consuming it was. When I first started the business and didn't have so many... [customers] coming, it was a lot easier. But every single transaction that goes through there, and there's a lot, there's one line for each transaction. You know the petrol from the car and ... [other expenses]. All just got so much bigger. (MBAH4)

Connectivity benefits micro businesses with compliance requirements such as filing GST and PAYE returns. This was previously explored in section 5.4.1, with Figure 5-6 showing that 48% of respondents (52 of 108) who file their own GST use the automated link between their computerised AIS and Inland Revenue's portal. This is more efficient for the micro business, and more accurate as manual typing is eliminated. The same connectivity exists for filing PAYE returns and is used by 85% of respondents (29 of 34) that prepare their own payroll using computerised payroll AIS. Reflecting on all the respondents who prepared their own payroll using any method (payroll computerised AIS, spreadsheet, manual paper-based records or Inland Revenue's online calculator), only 48% of respondents (29 of 60) benefited from this connectivity. Four of the micro businesses interviewed employed staff (MBAH1, MBS1, MBSAH1, MBSAH2), with MBSAH2 being the only one that prepared payroll themselves, the others used the services of their accountant or payroll services. As MBSAH2 used a spreadsheet to calculate the payroll, the benefits of connectivity and using computerised payroll AIS are not available to this micro business.

The last benefit of connectivity observed is with apps and other programs. Connectivity enables information to be shared, and as with the other areas of connectivity discussed above, the micro business benefits from efficiency, the accuracy of data, and completeness. Respondents were asked "Does information transfer between the program or app that you use and your main accounting software?". Of the 129 responses, 22% (29) answered "yes". Interviewee MBSAH2 used an older version of MYOB with partial connectivity with Microsoft Outlook, so emailing invoices to customers was not as seamless as it could be "I have to sit here and go 'ok' to each one ... 250 [invoices] ... I try and put a video on or something" (MBSAH2).

5.6.2 Autofill

Autofill is where information previously entered elsewhere in the software, is used to populate the current data entry screen.

As previously highlighted, the process of bank reconciliation is so much easier with the use of computerised AIS. Where customer invoices and supplier bills have been entered into the computerised AIS, the bank reconciliation program attempts to match any receipts or payments to their corresponding customer invoice or supplier bill, "I had a spreadsheet template set up, and I'd just type in the invoice information into that. And that worked. But MYOB is a little bit better because it'll automatically align the invoices with payments. So, it's better" (MBAH3). Autofill also occurs in bank reconciliations where "bank rules" are previously set up, completing the details in the AIS when a particular receipt or payment is made, or where there are no rules, artificial intelligence (AI) considers previous transactions to the same contact and creates an entry in the AIS using the same details (Xero Limited, 2021). Draft entries are created and so for the micro business "it comes

up with 'ok'. So, all I have to do is click 'ok, ok, ok'" (MBAH4) and the bank reconciliation is nearly complete with just a handful of transactions to add detail to (MBAH2, MBAH3, MBSAH1). These examples of autofill are particularly helpful for accountants completing bank reconciliations as they are removed from the intimate day-to-day operations of the micro business and auto-fill leaves only a few transactions to query with the micro business (MBAH1, MBAH3, MBS1), "what's this Warehouse one? And what's this other one?" (MBS1).

Autofill is particularly beneficial when creating customer invoices and supplier bills. A template or saved transaction can be set up so that a draft is created including standard details for that contact. When creating a customer invoice or supplier bill, details from the contact list and items list also populate with minimal keystrokes, accessing details such as customer address and inventory or service description and prices. Of the six micro businesses interviewed using computerised AIS, only three used the computerised AIS to create invoices, but in doing so did not use the saved transactions feature to assist them in this process (MBAH2, MBAH3, MBSAH2). One micro business used saved transactions for creating supplier bills. None of the respondents or interviewees commented on the autofill for the customer names or items list, but they will be benefitting from the reduced data entry, and possibly overlook the efficiencies it gives them.

In the simplest versions of computerised AIS, not all autofill benefits are available. Where expenses are incurred on behalf of a client, the micro business will record the expense in the computerised AIS, but the same information is needed for invoicing, as the cost is passed on to the client. For some computerised AIS programs and versions, this autofill feature is included, but not for MYOB Business: "to be able to track costs against a particular job would be handy. So, I have to run a little spreadsheet off the side. If I've bought some stuff for some clients, to be able to bill that on" (MBAH2).

These examples of autofill show how information is entered once into the computerised AIS and used in other areas to complete transactions. Reducing data entry saves time, is efficient for users and increases the accuracy of data as opportunities for human error are reduced.

5.6.3 Computerised Calculations

Throughout the computerised AIS, numerous calculations take place. Calculations are conducted automatically when entering data, as well as when preparing reports. Removing the human factor in the arithmetic benefits users of computerised AIS by increasing accuracy and efficiency as the calculations are completed almost immediately.

Data entry includes creating customer invoices and supplier bills, as items are sold (or purchased), quantity and price per unit are entered, and the total charge for that item calculated as quantity

multiplied by price. All items sold (or purchased) are totalled, and GST is calculated as appropriate. As previously stated, only three interviewees created invoices using their computerised AIS, but as MBSAH2 explained their invoicing process, it was obvious that numerous calculations took place as this micro business issued on average 250 invoices each month. Their services were provided weekly or fortnightly as required by their customer, and invoices were sent out once a month. A new invoice was created at the start of the month, and when subsequent services were provided MBSAH2 commented:

I can actually go back ... and just open those invoices and add the extra [service] to it. So, that's why we have dates on each time we do it. The customer gets the invoice, and it says "[service] on the 5th and on the 19th". (MBSAH2)

Time savings and elimination of mathematical errors benefit this micro business given the number of services and invoices they completed each month.

Management reports, budgets and GST returns all include a vast number of calculations, almost instantaneously. Some of the calculations, such as GST, are more complicated, and it is easy to introduce errors if completed manually:

But who wouldn't? Come on, push button A. Go down, select GST Report. And we have it set up, so if there's a mistake one month it's picked up the next time we do the GST ... Well, it's so easy! ... It's just done. (MBSAH1)

Similar to the autofill feature (discussed in section 5.6.2), the micro businesses interviewed did not acknowledge any of these benefits or examples other than noting the use of entering invoices or using reports, indicating they are not fully aware of the benefits of using computerised AIS.

5.6.4 Drilldown Detail

Drilldown detail, as introduced in section 4.7.4, is the ability to access supporting detail and transactions that are represented on screen. Computerised AIS facilitates easy and immediate access to that extra information.

A simple example of drilldown detail is supplier bills. The ability to attach an electronic copy of the source document from the supplier to the data entry screen (MYOB Technology Pty Ltd, n.d.-d; Xero Limited, n.d.-e) organises and archives the information, and is also easily accessible by the accountant as "every payment has a copy of the invoice attached to it, in Xero" (MBSAH1).

Tracking outstanding customer payments is another key area where drilldown was used. Either through the invoicing dashboard or accounts receivable report, the micro business can easily access the individual customer invoices that contributed to the total amount outstanding (MYOB

Technology Pty Ltd, n.d.-b), as well as access contact information to facilitate the collection of the debt.

... keeping track of who's paid and who hasn't. I think things like that, I think would become hard work when you haven't got a system that you can just pull out that there's all these people I need to chase up. No, I wouldn't like to do it [manually], that's for certain. (MBSAH2)

Reports and dashboards on-screen show summaries and totals. Sometimes detail and the transactions that are represented by that total are needed to offer further insights and support micro business management and decision-making. Using drilldown in computerised AIS recalls that detail quickly and efficiently (MYOB Technology Pty Ltd, n.d.-f). The micro businesses interviewed provided several examples where the ability to drill down and understand their reports has supported the management of their business. MBAH4 and MBSAH1 were able to identify break-even points for business profitability:

So, I've looked at the expenses that I have ... I've worked out I have to get nine ... [customers] a day, seven days a week, every day to cover the costs. (MBAH4)

I had to sell \$2,000 worth of stock every single day to make it work. Well, I'll tell you what, by the time I hit 2:00 in the afternoon, if I hadn't got \$2,000, I needed to be doing something about it. I needed a plan to do it. Without MYOB I never would have known. You asked me why? Because everything you need to know is in there. (MBSAH1)

Drilldown supports reconciliation with external reporting, "at the end of the year, I will go into Xero, and Xero will give me a printout of what it says, and I will make sure my spreadsheet system matches" (MBSAH1). The process for applying for funding, such as the COVID-19 New Zealand Government subsidy, was simplified with drilldown as well, and the computerised AIS could provide proof of income if required:

When you're applying for the government subsidies, this is exactly what you need. You've got to select a week, and when we're filling it out it's ... you put the week in, the exact income you've got. It's all sitting there ... it means that we hold all the information should anybody ever look at us. It's all there. (MBSAH1)

It is also useful for decision-making:

... the bills are all big, generally. We've got fuel, road users and insurance are probably the three big ones. And wages, if you've got the guy driving ... we went through the process of 'can we afford to keep him on?' kind of scenarios. So, we had to do a bit of working out and things like that ... Do we need some more? Purchase more ... [equipment]? (MBSAH2)

The ease of access to the information through the computerised AIS using drilldown is efficient and accurate, supporting better decision-making.

5.6.5 The Micro Business Opinion

Through the micro business survey, the 138 respondents who use computerised AIS were asked to indicate their level of agreement with five statements about their use of computerised AIS. The statements are shown in Figure 5-20, numbered one to five, and cover concepts of ease of use (1), efficiency (2), cash flow management (3), understanding the business (4), and minimising errors (5). The respondents felt quite positive about their computerised AIS, with 67% of respondents (92 of 138) answering either “strongly agree” or “agree” for all questions, compared with only 7% (9 of 138) with more negative responses (“strongly disagree,” “disagree,” or “unsure”) than positive answers (“strongly agree” or “agree”).

Survey respondents agreed more (“strongly agree” or “agree”) with statements (1) ease of use of AIS (92% of respondents, 126 of 138), (2) efficiency of AIS (97% of respondents, 134 of 138) and (5) that their AIS minimises errors (92% of respondents, 127 of 138) aligning with some of the benefits identified by the accountants interviewed that were discussed in the previous chapter (refer to section 4.7). However, the micro businesses did not agree as much with statements (3) managing cash flow (77% of respondents, 106 of 138) and (4) understanding the business (84% of respondents, 116 of 138). While the differences are slight, the three statements with higher agreement indicate that the AIS software available is easy to use, robust, intuitive and error-free. Potential improvements for these statements need to be implemented by the computerised AIS providers, and reasonably tight competition between the two most popular programs, Xero and MYOB, continues drive enhancements to computerised AIS.

The two statements with lower agreement generally reflect the micro business’s skills and understanding of the computerised AIS, specifically statement (4). Training and support are needed to improve these scores so micro businesses can fully benefit from their computerised AIS tool. Statement (3) on managing cash flow is possibly more challenging to improve. The micro business can benefit by using computerised AIS to “understand” their cash flow, but “managing” cash flow, in addition to the benefits of monitoring it through the computerised AIS can be affected by many external factors including interest rates, economic conditions, and weather events.

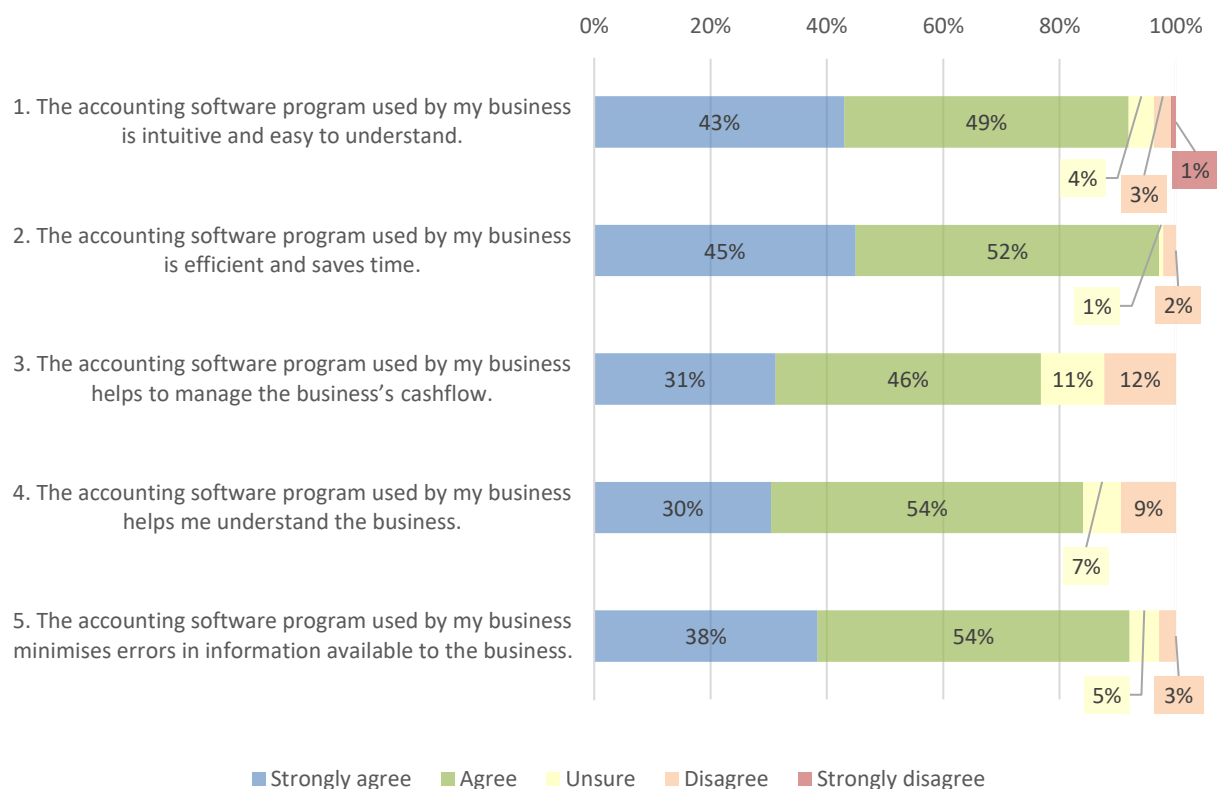


Figure 5-20 Opinions of micro business survey respondents on the use of their computerised AIS

Overall, there were few benefits of computerised AIS noted by micro businesses. Only seven of the eleven micro businesses interviewed used computerised AIS (MBAH1, MBAH2, MBAH3, MBAH4 MBSAH1, MBSAH2, MBS1), one of whom, MBS1, only did so through their accountant and had no interaction with the AIS, and two others (MBAH1, MBAH3) only used computerised AIS to accommodate their accountant, to minimise accounting fees and to meet their tax compliance obligations:

It's a low priority, but we have to do it. My only real motivation in all that is to just keep the government off my back. I have no real interest in it otherwise. I aim to give them as little money as possible and the more tyrannical they get, the more important it becomes to not finance your own persecution. (MBAH3)

MBAH4 initially started using computerised AIS to appease the accountant but has since learned the benefits, in particular, bank feeds and connectivity. This micro business still used multiple manual systems including workflow, invoicing and customer records to ensure high-calibre customer service, as connectivity required reliable internet which was currently not available to this micro business. Furthermore, a CRM app would need to be considered to adequately support their record-keeping needs due to their industry, incurring additional costs. While computerised AIS may benefit this micro business, utilisation of all its features does need to be weighed against other factors.

MBSAH2 also used computerised AIS through an older version of MYOB which does not incur any ongoing fees. This business experienced benefits from autofill, automated calculations and drilldown detail, but only limited benefits from connectivity with examples of bank reconciliation and emailing invoices shared above. This micro business was also impacted by inadequate internet services but was not pressured by a lack of time resources.

Could I halve my time in the office? It might be nice, but is it necessary relative to the money? At the moment, we're quite happy with the amount of time I'm having to spend out here ... I'd probably go out and do stuff that cost money. (MBSAH2)

While the benefits are acknowledged, for micro businesses not using the latest computerised AIS, or using spreadsheet AIS or manual AIS, the costs need to be weighed up against the benefits. For some micro businesses, the financial cost of updating their computerised AIS is greater than the additional benefits that they would receive.

5.7 Summary

In the previous chapter, Chapter 4, the accountants interviewed shared their opinions on the use of AIS in micro businesses, based on their professional relationships their micro business clients and expertise in accounting. In this chapter, Chapter 5, the views of micro businesses about those same issues were presented. The micro business survey responses are particularly important for addressing RQ 1 *What accounting information systems (AIS) tools are available and being used to manage accounting information processes for micro businesses?*, and the micro business interviews address RQ 3 *How are micro businesses using their accounting information systems (AIS)?*, RQ 4 *What factors affect micro businesses in the decision to adopt or not to adopt a computerised accounting information system (AIS)?* and RQ 5 *What are the benefits of using computerised accounting information systems (AIS) in micro businesses?*

Through desk-based research and interviews with accountants, the previous chapter identified the AIS tools available (RQ 1) in section 4.3 ranging from manual to computerised, and the micro business survey highlighted those being used. Section 5.3 detailed the differing levels of automation being used. The range covers no automation (i.e. manual record keeping), spreadsheets, and computerised AIS (starting with simple electronic cashbooks through to computerised AIS such as Xero and MYOB). The survey responses indicated that several micro businesses were using a mixture of AIS tools to address the variety of individual needs. The interviews emphasised how established hybrid AIS approaches are, as every interviewee that used computerised AIS was supplementing the standard functionality with spreadsheets and manual records. Further functionality was achieved

using add-ons and other management tools. Additional tools were predominantly focused on income-generating activities, such as sales, scheduling appointments, facilitating the receipt of payments, and marketing. While many of these could be integrated with automated data sharing between the app and the computerised AIS, this functionality was not used by many micro businesses.

Section 5.4 detailed how micro businesses used the AIS tools (RQ 3) to complete several typical functions within a business. Compliance requirements were considered first, including GST payroll, year-end reports and income tax. The discussion included the responsibility of these tasks (predominantly the business owner/employee versus accountant/bookkeeper) and the AIS tools used. Managing the business includes activities such as banking, sales, business expenditure, inventory, management reports and budgets. Micro businesses were highly focused on monitoring cash flow, embracing electronic transactions and online banking. Concentrated efforts were applied to sales and income activities, with the greatest utilisation of computerised AIS and add-on tools observed with these activities. The other areas of business management were not well monitored, though businesses were adept at creating ad hoc reports as needs arise, using a variety of manual and computerised AIS to retrieve data in addressing their business management questions.

The factors that affect a micro business's decision to computerise (RQ 4) as viewed by the micro businesses were detailed in section 5.5. The factors echo and extend those noted by accountants (section 4.6). Adoption of computerised AIS was firstly affected by characteristics of the individual business owner including generation/age, individual knowledge and experience, and personal attitude towards technology and learning. There are factors from within the micro business that also affected adoption including financial and time constraints, the purpose of the business (full employment, subsidising household income or a hobby), business size and the future direction of the business (expand, maintain, or wind-up). Influences on adoption from outside the micro business included the supply chain (suppliers and customers), regulatory bodies such as Inland Revenue (predominantly communicated via the accountant) and support services, specifically the access to a stable internet connection. These factors are interrelated, and multiple factors may affect the decision of a micro business to adopt computerised AIS.

Lastly, section 5.6 described several benefits of using computerised AIS (RQ 5). RQ 5 is addressed mainly through the micro business interviews, but the respondents also provided insights, building on those benefits identified in the previous chapter (section 4.7). Benefits included connectivity to external stakeholders (for example banks, customers, suppliers, and Inland Revenue), autofill to strengthen efficient and accurate data entry (such as in bank reconciliations, creation of customer invoices and recording supplier bills), automated calculations (on customer invoices, supplier bills,

reports, GST returns and payroll calculations), and the ability to access further supporting detail through drilldown functionality. Micro businesses gain efficiencies and improved data accuracy using computerised AIS. The benefits of connectivity and autofill in selected functions of the computerised AIS were recognised and well-utilised by the micro businesses, but these benefits need to be further understood and employed to streamline processes.

The following chapter, Chapter 6, concludes this research, drawing together the findings of the desk-based research (Phase 1), accountants' interviews (Phase 2), micro business surveys (Phase 3) and micro businesses interviews (Phase 4) to address each of the research questions. The contributions to the body of knowledge are noted, limitations of the current research acknowledged, and suggestions provided for future research to further extend this field of research.

Chapter 6

Conclusion

6.1 Introduction

All business enterprises, regardless of sector or size, are governed by three common aspects: (1) business objectives providing goals and direction for the business, which will be achieved through (2) decision-making and (3) managing limited resources. Accounting information systems (AIS) enable data collection and the reporting of information which is used in these common aspects of businesses. An identifiable subset of business enterprises is based on business size, with the smallest being the “micro business” – defined in New Zealand as a business with five or less employees (Ministry of Business Innovation & Employment, 2014a, 2014b, 2017).

Micro businesses are described as being the “backbone of a flourishing economy ... [providing] a solid foundation on which the rest of nation can grow” (Business Mentors, 2017, p. 2), the “foundation of economies” (Bishop, 2017, p. 37), the “cornerstone of the New Zealand economy” (Ministry of Business Innovation & Employment, 2014a, p. 3). They are a driver of “job creation and economic growth” (European Commission, 2016, p. 3) and play “an integral role in the New Zealand economy” (Business Mentors, 2017, p. 5). Micro businesses account for 89% of businesses in New Zealand (Ministry of Business Innovation & Employment, 2018), and small businesses produce 41% of New Zealand’s “economic value-add” (Ministry of Business Innovation & Employment, 2021). Similar economic importance is reported by other countries and summarised in Chapter 2, Table 2-2.

Given the importance of micro businesses to New Zealand and world economies and how typical challenges of resource poverty (time, money, skills and knowledge) (Sellitto et al., 2017) impact data gathering and using information in decision-making, the purpose of this research was the use of AIS to benefit micro businesses. The discussions in Chapters 4 and 5 explored the AIS tools available and used, what is considered best practice in the use of AIS, how micro businesses are using those tools, factors in adopting computerised AIS and the benefits of using computerised AIS. The discussion centred on the viewpoints of both accountants and micro businesses.

This chapter presents a summary of the findings for each of the research questions in section 6.2. Contributions to the body of research literature and practical implications are included in section 6.3. Limitations of this current research are identified in section 6.4 and finally, section 6.5 suggests areas of possible research for future studies.

6.2 Summary of Findings

Research question one on the available AIS tools used by micro businesses was addressed through each of four phases of data gathering, including the desk-based research and interviews with accountants discussed in Chapter 4, and the micro business survey and interviews discussed in Chapter 5, as shown in Table 6-1. The findings revealed that a variety of tools are used, ranging from manual record keeping, to spreadsheets, to computerised AIS, and including a mixture of these tools. Of the survey respondents, 15% stated that they use manual AIS. At the other end of the automation spectrum, 52% identified themselves as using computerised AIS, in addition to another 18% using hybrid approaches that include computerised AIS. The micro business interviews suggest that hybrid methods may be stronger than reported in the survey, with a reliance on other tools (manual, spreadsheets and other software or apps) to tailor data recording to their unique decision-making needs.

Of the computerised AIS used, two software providers dominate, Xero (56%) and MYOB (30%). Xero's predominant strength is from being a cloud-based product, increasing accessibility, and its dominance is supported by some accountants limiting services to only businesses using Xero software.

Table 6-1 Research questions addressed by phases of this current research

Research Questions	Phase 1 <i>AIS tools available to micro businesses</i>	Phase 2 <i>AIS best practice in micro businesses</i>	Phase 3 <i>AIS use by micro businesses</i>	Phase 4 <i>Exploring the benefits of AIS in micro businesses</i>
RQ 1: <i>What AIS tools are available and being used to manage accounting information processes for micro businesses?</i>				
RQ 2: <i>What is best practice for micro businesses using AIS?</i>				
RQ 3: <i>How are micro businesses using their AIS?</i>				
RQ 4: <i>What factors affect micro businesses in the decision to adopt or not to adopt a computerised AIS?</i>				
RQ 5: <i>What are the benefits of using computerised AIS in micro businesses?</i>				

Legend: Dark blue – phase predominantly addresses RQ; Light blue – phase partially addresses RQ; White – does not address RQ

The second research question on best practice was addressed entirely through accountant interviews (Table 6-1) and discussed in Chapter 4. Answers were dependent on whether or not the accountant's

firm specialised their practice either through industry or choice of AIS, compared with accountants who take a general approach. Specialisation provides opportunities for the accounting firm to streamline their processes and provide expert advice on the accountant-selected AIS. This approach may not suit micro businesses who prefer alternative AIS and may be better supported by other accountants.

Other accountants willing to accommodate any AIS approach focus on the individual needs of the micro business in adopting AIS. The type of AIS does not matter, manual or computerised AIS. It is the ownership and responsibility of the information that does matter. They see clear advantages in using computerised AIS, especially for GST and tax compliance, but acknowledge some micro businesses are better suited to manual systems or spreadsheets. The use of all features within computerised AIS is not essential, but important functions include bank reconciliation, customer invoicing and GST reporting. Other features such as recording supplier bills and budgets are useful, but key is that the micro business sees their AIS as a tool for managing their business. Where micro businesses outsource AIS management, they are removed from the information, and less likely to see it as a management tool.

The way in which micro businesses are using AIS generally agrees with the view from the accountant interviews on best practice. This third research question was mainly addressed by the micro business interviews in Chapter 5, and also by the accountant interviews (Chapter 4) and the micro business survey (Chapter 5) as shown in Table 6-1.

AIS use by micro businesses is primarily focused on monitoring cash flow (bank reconciliation), sales and income activities (invoicing and monitoring amounts due) and compliance reporting (GST and income tax). The greatest utilisation of computerised AIS and add-on tools are observed with these activities. Where manual or spreadsheet AIS is used by the micro business in a manner where only partial transaction data is captured, the accountant will often support their client by using computerised AIS on their behalf to ensure accurate data collection.

Other functionality provided by computerised AIS are less utilised. Managing business expenditure, inventory, reporting and budgets are often managed using manual or spreadsheet AIS, or on an ad hoc basis. Micro businesses could utilise these features more, especially reporting. Information presented in reports provides a basis for decision-making. While ad hoc reporting does take place, using the information to monitor the business activities can assist in alerting the micro business to future opportunities or issues.

The fourth research question, factors affecting the adoption of computerised AIS by micro businesses, was predominantly addressed by the interviews with micro businesses as shown in Table

6-1 and discussed in Chapter 5, and also addressed in the accountant interviews (discussed in Chapter 4) and the micro business survey (discussed in Chapter 5). Three main factors were identified: the individual business owner, internal business factors and external business factors.

Factors from the individual business owner include the generation, individual knowledge and skill and personal attitude to technology. Young micro business owners will have grown up with technology and have a foundational knowledge, and thus, the use of computers is second nature. Older generations are often more aware of alternative AIS methods that are manual or spreadsheet based.

Internal business factors include financial costs, time costs and the business purpose and future. Micro businesses are typically money and time poor. While the programmed efficiencies offered through computerised AIS can alleviate this, computerised AIS is more expensive than manual AIS. There were conflicting opinions from micro business as to whether the time savings outweighed the financial costs. The viewpoint was often related to the business purpose and future. Reasons such as “the business is a hobby” or “nearing retirement” were typical reasons for not adopting computerised AIS, something that has not been noted in prior studies.

External business factors include influences to adopt computerised AIS from the supply chain, regulatory bodies and supporting services. Automation was particularly observed where it can enhance the customer experience, making it easier for customers to book appointments, and for customer payments to be received. Computerised AIS can ease the burden of mandatory reporting, such as GST and income tax. Great improvements have been recently introduced by Inland Revenue to simplify the filing process, and accountants have encouraged micro businesses to utilise computerised AIS to benefit from these changes. Unstable internet access continues to hamper some micro businesses, as the most popular computerised AIS rely on the internet and connectivity.

These factors are often entwined with each other. For example, an older generation micro business owner, with knowledge of manual AIS, planning retirement or sale of the business may see the financial and time investment of automating their AIS as being too great. Alternatively, a micro business operated by a Generation X owner who has grown up with computers and technology, is comfortable with implementing and using computerised AIS to monitor the bank account, email invoices to customers and looking for apps to add greater efficiencies to managing their business.

The fifth and final research question, the benefits of computerised AIS were addressed through each of phases of data collection as shown in Table 6-1. The answers predominantly came from micro business interviews as discussed in Chapter 5, but also desk-based research and interviews with accountants discussed in Chapter 4, and micro business survey discussed in Chapter 5.

The findings revealed several benefits of using computerised AIS. The first being connectivity which through cloud technology enhances accessibility allowing multiple users from multiple locations to access a single version of the data. Data prepared from other sources (e.g., bank statements) can be integrated into the AIS without the need to retype, and returns can be uploaded directly to the Inland Revenue (e.g. GST returns). Where information exists elsewhere, the second benefit, autofill, populates data entry screens with that information, reducing the need for typing. An example of this is when creating a new invoice, the customer address from the contact information auto fills into the invoice, reducing the time to complete the information and any typing errors. Auto fill also matches customer invoices to payments received during the bank reconciliation process. Automated calculations remove the need for humans to complete basic arithmetic as the computerised AIS completes this in the creation of invoices, supplier bills and reports. The calculations are immediate and error free. Finally, drilldown enables direct access to supporting detail for information provided on screen.

These benefits are available in current versions of computerised AIS with full-functionality. Computerised AIS that is older or includes only a limited number of functions may not include the full range of benefits. When micro businesses utilise computerised AIS, information is accessible in a timely manner and has improved accuracy, providing a better foundation for decision-making by the business.

6.3 Contributions and Implications

The key findings from this research contributed to new knowledge, providing insights and implications for theory and literature, as well as practice and policy. The theoretical connections to the findings may appear somewhat tenuous and unclear. However, Hambrick (2007) noted data rich observations and findings are valuable in themselves and instrumental in the advancement of our understanding.

6.3.1 Theory and Literature

This current research applied the theoretical lenses of diffusion of innovation (DOI), the technology-organisation-environment (TOE) framework, and positive and normative accounting theories. As with exploratory qualitative research, application of the theory aids reflection to make sense of the findings.

Three facets of diffusion of innovation (DOI) were presented (refer to section 2.2.1): stages of the innovation-decision process, adopter categorisation based on innovativeness and characteristics

affecting organisational innovativeness. The stages of the innovator-decision process were observed as micro businesses adopted (RQ4) and used computerised AIS (RQ3). The micro businesses interviewed were characterised into the different stages with some in the *knowledge* gathering stage unsure of the most suitable option for their business. Others were undecided and amid *persuasion* by advisors. Most of those interviewed had already decided and implemented their chosen AIS but looked for *confirmation* that their decision was the most suitable option for their business. Likewise, the range of adopter categories was represented by the micro businesses interviewed in their decision to adopt computerised AIS (RQ4). The range of the data observed was normally distributed as stated in the theory.

Lastly, in the analysis of factors affecting the adoption of computerised AIS (RQ 4), from the perspective of both accountants and micro business, the characteristics observed were individual characteristics, internal organisational characteristics, and external organisational characteristics, which aligned with DOI theory.

The technology-organisation-environment (TOE) framework (refer to section 2.2.2) categorises the influences in technology adoption in a similar way to DOI theory. Individual and organisational (internal and external) elements are present, but the TOE framework also includes an element of technology. Individual and organisational elements are addressed by the findings supporting RQ 4, while support for the technology element is addressed through identifying the range of AIS tools used (RQ 1), how the AIS tools are used (RQ 3) and the benefits of computerised AIS (RQ 5).

This research includes two perspectives of how micro businesses use AIS, thereby incorporating both positive and normative accounting approaches (refer to section 2.2.3). Using a normative accounting theoretical perspective, this research identified the accountants' views of what should be done by micro businesses (RQ2). Using a positive accounting theoretical perspective, this research examined what AIS tools micro businesses are using (RQ1), how they are using the tools (RQ3) and how they record and use the AIS information in the management of their business.

The topic of AIS usage in micro businesses is not well represented in the available literature as discussed in Chapter 2. With a broader lens, studies on small businesses, SMEs and home-based businesses have applicability, but there is a need to acknowledge the differing business size definitions. A common theme from the literature is the need for further research, and this research contributes by answering that call.

The use of a multi methods research approach using surveys and semi-structured interviews adds to the body of knowledge by providing more detailed insights on how individual businesses use AIS in their day-to-day operations. This research explores the use of AIS, and the benefits of computerised

AIS use in micro businesses through the experiences of business owners and the views of accounting professionals as to what is best practice and compares the differences. These differences may be explained by the uniqueness of the micro business owners, the AIS tools used, and the business environment in New Zealand. The current body of academic literature is predominantly based on surveys, many of them quantitative, and so the addition of qualitative information through surveys and interviews from both the micro businesses and accountants in this research creates greater depth, extending the body of knowledge.

6.3.2 Practice and Policy

Various groups that will be affected by this research include micro businesses, accountants and advisors, governing bodies, and AIS software providers. Given the importance of micro businesses to other nations, it is expected that this research will impact these stakeholders globally.

Overall, the findings of this research reflect not only the region of Canterbury but are also applicable to the whole nation. The differences in the defining criteria can challenge the ability to interpret and make international comparisons of SMEs but the united agreement of the importance of micro businesses to the economies in other countries of the world, as explained in Chapter 2, extends the relevance of this research globally. The similarities between New Zealand and Australia, with the same size definition for micro businesses, and comparable economies and business environments make this research particularly relevant to Australia.

The relationship between micro businesses and accountants (or other advisors) is key when considering adoption of computerised AIS. Micro businesses are constrained by limited resources and face multiple factors in their decision, and accountants can reinforce the benefits available and navigate through any barriers. This research examined both AIS best practice and actual use by micro business, and by understanding the differences accountants will be in a better position to strengthen the quality of their advice and support informed decisions on the AIS used by their micro business client.

Governing bodies implement policies that affect micro businesses. It is important that they understand the limitations and factors that affect micro businesses, and promote policies that support and benefit micro businesses, and minimise any burdens. Through championing micro businesses, benefits will flow through the economy.

AIS Software providers are responsible for AIS functionality, new developments, pricing, and ease of use. It is key that computerised AIS is tailored to benefit micro businesses and address the attitudes and limitations that affect use of AIS. Future developments of computerised AIS should continue to benefit micro business, while still supporting the uniqueness of each business, without further strain on micro businesses' limited resources.

6.4 Limitations

As this research is restricted to the location of the single region of Canterbury, New Zealand this may impact the generalisability to other regions in New Zealand and overseas. There is a relationship between the numbers of each SME category (i.e. micro, small, medium) to the population of each region, and changes to the numbers coincide with population shifts (Ministry of Business Innovation & Employment, 2014a; Small Business Council, 2019a), indicating that any area sampling in New Zealand should be representative of the country. The numbers of micro businesses in Canterbury are high, yet access to individual businesses was hampered by no publicly available list. The invisibility of micro businesses was countered by using a target sampling method, with initial email invitations sent to those micro businesses with a public internet presence including an email address. This affected the sample size, as well as introduced bias as only businesses who advertised an email address were selected. There was no distinguishing factor in the survey to identify the impact of the snowball effect. Likewise, there was no means to identify if any participants were clients of the accountants and bookkeepers interviewed in Phase 2.

The timing of the micro business survey took place during a year of turmoil for micro businesses caused by the COVID-19 pandemic. The effect of this is unknown, as COVID-19 provided opportunities for some businesses to flourish as the goods and services they provided were in demand. These businesses may have been busier than normal and unable to participate in the survey. Others may have encountered a large downturn, and therefore time to participate, but affected by other stresses. In either scenario, many businesses faced life changing decisions and disruption, and the effect of this on their willingness to participate, and their answers in the survey are unknown.

Subjectivity and bias can be introduced through data gathering, inherent with qualitative research. Interviews have the potential for bias from the interviewer with tensions between getting close to the research to find rich data and remaining distant enough for objectivity (Lofland et al., 2006). The interviews are based on the personal opinions of the participants (accountants and micro businesses), reflecting individual perspectives. The micro business survey relied on individual interpretation of the questions without opportunity for confirmation. Answers are self-reported based on their individual interpretation. These limitations were tempered with prepared questions for the semi-structured interviews, pre-testing for the survey and comparison between the various forms of data collection (desk-based research, interviews, and survey) and between perspectives (micro businesses and accountants). The interviews, survey, and desk-based research were all

conducted by the researcher, being the only person involved in the data collection and analysis, ensuring consistency was applied throughout the research.

Despite the limitations identified, the research still provides important insights into how AIS can benefit micro businesses.

6.5 Future Research

This research adds to the current knowledge of understanding how using AIS benefits micro business, but it also prompts further questions and areas to be explored in future research.

As this research was focused on the single region of Canterbury, New Zealand, expanding the research sample nationally or globally would provide opportunity for comparison and support generalisability. The same reasoning could be applied to replicate the research to compare different business sizes, for example, using the definitions from New Zealand, small businesses (six to 19 employees) and medium businesses (20 to 49 employees).

Using a case study approach, triangulation of the data could include ethnographic observations of the micro businesses interviewed, with particular reference to RQ3. This would identify any differences in the micro businesses' spoken opinions from the interviews with actual observations of them using AIS. The accountants interviewed could be those accountants used by the micro businesses included in the current research. Furthermore, research could use the institutional isomorphism lens to further investigate and categorise the effect of the accountants influence in the adoption of AIS, differentiating between coercive, mimetic and normative pressures.

As this research noted that adoption of AIS is influenced by the generation of the micro business owner, repeated cross-sectional comparisons over time would provide further insights into this factor and possibly identify others. Longitudinal studies would provide insights into how micro business use of AIS changes over time.

Given the importance of computers and advancements in AI, and their interactions with human micro businesses, research on using AIS to benefit micro businesses will be a continuing journey.

6.6 Conclusion

Information is key to making sound decisions to support the objectives and future of any business, while working within limited resources. Micro businesses are a key group within the economy, representing ninety per cent of all businesses in New Zealand and similarly high proportions in other countries. To boost the success of these businesses, there must be adequate support to the micro businesses in using AIS, including gathering of the data, and use of information in their decision-making. Resource poverty suffered by small businesses is well documented including lack of time, money, knowledge and skills. Through increased understanding of the use of AIS by micro businesses, targeted support can be provided by government agencies, business advisors and software providers to foster the health of these businesses. Three observations that can make a difference to micro businesses, resulting from this research, are:

1. Micro businesses need to adopt the most recent available versions of computerised AIS.
2. Micro businesses need to make better use of features within the computerised AIS. This includes add-ons that automatically connect to the AIS.
3. Micro businesses need to seek training in fundamental accounting practices to better understand and make use of information created by the AIS in their business management.

Both the New Zealand and the European Union governing bodies have recently publicly acknowledged that they need to do more for micro businesses, including to promote the above changes. This current research agrees. Accountants and other advisors can do more to support AIS use by micro businesses. As trusted professionals, they are well positioned to provide micro business owner/managers with training on aspects of business management and AIS. Lastly, AIS software providers need to develop AIS software that is functional, flexible, easy to use, and priced to be affordable by micro businesses.

The benefits, primarily efficiency and accuracy, of computerised AIS are available for micro businesses. Time in any business is a precious resource, and so embracing efficiencies creates time for seeking opportunities such as additional production, new customers or improving personal work-life balance. Furthermore, the accuracy and timeliness of data is key when information is used for decision-making. Making decisions using inaccurate or outdated data is unlikely to lead to positive outcomes. While there are multiple barriers to adopting AIS, many would be diminished by reductions in the costs of implementing and training staff to use computerised AIS. Efforts need to be made to address the barriers and provide opportunities for micro businesses to experience the benefits of computerised AIS.

Appendix A

Accountants' Interview Package

A.1 Email Invitation to Potential Participants

Dear <participant's name>

My name is Pam Benbow and I am a PhD candidate at Lincoln University conducting research for my thesis entitled:

Using Accounting Information Systems to Benefit Micro Businesses

I am looking for accountants who have clients with five or less employees that they provide advice to on implementing and using accounting information systems for the purposes of business management and compliance requirements.

You have been identified as a potential participant, and I would like to enquire if you are willing to discuss your professional observations and experiences on this topic.

If you are interested, I would like to hear of your experiences sometime during <the month following date of email>. Interviews are expected to take 45 to 60 minutes, and would be undertaken at your office, at a time suitable to you. Your identity in this research will not be made public.

If you are interested in finding out more about this project, I can be contacted by either return email or my details below. If I have not heard from you by <date two days from date of email>, I will phone to discuss your possible participation.

Kind regards,

Pam Benbow

A.2 Research Information Sheet

You are invited to participate in a PhD research project entitled:

Using Accounting Information Systems to Benefit Micro Businesses

The aim of this project is to explore the benefits of using accounting information systems (AIS) in micro businesses.

Your participation in this project will involve an interview about your experience in your role as an accounting professional in relation to the project detailed above. The interview should take approximately 45 to 60 minutes. If you are willing to participate in this research, you will need to sign a consent form. Handwritten notes will be taken. The interview will also be recorded using an audio recording device with your consent.

Your participation in this research is voluntary. You may withdraw your participation and the information you have provided for the research by informing the researcher prior to 31 January 2019 by telephone or email.

Results of the project will be published in partial fulfilment of the requirements for a PhD at Lincoln University, and may also be published in academic journals and conference proceedings. Participants will be provided with anonymity and their identity will not be made public, or made known to any person other than the researcher and supervisors listed below. Only aggregated data will be included in publications. No information will be presented that would enable individuals to be identified. All data, electronic and printed, will be securely stored in locked or password protected storage.

This project has been reviewed and approved by the Lincoln University Human Ethics Committee. If you have any queries or concerns about your participation in the project, please contact myself or my supervisors; we would be happy to discuss your participation in the project.

The project is being carried out by:

Pam Benbow

*C301, Faculty of Agribusiness and Commerce, Lincoln University
Ph: 03-423-0251 E: pam.benbow@lincoln.ac.nz*

Supervisors:

Tracy-Anne De Silva

*C208, Faculty of Agribusiness and Commerce, Lincoln University
Ph: 03-423-0244 E: tracy-anne.desilva@lincoln.ac.nz*

Stuart Charters

*F803, Faculty of Environment, Society and Design, Lincoln University
Ph: 03-423-0415 E: stuart.charters@lincoln.ac.nz*

A.3 Participant Consent Form

I have read and understood the description of the above-named project. On this basis I agree to participate in the project, and I consent to publication of the results of the project in partial fulfilment of the requirements for a PhD at Lincoln University. I understand also that I may at any time withdraw from the project, including withdrawal of any information I have provided, up to 31 January 2019.

I consent to the interview being recorded on an audio device.

Following the interview, I wish to have the opportunity to read and amend the transcript of the interview conducted with me.

I consent to the interview being included in possible future publications in academic journals and conference proceedings beyond the completion of the PhD thesis.

Signature: **Date:**

**Full Name
(printed)**

A.4 Interview Guide

Theme 1: Personal background

- Q1. Tell me about your work as an accountant
- When did you first start?
 - What is your position?
 - What type of clients/industry do you provide services to?
 - What type of tasks and advice do you provide your clients?

Theme 2: Study definitions

- Q2. What do you consider to be the definition of a “micro business”?
- 0 to 5 employees
 - Reason for difference in definition
 - What percentage of your clients are micro businesses? (approx.)
- Q3. What do you consider to be the definition of an “AIS”?
- Automated: accounting software, online forms, email, internet
 - Manual: accounting ledger book, paper forms, handwritten invoices
 - Reason for difference in definition
 - Of your micro business clients, what percentage are using automated AIS? (approx.)

Theme 3: AIS tools used

- Q4. Tell me about the AIS tools used by your average micro business clients.
- General ledgers
 - Payroll
 - Spreadsheets
 - Manual records
 - Industry specific
- Q5. Tell me about what you think would be “best practice” for micro businesses using AIS tools.
- Q6. Tell me about your least automated micro business clients
- What are they using for manual AIS tools?
 - What is the impact on these clients of not adopting automated AIS?
 - What benefits do clients using automated AIS experience/receive compared with those using manual AIS tools?
- Q7. What factors affect a micro business’s decisions about automated AIS?
- factors encouraging adoption
 - barriers/dissuasion
 - industry sector influences

Areas to consider:

invoicing
statements
accounts receivable
accounts payable
bank reconciliation
quotes
job costing
CRM
saved transactions
online payments
GST
payroll
PAYE
FBT
depreciation
tax planning
budgets
inventory

Theme 4: Conclusion

- Q8. Is there any other information that you believe would be useful?
- Transcript will be emailed for review (where applicable)
 - Thank you for your time

Appendix B

Small Business Survey Package

B.1 Email Invitation to Potential Participants

Dear <business name>

My name is Pam Benbow and I am a PhD candidate at Lincoln University conducting research for my thesis entitled:

Using Accounting Information Systems to Benefit Micro Businesses

The aim of this project is to explore the use of accounting information systems (AIS) in recording and collecting data for managing micro and small businesses in New Zealand.

I am looking for owners and people responsible for the financial processes of small businesses in New Zealand to complete a questionnaire. *It doesn't matter how small your business is, you might not even have any employees, or even use accounting software, I am more interested to hear about how you use your accounting information to manage your business!*

The questionnaire asks about general business administrative processes (e.g. GST, payroll, receiving income, payment of expenses, budgets and the use of advisors), tools that are used to capture business information (e.g. accounting software, spreadsheets and paper records) and factors considered in choosing those tools. The questionnaire should take approximately 20 minutes to complete.

The questionnaire can be accessed online through the following link:

http://lincoln.az1.qualtrics.com/jfe/form/SV_cMiNQhEwvhYEjml

or you can type in your web browser the following

bit.ly/NZmicrobusinessAISsurvey

If you have any questions, you can contact me directly, or either of my supervisors Dr Tracy-Anne De Silva (ph: 03-423-0244 or e: tracy-anne.desilva@lincoln.ac.nz) and Dr Stuart Charters (ph: 03-423-0415 or e: stuart.charters@lincoln.ac.nz).

Thank you for your support.

Kind regards,

Pam Benbow

B.2 Survey Information and Consent

1. My name is Pam Benbow and I am a PhD candidate at Lincoln University conducting research for my thesis entitled:

Using Accounting Information Systems to Benefit Micro Businesses

The aim of this project is to explore the benefits of using accounting information systems (AIS) in recording and collecting data for managing micro and small businesses in New Zealand.

Anyone who is an owner or responsible for the financial processes of a small business in New Zealand is welcome to complete this questionnaire. The questions ask about general business administrative processes (e.g. GST, payroll, receiving income, payment of expenses, budgets and the use of advisors), tools that are used to capture business information (e.g. accounting software, spreadsheets and paper records) and factors considered in choosing those tools. The questionnaire should take approximately 20 minutes to complete.

Results of the project will be published in partial fulfilment of the requirements for a PhD at Lincoln University, and may also be published in academic journals and conference proceedings. Participants will be provided with anonymity and their identity will not be known unless provided, and if provided your identity will not be made public, or made known to any person other than the researcher and supervisors listed below. Only aggregated data will be included in publications. No information will be presented that would enable individuals to be identified. All data, electronic and printed, will be securely stored in locked or password protected storage.

Through the completion of this questionnaire, it is assumed that you are willing to participate in this research, and consent to the use of the data collected as detailed above.

This project has been reviewed and approved by the Lincoln University Human Ethics Committee. If you have any queries or concerns about your participation in the project, please contact myself or my supervisors; we would be happy to discuss your participation in the project.

The project is being carried out by:

Pam Benbow

C301, Faculty of Agribusiness and Commerce, Lincoln University

Ph: 03-423-0251 E: pam.benbow@lincoln.ac.nz

Supervisors:

Tracy-Anne De Silva

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Stuart Charters

F803, Faculty of Environment, Society and Design, Lincoln University

Ph: 03-423-0415 E: stuart.charters@lincoln.ac.nz

To move to the next screen, click on the **Next** button in the bottom right hand corner. The **Previous** button in the bottom left hand corner will allow you to return to previous questions.

Answers will be saved as you progress through the questionnaire. If you need to leave, you may return within one week to the survey through the access link, using the same device you used previously. The survey will return you to your last saved question.

Your survey responses will be submitted once you select **Submit your survey** on the final screen. If you choose not to complete the survey, any responses given will be deleted.

Thank you!

Pam Benbow

B.3 Questionnaire for Micro Businesses

Welcome

2. Are you responsible or have oversight of the financial processes for a business? *[Financial processes may include invoicing, bank reconciliation, payments to suppliers, payments of wages, preparation of GST returns and preparation of budgets.]*
- Yes – as owner [\[skip to Q4\]](#)
 Yes – in another role [\[skip to Q4\]](#)
 No
3. Please provide the details of the person in your business who is responsible for the financial processes. This information will only be used to invite them to complete this survey.
- Name: _____
 Email address: _____
[\[exit from filtering question Q2, skip to End of Survey\]](#)
4. How many people working in your business are paid wages or salary where PAYE is deducted? *[Please answer irrespective of the number of hours or days that they work.]*
- 0
 1-5
 6-19
 20 or more
[\[where 20 or more is NOT selected, skip to Q6\]](#)
5. Thank you for your time. This questionnaire aims to find out about **micro** and **small businesses** in New Zealand. Business size is defined by the **Ministry of Business, Innovation and Employment**, and your answers show that your business is larger.
[\[exit from filtering question Q4, skip to End of Survey\]](#)
6. Where in New Zealand is the main location of your business operations?
- | <u>North Island</u> | <u>South Island</u> |
|--|---|
| <input type="checkbox"/> Northland | <input type="checkbox"/> Tasman/Nelson |
| <input type="checkbox"/> Auckland | <input type="checkbox"/> Marlborough |
| <input type="checkbox"/> Waikato | <input type="checkbox"/> West Coast |
| <input type="checkbox"/> Bay of Plenty | <input type="checkbox"/> Canterbury |
| <input type="checkbox"/> Gisborne | <input type="checkbox"/> Otago |
| <input type="checkbox"/> Hawke's Bay | <input type="checkbox"/> Southland |
| <input type="checkbox"/> Taranaki | |
| <input type="checkbox"/> Manawatu – Wanganui | <input type="checkbox"/> Not in New Zealand |
| <input type="checkbox"/> Wellington | |
- [\[where Not in New Zealand is NOT selected, skip to Q8\]](#)
7. Thank you for your time. This questionnaire aims to find out about **micro** and **small businesses** in New Zealand.
[\[exit from filtering question Q6, skip to End of Survey\]](#)

Business Administration Tools

8. In the administration of your business, please indicate how often each of the following methods for recording transactions are used (eg invoices, receipts of cash, payments).

[Note: please provide a response for each line]

	Never	Some of the time	Most of the time	All of the time
Accounting software (e.g. Xero, MYOB)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spreadsheets (e.g. MS Excel, Google Sheet)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Manually using paper based records (e.g. order books, invoice books)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. You have indicated that your business doesn't use accounting software, spreadsheets, or paper. Please list the tools that are used in your business to record business transactions.

[Show when Q8 is Never for AIS, SS and Paper]

10. Has your business ever used accounting software?

- Yes
 No
 Unsure

[Show when Q8 is Never for AIS]

11. Please note the factors in your business's decision to stop using computerised accounting software.

[Show when Q10 is Yes]

12. Please list the types of information your business records on paper (e.g. invoices, cash expenses, etc.).

[Show when Q8 is Yes for Paper]

13. Please detail the main reasons for recording your business records on paper.

[Show when Q8is Yes for Paper]

14. Briefly describe how you use spreadsheets in the administration of your business.

[Show when Q8is Yes for SS]

15. Has your business ever considered using accounting software?

- Yes
- No
- Unsure

[Show when Q8is Never for AIS]

16. Please note the biggest factors dissuading your business from using computerised accounting software.

[Show when Q8is Never for AIS]

Accounting software

[Block is only shown when Q8is Yes for AIS]

17. Which accounting software does your business currently use?

- Xero
- MYOB Essentials
- MYOB AccountRight
- Cashmanager RURAL
- BankLink
- Other (please specify) _____
- Unsure

18. Has your business ever used any other accounting software?

- Yes (please specify) _____
- No
- Unsure

19. Please list the main reasons for changing the accounting software used in your business.

[\[Show when Q18 is Yes\]](#)

20. Is the accounting software you currently use cloud based?

- Yes
 No
 Unsure

21. When deciding on an accounting software program, did your business seek help or advice from anyone?

- Yes (please specify) _____
 No
 Unsure

22. Please note the main reasons for selecting the accounting software program used by your business.

23. Have you received any training for the accounting software program (for example with your accountant or advisor)?

- Yes
 No

Other Business Administration Tools

24. Please indicate if your business has the following, and if so how often it is used.

	Don't have	Have, but don't use	Have, but seldom use	Have and use often
<i>Own business website</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Internet banking</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Email</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

25. Please list any other software or apps used in the management of your business. (Do not include email or web browsers.)

[\[Show when Q8is Never for AIS\]](#)

26. You have already indicated that you use accounting software. Please list any other software or apps used in the management of your business. (Exclude accounting software, payroll software, email, web browsers, spreadsheets, word processors or presentation software.)

[NOTE: if you use more than one software or app, please enter separately the 5 that you use most frequently.]

- No other software or apps used [Exclusive function applied on this option]
- Other software or app 1 (please specify) _____
- Other software or app 2 (please specify) _____
- Other software or app 3 (please specify) _____
- Other software or app 4 (please specify) _____
- Other software or app 5 (please specify) _____

[\[Show when Q8is Yes for AIS\]](#)

27. Does information transfer between the program or app that you use and your main accounting software?

	Yes	No	Unsure
Other software or app 1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other software or app 2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other software or app 3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other software or app 4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other software or app 5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[\[Show when Q26 indicates other software or apps are used. Number of rows displayed dependent on the answers provided, and the label is Piped from the answer.\]](#)

Business processes

28. For your business, please indicate the main person responsible for completing each of the following tasks.

	Business owner	Employee	External accountant	External bookkeeper	Other	No one	Not applicable
<i>Creating customer invoices</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Paying suppliers</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Recording bank transactions</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Preparing bank reconciliation report</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Payroll</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>PAYE returns</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>GST returns</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Preparing year-end financial reports</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Income tax returns</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[Payroll and PAYE only show if Q4 is not 0 employees]

29. From the previous question you indicated that someone other than the business owner, employee, external accountant or external bookkeeper was responsible for each of the following task(s). Please specify who that person is.

- Creating customer invoices _____
- Paying suppliers _____
- Recording bank transactions _____
- Preparing bank reconciliation report _____
- Payroll _____
- PAYE returns _____
- GST returns _____
- Preparing year-end financial reports _____
- Income tax returns _____

[Show when Q28 includes an Other selection – options only show as required]

GST

30. Is your business annual turnover (revenue) more than \$60,000 per year? *(This is the IRD threshold for GST registration)*

- Yes
- No
- Unsure
- Prefer not to answer

31. Is your business GST registered?

- Yes
- No
- Unsure

[\[Skip to Q35 if No or Unsure\]](#)

32. Please indicate how often your business files its GST return with the IRD.

- Monthly
- Two monthly
- Six monthly
- Unsure

33. How does your business file its GST return with the IRD?

- Electronically
- Paper based returns
- Unsure

[\[Skip to Q35 if Manual or Unsure\]](#)

34. Do you use the link between your business's accounting software to myIR to automate filing of GST?

- Yes
- No
- No – my accounting software does not have this feature
- Unsure

[\[Show when Q8 is Yes for AIS\]](#)

Payroll

[Block is only shown if Q4 is not 0 employees]

35. How often does your business pay employee wages and salaries? (Select as many as apply.)

- Weekly
- Fortnightly
- Monthly
- Other (please specific) _____

36. Please indicate which tool your business uses to calculate and record payroll and salaries.

- Xero
- MYOB Essentials Payroll
- ACE Payroll
- SmartPayroll
- iPayroll
- FlexiTime
- IRD online PAYE / KiwiSaver calculator
- Spreadsheet
- Manually using paper based records
- Other (please specify) _____

37. How does your business file its PAYE returns (now called PayDay Filing) with the IRD?

- Electronically
- Paper based returns
- Unsure

[skip to Q39 if Manual or Unsure]

38. Do you use the link between your business's payroll software to myIR to automate filing of PAYE returns (now called PayDay Filing)?

- Yes
- No
- No – my accounting software does not have this feature
- Unsure

[Show when Q36 is not Spreadsheet or Manual]

Invoicing

39. Please indicate how often your business receives income in the following forms.

	Never	Rarely	Some of the time	Most of the time	All of the time	Unsure
<i>Cash</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Cheques</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Electronic (e.g. direct debit, direct credit, EFTPOS, credit card, PayPal, etc)</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

40. Accounts receivable: Approximately how many invoices per month would your business issue to customers on account?

- Number of invoices (please specify) _____
- My business doesn't issue invoices. [\[skip to Q43\]](#)

41. Please indicate how often your business creates customer invoices using the following method(s).

	Never	Rarely	Some of the time	Most of the time	All of the time	Unsure
<i>Accounting software (using a laptop or desktop computer)</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Accounting software (using a mobile device such as a tablet or smart phone)</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Automatically generated via website or accounting software</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Spreadsheet</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Manual (e.g. paper)</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[\[Show when Q40 is Yes for Invoicing\]](#)

[\[Options displayed dependent on answers in Q8\]](#)

42. Please indicate how often your business uses "bank rules," "saved transactions," "memorised transactions," "recurring transactions" (or similar) in your accounting software when recording the following transaction(s).

(NOTE: Your accounting software may call these features by different names.)

	Never	Rarely	Some of the time	Most of the time	All of the time	Unsure
<i>Recording customer invoices</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Recording receipts of income</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[\[Show when Q8 is Yes for AIS\]](#)

[\[Options displayed dependent on answers in Q40\]](#)

Supplier Bills and Accounts Payable

43. Please indicate how often your business makes payments using the following forms.

	Never	Rarely	Some of the time	Most of the time	All of the time	Unsure
<i>Cash</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Cheques</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Electronic (e.g. direct debit, direct credit, EFTPOS, credit card, PayPal, etc.)</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

44. How often does your business record bills from suppliers?

- As soon as a bill is received
- Once a week
- Some other point after a bill is received, but before it is paid
- Only when a bill is paid
- Other (please specify) _____

45. Please indicate how often your business records supplier bills and accounts payable using the following method(s).

	Never	Rarely	Some of the time	Most of the time	All of the time	Unsure
<i>Accounting software</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Spreadsheet</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Manual (e.g. paper)</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[Show when Q44 is not Only when bill is paid]

[Options displayed dependent on answers in Q8]

46. Please indicate how often your business uses “bank rules,” “saved transactions,” “memorised transactions,” “recurring transactions” (or similar) in your accounting software when recording the following transaction(s).

(NOTE: Your accounting software may call these features by different names.)

	Never	Rarely	Some of the time	Most of the time	All of the time	Unsure
<i>Recording bills from suppliers</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Recording expense payments</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[Show when Q8 is Yes for AIS]

[Options displayed dependent on answers in Q44]

Budgets

47. Does your business prepare budgets?

- Yes
- Haven't, but would like to
- Used to, but not anymore
- Never

48. Please note the main reasons why your business doesn't prepare budgets.

[\[Show when Q47 is Would like to or Never\]](#)

49. Please note the main reasons why you would like to prepare budgets for your business.

[\[Show when Q47 is Would like to\]](#)

50. Please note the main reasons why your business has stopped preparing budgets.

[\[Show when Q47 is Used to\]](#)

51. How did your business record budgets?

- Accounting software
- Spreadsheet
- Manual (e.g. paper)
- Other (please specify) _____
- Unsure

[\[Show when Q47 is Used to\]](#)

52. Did your business seek assistance or advice from an accountant or advisor in preparing the budget?

- Yes
- No
- Unsure

[\[Show when Q47 is Used to\]](#)

53. Please note the main reasons why your business prepares a budget.

[\[Show when Q47 is Yes\]](#)

54. How does your business record budgets?

- Accounting software
- Spreadsheet
- Manual (e.g. paper)
- Other (please specify) _____
- Unsure

[\[Show when Q47 is Yes\]](#)

55. Does your business seek assistance or advice from an accountant or advisor in preparing the budget?

- Yes
- No
- Unsure

[\[Show when Q47 is Yes\]](#)

Management information

56. Please indicate how often each of the following reports are prepared for your business.

	Daily	Weekly	Monthly	Two monthly	Six monthly	Yearly	Never	Unsure
<i>Profit & loss report</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Balance sheet</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Accounts receivable report</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Accounts payable report</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Bank account balance</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Bank reconciliation report</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Sales reports</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Budget / cash flow forecast vs actual</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[\[Options displayed dependent on answers in Q39, Q43 and Q47\]](#)

Advisors and mentors

57. If your business needs advice, for each of the following topics, please indicate who you would most likely seek assistance from.

	Accountant	Solicitor	Friend or family member	Consultant	Bank	Other	Personal research
<i>Selection of accounting software</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Using/training of accounting software</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Cashflow</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Business growth</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Tax planning</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Succession planning</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

58. From your previous question you indicated that your business would seek advice from someone other than an accountant, solicitor, friend or family member, consultant or bank. For each of the following topic(s), please specify who that person is.

- Selection of accounting software _____
- Using/training of accounting software _____
- Cashflow _____
- Business growth _____
- Tax planning _____
- Succession planning _____

[Show when Q57 includes an Other selection – options only show as required]

Opinion

59. Please indicate your level of agreement or disagreement with each of the following statements.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
<i>The accounting software program used by my business is intuitive and easy to understand.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>The accounting software program used by my business is efficient and saves time.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>The accounting software program used by my business helps to manage the business's cashflow.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

60. Please indicate your level of agreement or disagreement with each of the following statements.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
<i>The accounting software program used by my business helps me understand the business.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>The accounting software program used by my business minimises errors in information available to the business.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

61. Please indicate your level of agreement or disagreement with each of the following statements.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
<i>I have the skills and knowledge to operate my business's accounting software program.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>I understand the information produced in the reports provided by my business's accounting software program.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Your business in the community

62. Do you, or anyone in the business, actively participate in any business groups? (select all that apply)

- Chamber of Commerce
- Small business group (please specify) _____
- Professional body (please specify) _____
- Other (please specify) _____
- Do not participate in any business groups [Exclusive function applied on this option]

63. Do you, or anyone in the business, actively participate in any community groups? (select all that apply)

- Lions
- Rotary club
- Sports club
- Children's sports club
- Youth organisations (e.g. Scouts, Guides, St Johns)
- Volunteer emergency services (e.g. fire brigade, St Johns, SAR)
- School board of trustees or school committee
- Other (please specify) _____
- Do not participate in any community groups [Exclusive function applied to this option]

64. Please indicate which forms of advertising are used to promote your business. (select all that apply)

- Word of mouth
- Newspaper/magazines
- Radio/television
- Social media
- Webpage
- Tradeshows
- Other (please specify) _____
- Do not advertise [Exclusive function applied to this option]

65. Please select the option that best describes the reason that your business was started.

- To provide full employment for owner and staff
- To supplement the income of the owner's household
- A hobby of the owner
- Long term investment for the owner
- Other (please specify) _____
- Unsure

66. Please select the option that best describes the future direction of your business.

- To expand and develop your business
- To maintain the current size of your business
- To sell the business
- Other (please specify) _____
- Unsure

67. How many years has your business been operating? (Leave blank if you are unsure.)

- (please specify) _____

68. What year were you born? (Leave blank if you prefer not to answer.)

- (please specify in the format YYYY) _____

Other comments

69. Please note any other comments about your accounting software program and business processes that you believe would be useful to this research.

Further participation

70. Would you be willing to be interviewed as part of this research?

- Yes
 No

71. You have indicated that you are willing to be interviewed as part of this research. Please note that your details provided will only be used by the researcher for the purposes of contacting you for an interview. All answers in this questionnaire will be kept anonymous and confidential.

Name _____
Phone _____
Email _____

[\[Show when Q70 is Yes\]](#)

Thank you for participating!

72. If you know of someone who you believe may like to participate in my study, feel free to forward the following survey link via your own email:

http://lincoln.az1.qualtrics.com/jfe/form/SV_cMiNQhEwvhYEjml

73. Or if you prefer, please provide their details so that I can send them an invitation with a link to this survey.

Name: _____
Email address: _____

74. Please click the Submit your survey in the bottom right hand corner to submit your survey responses.

75. *Thank you for your time!*

Your participation in this survey is appreciated and all answers will be kept anonymous and confidential.

If you have any questions you would like to discuss, I can be contacted at:

Pam Benbow

C301, Faculty of Agribusiness and Commerce, Lincoln University
Ph: 03-423-0251 E: pam.benbow@lincoln.ac.nz

Feel free to forward the following survey link via your own email to others who you think might like to participate in this survey:

http://lincoln.az1.qualtrics.com/jfe/form/SV_cMiNQhEwvhYEjml

Appendix C

Micro Business Interview Package

C.1 Email Invitation to Potential Participants

Dear <participant's name>

My name is Pam Benbow, and I am a PhD candidate at Lincoln University conducting research for my thesis entitled:

Using Accounting Information Systems to Benefit Micro Businesses

Last year you completed a questionnaire as part of my research. The questionnaire asked about general business administrative processes (e.g. GST, payroll, receiving income, payment of expenses, budgets and the use of advisors), tools that are used to capture business information (e.g. accounting software, spreadsheets and paper records) and factors considered in choosing those tools.

In this questionnaire, you indicated a willingness to be interviewed to further explore this topic, in particular the benefits you experience. Are you still willing to discuss your opinions and experiences?

If you are willing, I would like to interview you sometime during <the 2 weeks following date of email>. Interviews are expected to take 45 to 60 minutes and would be undertaken either at your place of business, a location selected by you, or online using Zoom, at a time suitable to you. Your identity in this research will not be made public.

If you are interested in finding out more about this project, I can be contacted by either return email or my details below. If I have not heard from you by <date two days from date of email>, I will phone to discuss your possible participation.

Kind regards,

Pam Benbow

C.2 Research Information Sheet

You are invited to participate in a PhD research project entitled:

Using Accounting Information Systems to Benefit Micro Businesses

The aim of this project is to explore the benefits of using accounting information systems (AIS) in micro businesses.

Your participation in this project will involve an interview about your choice of AIS tools used in capturing business information and the benefits you experience as you use these tools in general business administrative process in relation to the project detailed above. The interview should take approximately 45 to 60 minutes. If you are willing to participate in this research, you will need to sign a consent form. Handwritten notes will be taken. The interview will also be recorded using an audio recording device with your consent. If the interview takes place via Zoom, the consent form will be shared via email and Zoom's recording feature will be used.

Your participation in this research is voluntary. You may withdraw your participation and the information you have provided for the research by informing the researcher prior to 31 October 2021 by telephone or email.

Results of the project will be published in partial fulfilment of the requirements for a PhD at Lincoln University, and may also be published in academic journals and conference proceedings. Participants will be provided with anonymity and their identity will not be made public, or made known to any person other than the researcher and supervisors listed below. Only aggregated data will be included in publications. No information will be presented that would enable individuals to be identified. All data, electronic and printed, will be securely stored in locked or password protected storage.

This project has been reviewed and approved by the Lincoln University Human Ethics Committee. If you have any queries or concerns about your participation in the project, please contact myself or my supervisors; we would be happy to discuss your participation in the project.

The project is being carried out by:

Pam Benbow

C301, Faculty of Agribusiness and Commerce, Lincoln University

Ph: 03-423-0251 E: pam.benbow@lincoln.ac.nz

Supervisors:

Associate Professor Tracy-Anne De Silva

C218, Faculty of Agribusiness and Commerce, Lincoln University

Ph: 03-423-0244 E: tracy-anne.desilva@lincoln.ac.nz

Dr Stuart Charters

SOLA1.29, Faculty of Environment, Society and Design, Lincoln University

Ph: 03-423-0415 E: stuart.charters@lincoln.ac.nz

C.3 Participant Consent Form

I have read and understood the description of the above-named project. On this basis I agree to participate in the project, and I consent to publication of the results of the project in partial fulfilment of the requirements for a PhD at Lincoln University. I understand also that I may withdraw from the project, including withdrawal of any information I have provided, up to 31 October 2021.

I consent to handwritten notes being taken during the interview.

I consent to the interview being recorded on an audio device.

Following the interview, I wish to have the opportunity to read and amend the transcript of the interview conducted with me.

Signature: **Date:**

**Full Name
(printed)**

C.4 Interview Guide

Business background

Q1. First, I'd like to thank you for completing my questionnaire. The questionnaire focused on your general business administrative processes and the tools that you use to capture business information. I would like to further explore this, focusing on how and why you chose the tools that you use, and the benefits they provide to you and your business.

To set the scene, can you briefly share with me, what your business does? (ie industry)

AIS system/use of technology

Q2. In the questionnaire you indicated you do/do not use AIS. Is this still the case?

Is it still _____?

[Xero] – which plan do you use?

[MYOB] – do you use the new cloud version or the desktop version?

[Other – explore to determine cloud vs desktop, frequency of update]

Can you tell me how you came to the decision to use AIS? [“the origin story”]

How did you start using the AIS?

Did you seek any advice and/or training?

Have you used the same AIS throughout?

“No” – reasons for changing?

How do you use AIS in your day-to-day operations?

Do you use any mobile apps that link through to your AIS?

How does the AIS support your long-term strategic decision-making?

What are the benefits of using AIS?

Thinking about the processes that you currently use AIS for, if you had to complete these manually, how would this impact you and your business?

Examples of processes:

Day-to-day operations:

Invoicing, payments received

Payment of bills

Bank reconciliation

Inventory management

Daily cash flow management

GST preparation

Q3. In the questionnaire you indicated you do/do not use spreadsheets. Is this still the case?

Does anyone else access your spreadsheets?

How do you share your spreadsheets?

How do you use spreadsheets in your day-to-day operations?

How do spreadsheets support your long-term strategic decision-making?

What are the benefits of using a spreadsheet?

Would you consider using AIS software to complete the same processes?

“No” – why?

(Depending on barrier) If that barrier is removed, would you consider automating?
Why?

“Yes” – why?

Why have you not already made this change?

(Depending on barrier) If that barrier is removed, would you consider automating?
Why?

How would you and your business benefit from automating the processes?

Thinking about the processes that you currently use spreadsheets for, if you had to complete these manually, how would this impact you and your business?

Q4. In the questionnaire you indicated you do/do not have manual processes. Is this still the case?

What are the manual processes in your day-to-day operations?

How do these manual processes support your long-term strategic decision-making?

What are the benefits of using a manual approach?

Would you consider using AIS software to complete the same processes?

“No” – why?

(Depending on barrier) If that barrier is removed, would you consider automating?
Why?

“Yes” – why?

Why have you not already made this change?

(Depending on barrier) If that barrier is removed, would you consider automating?
Why?

How would you and your business benefit from automating this process?

Conclusion

Q5. Is there any other information that you believe would be useful to my research on AIS adoption and use?

[If requested] I will email you the transcript for you to review once I have transcribed this interview.

Thank you for your time.

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