

Tying the knot – linking bootstrapping and working capital management in established enterprises

Bootstrapping
and working
capital
management

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Abstract

Purpose – Bootstrapping is a practitioner-based term adopted in entrepreneurship to describe the techniques employed in micro, small and medium-sized enterprises (MSMEs) to minimise the need for external funding by securing resources at little or no cost and applying strategies to effectively use resources. Working capital management (WCM) is a term used in financial management to define a set of practices used to manage business resources, including cash management. This paper explores the overlap and divergence between these two disciplinary distinct concepts.

Design/methodology/approach – A dual methodology is employed. First, the usage of the two terms in prior literature is analysed and synthesised. Second, the study uses factor analysis to explore how bootstrapping practices described by owners of 167 established MSMEs relate to the components of WCM in financial management.

Findings – The factor analysis identifies two main bootstrapping practices employed by MSMEs: (1) delaying payments and owner-related bootstrapping and (2) customer-related bootstrapping. Delaying payments is an integral practice in trade payables management and customer-related bootstrapping includes practices that are integral to trade receivables management. Therefore, links between bootstrapping practices and WCM practices are firmly established.

Research limitations/implications – The study is not without limitations. Based on cross-sectional evidence for established firms in Ireland only, future studies could explore cross-country longitudinal panel data to fully examine life cycle and sectoral effects, as well as other external shocks (for example, COVID-19) on bootstrapping and WCM practices. This study does not explain why some factors (for example, joint utilisation and inventory management) are present in some bootstrapping studies and not in others; further case study research might help explain this. Finally, changes in the business environment facing start-ups and established enterprise, including increased digitalisation, online trading, self-employment, remote hub working and sustainability, offer new avenues for bootstrapping research.

Originality/value – This is the first study to comprehensively explore the conceptual and empirical links between bootstrapping and WCM. This study will enable researchers and practitioners in these two distinct disciplines to learn from each other. Accounting researchers and practitioners can broaden their understanding of how WCM “works” in MSME settings. Similarly, entrepreneurship researchers and practitioners can deepen their understanding of how bootstrapping can be adopted by businesses to manage resources effectively.

Keywords Bootstrap finance, Bootstrapping, Working capital management, Financial management

Paper type Research paper

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1. Introduction

Bootstrapping derives from the expression “pulling yourself up by your own bootstraps,” meaning to achieve something using your own, if somewhat limited, resources. Originally applied at the turn of the twentieth century, to an individual’s efforts for self-advancement in the world, the metaphor has been adopted by several disciplines including, business, statistics [1] and computing to describe a self-starting process that continues without external input. In the business context bootstrapping is a practitioner term used by venture capitalists, investors and entrepreneurs to describe founders’ efforts to start and grow their ventures using little or no external capital, or “pulling the business up by its bootstraps”. In the academic literature it is referred to as “bootstrap finance” (Bhide, 1992), “bootstrap financing” (Block *et al.*, 2022; Carter and Van Auken, 2005), “financial bootstrapping” (Winborg, 2015), or simply “bootstrapping” (Brush *et al.*, 2006), which is the term used in this paper. The term is attributed to Bhide (1992) who first highlighted how fast growth start-ups in the USA managed to grow by acquiring resources without using traditional types of funding.

Whilst bootstrapping is often associated with start-ups, established businesses also engage in bootstrapping practices in order to preserve a critical level of liquidity in periods of financial crisis (Block *et al.*, 2022). In fact, internal sources of financing dominate in the micro, small and medium-sized enterprise (MSME) sector, with some 30% of European Union (EU) MSMEs using no external funding (Moritz *et al.*, 2015) highlighting a greater need to understand how businesses fund their day-to-day trading activities. The bootstrapping and working capital management (WCM) literatures both address this aspect of business financing however, the literature to date fails to acknowledge the apparent connections between the two to any meaningful extent. Using factor analysis this paper addresses the question regarding how the methods of bootstrapping relate to WCM.

The objective is to develop stronger links between the disciplinary distinct concepts of bootstrapping and WCM. Starting with Winborg and Landström (2001), over time bootstrap researchers have used surveys of business owners to identify financing practices using their own terms and employed factor analysis to synthesise the findings. This paper explores how these factors for bootstrapping relate to the components of WCM. Bootstrapping is a set of techniques employed by entrepreneurs to minimise the need for external funding by securing resources at little or no cost and by applying strategies to effectively use resources (Winborg and Landström, 2001). Concurrently, WCM is a well-established term primarily used in accounting and financial management to describe the set of practices used to manage the business’s resources, including cash management (McLaney and Atrill, 2014). Traditionally, the concepts are associated with two separate bodies of literature. Bootstrapping is primarily linked to the entrepreneurship and small business literature, whilst WCM is mainly associated with the accounting and financial management literature. Therefore, adopting an interdisciplinary approach to explore the overlap between these two disciplinary distinct concepts provides a valuable contribution to the literature and provides the opportunity for researchers and practitioners from both disciplines to learn more about how working capital and bootstrapping are applied in practice.

Using survey data from 167 established MSMEs in Ireland, the analysis identifies two main bootstrapping factors (delaying payments with owner-related bootstrapping and customer-related bootstrapping). Both bootstrapping factors are integral components of WCM practices. However, our analysis of 34 key studies between 1992 and 2022 in the field reveals that only three studies consider links between the two concepts. Bosse and Arnold (2010) suggest businesses should consider trade discount strategies as a source of bootstrapping finance, Lam (2010) highlights that businesses can minimise their working

capital by negotiating payment terms with both customers and suppliers, and [Fadil and St-Pierre \(2021\)](#) suggest that some bootstrapping practices could be considered WCM practices. However, this is the first study to systematically detail the links between the practices of bootstrapping and WCM. The findings provide important insights for business owners, business advisors and business training providers, regarding how these two concepts overlap in real-life businesses. Firstly, it documents the development of both concepts within the respective disciplines and identifies concept cross-references in key studies and journals. It then examines conceptual links based on survey data of established firms. Therefore, the findings of this study will provide accounting researchers and practitioners with an opportunity to contextualise how WCM assists in the financing of MSMEs. Similarly, entrepreneurship researchers and practitioners can deepen their knowledge of financial management by gaining an understanding of the principles of WCM and, especially, the cash conversion cycle.

The paper is structured as follows. Section two, the literature review, examines the historical development of each of the concepts within their specific disciplines and culminates with an analysis of concept cross referencing within key studies and key journals. Section three highlights the research methodology adopted, whilst Section four presents the results followed by a discussion of those results in Section five. Section six emphasises some valuable contributions and concluding comments.

2. Literature review

Two separate bodies of literature have evolved around the disciplinary distinct, but conceptually similar, practices of bootstrapping and WCM. In this overview of the prior literature the two concepts are outlined, and then similarities and differences between the two traditions are examined.

2.1 Bootstrapping

Over the past 30 years a body of literature has developed around the concept of bootstrap finance, now generally referred to as bootstrapping. Since the term was coined and developed in [Bhide's \(1992\)](#) article in the Harvard Business Review, it has received considerable attention, particularly in the entrepreneurship and small business literature. Following the seminal studies by [Bhide \(1992\)](#), [Winborg and Landström \(2001\)](#) and [Ebben and Johnson \(2006\)](#), most researchers agree that bootstrapping is a concept which refers to acquiring resources without using traditional types of funding, such as bank lending or equity. Empirical studies continue to highlight the importance of bootstrapping as a method of finance for businesses, including more recently [Fadil and St-Pierre \(2021\)](#) and [Block *et al.* \(2022\)](#). The literature to date primarily focuses on bootstrapping as a source of funding for start-up businesses; however, a small number of studies including, [Ebben \(2009\)](#) and [Neeley and Van Auken \(2012\)](#) confirm that bootstrapping can alleviate liquidity problems in established businesses.

Whilst there is no universally accepted definition of bootstrapping, there are accepted methods of bootstrapping identified in the literature ([Mac An Bhaird and Lynn, 2015](#)). The seminal bootstrapping study by [Winborg and Landström \(2001\)](#) gathered qualitative and quantitative data from small Swedish businesses to identify the 25 most used bootstrapping methods. Using factor analysis, the authors identified six factors. Four of these factors have formed the basis for subsequent studies (including those by [Ebben and Johnson \(2006\)](#), [Jones and Jayawarna \(2010\)](#), [Neeley and Van Auken \(2012\)](#), [Grichnik *et al.* \(2014\)](#)). These four factors include: customer-related bootstrapping, delaying payments bootstrapping, owner-related bootstrapping and joint utilisation bootstrapping. Customer-

related bootstrapping was found to include all methods to secure payments early from customers. Delaying payments bootstrapping included securing the best conditions from suppliers and delaying payments where possible to creditors. Owner-related bootstrapping included the owner putting money into the business and making sacrifices to avoid taking money from the business and where necessary securing family loans for the business. Joint utilisation included sharing resources with other businesses, bartering and buying second hand.

Bootstrapping also has been found to fill a resource dependency gap and is used in place of more traditional finance, as posited in multiple studies. Businesses that rely on minimising accounts receivable and inventory tend to be well established stable businesses (Winborg and Landström, 2001). Ebben and Johnson (2006) examined well-established small businesses and found customer-related bootstrapping increased (38.4%) or stayed the same (39.1%) and delaying payments decreased (55.6%) or stayed consistent (28.9%). Owner-related methods decreased (65%) or stayed the same (27%) and joint utilisation decreased (47.2%) or was maintained (33.3%). In effect, customer-related bootstrapping was the only method that increased over time as relationships developed and perhaps as business owners became more adept at WCM, especially cash management. Ebben (2009) examined established businesses and found lower liquidity businesses relied on owner-related bootstrapping and joint utilisation methods. Prior research by Ebben (2009), Jones and Jayawarna (2010) and Neeley and Van Auken (2012), indicate that new businesses and less liquid established businesses rely on owner-related bootstrapping and established stable businesses rely more on customer-related bootstrapping and minimising accounts receivable bootstrapping (Winborg and Landström, 2001).

Finally, bootstrapping routines provide stability and can demonstrate to external financial providers that entrepreneurs act prudently with money (Patel *et al.*, 2011). Grichnik and Singh (2010) found that owners used bootstrapping voluntarily rather than it being involuntarily imposed on them. Mac An Bhaird and Lynn (2015) found bootstrapping to be an essential resource-management strategy for the growth and survival of computer software companies. Neeley and Van Auken (2012) found that most techniques of bootstrapping were used to enhance cash flow. Of the top five techniques used, three were customer-related (invoicing customers promptly, stopping sales to late-paying customers and giving preference to early-paying customers) (Neeley and Van Auken, 2012).

Few accounting researchers have written about bootstrapping and thus there is a lack of research using a financial management perspective. Many seminal bootstrapping authors come from other fields including: entrepreneurship, business administration and/or finance. Hence, the focus tends to be on bootstrapping as a source of finance in the entrepreneurship literature, rather than its role in the wider financial management aspects of a business. Bootstrapping will not be the same for all businesses and will reflect variations in age, size, sector, owners' preferences, economic conditions, legal, institutional and cultural factors. However, this heterogeneity is not well documented in prior literature.

2.2 Working capital management

The concept of WCM has existed in financial management and accounting for over 100 years. Westerman (2015) traces the origins of WCM back to 1900 and acknowledges how an accounting perspective on WCM evolved around 1930. Today, the term WCM is synonymous with financial management and is widely discussed in accounting and financial management literature. Financial management involves managing a business's resources, including cash management. WCM is a key component of financial management. The efficiency of WCM is based on speeding up cash collections and slowing down cash payments (Enqvist *et al.*, 2014).

The core elements of WCM are the efficient management of cash, accounts receivable, accounts payable and inventories (Paul and Boden, 2011). The aim is to achieve an optimal balance for each, because how working capital is managed can affect a business's profitability and risk (Baños-Caballero *et al.*, 2012). Businesses that manage their working capital more efficiently can finance a greater portion of their operation via payables, thus reducing the need for outside finance (Richards and Laughlin, 1980). The flow of cash from suppliers to inventory to accounts receivable and back to cash is referred to as the cash conversion cycle (Shin and Soenen, 1998).

The financial management and accounting literature examines WCM using the cash conversion cycle as a measure, which is established by calculating ratios for each element of working capital. The cash conversion cycle reflects the length of time between the start of the production process, when cash leaves a business and the sale of the final product, when cash comes back into the business (inventory days + receivable days – payable days). The better the three elements (inventories, trade receivables and trade payables) are managed the more efficient the business is in generating cash flow.

The prevalence of WCM reflects standard guidelines used by accountants worldwide known as the generally accepted accounting principles (GAAPs). The most common GAAPs worldwide are the International Financial Reporting Standards (IFRSs), which include International Accounting Standards (IASs) and are issued by the International Accounting Standards Board (IASB) (IASB, 2023). Preparation of financial statements by accountants is undertaken in line with rules set by the IASs and the IFRSs. Therefore, it is no surprise that the use of ratios, which is embedded during accounting training, is a common approach adopted to explore WCM in the field of accounting and financial management.

The literature on the elements of WCM refers to some of the components as a source of finance, with trade credit being the most prominent source (Giannetti *et al.*, 2011; Carbó-Valverde *et al.*, 2012; Ogawa *et al.*, 2013). There is also support for trade credit use in start-up businesses by Huyghebaert (2006). Lawless *et al.* (2015) outline that trade credit provides advantages over bank debt in terms of flexibility and cash flow management, whilst Paul and Boden (2014) acknowledge that trade credit is an important source of finance for SMEs. Furthermore, several studies emphasise how trade credit is often used in place of external sources of finance by SMEs (Cuñat, 2007; Casey and O'Toole, 2014; McGuinness and Hogan, 2018). Customer credit is the other side of trade payables and part of WCM, which arises when a business sells goods or services on credit and waits to get paid. If monies received in take longer than monies paid out, funding gaps arise (Paul and Boden, 2014). Little work has been done in Europe to assess the role of customer credit rather than supplier credit as a source of finance (Cressy and Olofsson, 1997).

This overview of the WCM literature resonates with some of the bootstrapping practices highlighted in Section 2.1 and similarities and differences are considered in the next section.

2.3 Reflections on the two literature traditions

Reflecting on the concepts of bootstrapping and WCM some key observations emerge. Bootstrapping is seen as a relatively new term in the literature, compared to WCM, but more importantly it emerges that bootstrapping is mainly discussed in the entrepreneurship literature, whilst WCM is a term primarily associated with the accounting and financial management literature. Few bootstrap researchers view bootstrapping as a practice born of financial management or accounting. This reflects disciplinary traditions, whereby accounting researchers focus on larger publicly listed firms, whilst bootstrapping researchers focus on start-ups and smaller owner managed businesses.

The concepts of cash conversion cycle and/or WCM, have not been explicitly linked and discussed in the bootstrapping literature. However, when both sets of literature are reflected upon, links are evident. For example, in [Table 1](#) a sample of seminal bootstrapping academic papers are presented to demonstrate that elements of the cash conversion cycle are evident in the bootstrapping literature.

As outlined in [Table 1](#), managing the timing of payments from customers was found to be one of the bootstrapping methods by [Winborg and Landström \(2001\)](#), [Ebben and Johnson \(2006\)](#), [Jones and Jayawarna \(2010\)](#) and [Grichnik et al. \(2014\)](#). The method is consistent with accounts receivables management from a WCM perspective. The latter authors also identified delaying payments to suppliers as part of bootstrapping, which mirrors accounts payable management from a WCM perspective. Both accounts receivable and accounts payable form part of the cash conversion cycle. [Ebben and Johnson \(2011\)](#) studied the impact of the cash conversion cycle, liquidity and capital on performance in businesses. Whilst they referred to the fact that small businesses with shorter cash conversion cycles require lower levels of invested capital, they did not make a direct connection between the cash conversion cycle and bootstrapping. [Ebben and Johnson \(2006\)](#) found joint utilisation decreases over time and decreases in established businesses with lower liquidity.

Furthermore, [Neeley and Van Auken \(2012\)](#) refer to invoicing customers promptly, stopping sales to late-paying customers and giving preference to early-paying customers as methods associated with bootstrapping, which again are key elements of WCM. From this examination the presence of the elements of WCM in the bootstrapping literature are acknowledged. However, one noteworthy difference between the two domains is ratio analysis (for example: receivable days, payable days and inventory days).

Factors	Winborg and Landström (2001)	Ebben and Johnson (2006)	Jones and Jayawarna (2010)	Grichnik et al. (2014)
<i>Accounts receivable</i>				
Cease business relations with late payers	X	X		X
Use routines for speeding up invoices	X	X	X	X
Use interest on overdue accounts	X	X		X
Offer the same conditions to all customers	X			
Offer customers discounts if paying cash	X	X	X	X
Choose customers who pay quickly	X	X		X
Obtain advance payments		X	X	X
<i>Delaying payments</i>				
Delay payment to suppliers	X	X	X	X
Better conditions negotiated with Suppliers	X		X	X
<i>Minimise Inventory</i>				
Use routines to minimise stock	X			

Table 1.
Overlap between working capital management components and bootstrapping

Source(s): Table created by author

The entrepreneurial literature on bootstrapping pays little or no attention to the use of ratios, whilst ratios are deeply embedded in research on WCM in the accounting and financial management literature.

Another notable overlap in the domains, is that both bootstrapping and WCM are considered a source of finance for businesses. In the entrepreneurship literature the term bootstrapping is primarily discussed in the context of being an important source of finance, particularly for start-up businesses (Brush *et al.*, 2006; Atherton, 2012) and is acknowledged as helping to alleviate liquidity problems (Ebben, 2009; Neeley and Van Auken, 2012). Whilst, in the accounting and financial management literature, WCM practices such as delaying payment to suppliers and more prompt collection of amounts owed from customers are commonly referred to as a short-term source of finance that help alleviate liquidity problems (Cuñat, 2007; McGuinness and Hogan, 2014; Paul and Boden, 2014). This shared perspective on addressing liquidity problems confirms the links between bootstrapping and WCM. These connections have not been discussed to any meaningful extent in the prior literature and Table 2 highlights that the terms WCM (or cash conversion cycle) and bootstrapping seldom appear in the same research paper.

Table 2 presents the results of an analysis of cross disciplinary referencing of WCM and bootstrapping in seminal articles. It identifies when the concept of WCM is used in the bootstrapping literature and if the concept of bootstrapping is referenced in the WCM literature. This systematic analysis highlights that the WCM literature does not acknowledge the concept of bootstrapping as none of the academic articles reviewed mention the word “bootstrapping”. However, the bootstrapping literature acknowledges the concept of WCM, with nine of the 34 articles reviewed mentioning the term. Upon further investigation, only three of these nine articles (Bosse and Arnold, 2010; Lam, 2010; Fadil and St-Pierre, 2021) consider the link between both concepts. Bosse and Arnold (2010) and Lam (2010) refer to the trade credit element of WCM as an important form of bootstrapping. Whilst Fadil and St-Pierre (2021) suggest that some bootstrapping practices could be considered WCM practices.

Overall, this review of the literature suggests that bootstrapping and WCM share some similar practices. The customer-related and delaying payments factors of bootstrapping mentioned previously resonate strongly with trade receivables and trade payables management aspects of WCM. Whilst bootstrapping incorporates additional practices, referred to as owner-related (for example—owner withholding salary, owner working elsewhere to fund the business and taking family loans) and joint utilisation factors (for example – sharing premises, equipment and/or employees). The absence of these practices from the WCM literature is not surprising as it focuses solely on managing existing current assets and current liabilities of the business. This may be the reason why the practice-based bootstrapping evolved as a distinct concept. Given the limited acknowledgement of both concepts in the respective literature, we argue that it is important for research to develop stronger connections between these similar, yet discipline distinct, concepts based on empirical evidence. Thus, *our primary research question is: How are the factors for bootstrapping related to the components of WCM in established businesses?*

3. Research methodology

To answer the research question, the authors explore how the factors for bootstrapping relate to the components of WCM in established businesses. A review of the literature identified four agreed factors in bootstrapping research to date including (1) customer-related, (2) delaying payments (3) owner-related and (4) joint utilisation methods (Ebben and Johnson, 2006). In accounting terminology factor 2 would be classified as trade payables management,

Bootstrapping literature articles	Presence of WCM in bootstrapping article	WCM literature articles	Presence of bootstrapping in WCM Article
Atherton (2012)	No	Baños-Caballero <i>et al.</i> (2012)	No
Barker (2002)	No	Berger and Udell (1998)	No
Bhide (1992)	No	Biais and Gollier (1997)	No
Block <i>et al.</i> (2022)	No	Carbó -Valverde <i>et al.</i> , 2012	No
Bosse and Arnold (2010)	Yes	Carpenter and Petersen (2002)	No
Boussouara and Deakins (1999)	No	Casey and O' Toole (2014)	No
Brush <i>et al.</i> (2006)	No	Choi and Kim (2005)	No
Carter and Van Auken (2005)	No	Cressy and Olofsson (1997)	No
Ebben (2009)	Yes	Cuñat (2007)	No
Ebben and Johnson (2006)	No	Enqvist <i>et al.</i> (2014)	No
Ebben and Johnson (2011)	Yes	Giannetti <i>et al.</i> (2011)	No
Fadil and St-Pierre (2021)	Yes	Huyghebaert (2006)	No
Freear and Wetzel (1990)	No	Lawless <i>et al.</i> (2015)	No
Grichnik and Singh (2010)	No	Lee and Stowe (1993)	No
Grichnik <i>et al.</i> (2014)	No	Long <i>et al.</i> (1993)	No
Harrison <i>et al.</i> (2004)	Yes	McGuinness and Hogan (2018)	No
Jayawarna <i>et al.</i> (2011)	No	Nilsen (2002)	No
Jayawarna <i>et al.</i> (2015)	No	Paul and Boden (2011)	No
Jones and Jayawarna (2010)	Yes	Paul and Boden (2014)	No
Lahm and Little (2005)	No	Petersen and Rajan (1997)	No
Lam (2010)	Yes	Ogawa <i>et al.</i> (2013)	No
Mac An Bhaird and Lynn (2015)	No	Richards and Laughlin (1980)	No
Malmstrom (2014)	Yes	Shin and Soenen (1998)	No
Neeley and Van Auken (2010)	No	Smith (1987)	No
Neeley and Van Auken (2012)	No	Westerman (2015)	No
Patel <i>et al.</i> (2011)	Yes	Wilner (2000)	No
Rutherford <i>et al.</i> (2012)	No		
Tomory (2011)	No		
Vanacker <i>et al.</i> (2011)	No		
Van Auken and Neeley (1996)	No		
Waleczek <i>et al.</i> (2018)	No		
Winborg (2009)	No		
Winborg (2015)	No		
Winborg and Landstrom (2001)	No		

Table 2.

Analysis of cross disciplinary referencing of working capital management (WCM) and bootstrapping in literature

Source(s): Table created by author

whilst factor 1 and factor 3 corresponds to trade receivables management. Trade receivables and trade payables management, both components of WCM, have been identified as factors for bootstrapping by prior researchers including the seminal studies of [Winborg and Landström \(2001\)](#), [Ebben and Johnson \(2006\)](#), though they were not identified as such in the literature.

In addition, the practice of customer-related bootstrapping and delaying payments bootstrapping have been found to increase over the life cycle of a business ([Ebben and Johnson, 2006](#)). This could be because as the business becomes more established,

relationships with customers are strengthened and because experience teaches the business owner the importance of cash flow management and WCM. Thus, this research seeks to clarify how the factors for bootstrapping include the components of WCM in established businesses.

3.1 Study context

This study explores bootstrapping in MSMEs in Ireland after the global financial crisis period of 2007–2009. A significant change occurred in MSME funding from April 2009 to September 2012, across Europe with an increase in trade credit usage from 15% to 27% (SAFE, 2012). In Ireland, the share of MSMEs using bank finance for working capital or investment fell by 50% between 2005 and 2012 (Lawless *et al.*, 2013). In the aftermath of the financial crisis, a key component of constraint was borrower discouragement (Lawless *et al.*, 2013). In 2014 on average 35% of European MSMEs were financially constrained with discouraged borrowing accounting for 8% (SAFE, 2014). The figures were even higher in Ireland where 55% of MSMEs reported being financially constrained of which 15% were discouraged borrowers (SAFE, 2014). These prior study findings lack detailed information on what was happening at an organisational level and an analysis of bootstrapping practices can provide detailed information on what was happening with internal funding at an organisational level in the aftermath of the crisis.

3.2 Methodology and sample

This study is based on evidence from 167 established micro, small and medium-sized enterprises (MSMEs) that were surveyed in 2014. The data was collected from members of business networking groups including: (1) Business Network International (BNI), (2) Management Works, (3) Business-to-Business, (4) Chamber of Commerce and (5) Smart Leads. Of the 576 owner-managers contacted, 207 completed the survey questionnaire, giving a response rate of 36%. In total, 37 respondents were eliminated, resulting in 170 valid responses (29.5% response rate). Mahalanobis distance, a statistical tool to determine outliers based on a chi squared distribution (Tabachnick and Fidell, 2007), was then used for bootstrapping and financial management variables in the remaining sample. This measures the distance between one point and a distribution, evaluating the amount of standard deviations the point is from the mean of the distribution. Three responses were identified as outliers and eliminated, which left 167 valid respondents, given a response rate of 29%. The respondents were asked to identify the bootstrapping methods they employed based on Winborg and Landström (2001) list plus the motives for using bootstrapping. Data analysis involved conducting tests for common method bias (CMB) with established recommendations to test for CMB by Podsakoff and Organ (1986) employed.

4. Results

4.1 Descriptive statistics

Table 3 outlines the business characteristics of the survey respondents including: legal form, number of employees, age and sector. The mean age was 13.4 years and the standard deviation 10.96 years. Thirty two percent of the businesses were aged six to ten years. Seventy-nine percent of the businesses were micro businesses and 20% were small or medium sized enterprises.

Sixty eight percent of the businesses were limited companies and 45% consulting/service enterprises, thereby being the most dominant sector.

Business profile	Percent	Number
<i>Legal form</i>		
Sole Trader	29	49
Partnership	3	4
Franchise Owner	1	1
Limited Company	67	113
<i>Totals</i>	<i>100</i>	<i>167</i>
<i>Number of employees</i>		
Micro (Less than 10)	79	132
Small and Medium	21	35
<i>Total</i>	<i>100</i>	<i>167</i>
<i>Age of business</i>		
1–5 years	24	41
6–10 years	32	53
11–15 years	18	30
16–20 years	6	10
21–25 years	8	13
26+ years	12	20
<i>Total</i>	<i>100</i>	<i>167</i>
<i>Sector</i>		
Manufacturing	9	15
Construction	10	17
Agriculture	1	1
Trade	8	13
Hotel/restaurant	3	5
Consulting/service	45	75
Transport	2	4
Other	22	37
<i>Total</i>	<i>100</i>	<i>167</i>

Table 3.
Descriptive statistics of
business
characteristics

Source(s): Table created by author

4.2 Factor analysis

Factor analysis was undertaken to determine factors for bootstrapping methods. Exploratory factor analysis has been used in prior bootstrapping research (Brush *et al.*, 2006; Ebben and Johnson, 2006; Ebben, 2009; Jones and Jayawarna, 2010; Grichnik and Singh, 2010; Grichnik *et al.*, 2014). Exploratory factor analysis is a statistical tool that can take a large amount of data and reduce it to a smaller set of summary variables to help explain the underlying structure of the phenomena. Past research provided details on the 40 bootstrapping methods used in this study. Of the 40 methods, 15 methods were not normally distributed and were eliminated, leaving 25 bootstrapping methods. In this study, the aim is to reduce the 25 types of bootstrap financing methods to provide a better understanding of the bootstrap practices used by established firms. Each observed variable is potentially a measure of every factor, and the goal of exploratory factor analysis is to determine the relationships between the variables and factors and to identify the strongest relationships. The Kaiser–Meyer–Olkin (KMO) tests if the data collected is suitable for factor analysis. It measures the adequacy of each variable individually and for the overall model. Winborg and Landström (2001) also used this process in their seminal paper.

Principal component analysis was used, as it focuses on extracting the minimum number of factors to account for the maximum amount of variance in the original

variables. Principal component analysis is a reduction method to reduce large amounts of data by transferring the large sets of variables to smaller ones that contain almost all of the information in the larger set. Prior researchers identifying factors for bootstrapping in established businesses used factor extraction and varimax rotation to do this (Ebben and Johnson, 2006; Ebben, 2009).

Examination of the rotated component matrix for the bootstrapping types indicates that eight factors with eigenvalues over 1 were identified, explaining 64.06% of the total variance. This is a very acceptable level (Hair *et al.*, 1998). Cross-loadings at 0.4 or above were removed and five factors remained which explained 65.28% of the total variance. These factors are outlined in Table 4.

Values of 0.7 in the bootstrapping methods or above provide evidence that a construct has been captured (Hair *et al.*, 1998). Each factor was tested for reliability using Cronbach's alpha. The criteria for keeping the factors included a Cronbach's alpha of above 0.7. Factor 3 was below 0.7 and was removed. Only two factors, 1 and 2, had a Cronbach's alpha over 0.7.

The two reliable bootstrapping factors identified – delaying payments and owner-related (Factor 1) and customer-related (Factor 2) are outlined in Table 5. These findings align with those from prior studies (Winborg and Landström, 2001; Carter and Van Auken, 2005; Brush *et al.*, 2006; Ebben and Johnson, 2006; Jones and Jayawarna, 2010; Grichnik *et al.*, 2014). Business size, age and sector were controlled for, similarly to prior researchers (Jones and Jayawarna, 2010).

Factor 1 is named delaying payments and owner-related bootstrapping methods. In Winborg and Landström (2001), these methods loaded as two separate factors but as one factor in this study, similar to Ebben and Johnson (2006). If the methods of bootstrapping in Factor 1 are further examined, it is clear they all relate to managing cash shortages in the business. This can be done using owner-related bootstrapping methods (loans from family or

Factor loadings	Number of items	Cronbach's alpha
Factor 1	5	0.847
Factor 2	4	0.713
Factor 3	2	0.630
Factor 4	3	0.380
Factor 5	4	0.508

Source(s): Table created by author

Table 4.
Cronbach's alpha for
factors for
bootstrapping methods

Bootstrapping factors

Factor 1: Delaying payments and Owner-related bootstrapping

Business deliberately delays paying other taxes to Revenue
Business deliberately delays paying value added tax
Business deliberately delays paying suppliers
Loans from other family members
Owner's salary was withheld

Factor 2: Customer-related bootstrapping

Invoice issued immediately when the order was placed
Offered customer the opportunity to pay online using credit card
Full payment required at point of order
Obtained payment in advance from customer

Source(s): Table created by author

Table 5.
Factors for
bootstrapping methods

withholding the owner's salary) or by delaying the outflow of cash (delaying paying suppliers and Revenue (the Irish Taxation Authorities)). The delaying payments component involves delaying paying suppliers and delaying paying taxes (value-added taxation (VAT) and other taxes) to the Revenue, both practices are implemented to manage the timing of cash outflows from a business. The owner-related component involves strategies the business owner uses to either avoid taking cash from the business, for example not taking a salary or to assist the business with cash by getting a loan from family or friends. These are practices to avoid reducing cash outflows or to increase cash inflows for the business. Perhaps a more appropriate name for Factor 1 could be financial resource management however, the methods of bootstrapping within this factor fall under categories identified by prior researchers; therefore, it was decided to name the factor in accordance with prior research. Ebben and Johnson's (2006) businesses had a mean age of 13.99 years. In the current study, businesses had a mean age of 13.41 years. The findings from the current study, of delaying payments and owner-related bootstrapping methods loading on one factor, confirm Ebben and Johnson's (2006) findings for businesses of a similar age.

Factor 2 includes four customer-related bootstrapping practices: invoice issued immediately when the order was placed, offered customer the opportunity to pay online using a credit card, full payment required at point of order and obtained payment in advance from customer. All four are practices implemented by businesses to ensure that cash is received as quickly as possible from customers and supports the increased importance of customer relationships as a business develops (Ebben and Johnson, 2006).

Reflecting on the bootstrapping factors identified earlier, three of the four methods (customer-related, delaying payments and owner-related) are present in the findings in this study and thus corroborate prior studies. The fourth factor, joint utilisation bootstrapping is not evident, this reflects how prior studies have mixed results in this regard. Joint utilisation bootstrapping was found in both new (Winborg and Landström, 2001) and established businesses (Ebben and Johnson, 2006). However, in a later study, Ebben (2009) examined businesses with a mean age of 38 years and did not find joint utilisation present as a bootstrapping factor. In this study, the survey of established businesses revealed that the sharing of premises, employees and/or equipment was not commonplace.

Having established the bootstrapping practices at play in the surveyed firms, the focus turns to exploring how these factors map onto the components of WCM and owner-related methods. One of the components of WCM is the management of trade payables, by examining how long it takes the business to pay suppliers and other creditors. Businesses then evaluate the number of days they find and seek methods to extend their days before they pay suppliers. The Factor 1 bootstrapping component of delaying payments involves deliberately delaying paying suppliers. This is in effect similar to the trade payables element of WCM, ensuring the business has longer before it parts with its cash to suppliers.

Another component of WCM is the management of trade receivables. This involves evaluating how many days it takes the business to get money in from trade receivables and implementing practices to reduce that period. Bootstrapping Factor 2 identified in this study is customer-related bootstrapping and it includes four methods of bootstrapping. These four methods of bootstrapping are designed to get money in as fast as possible from customers and are effectively practices linked with trade receivables management in WCM. A slight difference in these bootstrapping methods compared to trade receivables management is that three of these methods involve not giving credit to customers by collecting the money from customers straight away, with only one ensuring efficiency in debt collection by getting the invoice out straight away. However, the fundamental aim of customer-related bootstrapping methods and the trade receivables management practices within WCM is the same, that is, to collect money owed from customers as fast as possible to improve cash flow in the business.

Turning to the owner-related bootstrapping component of Factor 1, it is evident that it is the only bootstrapping factor identified in this study that appears to be not directly linked to the components of WCM. This is because owner-related bootstrapping methods are business decisions to reduce taking cash from the business (for example the owner does not take a salary) or to increase cash in the business (for example the introduction of family loans) by means which are directly attributable to the owners' personal resources. These would not be expected to form part of WCM as WCM relates solely to the efficient management of current assets and current liabilities in the business.

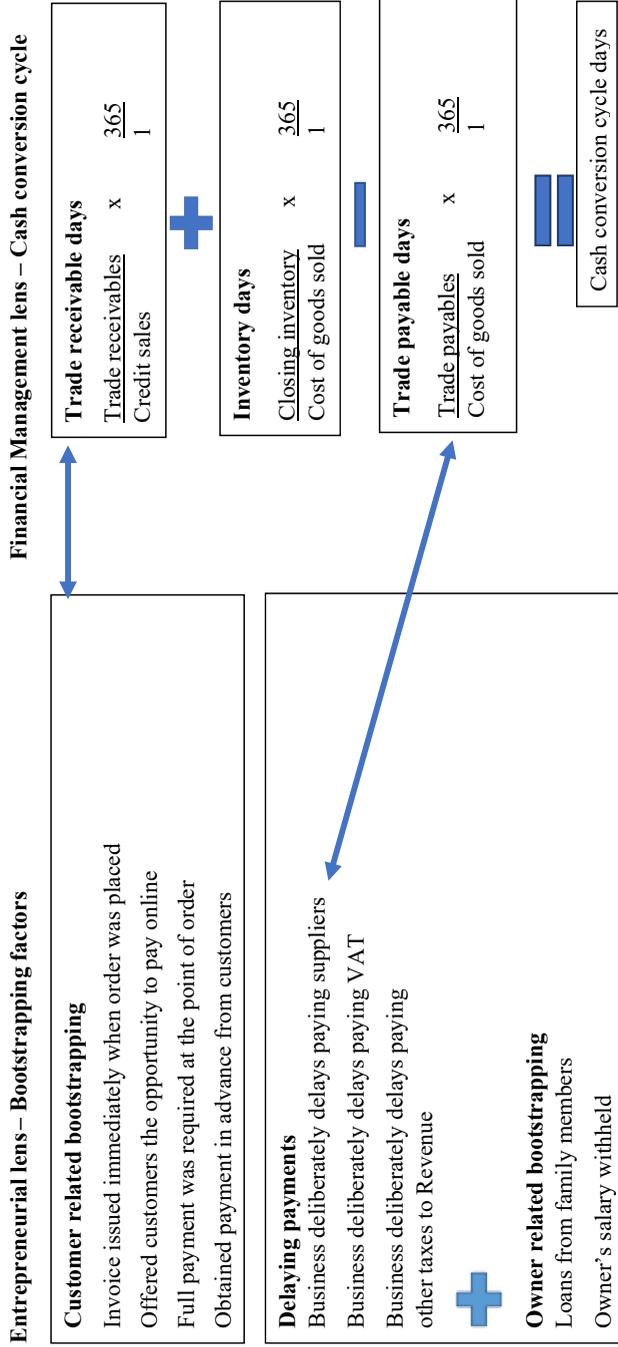
5. Discussion

The objective of this paper is to map the links between the disciplinary distinct concepts of bootstrapping and WCM by exploring how the factors for bootstrapping relates to the components of WCM. The literature review highlighted the overlapping practices within the prior literature on bootstrapping and WCM but that there is limited cross acknowledgement of both concepts in the respective bodies of literature. The findings of the current study are now explored to develop stronger links between both concepts.

As highlighted in [section 4](#), the analysis identified two bootstrapping factors; (1) delaying payments and owner-related bootstrapping and (2) customer-related bootstrapping for established MSMEs in the post crisis period. To develop those links further the bootstrapping factors present in this study are mapped to the components of WCM in [Figure 1](#).

Having developed the links between the factors for bootstrapping in this study and the component of WCM the final step involves synthesising the evidence by incorporating evidence from prior studies. To do this, [Table 6](#) compares the results from six seminal studies of bootstrapping factors with the results from this study. We focus our comparison on the three of these six studies that explored bootstrapping in established businesses ([Winborg and Landström, 2001](#); [Carter and Van Auken, 2005](#); [Ebben and Johnson, 2006](#)) as this current study also focuses on bootstrapping in established businesses. [Winborg and Landström \(2001\)](#) identified six bootstrapping factors, (1) owner financing, (2) minimising accounts receivable, (3) joint utilisation, (4) delaying payments, (5) minimising stock and (6) subsidies. [Carter and Van Auken \(2005\)](#) used [Winborg and Landstorm's](#) factors. [Ebben and Johnson \(2006\)](#) reviewed [Winborg and Landström \(2001\)](#) bootstrapping clusters and decided there were at least four types of methods to bootstrap businesses, customer-related bootstrapping, delaying payments bootstrapping, owner-related bootstrapping and joint utilisation. When they performed factor analysis, they found owner-related and delaying payments-related bootstrapping loaded on one factor and customer-related and joint utilisation bootstrapping loaded on two other factors. [Brush et al. \(2006\)](#) ran their own factor analysis and used interviews to determine bootstrapping usage, which contrasted with the surveys used by prior researchers ([Winborg and Landström, 2001](#); [Carter and Van Auken, 2005](#); [Ebben and Johnson, 2006](#); [Jones and Jayawarna, 2010](#); [Grichnik et al., 2014](#)). Four common bootstrapping factors emerged: owner-related, customer-related, delaying payments and joint utilisation across three studies ([Winborg and Landström, 2001](#); [Carter and Van Auken, 2005](#); [Ebben and Johnson, 2006](#)); these methods all signify cash management tendencies in a business and reflect practices which overlap with numerous WCM activities, in particular in the areas of trade payables and trade receivables management.

[Table 6](#) also identifies similarities in the factors for bootstrapping in the sample seminal bootstrapping studies. Owner-related bootstrapping, customer-related bootstrapping and delaying payments appeared in all six studies. However, joint utilisation appeared in only five of the six studies as it did not appear in [Brush et al. \(2006\)](#). Prior studies have found evidence of customer-related bootstrapping and delaying payments bootstrapping for both new ([Jones and Jayawarna, 2010](#); [Grichnik et al., 2014](#)) and established businesses ([Winborg and](#)



Source(s): Figure created by author

Figure 1. Reconciling bootstrapping with working capital management in MSMEs

Studies	Winborg and Landström (2001)	Carter and Van Auken, (2005)	Brush <i>et al.</i> (2006)	Ebben and Johnson (2006)	Jones and Jayawarna (2010)	Grichnik <i>et al.</i> (2014)	This study
Factor	Owner-related* Accounts receivable + Delaying payments** Minimisers Subsidies Joint utilisation^	Used Winborg and Landström (2001)	Own motives Minimise operational costs Develop products Close capital Ties Minimise labour 2000	Owner-related* and delaying payments** Joint utilisation ^ Customer-related + Not stated	Owner-related* Joint utilisation ^ Payments-related ** 2004 and 2006	Customer-related + Joint utilisation ^ Temporary resource utilisation Internal self - financing Not stated	Owner-related* and delaying payments** Customer-related + 2014 relating to 2013 Ireland Mixed sectors
Year data collected	1994–1996	2001	2000	Not stated	2004 and 2006	Not stated	2014 relating to 2013
Country	Sweden	USA	USA	USA	UK	Germany and Austria	Ireland
Sector	Various	Products and Services	IT	Retail and Services	Various sectors	Various sectors	Mixed sectors
Business age	Mature 20.2 years	Mean age 2 years	Mean age 13.99 years	Mean age	New	New	Mean age 13.41 years
Note(s):	*Owner-related bootstrapping methods						
	+Customer-related bootstrapping methods						
	**Delaying payments bootstrapping methods						
	^ Joint utilisation bootstrapping methods						
Source(s):	Table created by author						

Table 6.
Bootstrapping factors

Landström, 2001; Ebben and Johnson, 2006). They also identified components of WCM (Winborg and Landström, 2001; Ebben and Johnson, 2006; Jayawarna *et al.*, 2011; Grichnik *et al.*, 2014) but failed to acknowledge any meaningful link between both concepts. Winborg (2000) referred to bootstrapping methods that speed up the inflow of “financial means” such as receiving payments in advance from customers and offering them discounts if they pay cash. Though not directly identified as such by Winborg (2000), altering the flow of financial means can be interpreted as financial management. The initial steps of examining financial flows (Winborg, 2000) and the use of financial budgets were outlined, but the linkage between the two was not made. Research to date has not agreed on either a set of factors for bootstrapping or a definition for the practice.

The findings from this study, with the two key factors owner-related and delayed payments and customer-related, align with some of the findings from prior studies (Winborg and Landström, 2001; Carter and Van Auken, 2005; Brush *et al.*, 2006; Ebben and Johnson, 2006; Jones and Jayawarna, 2010; Grichnik *et al.*, 2014). Joint utilisation was not found as a factor in this study, whereas Ebben and Johnson (2006) found sharing resources with other businesses to exist. Joint utilisation is an important method of saving money in a business as by sharing resources such as premises, employees and equipment, costs can be reduced for businesses. This practice may be more common in start-ups that set up in incubation centres or for businesses that avail of government support from enterprise centres. In a post Covid-19 world, as remote working hubs become more established, joint utilisation may also become more prevalent.

In the current study, similarly to Ebben and Johnson (2006), owner-related and delaying payments loaded on one factor and customer-related bootstrapping on a separate factor. This may be explained by the relationship between owner-related bootstrapping and delayed payment bootstrapping: both relate to managing the impact of money on the cash outflow, whereas customer-related methods involve speeding up the cash inflow into the business. For example, owner-related bootstrapping is all about preserving cash in the business by the owner not taking a salary for example or working elsewhere so they can avoid taking a salary from the business or by putting cash into the business in the form of family loans. Delaying payments bootstrapping is also about preserving cash in the business by holding on to the money for longer before it is paid to suppliers or for taxes. In this study, the owner-related and delaying payments factor concentrated on three categories, one involving deliberately delaying payments and two owner-related (loans from family and owner’s salary withheld). This contrasted with Ebben and Johnson (2006), who also included methods such as bartering, leasing, buying second-hand and getting capital from the founder of another business. This may be due to 45% of respondents being in consulting/service businesses, with no opportunities for bartering and no need for leasing or buying second-hand equipment, whereas Ebben and Johnson (2006) examined retail and services businesses. These all indicate strong, deliberate cash management. Customer-related methods all focused on improving cash flow and getting money in quickly. The focus on these bootstrapping factors indicates that business owners are engaging in WCM and owner-related funding.

Establishing these strong ties between bootstrapping and WCM practices is a significant contribution of this study, because it has implications not just for bootstrapping research but also for embedding it in the accounting and financial management literature.

On the practitioner side, if bootstrapping is considered resource management and owner funding, similar to WCM, then the importance of its components needs to be explained to business owners and providers of finance to businesses. They will need to be taught the steps to take to ensure that customers pay quickly and the benefits of getting cash into the business earlier as opposed to later. Business owners will need a plan to ensure speedy payment by customers. They will need to be told the benefit of holding onto cash and of taking their time

to pay suppliers. Holding inventory is costly, so the management of inventory is important. In addition, steps to manage cash will need to be explained along with the importance of the cash conversion cycle. Finally, bootstrapping practices identified such as: loans from family members, withholding the owner's salary and deliberately delaying paying VAT and other taxes to Revenue, need to be embedded as financial management practices that can be undertaken to manage cash.

The insights gained from the context of a post financial crisis explored in this study are also important. This study finds businesses in a post financial crisis period use owner-related and delaying payments and customer-related bootstrapping practices. Interestingly only two of the prior seminal studies (Table 6) surveyed businesses across various sectors (Jones and Jayawarna, 2010; Grichnik *et al.*, 2014) and both of those studies explored new businesses, albeit in a different country setting. However, both start-ups and established businesses in a post financial crisis period use similar methods and thus may experience similar constraints regarding access to finance. Just as start-ups rely on bootstrapping for funding, the focus on the bootstrapping factors in a post financial crisis period in this study highlights how, in a similar way, established business owners are engaging extensively in WCM and owner-related funding in periods where external finance sources are constrained. This is relevant for researchers and practitioners in both research domains. Bootstrapping and WCM enable owner-managers to respond quickly and independently to external shocks in the economic systems. Business owners need to understand how best to manage each of these components to improve the cash flow in their business. This understanding in turn would enable them to reduce the risk attached to outside borrowings (rising interest rates and monthly repayments) and loss of control with the sale of equity.

Reflecting on Figure 1 there is much for both entrepreneurship and accounting scholars to learn from the links developed in this study between bootstrapping and WCM. Entrepreneurship scholars have provided comprehensive knowledge of how MSMEs minimise the need for external funding by securing resources at little or no cost and applying strategies to effectively use resources. However, accounting scholars as part of their training have been focused on WCM in businesses by learning all about the importance of the cash conversion cycle. In addition, a significant number of accountants have trained in large accountancy firms and worked with large corporate clients and therefore, whilst they are often familiar with the concept of WCM in the context of how it is managed in large corporations, many have limited experience of working in the MSME sector. Consequently, accounting scholars may not have a great awareness of how MSMEs utilise bootstrapping in practice. In this respect this study provides a valuable contribution, as it firmly establishes the deep connections between bootstrapping and WCM. Effectively this study contends that WCM in large corporations is equivalent to the bootstrapping practices employed by MSMEs. Bootstrapping should become embedded in the curriculum of accounting education, alongside the topic of WCM, to ensure accountants are made more aware of its utilisation in MSMEs.

Similarly, entrepreneurship scholars can take some important insights from the WCM literature, primarily developed by accountants, to enrich their understanding of both WCM and bootstrapping practices. Firm growth and performance are dominant themes in entrepreneurship research. In addition, overtrading is a key issue for growing firms, as some conduct more business than their working capital can support. Accounting scholars bring a depth of analysis, through the use of ratio analysis and the calculation of the cash conversion cycle, by quantifying the implications of improvements (or dis-improvements) in each of the respective elements of WCM. Hence, there is an opportunity for entrepreneurship scholars to develop a greater understanding of the impact of bootstrapping practices on MSMEs' performance by adopting a more in-depth quantitative analysis, to explore the financial implications of changes in bootstrapping practices. The increased digitisation of accounting

practices in the MSME sector will facilitate this greater analysis. The dual acknowledgement of bootstrapping practices by accounting scholars, and WCM practices by entrepreneurship scholars, serves to further the pedagogical development of these disciplinary distinct, but conceptually similar, practices.

In summary, whilst some bootstrapping practices extend to activities outside the domain of WCM, and whilst WCM is more metric driven compared to bootstrapping practices, it is clear that there is overlap between these disciplinary distinct concepts. Bootstrapping and WCM are both about ensuring that cash is flowing efficiently within a business. They also relate to ensuring there is enough cash in the business by managing internal resources and supporting cash deficits with owner-related funds. Bootstrapping and WCM practices involve businesses relying on themselves and the efficient operation of their business for financial support before ceding control for external debt and equity, thus providing support for a constrained pecking order in MSMEs (Cressy and Olofsson, 1997).

6. Conclusion

Several important insights on the less observed internal financing of MSMEs' emerge from this study. It extends the literature on bootstrapping practices in MSMEs by exploring how such practices manifest in established businesses and in a post financial crisis context. More importantly, the findings indicate that bootstrapping in established businesses is closely aligned with WCM. By adopting an interdisciplinary approach and establishing the connection between these two disciplinary distinct concepts, a more complete perspective unfolds. Firstly, factors of delaying payments and owner-related and customer-related bootstrapping are essentially components of WCM. Secondly, by "tying" WCM to owners' funding a stronger connection with the funding aspect of bootstrapping emerges.

The study is not without limitations. Based on cross sectional evidence for established firms in Ireland only, future studies could explore cross country longitudinal panel data to fully examine life cycle and sectoral effects, as well as other external shocks (for example: COVID-19) on bootstrapping and WCM practices. This study does not explain why some factors (for example: joint utilisation and inventory management) are present in some bootstrapping studies and not in others, further case study research might help explain this. Finally, changes in the business environment facing start-ups and established enterprises including increased digitalisation, online trading, self-employment, remote hub working and sustainability, offer new avenues for bootstrapping research.

In conclusion we argue that given the extensive literature by accounting researchers on WCM, and by entrepreneurship scholars on bootstrapping, there is an opportunity to take elements from both fields to strengthen the overall understanding of both concepts and to provide an opportunity for researchers and practitioners to learn from each other. In doing so, the understanding of managing business resources and financing practices in small businesses is deepened. It also introduces a new direction for investigating WCM and bootstrapping as this is the first study to demonstrate that these concepts would benefit from being positioned in both the financial management and entrepreneurship literatures.

Notes

1. In statistics, bootstrapping is a non-parametric approach to inference that describes the process of resampling the data set extensively to inductively arrive at an estimate for the statistic's sampling distribution (Mooney and Duval, 1993).

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