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The Productivity Puzzle, Management Practices and Leadership

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The Productivity Puzzle, Management Practices and Leadership

Eda Aral



Theses in Economics and Business

The Productivity Puzzle, Management Practices and Leadership

Eda Aral

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The Productivity Puzzle, Management Practices and Leadership

PhD thesis

to obtain the degree of PhD at the
University of Groningen
on the authority of the
Rector Magnificus Prof. J.M.A. Scherpen
and in accordance with
the decision by the College of Deans.

This thesis will be defended in public on

Thursday 15 February 2024 at 14.30 hours

by

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born on 28 April 1982
in Ankara, Türkiye

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Eda Aral

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Chapter 1

Introduction

1. BACKGROUND

“Productivity isn't everything, but, in the long run, it is almost everything.”

(Krugman, 1994)

Productivity is the proficiency of organizations in converting inputs to outputs. It is a key indicator of production efficiency, but also a significant predictor of nations' living standards. Countries' development, industries' employment levels and people's income differences that ultimately boil down to their quality of life and well-being are tightly linked to organizations' aggregate productivity in a country (Autor & Salomons, 2018; Gallardo-Albarrán & Inklaar, 2021). Besides its importance in the broader picture, productivity is also closely related to micro-level firm performance such as business growth, survival, and profitability (De Loecker & Syverson, 2021). Yet, economists are still not able to fully understand what determines firm productivity.

Two striking and puzzling empirical facts about productivity are that, firstly, there is enormous dispersion between firms' productivity levels, even within very narrowly defined industries, e.g. between “folding paperboard box manufacturers,” producing quite homogeneous goods (Foster, Haltiwanger, & Syverson, 2008). The average productivity level of firms at the top 90 percentile is doubling the average of the bottom 10 percentile, in the US or Canada. This ratio can increase to 3:1 in developing and emerging economies. Secondly, it is documented that firms' productivity differences are persistent (Bartelsman & Dhrymes, 1998) such that high-productivity firms today will most probably be high-productivity firms in the future.

Productivity levels of firms determine firms' subsequent activities, such as their export performance as established in the international economics literature, where it is a stylized fact that exporters have higher productivity than non-exporters, even before they enter export markets

(Bernard, Eaton, Jensen, & Kortum, 2003; Melitz, 2003). The common assumption is that only adequately productive firms can compete in export markets and those firms, whose productivity levels do not enable them to compete and survive, exit export markets. Numerous studies of theoretical and empirical research support the argument that the productivity variance across firms is a major determinant and driver of firms' export performance (e.g., Aw, Chung, & Roberts, 2000; Bernard & Jensen, 1999; Bernard, Jensen, Redding, & Schott, 2007; Delgado, Farinas, & Ruano, 2002; Isgut, 2001; López, 2009; Melitz, 2003; Melitz & Redding, 2014; Pavcnik, 2002; Sharma & Mishra, 2011; Trefler, 2004; Wagner, 2007). Therefore, understanding better what drives (variance in) productivity is essential for the greater picture.

The persistence of productivity differences is so consistent that it rules out measurement error possibilities as the main explanation, and it hints at the existence of true productivity drivers (De Loecker & Syverson, 2021). Hence, the drivers of productivity differences across firms have always been a concern within the fields of economics, management and public policy (Haldane, 2017; Krugman, 1994). It is also what ignited the studies that made up this dissertation.

In economics, the productivity variation across firms has been linked to numerous antecedents. At the macro or meso level, product market structure, proper regulation, trade liberalization and competition induce firms to take productivity-raising actions, and reallocate market shares toward better-performing firms (Bartelsman & Doms, 2000; Chaney & Ossa, 2013; De Loecker & Goldberg, 2014; Pavcnik, 2002; Syverson, 2011). Labor market dynamics such as employment protection legislation can also be binding for productivity, as they limit labor adjustment and job flows that firms need due to changing technologies and conditions (Bassanini, Nunziata, & Venn, 2009; Haltiwanger, Scarpetta, & Schweiger, 2008).

In the field of organizational economics, firm-level drivers of productivity have been explored widely. Technological differences between firms, especially in information technologies (IT), are the first to think of, as many empirical studies document (e.g., Bartel, Ichniowski & Shaw, 2007; Brynjolfsson et al., 2008; Faggio, Salvanes & Van Reenen, 2010). In a similar vein, R&D investments, and product and process innovations of firms also have productivity-increasing effects (Doraszelski & Jaumandreu, 2013, 2018; Polder et al., 2010). Haskel and Westlake (2017) address the growing role of intangible capital, such as production know-how raising technical efficiency (quantity of output), and brand capital raising the price at which the products can be sold (revenues from output). As labor is a major component in production, productivity is also consistently correlated with the human capital at the firm, which is a function of employees' and

managers' innate abilities and learned skills, combined with effort (Abowd & Kramarz, 2005; Bender et al., 2018; Iranzo, Schivardi, & Tosetti, 2008; Lazear, Shaw, & Stanton, 2015).

2. THE BLACK BOX OF PRODUCTIVITY

But even when all the material, capital and labor inputs are accounted for, there still remains a substantial unexplained variance of productivity across firms, which makes the overall productivity a big black box of unknowns (Bresnahan, Brynjolfsson, & Hitt, 2002; Chaney & Ossa, 2013). For a long time, the unexplained variance in productivity was dubbed a “measure of ignorance” in economics (Abramovitz, 1956). The differences in productivity, therefore, were measured as a residual, the total factor productivity (TFP), which captures variations in output not explained by the changes in observable inputs (Syverson, 2011). Among the unobservables, managerial quality was proposed as a highly relevant factor of productivity. However, because it lacked standardized units for its measurement, managerial quality was regarded as biasing the estimation of production in the field of economics (Mundlak, 1961).

Nevertheless, outside the field of economics, the important role of management or managerial quality for firm productivity has a long and well-documented history. The understanding of management that gave rise to our knowledge today dates back to Taylor's (1911) scientific management principles, Fayol's (1917) primary functions of management (planning, organizing, directing, coordinating and controlling), some decades later, Drucker's (1954) approach of “management by objectives”, and Japanese Lean manufacturing techniques (Womack & Jones, 2010). Ranging from production to financial management, from strategic management to human resource management and beyond, the umbrella term of *management* is subject to a large body of research mainly in the fields of management and business studies to answer questions such as what drives better performance, how firms can position themselves to compete better, and why firms act as they do.

Although within the field of economics, the role of management has traditionally been not the central focus, this has changed over the last decade, especially through the work by the scholars Bloom, Lemos, Sadun, Scur, and Van Reenen (2014, see also Bloom & Van Reenen, 2007). Opposed to the starting point to take management as the residual of the productivity equation, this line of research starts with the premise that the quality of management practices can be measured and it can actually provide a key explanation for variation in firm performance. Just like a stock of physical capital, these authors propose that a firm also has a stock of managerial capital in the guise

of the knowledge and training of its managers and their practices with respect to operations, targets and HR-management (Bloom, Sadun, & Van Reenen, 2016; Garretsen, Stoker, & Weber, 2020).

Thus, the management practices that firms adopt and the managers who steer the firms come under the spotlight.

2.1 Management Practices and Challenges in Management Research

Solving the puzzle piece by piece, there are management practices in place at firms which shape productivity alongside the explicit inputs of production such as capital, labor, technology and skills. Management practices can be defined as an intangible production factor or input like knowledge; they are intricately linked to the systems and structures of how routines are conducted within the firm (Bloom & Van Reenen, 2007). They are infused in the organizational structure, and they can depreciate or evolve slowly over time. They are instilled by several managers and employees that come and go, but they are distinct from the individual managers or individual managerial talent. With these attributes, management practices can be considered an integral part of the intellectual capital maintained and utilized within the firm, disentangled from individuals so that the practices can be common within the firm, and are not lost when certain managers depart.

Management practices' relevance for firm productivity and for several other firm outcomes has been consistently supported, not only by the work of Bloom, Sadun, Van Reenen and colleagues (e.g., Bloom et al., 2012; 2013; 2014; Bloom & Van Reenen, 2007), but also by several other empirical studies (e.g., Arthur, 1994; Birdi et al., 2008; Griffith, Haskel, & Neely, 2006; Guerci, Hauff, & Gilardi, 2019; Huselid, 1995; Ichniowski, Shaw and Prennushi, 1997; Kehoe & Wright, 2013). At the same time, within this line of research, there remain three significant challenges and limitations in understanding this relationship that serve as inspiration for the three empirical papers in this thesis.

Challenge 1: Universal or Context-Specific?

In the first place, a crucial question is whether there are universal, “best” management practices that every firm can adopt and benefit from, or whether the usefulness and efficacy of such practices depend on the context and contingencies of a firm (Delery & Doty, 1996). Mostly, the fields of organizational and personnel economics, and human resource management (HRM) have investigated extensively how managerial activities and workplace practices are related to organizational outcomes, and what constitutes good management practices for higher performance. Grounded in the historical scientific management approach (Taylor, 1911), Lean manufacturing (Womack & Jones, 2010) and Total Quality Management (TQM) principles (Ahire,

Landeros, & Golhar, 1995), various practices have been subject to research for their contributions to firm performance. Among others, practices of rigorous recruitment, selection, training and coaching procedures, employee involvement and empowerment, performance-based incentives and promotion, employment security, monitoring and extensive sharing of information have been linked to high performance (see e.g., Combs et al., 2006; Freeman & Medoff, 1984; Lazear, 1999 & 2000; Lazear & Oyer, 2013; Paauwe & Richardson, 1997; Pfeffer, 1998; Prendergast & Topel, 1996).

However, there is no consensus about the complete list of effective practices, or about the role of the context for the relevance of these practices (Boselie et al., 2005, Gibbons & Henderson, 2013; Paauwe, 2009; Paauwe & Boselie, 2005). Some studies have also focused on innovative, non-traditional or flexible managerial practices (Arthur, 1994; Bauer, 2003; Cutcher-Gershenfeld, 1991; Ichniowski, Shaw & Prennushi, 1997), which can be subjective and timing-related. In addition, the ongoing discussions in the HRM field over bundles and configurations of management practices to form high-performance systems that fit the firm's strategies indicate that the question whether the relevance of management practices is universal or local is still largely unanswered (Boon, Den Hartog, & Lepak, 2019; Guest, 2011; Lepak & Snell, 2002).

Challenge 2: Measurement

Second, the measurement of management practices has been inconsistent and even problematic. Measurements have relied heavily on subjective reports of managers, perceptions of employees, or judgments and preferences of the researchers (Bauer, 2003), and differed across studies in measuring the presence (the extensive margin), the coverage or the extent (the intensive margin) of adoption of practices (e.g., the former as in Boning, Ichniowski and Shaw (2007), the latter as in the seminal study by Huselid (1995) and in Pak and Kim (2018)). These measurement dimensions exemplify just a few of the variations observed in the field. As a result, the extent to which managerial practices could explain the productivity variations has remained ambiguous.

In the research on management practices, notably survey studies have been dominant, e.g. combining firm-level data based on administrative information of firms with survey data, but such studies have been mostly confined to low response rates. Although there have been some widespread surveys (e.g., Black & Lynch, 2001 & 2004; Huselid, 1995) and detailed intra-industry studies (e.g., Ichniowski, Shaw, & Prennushi, 1997; Ichniowski & Shaw, 1999) that allowed productivity comparisons based on the variation of a set of management practices, the possibility of wider comparison across firms, industries and countries have remained limited due to the lack of a standard measurement method of management, the aforementioned unresolved issues over

“good” management practices, and the multiplicity of outcome measures (Boon, Den Hartog, & Lepak, 2019).

Challenge 3: Managers versus Management

Third, management practices as such have been largely investigated, without linking them to the possible role of individual managers. This lack of focus has been particularly evident in economics scholarship, as noted by Syverson (2011) in a comprehensive review of empirical studies on the drivers of productivity. Aguinis et al. (2022) refer to this phenomenon as the “managerless approach”, where the emphasis is on the formalization of managerial tasks, and in structure, organization and control. This situation can be partially attributed to the dominance of the scientific management approach dating back to Taylor (1911), which directed the analytical focus towards management processes and tasks, especially in the field of economics. As a result, the managerial influences on productivity have been predominantly linked to developments in processes, tasks, and technologies rather than individual managers.

Consequently, the question of whether and how managers and management practices, separately and in tandem, are connected to productivity has remained unclear, as recently also posed by Baltrunaite, Bovini, and Mocetti (2023) as well. Therefore, it is essential to understand the nature and extent of the relationship between management practices, individual managers, and productivity. As addressed in the following sections, there is related literature that examines the role of individual managers in firm productivity and performance.

2.2. The Relevance of Managers

To be clear, it is not the case that the relevance of individual managers for firm performance has been completely ignored in the field of economics. However, especially in the fields of strategic management and leadership, the role and behaviors of individual managers have been much more theorized and studied. Before I describe the theories and findings from the latter two fields, I will start with explaining how the field of (organizational) economics has included the manager in its theories and studies. In doing so, I will show that the conceptualization of the manager’s role in economics has remained mainly limited to managerial human capital and manager fixed effects.

The field of organizational economics primarily associates managers' value with their human capital, which is assumed to encompass education, abilities, and ambition (Abowd, Kramarz, & Margolis, 1999). Empirical evidence supports this proposition: Bender et al. (2018) show that firm productivity can be partly attributed to firm’s managers’ human capital. In a similar vein, Lazear, Shaw and Stanton (2015) show that there is a significant association between the

productivity of the workforce and their supervisor's level of human capital. In a recent paper, Roberts and Shaw (2022) review how managers' value has been accounted for in organizational and personnel economics, which seem to be reluctant to take findings that are obtained using "non-economic methods" into account. Noticing that managerial value has been commonly demonstrated by manager fixed-effects while managerial characteristics receive less attention (e.g., Baltrunaite, Bovini, & Mocetti, 2023; Bertrand & Schoar, 2003; Giardili, Ramdas & Williams, 2022; Lazear et al., 2015; Metcalfe et al., 2023), they emphasize that what managers do to contribute value to firms deserves further attention. This value-added approach in economics that reduces managers' role in firm heterogeneity to manager fixed-effects, which are explained by their human capital or very broadly inferred managerial style, has an important limitation (Garretsen, Stoker, & Weber, 2020; Zehnder, Herz, & Bonardi, 2017). Namely, it leaves the "how" question mostly unanswered: how are managers associated with higher productivity? For instance, with their characteristics, personalities, relationship skills or problem-solving skills, behaviors, or with the attention they allocate for certain tasks (Dessein & Santos, 2021; Hoffman & Tadelis, 2021)?

The field of strategic management has taken this "how" question one step further. A dominant perspective in this field is the resource-based view of the firm, which proposes that firms' physical and intellectual resources that are valuable, rare, inimitable, and non-substitutable can provide competitive advantages (Barney, 1991; Wernerfelt, 1984). By managing these resources through developing, diversifying and harmonizing, firms can derive core competencies and capabilities that can enable high performance (Prahalad & Hamel, 1990). When a firm's capabilities are considered, firstly there are ordinary capabilities that are necessary for production efficiency. Secondly, and perhaps more importantly, there are also the dynamic capabilities of the firm, which are related to renewing and (re-)aligning firms' resources innovatively to maintain firm's competitive advantages, responsively to firm's environment (Teece, Pisano, & Shuen, 1997). The management of firm's dynamic capabilities requires agility and forward-looking leadership which resides with individual managers at firms, especially with top management (Penrose, 1959; Teece, 2019). Therefore, and here the topic of the individual managers enters the scene, firms' strategic managers are attributed critical responsibility in the management of firm's capabilities, its performance, and ultimately its productivity.

These strategic managers include the CEO, the top management team, the board of directors and general managers, whose decisions and actions have strategic consequences for the firm (Samimi et al., 2022). Although most studies focused on how top managers are important for firm outcomes such as productivity, sales performance, and profitability (e.g., Bennedsen, Perez-Gonzalez, & Wolfenzon, 2020; Bennett, Lawrence, & Sadun, 2017; Bertrand & Schoar, 2003;

Perez-Gonzalez, 2006), newer studies have also investigated and provided empirical evidence for how middle-level managers also matter (Bender et al., 2018; Friebe, Heinz, & Zubanov, 2022; Hoffman & Tadelis, 2021; Lazear, Shaw & Stanton, 2015).

In order to answer the question of *how* individual (top) managers are related to firm outcomes, the upper-echelons theory (UET) was introduced by Hambrick and Mason (1984). This strategic management theory points to the crucial role of top managers' (biographical) characteristics, personalities, and traits as these can shape their attention, choices and actions due to bounded rationality; therefore, these characteristics influence firm performance (see also Dessein & Santos, 2021; Hambrick, 2007; Liu et al., 2018; Wang et al., 2016). Numerous empirical studies provide support for this theory, showing, for example, that top managers' tenure, personal values, or personalities are relevant for firm outcomes (Finkelstein, Hambrick, & Cannella, 2009; Liu et al., 2018; Ou, Waldman, & Peterson, 2018). Notably, many of these studies focus on the CEO of the firm. Yet, what CEOs or managers actually *do* is still to be explored within in the field of strategic management (Bromiley & Rau, 2016; Holmes Jr. et al., 2021; Neely Jr. et al., 2020).

In the field of (psychological) leadership studies, there has been a strong focus on not only the characteristics, but more importantly also on the actual behaviors of managers, which can foster desirable (or undesirable) outcomes with followers, teams, and organizations via e.g. cognitive, relational or behavioral mechanisms (Decuyper & Schaufeli, 2020; Fischer & Sitkin, 2023). The leadership literature highlights several leadership behaviors that can be relevant for firm outcomes (Anderson & Sun, 2017; Liu et al., 2018). With such leadership behaviors, managers can influence efficiency (e.g., use of resources), adaptation (e.g., innovativeness and change), employee engagement (e.g., motivation and satisfaction), and relationships (e.g., commitment) in their organizations (Yukl, 2008). Thus, managers such as CEOs can exert significant influence on individual and organizational performance via their leadership behaviors, i.e., by formulating and implementing strategies, and facilitating employees' goal attainment as in the instrumental leadership style (Antonakis & House, 2014), or by providing inspirational motivation as in the transformational leadership style (Bass, 1985; Judge & Piccolo, 2004; Wang et al., 2011). At the same time, the main drawback in this field is that establishing a causal relationship between leader behavior and firm outcomes is problematic (Antonakis, Bendahan, Jacquart, & Lalive, 2010; Fischer & Sitkin, 2023; Sieweke & Santoni, 2020).

In my thesis, in chapter 4, I will combine insights from these various fields to investigate how management practices and individual managers (CEOs) are related to productivity, with special attention to their leadership behaviors. In all empirical chapters, I will use the same

instrument to measure management practices, which I introduce in the next section. I base my work on the World Management Survey (WMS) project.

3. THE WORLD MANAGEMENT SURVEY (WMS)

Building on the grounds of management and organizational economics research (e.g., Black & Lynch, 2001; Ichniowski, Shaw, & Prennushi, 1997; Lazear, 2000), Bloom and Van Reenen (2007) started the WMS project for the measurement of management practices in a standardized way. The WMS opened up new perspectives for understanding the productivity heterogeneity by quantifying management quality in a consistent, standard way, which makes it comparable across firms and countries.

Through elaborate interviews with firm managers¹, the WMS measures the quality of firms' management practices in *monitoring*, *targets* and *people management*, and assigns a management score to each firm. This management score is found to be positively and significantly associated with firm productivity, but it is also observed that better-managed firms are larger, they grow faster, they are more profitable, more likely to survive, more efficient in their energy usage, even more likely to receive state aid during a crises such as the COVID-19 pandemic (Bloom & Van Reenen, 2007; Bloom et al., 2010; Groenewegen, Hardeman, & Stam, 2021; Scur et al., 2021; see Appendix A for further explanation). More importantly, management practices' causal relation to productivity is documented through a field experiment that shows the adoption of better management practices increases firm productivity with long-lasting results (Bloom et al., 2013; Bloom et al., 2020). Therefore, management practices as measured by the WMS can be seen as an established and objective driver of firm productivity.

The WMS line of research has contributed to management and economics literature in many ways. It has transformed the widely acknowledged but scattered knowledge of management practices into quantifiable inputs for the economic analysis of productivity. It standardized and streamlined the measurement of management practices, so that it efficiently measures core management activities that are common and widespread across producers. Achieving wide reach with the backup of governmental bodies², the WMS provides a more generalizable and objective measure for management practices, compared to, for example, popular case study methods that

¹ For an extensive explanation of the WMS methodology, see Appendix A.

² In the beginning phase of the WMS project, Bundesbank in Germany, the Treasury in the UK, and Banque de France in France made their official support known to the survey invitation recipients (Bloom & Van Reenen, 2007). Similar support could also be ensured in other countries in the following years.

have focused intensely in a firm or a specific industry, in the prior literature of management and organizational economics. Focusing on core practices that can be considered as *ex ante* determinants of high performance (Scur et al., 2021), the WMS treats management as a “technology” or as a “stock of knowledge” that increases productivity, independent from individual managers and managerial talent (Bloom, Sadun, and Van Reenen, 2016). Moreover, by showing a causal relationship between management practices and productivity (Bloom et al., 2013), the WMS contributes to the understanding of between-firm differences by allowing various approaches of economic analysis. Finally, on a practical level, the significant positive correlation between countries’ ranks in management quality and country-level productivity, GDP per capita, and broadly the development levels, is inspiring many governments to initiate the industrywide measurement of management practices quality, systematically through census-style surveys based on the WMS project (see e.g., MOPS, Buffington et al., 2017; Bloom & Van Reenen, 2010; Scur et al., 2021).

One of the main strengths of the WMS is its methodological advantages compared to regular survey methods. The measurement of management practices is primarily based on open-question interviews with managers, ensuring high response rates. Its double-blind method on the side of both interviewers and interviewees minimizes the interviewer and respondent biases of the survey method. Finally, by focusing on more objective indicators of managerial practices instead of self-reported assessments of managerial quality, it reduces measurement error. Thus, the WMS project offers a validated and reliable measurement method for management practices. It now serves as a useful benchmarking tool to measure and compare firms’ management practices quality systematically across firms, industries, and countries. With the WMS, we have a better understanding of how variance in firms’ management practices quality relates to productivity differences; therefore we are one step ahead in our efforts to open the black box of productivity.

However, although the WMS seems to solve the aforementioned challenge of “*measurement*,” it is not a cure-all solution to the two other challenges I presented, namely the “*universal or context-specific*,” and the “*managers vs. management*” challenges. Below, I describe how this thesis addresses these two topics.

3.1. Limitations and Gaps in the WMS Research

Universal or Context-Specific?

In the WMS perspective, there are “best” management practices that are presented as universally applicable and beneficial to all organizations. According to Scur et al. (2021, p.236), this

position is justified because the WMS is based on practices that are “*ex ante* likely to be causal determinants of better performance”. The management practices of the WMS are in three main managerial areas, which do not involve strategy or local elements that are prone to change with context. In the attempt to assess core management practices that might be universal, the WMS thus deliberately leaves out more organization-specific practices regarding innovation, finance, marketing and strategy among others, as these can be more context-dependent (Bloom et al., 2014; Scur et al., 2021). Thus, management practices are posited as universal, directly and positively linked to productivity, and mostly slow-changing. In that sense, management practices are part of the organizational structure, like a stable stock of knowledge (Bloom & Van Reenen, 2007).

Consequently, the WMS does not pay much attention to the possible influence of a firm's internal and external context on the effectiveness of the three types of management practices (Waldman, Sully de Luque, & Wang, 2012). However, following literature from HRM and especially strategic and comparative HRM studies (Cooke, 2018; Jackson, Schuler, & Jiang, 2014; Gooderham, Mayrhofer, & Brewster, 2019; Parry, Morley, & Brewster, 2021; Schuler & Jackson, 2005), it can also be argued that the effectiveness of these management practices might very well vary across countries and firms, in accordance with firms' needs, targets, characteristics, circumstances, and socio-economic and institutional environments. This remains essentially an open question (Datta, Guthrie, Wright, 2005; Gibbons & Henderson, 2013), and therefore I aim to investigate the role of the context for the effectiveness of management practices in my thesis, specifically in chapter 2.

The Relevance of Managers

The WMS project focuses on the “managerless” part of management (Scur et al., 2021). Detaching management practices from the individual CEO and other top-level managers has obvious several methodological advantages. In this way, the characteristics, capabilities, leadership styles and behaviors of firms' managers are taken out of the picture, which allows easier, more objective and more straightforward measurement and comparison of management practices across firms. However, in doing so, the WMS clearly does not take into account individual managers' possible impacts for productivity (Bloom et al., 2014; Scur et al., 2021; Waldman, Sully de Luque, & Wang, 2012), whereas it is well established in strategic management and leadership research that individual managers do play a significant role in determining firm performance (Finkelstein, Hambrick, & Cannella, 2008; Hambrick & Mason, 1984; Hambrick & Quigley, 2014; Quigley & Graffin, 2017; Vera et al., 2022) alongside management practices (Metcalf, Sollaci, & Syverson,

2023). Therefore, I investigate the separate and joint roles of management practices and individual managers in productivity research in my thesis.

3.2. Additional Research Avenues with the WMS

With its methodological benefits in standardizing the measurement of management quality in firms and making widespread surveys feasible, the WMS opens up new research avenues, especially in topics related to the productivity variation across firms. One prominent field where between-firm productivity differences are also a central topic of interest is international economics. Here, productivity is a predictor variable rather than an outcome variable. In this field, the firm productivity is assumed given for the firm, and mostly exogenous (Helpman, Melitz, & Yeaple, 2004). As a major driver, the productivity level of firms determines whether the firms can start exporting and whether they can survive in the export markets (Bernard et al., 2003; Melitz, 2003). However, firm productivity is also endogenous, meaning that it changes with firms' actions such as product optimization decisions that change the line and quality of products, and revenue-enhancing investments that involve technologies and skills (Redding, 2011; Verhoogen, 2008; Yeaple, 2005). At this point, firms' core management practices that shape the quality in their production operations, targets and people management as in the WMS framework become important. Yet, generally what drives productivity and specifically firms' management practices as a productivity driver have received scant attention within the firm heterogeneity in exports topic in international economics.

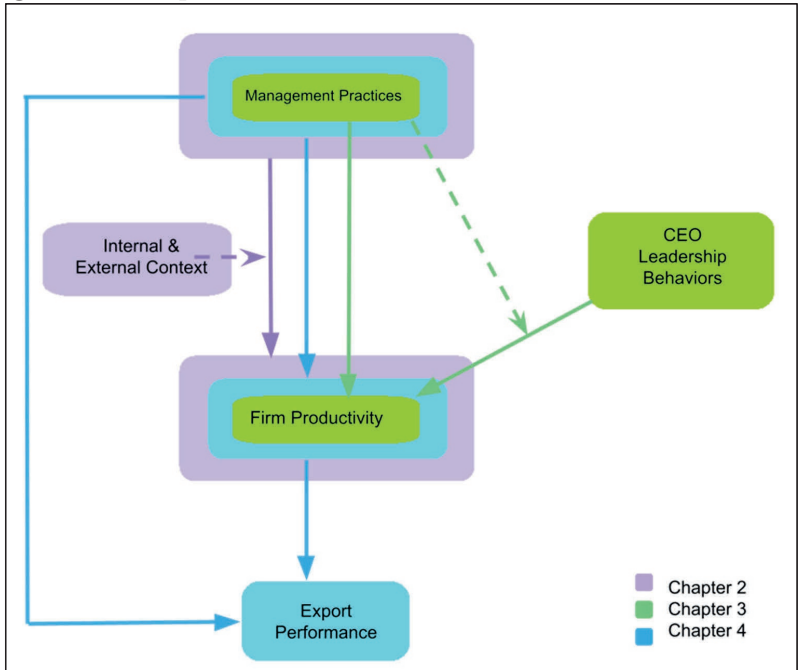
Meanwhile, in international business (IB) research, several managerial capabilities and activities have been linked to firms' export performance (Cadogan, Diamantopoulos, & Siguaw, 2002; Chen, Sousa, & Xinming, 2016; Fernández-Mesa & Alegre, 2015; Lages, Silva, & Styles, 2009; Sousa, Martínez-López, & Coelho, 2008) however the IB research is not systematically covering core management practices across firms, therefore not allowing a clear comparison. Bloom et al. (2021) test the direct link between management and export activities, and show that firms with higher management scores achieve better product quality and higher price to quality ratio for exported goods, thus these firms accomplish better results in exports. But the possible sequential relationship where the firm heterogeneity in exports is explained by productivity differences, which can be shaped by firms' management practices has not been closely examined, so far. In my thesis, I set out to explore this threefold relationship in chapter 4.

4. SET-UP AND SYNOPSIS OF THE THESIS

Motivated by the puzzling variation in firm productivity, my thesis addresses the two challenges that were described in the previous section. Using the WMS tool, I study the management practices' association with productivity and try to answer whether the management practices are universal or whether the firm's context alters their effectiveness, and how CEOs are relevant in the productivity equation alongside management. Additionally, I investigate how the relationship between management practices and productivity further explains the firm heterogeneity in firms' exports. Centering around firm productivity, the conceptual model of the thesis is stylized in Figure 1.1.

The thesis is composed of three empirical studies that are presented in separate chapters. Using insights from the fields of organizational economics, human resource and strategic management, leadership, international economics and business, I build on several literatures and adopt a multi-disciplinary perspective throughout the chapters.

Figure 1.1: Conceptual Model of the Thesis



Notes. There are three models, depicted together here. Each chapter covers a separate part of the model above. The concepts that each chapter concerns are depicted in different colors. Solid arrows suggest a direct relationship between the concepts, while dashed arrows suggest a moderation relationship. Other relationships that have not been suggested above are possible, but they are not covered in the studies that make up this dissertation.

Chapter 2: Universal or Context-Specific?

The first empirical study of the thesis is presented in chapter 2. This chapter builds a bridge from the WMS project to the literature of human resource management (HRM) where the universal versus context-specific HR management practices is still an open question (Datta, Guthrie, & Wright, 2005; Delery & Doty, 1996; Gibbons & Henderson, 2013; Guest, 2011; Purcell, 1999). I investigate how universal the WMS management practices are, and whether the implications of the management practices vary according to firms' characteristics and conditions. Within the WMS, I focus on the *people management practices*, which can be more sensitive to national institutional pressures in firms' socio-economic environments (Mayrhofer, Gooderham, & Brewster, 2019). I argue that, with varying interpretations of people management in each country, the effectiveness of people management practices might differ with whom they are applied, how they are perceived, and how they are exercised.

To investigate this, I first zoom in on the internal context of the firm and pay special attention to the level of human capital, which is basically the combination of employees' skills, abilities, and knowledge. I hypothesize that the level of human capital at the firm-level will positively moderate the relationship between the people management practices and productivity. Then, I turn to the external context of the firm and have a look at the cultural values at the national level. Specifically, I focus on the value of "individualism versus collectivism" which entails a fundamental distinction between cultures, also importantly in the work setting (Hofstede, 1980; Moorman & Blakely, 1995). Because the WMS was developed in the context of Western cultures with comparably high individualism, the people management practices may not result as effectively in all cultural environments. Therefore, I hypothesize that the value of individualism will positively moderate the relationship between the people management practices and productivity. In the external context of the firm, among institutional pressures, I lastly take into consideration the labor market regulations. I focus on employment protection legislation, which varies substantially across countries, and burdens firms by increasing the costs of managerial practices such as hiring and firing (Autor et al., 2007; Bjuggren, 2018; Caballero, Cowan, Engel, & Micco, 2013). Related, I hypothesize that stricter employment protection legislation will negatively moderate the relationship between the people management practices and productivity.

I use the WMS database of manufacturing firms from 14 countries for management practices (Bloom et al. 2014; Bloom et al., 2021; Aral et al., 2020). My analysis shows that the people management practices are positively associated with productivity, and that the human capital in firms strengthens this association. However, the analysis does not provide evidence for a moderation relationship between people management practices and cultural values or employment protection legislation. Therefore, my study underpins the universality of the management practices and affirms that the WMS can serve as an objective tool in assessing firms' management quality across different contexts.

Chapter 3: Management in Combination with Managers

In the third chapter, I combine and confront the role of management practices and managers for firm productivity. Particularly, I focus on firms' CEOs and their instrumental leadership (IL) behaviors (Antonakis & House, 2014). IL involves leader behaviors of environmental monitoring, strategy formulation and implementation, path-goal facilitation, and outcome monitoring (idem, p. 749). This leadership style puts emphasis on "getting things done". With this angle, IL is an appropriate leadership style to use for testing the possible relationship between CEO behaviors and firm productivity.

With the purpose of making a fuller account of firm productivity, I bring CEOs' IL behaviors information together with firms' management practices information and investigate how and to what extent the CEO's IL behaviors and the firm's management practices distinctly and together relate to productivity. I also explore if and how IL behaviors and management practices interact to see whether management as a technology enhances the CEOs' effectiveness. I account for several relevant CEO and firm characteristics following the insights from the related literatures (Anderson & Sun, 2017; Bass, 1985; Bass & Avolio, 1990; Bloom & Van Reenen, 2007; Judge & Piccolo, 2004; Waldman, Ramirez, House, & Puranam, 2001; Wang et al., 2016).

My sample is composed of 156 manufacturing firms in the Netherlands, which were interviewed for their WMS management practices, and surveyed for their CEOs' leadership behaviors in 2018 (Aral et al., 2020; van den Berg et al., 2019). I match this information with the demographic and administrative data of firms and CEOs. My estimations show that both CEOs' IL behaviors and management practices significantly explain the variance in firm productivity, even when several CEO characteristics are controlled for. Crucially, CEO behaviors and management practices are not substitutes; they have distinct associations with productivity. I do not observe an interaction between leadership behaviors and management quality in our sample. Overall, my study demonstrates that CEOs' leadership behaviors are strongly associated with firm productivity, beyond the role of firms' management practices.

Chapter 4: Management, Productivity and Exports

With the multi-disciplinary approach that I adopted, in chapter 4 I tackle the firm heterogeneity issue in the international economics literature to look at the background of productivity differences across firms, which is addressed as the driver of varying export performances (Melitz, 2003). Combining insights from international business (Chen, Sousa, & Xinming, 2016; Sousa, Martínez-López, & Coelho, 2008) and the WMS studies (Bloom et al., 2013; Bloom, Sadun, & Van Reenen, 2016; Bloom & Van Reenen, 2007), I delineate that management practices are predicting (i) productivity and (ii) exports, and (iii) productivity is predicting exports.

I use a detailed firm-level dataset of 385 firms in manufacturing industries in the Netherlands. The firms were interviewed to score their management practices within the WMS project in 2018 (Aral et al., 2020; van den Berg et al., 2019). Combining firms' productivity, exports and administrative information, I examine how management is associated with productivity and how this association reflects to exports. My analysis results first reconfirm that the quality of management practices is a significant predictor of firm productivity, and better-managed firms export more (in terms of revenues), even when several other firm characteristics that can impact

on exports are taken into account. More importantly, my results suggest that part of the productivity variation that predicts firms' export heterogeneity stems from the variation in management practices.

Table 1.1 summarizes the main characteristics of the three empirical studies in this thesis.

5. GENERAL CONTRIBUTIONS

To conclude, this thesis aims to shed light on the managerial determinants of productivity, both via management practices and managers, to better understand why it varies across firms. In doing so, I contribute to multiple literatures. My multifocal approach allows me to navigate in the previously overlooked topics regarding the persistent productivity differences across firms. As I address the pending questions, I learn more about the potential of management practices and extend the literature of empirical economics of management and WMS. More importantly, I contribute to the efforts of explaining the drivers of productivity differences better.

At the heart of my research, there is the WMS whose method and data I adopt because its way of quantifying firms' management quality is useful and meaningful for the economic analysis of productivity (Bloom & Van Reenen, 2007). In total, my findings support the perspective that management practices are akin to a technology (Bloom, Sadun, & Van Reenen, 2016), as my research provides evidence that they are universal, practically robust in varying contexts, and related to multiple performance outcomes. Furthermore, I show that both management practices and managers have their own separate contributions to productivity.

Table 1.1: Thesis Structure

	Chapter 2	Chapter 3	Chapter 4
Topic	Universality of management practices	CEO leadership behaviors' link to productivity, and management's interaction with CEO behaviors	Management practices' link to productivity for predicting firm heterogeneity in exports
Main dependent variable(s)	Firm productivity	Firm productivity	Firm productivity and export performance
Main predictor variable(s)	People management practices	Management practices and CEO behaviors (instrumental leadership)	Management practices and productivity
Interacting variables	Management in interaction with human capital, cultural values (individualism vs. collectivism), employment protection legislation	Management in interaction with CEO instrumental leadership behaviors	-
Data sources	WMS dataset, Orbis dataset, Hofstede and GLOBE cultural values datasets, OECD employment protection legislation dataset	Survey studies for WMS management practices and leadership behaviors in The Netherlands, Statistics Netherlands for productivity	Survey study for management practices in The Netherlands, Statistics Netherlands for productivity
Sample	4169 firms from 14 countries	156 firms from the manufacturing industry in the Netherlands	385 firms from the manufacturing industry in the Netherlands
Time period	Ranging between 2006 and 2018, varying at the country level	2018	2018

Chapter 2

A Contextual Analysis of the Relationship between People Management Practices and Labor Productivity*

ABSTRACT

Management practices play a crucial role in determining firm performance. However, accurately measuring management quality has remained a persistent challenge in organizational economics and management research. The World Management Survey (WMS) project has collected comprehensive firm-level data from over 35,000 firms, aiming to systematically measure management quality in organizations and facilitate cross-firm and cross-country comparisons. Nevertheless, the project has not accounted for the diverse institutional contexts in which firms operate, despite their substantial variations. In light of this, our study critically examines the association between people management, a key dimension of management quality defined in the WMS, and productivity across different firms and countries. Specifically, we investigate the relationship between people management and labor productivity, in varying contexts of human capital, cultural values and labor markets in 14 countries. Our findings underpin previous research by demonstrating a significant positive relationship between people management practices and labor productivity, and we further observe that this relationship strengthens with higher levels of human capital at the firm level. Importantly, we did not observe any moderating effects of contextual factors on the relationship between people management and productivity. This suggests that the people management practices captured by the WMS seem to be universally valid across countries with different cultural values and labor market characteristics. This finding can be attributed to the convergence and idiosyncratic arrangements mechanisms.

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1. INTRODUCTION

Vast and persistent productivity differences between countries and firms have long been a question of great interest (Bartelsman & Domes, 2000; Hsieh & Klenow, 2009; Syverson, 2011). A growing number of empirical studies point to the role of firm management for how some businesses outperform others (Bender, Bloom, Card, Van Reenen, & Wolter, 2018; Birdi et al., 2008; Black & Lynch, 2001; Bloom, Lemos, Sadun, Scur, & Van Reenen, 2014; Bloom, Sadun, & Van Reenen, 2016; Gibbons & Henderson, 2013; Griffith, Haskel, & Neely, 2006; Ichniowski, Shaw & Prennushi, 1997; Shin & Konrad, 2017). As part of the efforts to understand management's role in productivity heterogeneity, Bloom and Van Reenen (2007) have developed a survey tool, the World Management Survey (WMS), for the consistent measurement of management across firms and countries. Conducted in more than 35 countries and 20,000 firms from manufacturing, healthcare, retail and education sectors, the WMS offers standardized management scores for the comparison of management quality across firms and sectors. The management score of the WMS has been found to be positively and significantly associated with many performance outcomes, including productivity (Bloom & Van Reenen, 2007).

Although the WMS provides a key benchmark for management quality, it has not paid much attention to the possible influence that a firm's characteristics and environment could have on the effectiveness of a given set of management practices on firm performance (Waldman, Sully de Luque, & Wang, 2012). Such a position is in line with the perspective that we live in a globalized world, where many organizations are “born” global (Evans, Pucik, & Barsoux, 2002). In such a business world, successful leaders share an international MBA education, and many organizations work globally through internet-based business or cross-border travel and trading. From this perspective, labeled as the process towards “cultural uniformity” (House, Dorfman, Javidan, Hanges, & de Luque, 2013), a convergence of management practices has taken place (Mayrhofer, Brewster, & Pernkopf, 2021). And even before extensive globalization took place, some researchers already pleaded for the fact that the existence of common industry practices steadily leads to the harmonization of management and leadership practices (e.g., Adler, Doktor, & Redding, 1986).

Also within the fields of Human Resource Management (HRM) and labor and organizational economics, where the relationship between people management and firm performance has been widely investigated, a large body of literature supports the claim that there are universally best (people) management practices (Combs, Liu, Hall, & Ketchen, 2006). For instance, Ichniowski et al. (1997) found that a coherent system of HRM practices is associated with

higher productivity levels in an empirical study in the steel industry. Ichniowski and Shaw (1999) later showed that the American manufacturers, adopting the same system of HRM practices as more productive Japanese manufacturers, experienced rise in worker productivity. Following this line of reasoning, expecting universal effectiveness of management practices as defined by the WMS studies seems very logical.

However, it can be argued that while management theories have rapidly disseminated across the globe, the implications of these management practices do vary across countries and firms, depending on their unique needs, targets, characteristics, circumstances, and socio-economic environments (Datta, Guthrie, Wright, 2005; Gibbons & Henderson, 2013). For instance, Black and Lynch (2001) found that management practices significantly impact productivity, especially when there are synergistic effects between these practices and the existing institutional framework. Their research revealed that a specific set of management practices leads to distinct outcomes in similar plants, particularly in the presence of unionized labor compared to non-unionized labor. Gibbons and Henderson (2013: 3) argued that "management practices cannot be reduced to well-defined action rules that can be specified *ex ante* and verified *ex post*," but rather, their implementation is context-dependent.

Notably, the people management dimension of the WMS practices is particularly sensitive to idiosyncratic pressures, both at the individual employee level (Rousseau, Ho, & Greenberg; 2006) and within the national and institutional contexts, encompassing labor market regulations and cultural values (Gooderham, Mayrhofer, & Brewster, 2019; Parry, Morley, & Brewster, 2021). Consequently, this sensitivity gives rise to customized implementations of people management practices for different employees and varying interpretations of people management practices across countries (Dastmalchian et al., 2020; Mayrhofer, Gooderham, & Brewster, 2019; Newman & Nollen, 1996; Pak & Kim, 2018; Robert et al., 2000; Vossaert et al., 2022). As highlighted within the institutional theory, national cultures and institutional actors such as labor unions exert pressure on the adoption and implementation of people management practices, including compensation systems (Gooderham, Mayrhofer, & Brewster, 2019).

Focusing on the people management dimension of the WMS and following the perspective which asserts that a firm's characteristics and conditions affect the end results of management practices, we propose in our study that the WMS scores for people management, may not essentially relate the same to productivity outcomes in differing contexts, because the effectiveness of top-down practices may differ with whom they are applied, how they are perceived, and how they are exercised.

First, the human capital level of employees, standing for the skills, talents and knowledgeability, may influence how the practices are absorbed by the workforce in a firm. Employees interpret firm's practices and reciprocate by devoting effort, resulting in altered outcomes (Liao, Wayne, & Rousseau, 2016; Vossaert et al., 2022). A high-skilled, more educated workforce can better understand sophisticated and innovative practices. Skilled employees can more effectively accumulate and transfer information amongst them to achieve the management's requirements, and be more capable of solving problems to improve performance (Hitt, Bierman, Shimizu, & Kochhar, 2001; Brynjolfsson & Milgrom, 2013).

Second, cultural values affect people's expectations and attitudes and thus affect the way people perceive the practices in the workplace and the way they react (Hofstede, 1980). While some work practices are deemed suitable in certain cultural settings, such as the widespread practice of announcing top-performing employee-of-the-month in Anglo-American work settings, the same practice is perceived less favorable in other cultural settings with higher collectivism and humility values. Therefore, the same practice has different linkages with employee performance in different settings.

Third, employment regulations can alter how the people management practices can be exercised. The rigidity of employment protection, which varies substantially across countries, burdens firms by increasing the costs of managerial practices such as hiring and firing (Caballero, Cowan, Engel, & Micco, 2013) and by enabling stronger labor unions to pressurize the firms (Hall & Soskice, 2001). Labor market regulations that are enacted to protect workers lower firms' flexibility in recruitment by i.e. complicating the use of temporary contracts, and impeding employee dismissals by i.e. obligatory severance payments (Autor, Kerr, & Kugler, 2007; Baek & Park, 2018). Thus, they influence firms' ability to attract talent, eagerness to hire, capability of building a skilled workforce, and adaptability to changing market conditions (OECD, 2020b). Therefore, we claim that human capital at the firm level, and cultural values and labor market regulations at the country level are expected to moderate the productivity outcome of people management practices.

Established in the organizational economics field, the WMS project has been building strong connections with the (strategic) management literature (Scur & Wolfolds, 2023). However, there is clearly a need for examining the people management practices of the WMS and reinterpreting this dimension with a wider perspective, using theories of multiple literatures. Our paper takes up this challenge by investigating the interactions between people management practices and particular contextual factors for a heterogeneity analysis. We use the WMS database

(Bloom et al. 2014; Aral et al., 2020), containing medium-sized manufacturing firms from 14 countries. We relate firms' people management scores to their average labor productivity, and investigate how firm's average of human capital, country's level of individualism and employment protection legislation influence the effectiveness of people management practices. By investigating the impacts of these three moderating variables on the people management–productivity link, our study makes the following contributions.

First of all, we offer important insights into the moderation relationship between human capital and people management where we observe a significant positive interaction. Thus, we empirically contribute to the resource-based theory and provide evidence that the intangible resource of human capital is critically important for firm management for the competitive advantage of firms in today's knowledge-based economy (Barney, 1991; Haskel & Westlake, 2018). Secondly, we explore internationally differentiating factors' association with the WMS and reinterpret the WMS using multiple perspectives from organizational economics, HRM and international business literatures. Our findings underpin the universality of the WMS scores by providing evidence that the best practices positively correlate with labor productivity regardless the differences in cultural values and employment protection regulations across countries. Doing so, our study bears importance for using the WMS as a benchmark in assessing firms' management quality worldwide and using its management practices in management consulting and policy shaping.

The set-up of this paper is as follows. The second section explains the theoretical background and the reasoning behind our hypotheses. The third section describes the data and methodology, and the fourth section presents the results. A discussion of the results and the concluding comments will follow in the fifth section.

2. LITERATURE AND HYPOTHESES

2.1. The WMS and People Management Practices

Addressing the astounding and persistent productivity differences between firms within countries, the WMS research started as an innovative survey for the measurement and comparison of management quality across firms (Bloom & Van Reenen, 2007). It assesses firms' management quality across 18 key management practices in three key areas³ of management (Bloom et al., 2014).

³ In the earlier papers about the WMS (also in Bloom & Van Reenen, 2007), the same 18 management practices were classified in four key areas: monitoring, operations, targets, and incentives.

First, *monitoring*: Are modern manufacturing techniques introduced and used for cost efficiency and quality improvement objectives? How well do organizations monitor the operations inside the firm? Second, *targets*: Do organizations set the right targets, track the outcomes continuously, communicate the targets effectively, and take appropriate action if the targets and the performance outcomes are inconsistent? Third, *incentives* or “*people management*”: Are organizations promoting and rewarding employees based on performance, prioritizing selective hiring, developing skills, making room for talent, and trying to keep their best employees? Averaging firms’ scores for the 18 management practices, WMS offers a single, overall management score which is found to be positively associated with manifold indicators of firm performance; such as productivity, profitability, growth, survival, and Tobin’s Q (Bloom & Van Reenen, 2007). More detailed explanations of the management practices and the WMS methodology are provided in the Appendix A.

The WMS studies point out that about 25% of cross-country variation in total factor productivity is explained by the management practices (Bloom et al., 2014). It is widely acknowledged in various areas that the WMS can be a methodologically robust way of measuring core management practices across firms (e.g., Atkin, Khandelwal, & Osman, 2017; Bandiera, Guiso, Prat, & Sadun, 2015; Corrado, Hulton, & Sichel, 2009; Kogan, Papanikolaou, Seru, & Stoffman, 2017; Syverson, 2011). Moreover, the randomized control trial evidence from the management field experiment in India by Bloom et al. (2013) suggests a causal impact of structured management on productivity. The intervention effect is observed to have lasting effects even after more than five years⁴ (Bloom, Mahajan, McKenzie, & Roberts, 2020).

Crucially, Bloom, Sadun and Van Reenen (2016) argue that good management is like a *universally* applicable technology in the sense that it raises productivity independent of the context in which the firm operates, internally or externally. They suggest a model of production, where management is considered as an intangible capital stock, in which output is monotonically increasing, regardless of the firm’s environment. Firms start with an idiosyncratic endowment, an initial draw of managerial ability, but they can change their managerial capital in time with a cost of adjustment; i.e., they can buy management consultancy, or hire a better CEO. Like other tangible and intangible assets, failure to invest in managerial capital may lead to management’s depreciation over time, comparable to depreciation of IT capital in the firm. The “management as a technology” model constitutes the paradigm of the WMS, where higher management scores are expected to directly translate into higher productivity.

⁴ They report that the follow-up data collection corresponded to an average period of 9 years (ibid., p.205).

One-third of the management score of the WMS is composed of people management practices, which are clearly derived from the HRM literature that centers around the association between people management practices and performance outcomes. In the HRM field too, there are scholars who argue for a so-called universalistic approach (Combs et al., 2006; Huselid, 1995; Pfeffer, 1994, 1998). This approach assumes that the adoption of a set of best HRM practices can lead to superior organizational performance in any firm.

The people management in the WMS, as displayed in Appendix Table A1, is composed of universally applicable and mutually supporting practices that value the abilities of employees and incentivize high performance. Hence, we hypothesize as below:

Hypothesis 1. *The people management score in the WMS is positively associated with labor productivity.*

2.2. People Management from Contingency Perspective: Moderating Factors

In contrast to the "one-size-fits-all" universalistic approach, various fields propose contingency perspectives that emphasize the importance of considering contextual factors when examining the relationship between management practices and performance. In the field of HRM, the contingency perspective highlights the need for people management practices to align with the firm's characteristics, strategies, and circumstances in order to be effective (Apospori et al., 2008; Datta et al., 2005; Delery & Doty, 1996; Jackson & Schuler, 1995; Paauwe, 2004; Purcell, 1999). Similarly, research on management context emphasizes the sensitivity of people management to individual idiosyncratic pressures (Rousseau, Ho, & Greenberg, 2006), as well as national and institutional contexts (Gooderham, Mayrhofer, & Brewster, 2019; Parry, Morley, & Brewster, 2021), resulting in customized implementations of people management practices across countries to accommodate diverse interpretations (Dastmalchian et al., 2020; Mayrhofer, Gooderham, & Brewster, 2019; Newman & Nollen, 1996; Pak & Kim, 2018; Robert, Probst, Martocchio, Drasgow, & Lawler, 2000; Vossaert et al., 2022).

In this vein, Datta et al. (2005) demonstrate that industry characteristics, as contextual factors, affect the relationship between high-performance management practices and labor productivity. Comparably, in the organizational economics field, Brynjolfsson and Milgrom (2013) highlight the importance of complementarities in organizations, pointing out that the interactions among firms' conditions and managerial decisions impact on the success of implemented management practices.

This line of reasoning, which states that the link between management practices and performance outcomes is conditional upon certain characteristics of the firm and the environment, leads us to argue that the people management score of the WMS may not be equally associated with productivity in all firms, because firm-specific characteristics and institutional factors in firm's environment indeed can influence this association. More specifically, we focus our attention on two layers of contextual factors that may moderate the relationship between people management and productivity. Firstly, in the internal context, we examine the influence of the strength of firm's human capital. Secondly, in the external context, we investigate the impact of the employee protection legislation in firm's institutional environment, and the effect of cultural value differences, specified as individualism versus collectivism.

The Moderating Role of Human Capital

The resource-based view of the firm suggests that the knowledge, skills and abilities of employees, namely the human capital in the firm is a major driver of firm performance (Hitt et al., 2001; Pfeffer, 1994; Ployhart & Moliterno, 2011). The strength of the human capital in the firm is expected to influence the firm's labor productivity directly, since more skilled employees can be simply more productive than less skilled employees (Becker, 1964; Lazear, Shaw, & Stanton; 2015; Youndt & Snell, 2004). The positive association between intellectual and human capital and organizational performance is documented in numerous studies (Black & Lynch, 2001; Bontis, Chua Chong Keow, & Richardson, 2000; Carmeli & Tishler, 2004; Crook et al., 2011; Haskel & Westlake, 2018; Miller, Xu, Mehrotra, 2015; Takeuchi, Lepak, Wang, & Takeuchi, 2007). In several WMS studies (e.g., Bloom & Van Reenen, 2007 and 2010), it is also assumed that human capital has an impact on productivity and therefore is treated as a control variable, just like physical capital.

In addition to its direct impact on firm performance, human capital can also play a moderating role in the relationship between management practices and performance. This is because varying combinations of skills, knowledge, and abilities create distinct internal contexts within firms, resulting in different resources, advantages, and disadvantages for the firm's management. The central idea here is that highly skilled and knowledgeable employees are more likely to possess the know-how and problem-solving abilities (Brynjolfsson & Milgrom, 2013). Moreover, knowledge can be more easily acquired and shared among employees with higher levels of human capital, leading to more effective knowledge dissemination within the organization (Gerrard & Lockett, 2018). Consequently, a workforce with high human capital is better equipped to absorb management practices and respond to improvement efforts more efficiently and

promptly (Coff & Kryscynski, 2011; Shin & Konrad, 2017; Wright, Coff, & Moliterno, 2014; Wright, McMahan, & McWilliams, 1994).

For example, the people management practices within the WMS emphasize consequence management, where failure to meet agreed objectives carries certain repercussions, including job reassignment (Bloom & Van Reenen, 2007). The effectiveness of this practice relies on the presence of a skilled and knowledgeable workforce that can quickly adapt and learn from new assignments. Similarly, the WMS promotes employee advancement based on performance and talent, rather than tenure (*ibid*). The success of such a practice hinges heavily on the skill levels of employees. In summary, management practices that prioritize high-performance goals are more likely to be effective when supported by higher levels of human capital.

Moreover, it is important to note that there may be discrepancies between the intended top-down people management practices and their actual implementation due to the varying human capital levels of line managers at lower organizational levels. This can manifest as modified implementations resulting from a lack of knowledge, ability, and motivation to consistently implement the practices, ultimately leading to decreased effectiveness (Guest & Bos-Nehles, 2013; Vossaert et al., 2022).

Although the variance of human capital levels across firms creates a clear heterogeneity, there are only a couple of studies that have investigated such a moderating role of human capital (e.g. Aryee et al., 2016; Froese, Peltokorpi, Varma, & Hitotsuyanagi-Hansel, 2019; Hitt et al., 2001). Froese et al. (2019) focus on job satisfaction as the outcome of merit-based rewarding, an HR practice, and point that merit-based rewarding is more strongly related to job satisfaction among highly educated employees, in comparison to employees with lower education. In a similar line of thinking to our study, Feng and Valero (2019), using the WMS database, suggest an interaction between the overall management scores of firms and their proximity to universities, which they use as a proxy for the skill supply of firms. They find that this interaction is significantly associated with Sales as a performance measure, in a limited number of firms. Despite the documented importance of human capital, there remains a paucity of evidence on whether the human capital level moderates the efficacy of the management practices in shaping labor productivity.

In our study, we investigate the conditional effect of a firm's observable average human capital level on the effectiveness of the people management. We specifically expect that human capital will strengthen the effectiveness of people management and hypothesize as follows:

Hypothesis 2. *The level of the average human capital in the firm moderates the positive relationship between the people management score in the WMS and the labor productivity such that the relationship strengthens in firms with a higher average level of human capital.*

The Moderating Role of Culture and Employment Protection Legislation

Culture: individualism versus collectivism. It is now well established from a variety of studies that countries differ substantially in terms of cultural values, which have been defined as the “tendencies to prefer certain states of affairs over others” (Hofstede, Hofstede, & Minkov, 2010: 9). Defining implicitly what actions are preferable to others, culture influences people’s expectations, attitudes and behaviors (Hofstede, 1980). Through this mechanism, cultural values affect employees’ attitudes toward work, their motivations and behaviors at the workplace. As employee performance is a function of employees’ motivation (Appelbaum et al., 2000; Boxall & Purcell, 2011; Vroom, 1964), cultural values are expected to impact on the people management-employee performance link.

Cultural values are scored at the country level in various frameworks⁵ and there is a large body of literature that shows that cultural values are a key determinant of the context in which organizations are embedded. The relationship between cultural values, organizational performance and managerial practices in general has been investigated in numerous studies, addressing the moderating role of cultural values (e.g., Dastmalchian et al., 2020; Newman & Nollen, 1996; Rabl, Jayasinghe, Gerhart, & Kühlmann, 2014; Robert et al., 2000; Spector et al., 2002). While it is commonly proposed that cultural values' congruence with managerial practices will improve the employees' and firms' performance outcomes, empirical studies present mixed findings about the culture's influences.

Using Hofstede’s cultural value dimensions, Newman and Nollen (1996) show that financial performance of overseas units of a multinational firm is higher when the managerial practices, such as emphasis on individual contributions, are congruent with the cultural values in the host countries. Similarly, Robert et al. (2000) investigate the relationship between empowerment and continuous improvement practices in different cultural contexts (the US, Mexico, Poland and India). Their study indicates that two cultural dimensions, namely power distance and individualism, impact this relationship. On the other hand, using the GLOBE framework (House et al., 2004), Rabl et al. (2014) and Dastmalchian et al. (2020) provide converse

⁵ Culture’s Consequences by Hofstede, 1980; Hofstede et al., 2010; Trompenaars’s Dimensions by Smith, Dugan, & Trompenaars, 1996; Schwartz Value Survey by Sagiv & Schwartz, 2000; The GLOBE Culture and Leadership Study by House et al., 2004, etc.

findings. In a meta-analysis of firms and establishments in 29 countries, Rabl et al. (2014) report that, regardless of the national cultures, the mean effect size of high-performance work practices on business performance is positive in each country. Likewise, Dastmalchian et al. (2020), find for 14 countries that the relationship between the high-performance work practices and organizational performance is not moderated by societal culture. These mixed findings indicate a need to investigate the role of culture in the link between management practices and firm performance, especially for the people management dimension.

Following the argumentation that cultural backgrounds influence people's values, preferences, and reactions regarding management (House et al., 2004), we suggest that cultural values moderate the relationship between people management practices and productivity. Specifically, we expect that people management practices as they were developed for the WMS in the context of Western cultures, may not result as effectively in all cultural environments. We focus on the cultural value dimension of *individualism versus collectivism*, which entails a fundamental distinction between cultures (Moorman & Blakely, 1995). Especially Hofstede's individualism versus collectivism differentiation makes a suitable comparison basis for our analysis with its emphasis on work goals and self-orientation of employees at the workplace (Brewer & Venaik, 2011; Kirkman, Lowe, & Gibson, 2006).

According to Hofstede et al. (2010), in individualist cultures, hiring and promotion decisions are based on rules that mainly value employees' individual performance and skills, while employees' group connections are also taken into consideration in collectivist cultures. Furthermore, individualism substantially affects personal work goals, as people at the individualist end value self-actualization and challenging tasks that give a sense of accomplishment more (Brewer & Chen, 2007). Employees' commitment to the firm is substantially influenced by the compensation scheme; they are better motivated when their performance is evaluated on an individual base, because they are more concerned for the consequences of their actions for themselves (Thomas & Peterson, 2018). On the other hand, people at the collectivist pole care for their ties with their co-workers and their group performance more than their personal performance (Hofstede, 1983). Consequently, the practices that enhance employee autonomy, and emphasize individual rewarding and promotion criteria are expected to be more effective in increasing productive effort in rather individualist cultures.

If the people management practices of the WMS are less suitable to cultures with low individualism, then we would expect a converse, weak or insignificant relationship between the people management score and productivity in those countries. Hence, we hypothesize as follows:

Hypothesis 3. *Individualism moderates the positive relationship between the people management score in the WMS and the labor productivity such that the relationship will be stronger in countries which score high on individualism.*

We choose to focus our work on individualism versus collectivism, but for robustness, we also test for the moderating effect of other cultural value dimensions, namely power distance, masculinity, and performance orientation. We study *power distance*, defined as the way in which social relationships are perceived to be hierarchical and the authority and status privileges of superiors are accepted (Hofstede, 1980; House, Javidan, & Dorfman, 2001; House et al., 2004), because power distance differs across countries and it might affect the willingness of subordinate employees to comply with the directions of managers (Schwartz, 1999). Additionally, power distance scores substantially correlate with the individualism scores of countries (Hofstede et al., 2010: 102-103). We study *masculinity* (Hofstede et al., 2010), as it involves work goals that can be linked to people management: at the masculine pole, having opportunities for high earnings, recognition, advancement to higher-level positions, and doing a challenging job are valued more, in comparison to the feminine pole. Thirdly, *performance orientation* as defined in the GLOBE study (House et al., 2001, p. 495) “refers to the extent to which an organization encourages and rewards group members for performance improvement”; which matches with the rewarding and promoting high-performers principles of the WMS people management practices. Hence, we test this cultural value too.

The employment protection legislation. Among cross-country differences that can influence the effectiveness of people management, legislation related to the labor markets are very relevant since such regulations concern the job security of employees, which affects both employees (Esser & Olsen, 2012; Gallie, 2003) and employers (Autor, Kerr, & Kugler, 2007; Lazear, 1990). Key aspects of legislation include recruitment and dismissal procedures, conditions for temporary and fixed-term contracts, trial periods, unfair dismissals, and notification and compensation procedures. It is important to pay closer attention to these factors. Restrictive regulations limit firms' flexibility in implementing predetermined management practices, leading to increased institutional adjustment costs, especially concerning employee dismissals (Caballero et al., 2013). For instance, the overseas establishments of a multinational firm, whose people management practices are determined at the headquarters in a home country with loose regulations, might face regulatory frictions and costs if the host country it operates has more restrictive regulations. But the frictions are not only for multinationals once the best practices are assumed universal. We argue that the people management practices that the WMS suggests may not be implemented equally effectively in all institutional environments.

Employment protection legislation can influence the relationship between people management and labor productivity in two ways. First, it is expected to have an impact on employees: firing threats decrease employees' on-the-job leisure (Corgnet, Hernán-Gonzalez, & Rassenti, 2015). In other words, higher employment protection is associated with lower employee effort, resulting in decreased productivity. Similarly, Ichino and Riphahn (2005) and Jacob (2013) report a positive relationship between absenteeism and stronger employee protection. Second, and as a moderator, employment protection legislation is expected to impact the implementation of firm's people management practices. Stringent legislation surrounding dismissals makes firms hesitant to terminate employees, thereby lowering the productivity threshold at which layoffs occur (Bassanini, Nunziata, & Venn, 2009; Bottasso, Conti, & Sulis, 2017). Additionally, firms may be reluctant to recruit new employees as dismissal protection raises firms' adjustment costs (Autor, Kerr, & Kugler, 2007). The burdens associated with ending contracts lead to higher employee turnover rates when firms are hesitant to offer permanent contracts (Cahuc, Charlot, & Malherbet, 2016; Hijzen, Mondauto, & Scarpetta, 2017). Under such circumstances, the potential of people management practices in acquiring and retaining a talented and productive workforce (Bloom & Van Reenen, 2007) may not be fully realized.

In short, stricter employment protection legislation burdens firms with higher hiring and firing costs (Autor et al., 2007; Bjuggren, 2018), which may hinder the effective conduct of the people management practices. Particularly when the WMS is considered, the practices in the people management dimension are defined in a quite assertive style. Firms that “remove” poor performers promptly to make room for talent, and go the extra mile to attract and retain high talent are considered well-managed. These practices can be taxing under stricter legislation. With this line of reasoning, we hypothesize as follows:

Hypothesis 4. *The strictness of employment protection legislation in a firm's country moderates the positive relationship between the people management score in the WMS and the labor productivity such that the relationship will be weaker for firms in countries with stricter legislation.*

3. DATA AND METHODOLOGY

3.1. Design and Sample

In the WMS dataset we use (Bloom et al., 2021) there are 4169 manufacturing firms, distributed in 14 countries. The firm-level financial information and size data are collected using

the Orbis (Bureau van Dijk) database. Considering the facts noted by Kalemli-Ozcan et al. (2015), we dropped the observations from the countries with few and poor representations with an aim to have a well-balanced variance of firm characteristics across the countries in the sample. Although the WMS covers firms from more than 35 countries, we had to eliminate a number of countries from our analysis, due to the lack of comparable financial information at the firm level on the Orbis database we use.

The WMS interviews with firms have been conducted in different years; in 2018 in the Netherlands (Aral et al., 2020; Dieteren et al., 2018), and from 2006 to 2010 in the other countries in our sample. All the firms in the sample mainly operate in manufacturing industries. No industry (defined at the 3-digit SIC level) is represented above 3.79% proportion. Ultimately, our sample consists of like-sized firms from 121 manufacturing industries, with 26% multinational and 74% domestic firms.

Large firms, having more than 250 employees⁶, comprise half of our sample. Medium-sized firms, having 50-249 employees comprise 47%, and there is a 3% share of small firms, with less than 50 employees. The median size is 246, corresponding to a medium scale, which constitutes the survey target of the WMS studies.

3.2. Variables

People Management Practices

The people management scores of firms constitute the key predictor variable in our analysis. In the WMS methodology, which is explained in Appendix A, the firms are scored from 1 (worst practice) to 5 (best practice) for each management practice, according to the interviewers' assessment of the firm's activities for the related management practice. In this study, we only use the seven people management practice scores that are depicted in Appendix Table A1, out of the full set of 18 management practices. We take the z-scores of each of the seven people management practices and then average them to obtain the normalized people management scores of firms. Using the raw average leads to very similar results.

⁶ This size classification is based on OECD's definition of enterprises by size (OECD (2022), "Enterprises by business size" (indicator).

Productivity

As a broad indicator of the overall performance of the firms, we use labor productivity in our empirical analysis as the dependent variable. We define labor productivity as the ratio of firm's total revenue to its size, where firm size is the number of employees in the firm i .

$$\text{Labor Productivity}_i = \text{Total Revenue}_i / \text{Number of Employees}_i \quad (1)$$

To smooth out yearly variations, we calculate the five-year mean of labor productivity in firms using the financial information obtained from Orbis, corresponding to 2013-2017 period for Dutch firms and 2008-2012 period for firms in the other countries.

Moderating Variables

The human capital strength in firms is proxied by the (logged) proportion of firm's employees with a college degree, reflecting the firm-level measure of observed knowledge and skills in the workforce. The data is available in the WMS database as obtained from the firms in the WMS interviews.

To estimate the culture's impact, we believe cultural value frameworks such as the models by Hofstede et al. (2010) and the GLOBE Project (House et al., 2004) make a useful benchmark to explore how country-level context relates to firm management and performance (Kirkman, Lowe, & Gibson, 2006). In our main estimations, we use the cultural value scores for *individualism* from Hofstede et al. (2010). The scores of countries for the value of individualism are provided in Appendix Table B1. We repeat our estimations using the more recent *institutional collectivism* (both in practice "as is," and values "should be") scores of the GLOBE Project (House et al., 2004), for robustness. We also explore the possible moderating effect of other cultural dimensions, namely *power distance*, using both Hofstede's and GLOBE's scores (idem); *performance orientation* (GLOBE) and *masculinity versus femininity* (Hofstede).

For international comparisons of the labor market institutions, we use the Employment Protection Legislation (EPL) index of OECD (2020a), which is now a custom measure in the literature (Calcagnini, Ferrando, & Giombini, 2014). The WMS survey waves took place in different years from 2006 to 2018 in the sample, varying according to the country. For each firm, we use the country's EPL index which belongs to the year that the firm was interviewed. The index values that are used in our analysis are depicted in Appendix Table B2.

Control Variables

We have a set of control variables in our estimations. The basic ones include the (logged) firm size as the number of employees since larger firms usually display a higher productivity, industry dummies defined at the U.S. SIC three-digit level to control for the industry-specific factors that have a bearing on productivity, (logged) firm age as firm productivity may vary across the life cycle of firms, and a dummy for being publicly listed. We include a full set of country dummies to account for country-specific factors, such as development, competition, and formal and informal institutions that are not captured in other variables in the model. Likewise, we use year dummies as firms in different countries in the sample are interviewed in different years, in order to control for the time-specific factors that relate to productivity. For interview-related noise, we control for the interviewer effect using a full set of interviewer dummies, and the day of the week that the interview takes place, following the methodology by Bloom and Van Reenen (2007).

3.3. Empirical Model

We consider productivity as a function of the people management quality in the firms. To estimate people management's and suggested moderators' roles in predicting productivity, we run OLS regressions in the cross-section, attributing the productivity heterogeneity across firms primarily to the people management scores at the firm-level as in the basic model below.

$$P_i = \alpha_0 + \alpha_1 \text{People}_i + \varepsilon_i \quad (2)$$

where P is the logged average labor productivity and People is the average of normalized people management practice scores of firm i . We gradually add control and moderating variables to the model to gain a better understanding of the factors that affect productivity. The multivariate regression equation is thus extended as below.

$$P_i = \varphi_0 + \varphi_1 \text{People}_i + \gamma_i^c Z_i + u_i^c \quad (3)$$

where Z s refer to control variables, which are firm i 's industry defined at the U.S. SIC three-digit level, full set of country dummies, and a dummy for the year that the WMS interview with the firm (plant) takes place, (log) firm size, (log) firm age at the time of the WMS interview, a dummy for whether the firm is publicly listed, and noise. To keep up with the WMS approach, we also control for the level of human capital at the firm in all the models.

To investigate the moderators' roles, we use interaction models (4) and (5). The moderating impact of average human capital at the firm level is accounted for with model (4) below.

$$P_i = \beta_0 + \beta_1 \text{People}_i + \beta_2 (\text{People}_i * \text{HC}_i) + \beta_3 \text{HC}_i + \delta_i^c Z_i + \theta_i^c \quad (4)$$

where HC refers to the level of average human capital at the firm i . The impacts of the EPL index and individualism scores at the country level are assessed with model (5).

$$P_i = \sigma_0 + \sigma_1 \text{People}_i + \sigma_2 (\text{People}_i * X_c) + \sigma_3 X_c + \mu_i^c Z_i + \gamma_i^c \quad (5)$$

where X refers to either the EPL index or the individualism score of country c , where the firm i operates. Here in model (5), the control variables (Z s) include also the level of human capital at the firm, merely for controlling.

Following the literature reviewing the use of cultural values frameworks in studies of international business and economics (Beugelsdijk, Kostova, & Roth, 2017; Kirkman, Lowe, & Gibson, 2006), to ensure a distinction between the roles of country and culture in the estimations, we keep the country dummies in the model (5) together with country-level culture scores so that country-specific characteristics and fixed-effects beyond culture can be captured in the estimation. It can be argued that country dummies in the estimations would absorb all the variation in country-level individualism scores which do not vary across firms in a country. To control for such an effect, we repeat the estimations without using country dummies, for robustness. We approach the estimations with EPL similarly.

To investigate culture's and employment legislation's roles, we perform alternative analyses. Here, we categorize the countries in dichotomies; as low EPL and high EPL and individualist or collectivist, according to the mean values observed in our sample. In the individualism versus collectivism analysis, countries with individualism scores lower than 60 are considered more collectivist whereas those with equal to or higher than 60 are considered more individualist. Countries with EPL indices greater than 2.57 are considered to have strict EPL, while the other are considered as not strict⁷. Then we estimate model (3) and model (5) separately for each category. Wald tests help to see whether individualism or EPL in high values have a significant bearing on the link between people management and productivity, in comparison to lower values of dichotomies.

⁷ Using the median value of 2.61 also leads to the same dichotomy as the mean value of 2.57.

4. RESULTS

4.1. Descriptive Statistics

We pay special attention to our main variables and additionally to the variable of average human capital at the firm level, as it is plausible to expect that employee abilities can be positively correlated with productivity and good people management quality in firms. The number of firms surveyed, and the people management score, human capital, productivity and firm size averages in each country are displayed in Table 2.1a. Great Britain has the highest number of observations, however, the large number of observations from China and balanced numbers from the other countries with varying characteristics allow for making fair comparisons.

Table 2.1a: Descriptive Statistics

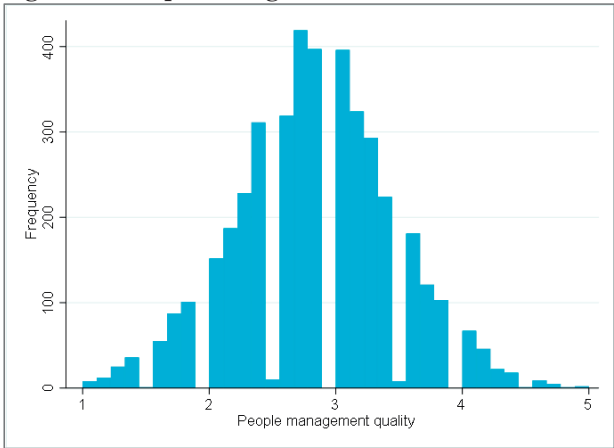
	Number of firms	Average people management score	Average firm size	Average proportion of employees with a college degree (%)	Average labor productivity
Australia	130	2.89	1224	16.2	1111 (2450)
China	597	2.70	1062	11.4	146 (623)
Germany	355	3.04	898	15.4	372 (254)
Great Britain	852	2.91	576	12.4	404 (1020)
Greece	245	2.57	494	16.2	410 (785)
India	243	2.74	940	23.0	133 (254)
Italy	273	2.80	338	16.5	426 (345)
Japan	142	2.98	518	32.3	465 (338)
Netherlands	157	2.92	247	6.8 ⁸	431 (320)
Northern Ireland	112	2.82	348	10.5	377 (604)
Poland	310	2.86	409	20.5	133 (189)
Portugal	297	2.63	249	9.8	296 (498)
Republic of Ireland	85	2.93	216	18.1	407 (717)
Sweden	371	2.90	358	16.1	645 (1644)
OVERALL	4169	2.84 (0.63)	611 (1528)	15.0	368 (937)
		Median: 2.86	Median: 246		Median: 218

Notes. Firms with missing data on productivity measure are dropped. The numbers of observations vary for variables. Average firm size is the number of full time employees. Average labor productivity is indicated in US Dollars per employee. Standard deviations in parentheses.

⁸ Note that the Dutch firms' human capital average (average proportion of employees with a college degree) is quite low, which does not truly reflect the actuality. The Dutch firms in the WMS interviews must have responded differently than firms in other countries, for the level of education of their employees. Because we could not obtain better information there, and a lower ratio would not lead to an overestimation of human capital's role, we decide to keep the ratio for The Netherlands as it is.

Germany is observed as the country with the highest average people management score, while Greece has the lowest average. The distribution of people management scores across our sample is depicted in Figure 2.1. The bell shape and statistical tests suggest a close to normal distribution of people management quality across firms.

Figure 2.1: People management scores across firms



Notes N = 4169. People management quality refers to the people management score at firm level, scored on a 1-5 scale, where 1 corresponds to low people management quality, and 5 to highest.

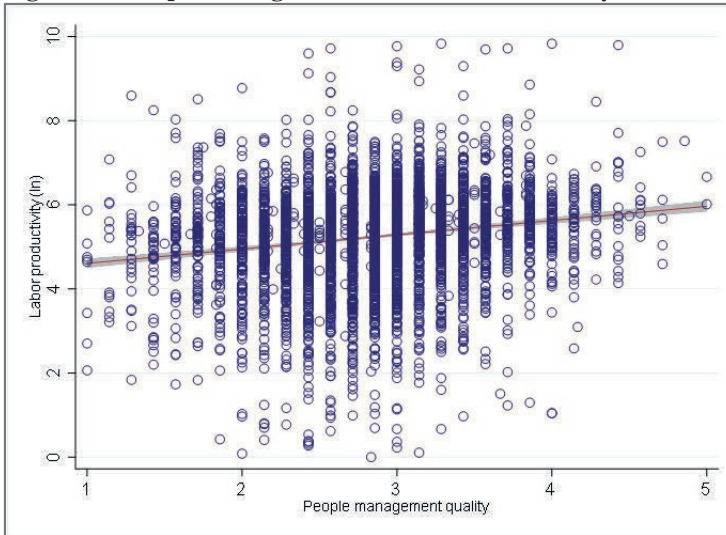
The average people management score is highest among the large firms (2.93). The medium-sized firms rank second (2.73), and the small firms rank last (2.69). The variance is the smallest for large firms, again. Not surprisingly, firm size is positively correlated with the people management score, as better-managed firms are more likely to survive, be productive, and grow (Bloom & Van Reenen, 2010). Table 2.1b shows the pairwise correlations among the variables in our study. People management scores of firms seem to be higher in firms with stronger human capital, and in countries with higher levels of individualism and less strict employment protection legislation, as expected.

Table 2.1b: Correlations

	People Management Score	Firm Size	Human Capital	Individualism
Firm Size	0.1551*			
Human Capital	0.2172*	0.1041*		
Individualism	0.1546*	-0.1715*	-0.0194	
Strictness of EPL	-0.1158*	0.0462*	-0.0316*	-0.6941*

Notes. Pairwise correlations between the variables of interest for 4169 firms in the sample. The human capital indicator, proxied by the proportion of employees with a college degree is available for 3878 firms. The correlations significant at 5% level are marked with a star.

The correlation between people management scores and (logged) labor productivity of firms is displayed below in Figure 2.2. The positive association observed here is tested along with multiple control variables in the following section.

Figure 2.2: People Management and Labor Productivity

Notes. N = 4169. People management quality refers to the people management score at firm level, scored on a 1-5 scale, where 1 corresponds to low people management quality, and 5 to highest.

4.2. Hypotheses Testing

Table 2.2 presents the results for the testing of Hypothesis 1. The OLS estimation results in Table 2.2 indicate that people management practices are positively and significantly associated with labor productivity, controlled for industries (column 2), countries (column 3), timing (column 4), general firm characteristics such as firm size, age and being quoted, and interview noise (columns 5-7). Additionally in column 8, we control the robustness of the relationship for the level of human capital (logged proportion of all employees with a college degree), without testing its moderating impact yet. Even then, the people management score stands out as a significant predictor of labor productivity, confirming our first hypothesis. One standard deviation upwards change (around 0.6 points) in the people management score corresponds to 19 log points rise in the average labor productivity. As expected, there is also a direct relationship between human capital and productivity, albeit to a lesser extent compared to the impact of people management. We label this result of column 8 as our baseline model.

Table 2.2: Estimation Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Dependent Variable: Log average labor productivity</i>								
People Manage.	0.329*** (0.0298)	0.266*** (0.0286)	0.183*** (0.0239)	0.182*** (0.0241)	0.179*** (0.0241)	0.196*** (0.0252)	0.214*** (0.0265)	0.190*** (0.0285)
Industries		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Countries			Yes	Yes	Yes	Yes	Yes	Yes
Years				Yes	Yes	Yes	Yes	Yes
General Controls					Yes	Yes	Yes	Yes
Noise Controls						Yes	Yes	Yes
Firm Size							Yes	Yes
Human Capital								Yes
Observations	4,169	4,169	4,169	4,169	4,159	4,120	4,120	3,830
Adj. R ²	0.0318	0.195	0.453	0.453	0.452	0.451	0.453	0.459

Notes. * $p < .05$; ** $p < .01$; *** $p < .001$. All columns are estimated by OLS, with model (2) for column 1 and model (3) for the other columns. Robust standard errors are in parentheses under coefficient estimates, clustered by firm. The people management score (main independent variable) is the raw average of normalized scores (z-scores) for seven people management practices in the WMS as shown in Appendix Table A1. The dependent variable is log average productivity, calculated as the 5-years average of revenues divided by the number of employees in the firm (firm size). Firm size is taken as the logged average of the number of employees in the 5-years period of interest, as obtained from the Orbis database. In case where this information is missing on Orbis, we use the number of employees in the firm as obtained in the WMS interview to minimize losing data points. The 5-year period covers the years 2008-2012 for all countries except the Netherlands; it is 2013-2017 for the Dutch firms. Year dummies stand for the year that the WMS interviews were conducted. Industry dummies are at 3-digit SIC level. Country dummies comprise a full set of dummies for all the countries in the dataset. General controls include (logged) firm age and a dummy for being quoted. Noise controls comprise 141 interviewer dummies and the day of the week on which the WMS interview takes place. Human capital is the logged proportion of employees in the firm, with a college degree.

Next, we investigate our Hypotheses 2-4. The estimation results are depicted in Table 2.3. Column 9 shows the results for human capital interaction, while columns 10 and 11 show the interaction of individualism and EPL, respectively. Proxied by the fraction of employees with a

college degree, the human capital is enhancing the efficacy of people management, supporting Hypothesis 2. The significance of this relationship is robust to all controls.

Table 2.3: Estimation Results for the Moderation Analyses

	(8)	(9)	(10)	(11)
<i>Dependent Variable: Log average labor productivity</i>				
People Management	0.190*** (0.0285)	0.102** (0.0422)	0.304*** (0.0760)	0.124 (0.0965)
Human Capital	0.0422*** (0.0133)	0.0469*** (0.0133)	0.0427*** (0.0133)	0.0423*** (0.0133)
Human C.* People M.		0.0422** (0.0164)		
Individualism			0.0255 (0.208)	
Individualism * People M.			-0.00187 (0.00116)	
Strictness of EPL				1.423 (7.321)
EPL * People M.				0.0295 (0.0396)
Control Variables	Yes	Yes	Yes	Yes
Observations	3,830	3,830	3,830	3,830
Adj. R ²	0.459	0.459	0.459	0.459

Notes. *p<.05; **p<.01; ***p<.001. All columns are estimated by OLS. The baseline model in column 8 does not estimate any interaction, and it is the same as the respective column in Table 2.2. It is only repeated here for ease of comparison. Model (4) is used for the human capital moderation analysis in column 9, and model (5) for individualism and EPL moderation analyses in columns 10-11. Robust standard errors are in parentheses under coefficient estimates, clustered by firm. The dependent variable is log average productivity. Control variables include the industry, country and year dummies, firm size, general and noise controls. In individualism and strictness of EPL moderation analyses in columns 10-11, human capital is used only as a control variable like in the baseline model. Other details of the variables are provided under Table 2.2.

For Hypothesis 3 regarding the moderation effect of individualism, the results in column 10 show that this hypothesis is not supported. No significant interaction is observed between the

degree of individualism in a country and the effectiveness of people management at the firms. The estimations above include country dummies in the models, so that other country characteristics besides individualism are captured. These estimations are repeated without using country dummies in order to check the probability that the country fixed-effects absorb all the variation in country-level individualism scores. The results of the estimations without country dummies are provided in Appendix Table B3, column I. When country dummies are excluded, the main effect coefficient and the interaction coefficient of individualism gain significance. When country dummies were included, the main effect coefficient between individualism and productivity was insignificant, which makes more sense when what shapes labor productivity is considered from an economic perspective. Excluding country dummies from the model loads the country-related distinguished factors on the individualism term, turning it to significant, while leading to a fall in the adjusted R-squared value of the model which implies a worse fit. The significant, yet negative coefficient of the interaction term can be perceived as individualism decreasing the effectiveness of people management, however the people management coefficient here is higher than in the estimation with country dummies, compensating for the negative effect of moderation.

For robustness, we tested Hypothesis 3 using the *institutional collectivism* scores of the GLOBE Project (House et al., 2004), and also investigated the possible moderating effect of other cultural dimensions; namely *power distance*, *performance orientation* and *masculinity versus femininity*. The estimation results of these additional tests regarding the effectiveness of people management in altering levels of various cultural values are depicted in Appendix Table B4. These estimations support our finding that no significant difference between the magnitudes of people management's effectiveness across different levels of *institutional collectivism* is evident. It can thus be suggested that the people management practices, as outlined by the WMS, are generally beneficial for the labor productivity across countries with varying degrees of individualism or collectivism. Again, we did not find a significant interaction between any of the other cultural values and people management. People management practices of the WMS do not appear to be essentially more or less effective in specific cultural environments.

Lastly, when we compare the coefficients of people management scores in dichotomized subsamples of high and low individualism, the coefficient of people management score turns out to be only slightly higher in individualist countries subsample. The results of estimations in dichotomies are displayed in Appendix Table B5. Although seemingly higher, the difference is not statistically significantly higher. Although the WMS is designed in congruence with Anglo-American work practices that are expected to be more relevant in rather individualist cultural

environments, the results do not support the claim that the best practices' link to productivity is culturally contingent.

The estimation results for possible moderation of employment protection legislation are shown in Table 2.3 above, column 11. The observed interaction between the EPL index and people management scores is not significant; therefore Hypothesis 4 is not confirmed. Stricter employment protection does not seem to hinder the effectiveness of people management practices. When we excluded the country dummies from the model, like in the analysis of individualism moderation, the results did not change substantially (see Appendix Table B3, column II).

Similarly, in the estimation of productivity in dichotomized subsamples of low and high strictness of legislation, we did not observe a substantial difference in the association of people management score with productivity in the not-strict employment legislation countries subsample (see the estimation results in Appendix Table B5). The observed difference between the coefficients of people management in predicting labor productivity in strict versus not-strict EPL environments is not statistically significant ($p = .180$). We have not found support for the idea that the practices of the WMS could not be effectively used in rigid legislation conditions.

5. DISCUSSION AND CONCLUSION

The WMS studies (e.g., Bloom & Van Reenen, 2007; Bloom et al., 2014) have proven a strong tool for the comparison of management quality across firms and countries. Our study is among the first to analyze whether the management practices suggested by the WMS are equally effective in differentiating settings. In a sample covering around four thousand manufacturing firms in 14 countries, we tested the link between people management practices and labor productivity and investigated the possible moderating impacts of firms' internal and external contexts on this link. Our analysis reconfirms that what the WMS presents as "best" people management practices are positively associated with labor productivity. We further show that the strength of human capital in firms underpins this association. On the other hand, no evidence is observed for interaction between people management practices and cultural values or employment protection legislation.

With this study, we contribute to management research in a number of ways. First, our study has been one of the first attempts to investigate the WMS through the lenses of other literatures, by offering insights of international business management and HRM and linking them to empirical economics of management. Utilizing multiple control variables, we corroborate the

universality of best practices in people management, and validate the WMS as a benchmarking tool for international comparison of management quality in firms, regardless of the international differences in cultural values or employment protection legislation. Our findings are robust to other contextual factors in a firm's environment, such as the firm's industry, size, age, and the timing of the WMS interviews. Thus, we also contribute to the ongoing debate in HRM literature, concerning universalistic versus contingency approaches to the relationship between HRM practices and firm performance (Guest, 2011). Second, we point out an important resource of competitive advantage in the firms, the human capital embodied in the employees, and establish it as a moderator that alters the outcome of people management efforts.

Our study also adds to the large body of literature on international management by assessing how cultural values are relevant to people management practices. Despite the necessity of compatibility between culture and management having a strong logic, the question of how individualism, which differs substantially across Anglo-European countries and the other countries, does not influence upon the outcome of people management remains to be answered. There can be both methodological and theoretical explanations.

Methodologically, the absence of the USA and Canada in our sample could result in an underrepresentation of countries with high levels of individualism, potentially impacting our estimations. On the theoretical front, it is important to consider that the cultural value scores utilized in our study (based on Hofstede et al., 2010, and the GLOBE Project, House et al., 2004) may not entirely capture the contemporary values of globalized societies. However, studies using more recent data from the World Values Survey (Beugelsdijk, Maseland, & van Hoorn, 2015; Taras, Roney, & Steel, 2009) suggest that cultures exhibit a certain stability, enabling us to utilize these cultural value frameworks for international comparisons. Consequently, we primarily rely on convergence arguments to explain our findings (Mayrhofer, Brewster, & Pernkopf, 2021).

Theoretically, advancement of technology, facilitating global communication, and the globalization of markets contribute to economic, organizational, and employment homogenization across borders (Quintanilla & Ferner, 2003). Moreover, individuals worldwide have been educated and trained according to kindred business principles for decades, resulting in a convergence of management knowledge and practices across cultures. As managers implement similar principles and practices within their firms, employees generally share organizational cultures that are akin to one another. These organizational cultures likely play a significant role in shaping employees' attitudes toward work goals and, consequently, their work performance. Thus, from these perspectives, the people management practices offered by the WMS appear to have universal

applicability across countries with diverse cultural values. Moreover, it is plausible that the individually customized implementation of people management practices coexists in reality, allowing for the optimization of top-down practices to suit varying needs, agreements, and preferences (Pak & Kim, 2018; Vossaert et al., 2022). Therefore, there may be unmeasured or implicit modifications to the practices, enabling the attainment of intended outcomes generally.

The employment protection legislation in labor markets is also found insignificant for the relationship between people management practices and productivity. There are a few possible explanations for this finding. Firstly, dismissal protection gives firms incentives to substitute labor to other factors of production, such as further capital investments which raise the productivity of labor (Autor et al., 2007; Baek & Park, 2018). Therefore, even under strict employment protection, it can be possible to achieve high productivity while still maintaining good people management practices with decreased labor intensity, explaining the insignificant moderation results we obtained. Secondly, higher costs attached to the strictness of employment protection could lead firms to invest more in their workforce (Bjuggren, 2018; Koeniger, 2005; Nickell & Layard, 1999) and substitute burdensome temporary contracting with permanent. Through longer employment terms, employees can acquire more firm-specific knowledge and skills, which can be advantageous for productivity through increased levels of human capital (Baek & Park, 2018; Belot, Boone, & Van Ours, 2007). So strict EPL can have a negative impact on the effective use of certain people management practices, while concurrently, it may prove advantageous for enhancing human capital at firms. Given that these two pathways may lead to divergent consequences on productivity, the moderating impact of employment protection legislation on this matter remains indeterminate in our analysis.

Our study is not free from limitations. Both management and productivity are unobservable variables; we estimate them only by measuring observable practices and outputs at a given point in time. One main limitation therein lies in the fact that the link between management quality and productivity does not essentially go one way. High-productive firms might have more physical and human capital resources that upgrade the management capabilities of the firm. This study does not eliminate such endogeneity, but relies on the experimental evidence provided by the management field experiment in India by Bloom et al. (2013) showing a causal impact of management on productivity.

We identified human capital as a key moderator to alter the outcome of people management. But our proxy for human capital is a very broad one. Linked to the years of schooling and attainment of high degrees in education, our measure of human capital represents the general

knowledgeability of firms' employees, but it is far from being a strong measure of employee competencies of communication, problem-solving, creativity, persistence, etc., which are valuable skills that would enhance the link between people management practices and labor productivity. More comprehensive indicators of human capital can give valuable insights: establishing which skills are more beneficial would be useful for talent management at the firm level, and for education design for policymakers at the country level, especially when the productivity and income distribution effects of skill-biased technical change are considered (Acemoglu & Autor, 2011; Goldin & Katz, 2009; Katz & Autor, 1999).

Furthermore, we assume that the WMS score we use to proxy the people management quality in firms is a good one, relying on the well-acknowledged best practices approach of HRM literature, and the "management as a technology" perspective that is suggested by Bloom, Sadun and Van Reenen (2016). However, there might be other dimensions of people management quality omitted by the survey measures of the WMS, but ultimately influential on labor productivity. Leadership skills and competencies of management, for instance, are essentially important in setting vision, motivating and inspiring employees towards the achievement of organization targets, and acting proactively against problems. Leaders have a critical role in facilitating the people management systems, and influencing employee perceptions by interpreting and providing meaning for the intended practices (Nishii & Paluch, 2018). Further studies regarding the role of leaders in shaping management's outcome would be worthwhile.

An additional limitation is that we had to exclude firms from a number of countries from our study due to the lack of comparable financial information on firms there. The most important drawback here lies in the fact that the USA and Canada are excluded, yet these countries have prominently high levels of individualism and loose legislation on employment protection. In our work, we directed the focus to an alternative setting that is differentiated from the American context, which is the basis of WMS studies, but further work covering more countries is needed in order to determine with a greater degree of accuracy whether the people management practices of WMS are as equally effective across countries.

This study extends our knowledge of the firm-level resources that bolster the management's success in raising productivity. It highlights the importance of building skills and knowledgeability through education, therefore gives a recipe for policy makers to improve countries' productivity. At the firm level, better understanding how high human capital strengthens management entails a critically weighty task for managers. Identifying at which hierarchical levels skills influence the management and productivity link more is essential to efficiently structure a

firm. Designing the people management practices so as to better utilize the human capital resources and employee competencies will increase firm's competitive advantages. Developing the tools that enable recruiting skilled employees, investing in employees' development, empowering skilled employees in the organization structure, and using the right people in the right job designs appear to be particularly important to make the most of the firm's workforce. As such, logical extensions of our work can be investigating to what extent the empowering of skilled employees matters; how firms in skill-intensive industries are managed; and how managerial human capital relates to management practices and productivity.

A natural progression of our work is to focus on the firm level, where we find that the context indeed matters. Investigating firms in a single country and taking more firm-level variables into account would help gain a better understanding of how the firm-specific aspects influence the effectiveness of firm management. A greater focus on human capital resources, organizational design, and firm activities such as internationalization and innovation, where human capital matters greatly, can produce valuable findings that account more for the impact of intangible resources on the management and productivity link

Chapter 3

Management Practices, CEO Instrumental Leadership Behaviors and Firm Productivity[§]

ABSTRACT

Understanding the large productivity differences across firms has been a challenge in economics and management fields. Research shows that firms' management practices explain a significant part of this productivity variation. However, the possible contribution of individual managers is still ill-understood in this respect. In this paper, we propose that, next to management practices, the leadership behaviors of CEOs are also linked to productivity. For 156 manufacturing firms, we investigate the association of CEO instrumental leadership (IL) behaviors with firm productivity, alongside and also in interaction with firms' management practices. Our study is among the first to show that CEO leadership behaviors have not only a robust, positive association with productivity, but also that this association is independent of the association between management practices and productivity. With our findings, we contribute to the economics and management literature by providing evidence for the importance of both management practices and the individual manager for firm performance.

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1. INTRODUCTION

To understand why firms' productivity levels differ, various angles in the field of economics have been considered (De Loecker & Syverson, 2021; Haldane, 2017; Syverson, 2011). Notably, certain determinants such as scale, technological superiority, and human capital differences could be rather easily observed and accounted for (Abowd & Kramarz, 2005; Bartel, Ichniowski & Shaw, 2007). But by now, research has also established that management explains a significant portion of productivity differences (see for an overview Metcalfe, Sollaci, & Syverson, 2023). An unresolved question is, however, the extent to which the relevance of management for productivity is determined by the behaviors of individual managers themselves, next to firm-wide management practices. More generally, in the field of management it seems that we have arrived at "...the perplexing paradox that the manager has somehow managed to elude management scholarship" (Aguinis et al., 2022, page 1850). Syverson (2011) described that the effect of management on performance indicators, like productivity, runs through these two channels, and that these channels are not mutually exclusive.

For the empirical evidence of the contribution of management practices, there is by now a vast stream of literature, which was initiated by Bloom and Van Reenen's seminal paper from 2007. In this paper, they describe how to measure and explain management practices across firms and countries (Bloom & Van Reenen, 2007). Several studies show that such management practices not only are strongly related to firm productivity (for overviews, see Bloom, Genakos, Sadun, & Van Reenen, 2012; Scur et al., 2021), but also that there is a causal relationship running from management practices to firm productivity (Bloom et al., 2013).

The role of the behaviors of the individual manager is thus often neglected in management scholarship (Aguinis et al., 2022), and this also holds for the work on the relevance of the individual manager for firm performance and productivity (Giardili, Ramdas, & Williams, 2022). In the strategic management literature, numerous studies describe how, most notably, the CEO can be linked to firm performance indicators (Mackey, 2008; Quigley & Hambrick, 2015). Guided by the upper echelons theory (Hambrick & Mason, 1984; Hambrick, 2007), CEOs' observable and biographical characteristics such as their gender (Khan & Vieito, 2013), founder status and executive titles (Adams, Almeida, & Ferreira, 2005) have been linked to various outcomes at the firm level. Besides these, also CEOs' personal values (Ou, Waldman & Peterson, 2018), their day-to-day involvement in the firm's business (Bennedsen, Pérez-González, & Wolfenzon, 2020) and behavioral types that are observed from their daily activities and engagements (Bandiera, Prat,

Hansen, & Sadun, 2020) have been found to matter for firm performance. But in order to find evidence for the causal relationship between CEO and firm performance indicators, the CEO is often merely a dummy variable, whereby creating exogenous variation in the CEO-variable enables the identification of the impact of different kinds of CEOs on firm outcome variables (Garretsen, Stoker, & Weber, 2020). Such studies use e.g. CEO departure (Fee, Hadlock, & Pierce, 2013) or CEO hospitalization indicators (Bennedsen et al., 2020) to explain variation in firm performance.

Consequently, the question of what CEOs actually *do* to affect firm performance outcomes remains largely unanswered (Bromiley & Rau, 2016; Neely, Lovelace, Cowen, & Hiller, 2020). The topic of leader behaviors has been mainly developed and studied within the boundaries of the leadership literature. In this field, which is dominated by OB scholars, research on behaviors of leaders has been carried out intensively (see e.g.; Anderson & Sun, 2017; Fischer & Sitkin 2023). At the same time, this field has difficulties in establishing relationships between such leadership behaviors and firm performance outcomes, but the concepts and instruments to measure leadership behavior are useful for the study of CEO effectiveness.

Following recent pleas (Aguinis et al., 2022; Garretsen et al., 2020; Vera, Bonardi, Hitt, & Withers, 2022), our study is among the first in the management literature to give a detailed account of how and to what extent management practices and the behaviors of individual managers, namely the CEO, distinctly and together relate to firm productivity (Metcalf et al., 2023). Surveying 156 manufacturing firms, we measure both their management practices and CEO leadership behaviors, and we link these to objective data on firm productivity, whereby we control for CEOs' individual characteristics such as their tenure, age, origins, and earnings, serving as a proxy for their skills and competences. We also explore whether CEO leadership behaviors and management practices interact. We take a mixed-method approach, where we combine interview data, survey data and objective productivity data.

Our estimations show that both CEO leadership behaviors and management practices are significantly positively associated with firm productivity, even when individual CEO characteristics (as proxies for skills and competencies) are controlled for. We also find that the relations between CEO leadership behaviors and management practices with productivity are not mutually exclusive, such that CEO leadership behaviors are not substituted by management practices. Instead, they have separate and independent relations to productivity. Our sample does not provide evidence for a significant interaction between CEO leadership behaviors and management quality. Overall, our study demonstrates that CEO leadership behaviors are strongly associated with firm productivity, beyond the role of firms' management practices.

By combining insights from the leadership, strategic management and economics of management literatures, our study offers three contributions. Firstly, speaking to the growing body of research on top managers and their impacts (e.g., Aguinis et al., 2022; Busenbark, Krause, Boivie, & Graffin, 2016; Bennedsen et al., 2020; Bertrand & Schoar, 2003; Quigley & Hambrick, 2015), we contribute to the management literature by investigating the relationship between CEO behaviors and firm productivity. More specifically, we extend the upper echelons theory (Hambrick, 2007; Neely et al., 2020) by showing the importance of CEO leadership behaviors beyond their individual and biographical characteristics. Secondly, our findings complement the rapidly expanding stream of literature on management practices (Bender et al., 2018; Bloom & Van Reenen, 2007; Scur et al., 2021; Scur & Wolfolds, 2023; Syverson, 2011) by showing the relevance of the individual manager, namely the CEO, alongside management practices. Thereby, we enhance our understanding of how both management and managers separately are relevant when it comes to productivity variation across firms (Metcalf et al., 2023). Finally, by providing empirical evidence regarding CEO leadership behaviors' relationship with firm productivity, we also contribute to the leadership literature, in which there has been a paucity of studies in this respect (Fischer, Dietz, & Antonakis, 2017; Garretsen et al., 2020).

2. LITERATURE AND HYPOTHESES

2.1. Productivity Variations across Firms and the Role of Management Practices

Bloom, Sadun and Van Reenen (2016) consider management practices as a universally applicable technology that raises productivity, independent of the firm's characteristics or environment. Among the efforts to understand how firm management relates to productivity variation, the World Management Survey (WMS) stands out as the first standardized survey tool to measure management practices in a consistent manner across countries and firms (Bloom & Van Reenen, 2007; for an overview see Scur et al., 2021)¹. The WMS measures and scores management quality using a set of core management practices such as monitoring, operations, targets, and people management, which resemble the key principles of Lean manufacturing and high-performance human resource practices, with a "best practices" perspective (Bloom & Van Reenen, 2007). The WMS management practices scores are found to be positively associated with many indicators of firm performance such as operating profit, output growth, exports, Research and Development expenditures and patents, and notably productivity (Bloom et al., 2019; Bender et al., 2018; Bloom

et al., 2016; Bloom & Van Reenen, 2007). In line with these findings, we therefore hypothesize as follows:

Hypothesis 1. Management practices are positively associated with firm productivity.

2.2. The Relevance of Managers: CEOs

The role of CEOs in organizational performance has been central in the strategic management field (Bertrand, 2009; Finkelstein, Hambrick, & Cannella, 2008; Hambrick & Mason, 1984; Vera et al., 2022). Notably, the upper echelons theory focuses on the question of how CEOs matter, by proposing that CEOs' characteristics and attributes determine CEOs' choices and actions, and consequently influence organizational performance (Hambrick, 2007; Liu, Fisher & Chen, 2018; Wang, Holmes, Oh, & Zhu, 2016). CEO characteristics are variables such as age, gender, background of education and experience, tenure, skills, personalities and values (Kaplan, Klebanov, & Sorensen, 2012; Ling, Zhao, & Baron, 2007; Liu et al., 2018). With these characteristics, CEOs shape the firm's structure, its direction and commitments, the allocations and alignments of its resources (Chadwick, Super, & Kwon, 2015). In doing so, CEOs codetermine the competitiveness of the firm and its performance (Black, 2019; Busenbark et al., 2016; Samimi, Cortes, Anderson, & Herrmann, 2022; Wang et al., 2016). Empirical evidence supports this line of reasoning. For example, Carpenter, Sanders, and Gregersen (2001) show that US multinational firms led by CEOs with international assignment experience perform better.

However, insights into CEOs' specific actions and behaviors are scarce. As Neely et al. (2020) point out, the exploration of the relational black box regarding the link between the behaviors and actions of CEOs and firm performance outcomes is not well articulated in the upper echelons theory, nor more generally in the strategic management research. In an attempt to distinguish individual managers' effects on firms, Bertrand and Schoar (2003) track managers across firms over time using "mover dummies", and attribute the variation in firm policies and economic performance to "manager fixed-effects". Their results suggest that top managers matter for firm performance, however without attention to how they manage.⁹ The paper by Bandiera et al. (2020) is to date one of the very few studies that attempt to shift the focus to CEO behaviors. These authors examine CEOs' diaries using a machine learning algorithm systematically classifying CEOs' activities. Based on the results, they categorize CEOs' activities into two behavioral profiles. They observe that there are "leader" CEOs who engage in more communication and coordination

⁹ Also, note that Jarosiewicz and Ross (2020) showed that using mover dummies might lead to statistically spurious results in explaining managers' effects.

activities, and “manager” CEOs who are more involved in production-related activities. Their findings suggest that “leader” CEOs are more likely to contribute to firm productivity. Although their study adds a behavioral perspective to the strategic management literature, Bandiera et al. (2020) still do not grasp the role of actual *leadership behaviors* of CEOs.

CEO Behaviors: Instrumental Leadership

In order to investigate leadership behaviors, we have to turn to the field of leadership studies. Here, several leadership styles have been developed and measured for decades (Fischer & Sitkin, 2023). Grounded in upper echelon theory, Samimi et al. (2022) developed a conceptual framework of strategic leadership which includes not only the CEO characteristics, but also their leadership behaviors in order to explain how they influence firm outcomes. Intertwined with their functions as strategic leaders, CEOs’ leadership actions include, among others, shaping firm’s strategies; communicating a vision; motivating and influencing the personnel; managing, processing and distributing information within the firm; and steering the firm’s behaviors in social and ethical issues (ibid.). These actions can be executed by using different leadership styles, such as transformational, empowering, or instrumental leadership. Such styles have been developed and tested in the leadership literature. Especially, transformational / charismatic and transactional leadership behaviors have been subject to extensive research (Anderson & Sun, 2017; Bass, 1985; Judge & Piccolo, 2004; Wang, Oh, Courtright, & Colbert., 2011; Wang, Tsui, & Rin, 2011).

Explaining how leaders like CEOs influence organizational effectiveness, Yukl (2008) points to specific categories of leadership behaviors and highlights a. o. task-oriented leadership behaviors, which include the clarifying of objectives, planning of work activities, monitoring operations and eliminating errors (idem, p.712). Similarly, Morgeson, DeRue and Karam (2010) discuss the leadership functions for team effectiveness and refer to goal-setting theory (Locke & Latham, 1990) to emphasize the importance of strategy formulation and implementation for directing employees’ actions towards the achievement of performance goals.

Building upon these perspectives, Antonakis and House (2002; 2004; 2014) developed the *instrumental leadership* (IL) scale that is particularly relevant for managers and CEOs, as IL centers around strategic and task-monitoring behaviors, to ensure organizational goal attainment and performance. With a leader’s essential knowledge of the organization’s strengths, constraints and needs, and a good grasp of its environment, IL deals with the direction that the organization takes, and concerns on how to maximize follower performance beyond moral or positive psychological appeals that are covered in the styles of transformational or transactional leadership (Antonakis & House, 2004). Ensuring that employees in the firm can perform in the ways needed for goals to be

attained, especially planning, decision making and problem solving functions from the leader are necessary, and IL behaviors of the leader can serve this need (Antonakis & House, 2014). With its emphasis on improving performance and ensuring goal attainment, we argue that IL behaviors are specifically relevant for CEOs. The central idea is that instrumental leadership “gets the job done”: by showing IL behaviors, leaders clarify policies, specific objectives and required tasks; they build measurement and feedback tools for outcomes; they assist and inform the employees to improve their performance, and they provide them with integrated resources that facilitate goal attainment.

The IL concept’s validity and reliability are tested extensively by Antonakis and House (2014) in varying experimental settings to ensure generalizability. It is found to be prototypical of good leadership on par with other well-known leadership styles in predicting leader outcomes effectively, such as transformational leadership and contingent reward (Bass, 1985, Judge & Piccolo, 2004; Podsakoff et al., 1990; Waldman et al., 2001; Wang et al., 2011).

Crucially, there is a paucity of consistent empirical evidence in the existing leadership and strategic management literatures when it comes to the relationship between any CEO leadership behaviors and objective outcomes at the firm level (Samimi et al., 2022). This also holds for the possible relevance and role of CEOs’ IL behaviors. Up until now, empirical evidence that links CEOs’ IL behaviors’ to firm performance outcomes like productivity is lacking, because most studies are targeted at leaders who do not operate at the CEO level. Moreover, they predominantly focus on subjective, individual outcomes, such as job satisfaction or stress. For example, the study by Rowold, Diebig and Heinitz (2017) reveals that leaders’ IL behaviors are negatively associated with their employees’ stress levels. Similarly, Allgood, Jensen and Stritch (2022) investigate employee burnout amid COVID-19 and find evidence for IL’s mitigating effect on employees’ work-family conflicts. Although these outcomes are measured at the individual subjective level, they hint at a positive link between IL behaviors and performance, and ultimately firm productivity. Therefore, we propose the following hypothesis:

Hypothesis 2. *CEO instrumental leadership behaviors are positively associated with firm productivity.*

2.3. The Contributions of CEOs’ IL Behaviors and Management Practices to Firm Productivity

As we state in our first two hypotheses, we expect that both management practices and CEO IL behaviors are positively related to firm productivity. To the best of our knowledge, we are the first to combine these two variables in a single study so as to assess how much of the variance

between firms' productivity levels is due to CEO IL behaviors, besides the part due to the previously found variation in management practices (Bloom et al., 2013; Bloom & Van Reenen, 2007). Following up on these two hypotheses, and in line with recent findings from Metcalfe et al. (2023) on the separate effects of individual store managers and management practices on productivity, we also propose that management practices and CEO IL behaviors will have distinct relationships with firm productivity.

While good management quality indicates the presence of modern techniques, like continuous performance tracking and talent management practices, instrumental leadership of CEOs implies a common understanding of their strategy and vision, providing critical information and constructive feedback, and ensuring the alignment of organizational resources with employees and the specified tasks to facilitate goal achievement. Management practices are a given (static) stock of knowledge and guidelines in the firm, shaped by many managers in different periods and at different levels, evolving slowly in time as leaders come and go (McNally, Schmidt & Valero, 2022). Instrumental CEOs, on the other hand, are more dynamic, responsive to what happens in the firm and the environment, and even proactive with their expertise and knowledge. They can see the strengths and capitalize on the presented opportunities. Therefore, we propose that instrumental leadership of CEOs and management practices will both and together have links to productivity, so we hypothesize as below:

Hypothesis 3. *Management practices and CEO instrumental leadership behaviors are both positively related to firm productivity, such that their associations with productivity are distinct from one another.*

2.4. The Interaction between IL and Management Practices

Leadership does not take place in a vacuum (Porter & McLaughlin, 2006, p.559). Hence a critical question in the leadership field concerns what can neutralize, substitute, or enhance leadership behaviors. While neutralizers are posited as variables (e.g., situational characteristics, conditions in place) that counteract leadership behaviors and even destroy their effectiveness, substitutes are variables that can replace leadership behaviors and render leadership behaviors unnecessary. Finally, enhancers are variables that can strengthen the effect of leadership behaviors (Dionne et al., 2002; 2005; Kerr & Jermier, 1978; Podsakoff, MacKenzie, & Bommer, 1996). Several empirical studies have shown that there are employee-, task-, team- or firm-related variables that can indeed substitute or moderate leadership behaviors (e.g., Keller, 2006), also when it concerns the behaviors of CEOs (Stoker, Grutterink, & Kolk, 2012).

Reviewing the leadership literature, Porter and McLaughlin (2006) refer to managerial policies and technologies as organizational processes that can moderate leadership behaviors' effectiveness. At the same time, one could also argue that leadership behaviors moderate the effectiveness of management practices (Metcalf et al., 2023). For a given quality of management practices the presence of an effective CEO could enhance the effect of management practices on firm productivity. This raises the question of whether the interaction of management practices with IL leadership behaviors is positively associated with firm performance. This is summarized by our fourth hypothesis:

Hypothesis 4. *The interaction of CEO instrumental leadership behaviors and management practices has a positive relationship with firm productivity.*

3. DATA AND METHODOLOGY

3.1. Design and Sample

In 2018, we surveyed manufacturing firms in the Netherlands to collect information about their management practices and CEO leadership behaviors (Aral et al., 2020). Following the standard research method of the internationally harmonized WMS project (for a detailed description, see Bloom & Van Reenen, 2007), firms were first invited for a telephone interview to determine their management scores, 459 firms agreed to participate which covers approximately one quarter of all manufacturing industry in The Netherlands. We approached a randomly selected half ($N = 233$) of this sample to also participate in a survey about CEO leadership behaviors. Of these 233 firms, 170 firms filled out the online survey about the leadership behaviors of their CEOs.

The management practices survey was carried out by trained graduate students as telephone interviews with a plant manager from each firm, who had a good understanding of the firm's managerial practices as well as the day-to-day activities. Firms were specifically informed to delegate such a knowledgeable, hands-on plant manager for the interviews. The survey was "double-blind", meaning that the interviewers did not know about the firms besides their names, industries and contact information, and the interviewed managers did not know that their firms were scored on management practices. The interviewers asked open-ended questions to the interviewed managers, in a continued discussion eliciting examples until the interviewer could make an accurate evaluation of the firm's practices so as to score the firm on the various management practices.

After the telephone interview, the plant managers were invited to take the online leadership survey. Among the 170 firms that agreed to participate, 156 firms provided complete survey

responses, leading to a comparable sample size as other studies on CEO behavior and firm performance (e.g., Krause, Withers, & Waller, 2022; Ling et al., 2007; Ling, Simsek, Lubatkin, & Veiga, 2008; Luo, Kanuri, & Andrews, 2014; Wang et al., 2011).

We matched the survey data with the administrative data of the firms at Statistics Netherlands (CBS) General Business Register. Firm characteristics, such as their size, multinational enterprise (MNE) status, industries, productivity and other financial information that are needed to estimate firm productivity are collected from the CBS data sources. Then, we hand-collected biographical information about the CEOs. To establish a link between the surveys and the biographical information of the CEOs, we used the Chamber of Commerce registries at CBS, which have firms' board members' information. In this way, we could match firms' CEO information with their IL and management practices data. In the final dataset, the completeness of data varies for the CEO and firm details. Our main results are based on 149 firms for which we had a complete data set.

3.2. Variables

Management Practices

The management practices of the WMS cover the core managerial activities in manufacturing firms, which entail a useful benchmark to assess firms' management quality in three key areas of management (Scur et al., 2021). First, *monitoring*: Are modern manufacturing techniques introduced and used for cost efficiency and quality improvement objectives? How well do firms monitor the operations inside the firm? Second, *targets*: Do firms set the right targets, track the outcomes continuously, communicate the targets effectively, and take appropriate action if the targets and the performance outcomes are inconsistent? Third, *people management*: Are firms promoting and rewarding employees based on performance, prioritizing selective hiring, developing skills, making room for talent, and trying to keep their best employees? The full set of questions that are asked to score each dimension of the management practices of the WMS is included in Bloom and Van Reenen (2007), and shown in Appendix Table A1.

Trained interviewers scored firms on 18 management practices from 1 (worst practice) to 5 (best practice). For instance, among people management practices, promoting employees only on the basis of tenure corresponds to the lowest scores; promoting on the basis of performance corresponds to medium scores (3), while active talent management of continuously identifying, developing and promoting the top performers corresponds to the highest scores (Bloom & Van Reenen, 2007). Following the standard approach of the WMS procedure (ibid.) and based on factor

analysis of data from over 12,000 firms showing that the 18 manufacturing questions yields one principal component (Scur et al., 2021), we adopted the unweighted average of all practice scores as the overall management score of the firm. As the scoring might change across 18 management practices, we use the standardized average of all the practices in the firm (z-scores).

Instrumental Leadership

For the assessment of IL behaviors, we used the 16 instrumental leadership items as developed by Antonakis and House (2002; 2014). The items that comprised the IL construct are presented in Appendix Table C1. The questionnaire for IL behaviors was translated and administrated in Dutch, after the lingual equivalence with the original English version was ensured. Plant managers rated their CEO's IL behaviors on a 1-7 Likert scale that ranged from "totally disagree" to "totally agree". Standardizing (mean 0; standard deviation 1) and averaging the scores of the 16 items, we obtain an overall index of IL for each CEO in the sample ($\alpha = 0.94$).

The confirmatory factor analysis and tests of model fit are executed with Structural Equation Modeling. On the basis of all 16 IL items (Antonakis & House, 2014), we used the average scores of four factors that comprise IL (environmental monitoring, strategy formulation and implementation, path-goal facilitation, and outcome monitoring items) to estimate the latent construct of IL. Similarly, on the basis of all 18 management practices (Bloom & Van Reenen, 2007), averaged scores for three management subdimensions (monitoring, targets, and people management) are used to estimate the latent construct of management quality. The model chi-square value (21.95, $p=0.056$) indicates that the model with four IL and three management factors reproduces the observed covariance among the measured items fairly. The RMSEA value (0.066) is lower than the 0.08 cutoff with a p-value (0.264) above 0.05, indicating an acceptable fit. The comparative fit (0.982) and the Tucker-Lewis (0.971) indices are both higher than a conservative threshold of 0.95. The SRMR value (0.059) is below the 0.08 cutoff, and the coefficient of determination is quite high (0.979). All measures taken together, the model has an acceptable fit level.

Firm Productivity

We use the firm-level productivity variable as our dependent variable, which is a good indicator of performance for manufacturing firms, also allowing us to compare our findings with the existing management and WMS studies. For this, we compute the value-added per employee in Euro amounts, using the Structural Business Statistics database that is maintained by CBS. We

log transform productivity in our estimations for ease of interpretation and comparability with the WMS literature (Bloom & Van Reenen, 2007).

Control Variables

In our estimations, we include as controls several CEO characteristics that have been frequently used in upper echelons literature (Wang et al., 2016). As indicators of CEO experience, we use CEO tenure as the number of years in which they have the CEO position, and CEO age. We also take CEO origins into account; whether they are Dutch nationals or foreigners, which might signal their international experience. Furthermore, we include CEO earnings that are the sum of their wages and bonuses in the past 12 months, as a proxy for their skills and capabilities. We do not include CEO gender in our analysis, because there is so little heterogeneity in our sample in that respect.

In most studies that investigate CEO leadership, transformational leadership (TFL) is the central concept (Peterson, Walumbwa, Byron, & Myrowitz, 2009; Waldman, Siegel & Javidan, 2006). Antonakis and House (2014) have investigated the discrepancy between IL and TFL extensively and have shown the incremental validity of IL above and beyond TFL (see also Anderson & Sun, 2017). Nevertheless, in our study we also control for TFL. We collected information about the CEO transformational leadership behaviors using 19 TFL items with components of identifying and articulating a vision, providing an appropriate model, fostering the acceptance of group goals, high-performance expectations and intellectual stimulation (Podsakoff et al., 1990), and CEO charismatic leadership using 5 items (Waldman, Ramirez, House, & Puranam, 2001). For internal consistency, TFL displays an alpha coefficient of 0.96 together with the charisma items; whereas excluding charisma drops TFL's alpha value to 0.95. Therefore, we use the TFL construct including the charisma items in our analysis, which is a practice that is also in line with the leadership literature (Anderson & Sun, 2017; Rowold & Heinitz, 2007). To obtain an overall TFL behavior score for each CEO, we standardize the responses and average the standardized scores for all the items that make the TFL construct.

As for firm characteristics, we use administrative data from 2018 in the CBS registries to collect information about firms. We focus on the firm controls that are relevant for productivity, production scale, technological and competitive advantages as omitting such factors would entail a substantial endogeneity problem. In our estimations, we include the firm's capital intensity that is computed as the logged sum of tangible and intangible assets per employee, in thousand Euros in 2017. This variable can be computed only at the enterprise group level, not at the firm (or business entity) level like other variables. As a commonly used control variable, we include firm

size as size classes that allow for non-linearities. There are small (1-49 employees), medium (50-249), and large (250+) firms in the sample¹⁰; the majority of the firms has medium size as in the management survey, which is in line with other WMS studies (Scur et al., 2021). In a similar sense, we use firm age categories for the life cycle of firms: 3-5 years; 5-10 years; 10 or more years old. We use a set of industry dummies (2-digit NACE) and location dummies at the province level. Moreover, we use a binary variable that stands for the multinational ownership status of the firm. We distinguish firms as domestic or multinational, as multinationals are commonly larger, more productive, and better managed (Bloom & Van Reenen, 2007).

3.3. Descriptive Statistics

Table 3.1 below shows the descriptive statistics for our sample. Mean values and standard deviations are shown for each variable. As mentioned before, the completeness of data hence the number of observations per analysis varies for CEO and firm details. To check whether the change in the number of observations alters the average characteristics of the sample in various steps of analysis, we compare the descriptive statistics for our largest and smallest number of observations (N= 156 vs. 99). We do not observe substantial differences, as depicted in Table 3.1.

¹⁰ This size classification is based on OECD's definition of enterprises by size for manufacturing sector. OECD (2022), "Enterprises by business size" (indicator).

Table 3.1. Descriptive Statistics

	Full Sample			Sample section with CEO demographic information		
	N	M	SD	N	M	SD
Productivity	156	99.42	55.84	99	99.25	57.58
Instrumental Leadership	156	5.21	0.95	99	5.28	0.91
Management	156	3.02	0.56	99	3.04	0.56
Subdimension: <i>monitoring</i>	156	3.30	0.45	99	3.28	0.77
Subdimension: <i>targets</i>	156	2.90	0.66	99	2.94	0.64
Subdimension: <i>people</i>	156	2.87	0.50	99	2.89	0.49
Firm Size	156	275.54	409.10	99	268.03	420.08
Firm Age	156	35.25	19.57	99	35.09	17.05
Capital Intensity	156	155.66	525.70	99	173.29	639.04
Foreign Firms	156	0.80	0.40	99	0.79	0.41
CEO tenure				108	12.10	8.05
CEO earnings				124	327.22	368.21
CEO age				119	53.70	6.08
CEO origin (foreign)				119	0.13	0.33

Notes. IL and TFL behaviors are measured on a 1-7 scale where higher scores correspond to more of such behaviors. Management and its subdimensions are measured on a 1-5 scale where higher scores correspond to better management quality. Productivity and capital intensity values are depicted per employee, in thousand Euros. Although we use categories for firm size and age in our analysis, here firm size is shown as the number of employees and firm age as years. CEO earnings are in thousand Euros. CEO age and tenure are in years. In the full sample (N=156), the median firm size is 143 employees, 71% of firms are medium and 28% of firms are large in size. In the smaller sample with CEO demographic information (N=99), the median firm size is 144 employees, 73% of firms are medium and 25% of firms are large in size.

Table 3.2 shows the correlations between the variables. Management practices are positively correlated with CEO IL behaviors. CEO individual characteristics are not correlated with IL and with each other, except the correlation between CEO age and tenure. CEO earnings and origin as a foreign CEO have significant correlations with productivity. Likewise, multinational firms and large firms, as seen in the firm size and capital intensity variables, are observed to be more productive.

Table 3.2. Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) IL	1										
(2) Productivity	0.19*	1									
(3) TFL	0.81*	0.17*	1								
(4) Management	0.29*	0.34*	0.32*	1							
<i>Monitoring</i>	0.25*	0.33*	0.26*	0.92*							
<i>Targets</i>	0.29*	0.32*	0.36*	0.86*							
<i>People</i>	0.23*	0.26*	0.25*	0.88*							
(5) CEO tenure	-0.09	-0.24*	-0.16	-0.38*	1						
(6) CEO earnings	0.06	0.36*	0.02	0.23*	-0.18	1					
(7) CEO age	0.04	0.04	-0.11	-0.10	0.40*	0.09	1				
(8) CEO origin	0.09	0.23*	0.10	0.13	-0.16	-0.00	-0.09	1			
(9) Firm Size	0.07	0.28*	0.11	0.29*	-0.07	0.45*	0.05	-0.04	1		
(10) Firm Age	-0.04	-0.02	-0.10	-0.13	0.25*	-0.00	0.05	0.20*	0.03	1	
(11) Capital Int.	0.14	0.44*	0.16*	0.28*	-0.29*	0.31*	0.08	0.08	0.31*	-0.03	1
(12) Foreign firm	-0.00	0.35*	-0.03	0.25*	-0.40*	0.39*	-0.05	0.12	0.25*	-0.06	0.37*

Notes. Pairwise correlations are shown (* $p < 0.05$). Although we use categories for firm size and age in our analysis, here firm size is taken into account as the number of employees, and firm age as years.

Although there are significant correlations among certain variables, the analysis of multicollinearity yields acceptable results. The VIF analysis results are reported in Appendix Table C2, where we specifically pay attention to the correlations between IL, management practices, TFL, CEO characteristics and firm characteristics. The estimated levels of multicollinearity do not pose a threat of inflated variation (mean VIF values are 1.70, 2.56, 2.61 and 2.66 for our four empirical models that will be explained in the following section).

Importantly, and only after the interview was concluded, we also asked the interviewed plant managers' for their evaluations of the overall quality of management practices in their firm, to see if there was a halo effect in their perceptions. It could be possible that plant managers in more productive firms might give an exaggerated, polished account of management practices to bias interviewers' scoring of management practices, and also they might assess their CEO as strong instrumental leaders. These self-scores are not significantly correlated with firm's productivity ($r=0.07$), indicating that firms' productivity levels do not affect or bias plant managers' responses in the data collection of both the interview and the survey.

3.4. Empirical Model

We propose a mixed-determinant model (Klein, Dansereau, & Hall, 1994) where predictors at various levels (namely, management practices score at the firm level and CEO's IL behaviors and biographical characteristics at the individual level) to estimate a criterion of performance, being productivity at the firm level.

To test Hypothesis 1, we estimate productivity using firm's management score as the main predictor variable. The cross-sectional OLS regression model takes the following form:

$$P_i = a_0 + a_1M_i \pm a_2F_i \pm \varepsilon_{ai} \quad (1)$$

where i denotes the firm. The dependent variable P_i is productivity, logged value-added per employee. M_i stands for the standardized management score (z-scores) for firm i . Here, we control for firm characteristics using F_i as the factor of firm-related control variables. We do not include CEO-related variables in this model.

Secondly, to test Hypothesis 2, we estimate productivity using IL behaviors as the main predictor variable, and incrementally adding firm and CEO controls, using the model below. L_i stands for the CEO's IL behaviors' standardized measurement for firm i . CEO biographical characteristics are denoted by the factor CEO_i , and CEO's TFL behaviors are operationalized using the standardized measurement TFL_i .

$$P_i = b_0 + b_1L_i \pm b_2F_i \pm b_3CEO_i \pm b_4TFL_i \pm \varepsilon_{bi} \quad (2)$$

To test Hypothesis 3, we estimate productivity using IL behaviors and management in a combined model to investigate the differential associations of these two variables with productivity, again taking firm and CEO characteristics into account for the robustness of our prediction, using the model below:

$$P_i = c_0 + c_1L_i + c_2M_i \pm c_3F_i \pm c_4CEO_i \pm c_5TFL_i \pm \varepsilon_{ci} \quad (3)$$

Finally for Hypothesis 4, we explore the interaction between IL and management practices in predicting productivity, to assess whether this interaction has a positive relationship with firm productivity, using the model below:

$$P_i = d_0 + d_1L_i + d_2M_i \pm d_3(M_i * L_i) \pm d_4F_i \pm d_5CEO_i \pm d_6TFL_i \pm \varepsilon_{di} \quad (4)$$

4. RESULTS

4.1. Management Practices and Firm Productivity

The estimation results regarding Hypothesis 1 are presented in Table 3.3 below.

Table 3.3: Management Practices' Association with Productivity

<i>DV: (log) Productivity</i>	(1)	(2)	(3)	(4)
Management	0.129*** (0.040)	0.111*** (0.037)	0.101*** (0.037)	0.0911** (0.038)
Capital Intensity		0.143**** (0.035)	0.110*** (0.037)	0.108*** (0.039)
MNE firm			0.251** (0.124)	0.237* (0.126)
Firm characteristics (size & age)			Y	Y
Firm fixed-effects (industry & location)			N	Y
N	156	149	149	149
Adj. R ²	0.283	0.356	0.385	0.380

Notes. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$ Robust standard errors in parentheses. Firm characteristics include the control of firms' size (small = <50 employees, medium = 50-249, large = 250+) and age categories (3-5 years; 5-10 years; 10 or more years). Firm fixed effects include firms' industries (2 digits NACE) and location (province). Coefficients regarding firm characteristics and fixed effects are not depicted for brevity.

Supporting Hypothesis 1, our results corroborate the previous findings in the literature (Scur et al., 2021), showing that management practices are strongly positively associated with the variation in productivity across firms. When all firm controls are accounted for, we see that one standard deviation increase (around 0.56 points improvement over a 5-point scale) in the management quality corresponds with approximately 9% increase in firm productivity. Among firm characteristics, capital intensity of firms and MNE status both have strong positive associations with productivity, which can be considered common for manufacturing firms, and which is in line with existing studies.

4.2. CEO Behaviors and Firm Productivity

Testing Hypothesis 2, we examine the association between CEO IL behaviors and firm productivity, controlling for CEO TFL, CEO characteristics and firm characteristics incrementally. The results of the OLS estimations are shown in Table 3.4 below.

Table 3.4: IL's Association with Productivity

<i>DV: (log) Productivity</i>	(1)	(2)	(3)	(4)	(5)	(6)
IL	0.103*** (0.039)	0.163** (0.063)	0.172*** (0.058)	0.174*** (0.058)	0.161** (0.072)	0.146* (0.076)
TFL		-0.0726 (0.058)	-0.0993* (0.053)	-0.0983* (0.054)	-0.0643 (0.061)	-0.0493 (0.060)
Capital Intensity			0.133**** (0.038)	0.101** (0.042)	0.171**** (0.047)	0.166*** (0.051)
MNE firm				0.263** (0.122)	-0.0350 (0.096)	-0.0497 (0.092)
CEO's tenure					-0.00749 (0.005)	-0.0107** (0.005)
CEO's earnings (log)					0.128** (0.060)	0.118* (0.060)
CEO's age						0.00925 (0.007)
CEO's origin (foreign)						0.0509 (0.138)
Firm characteristics	N	N	Y	Y	Y	Y
Firm fixed-effects	Y	Y	Y	Y	Y	Y
N	156	156	149	149	99	99
Adj. R ²	0.264	0.266	0.360	0.393	0.534	0.530

Notes. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$ Robust standard errors in parentheses. Firm characteristics include the control of firms' size and age categories. Firm fixed effects include firms' industries and locations.

Supporting Hypothesis 2, the overall results suggest that CEO IL behaviors are significantly positively related to firms' productivity when various relevant firm and CEO characteristics are accounted for. Column 4 presents the result of the estimation where all firm controls are taken into account. In the next two columns, we also control for the biographical CEO characteristics. Here, we find that CEOs' earnings have a strong positive correlation with firm productivity, whereas CEO tenure is found to be negatively linked to productivity. Further, CEO age and origin (being foreign) are found to be insignificant. Based on these observations, column 4 is our preferred model for Hypothesis 2. One standard deviation increase (around 0.9 points improvement over a

7-point scale) in the IL behaviors of a CEO corresponds with approximately 17% increase in firm productivity. Winsorizing data to control for the effect of possibly spurious outliers of productivity in the estimations does not change the results (results available upon request).

4.3. The Distinct Associations of CEO IL Behaviors and Management Practices with Productivity

In the third step, we bring together the management practices and CEO IL behaviors. Results are depicted in Table 3.5.

Table 3.5: IL's and Management's Joint Association with Productivity

<i>DV: (log)</i> <i>Productivity</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Management	0.0911** (0.038)	0.148** (0.057)	0.110*** (0.042)	0.119*** (0.042)	0.0888** (0.039)	0.0797** (0.038)	0.129** (0.055)	0.127** (0.057)
IL			0.0775** (0.039)	0.157** (0.061)	0.163*** (0.058)	0.167*** (0.058)	0.127** (0.063)	0.115* (0.065)
TFL				-0.0987* (0.059)	-0.116** (0.055)	-0.113** (0.055)	-0.0723 (0.060)	-0.0578 (0.059)
Capital Intensity	0.108*** (0.039)	0.140** (0.053)			0.126*** (0.037)	0.0973** (0.040)	0.138*** (0.050)	0.132** (0.053)
MNE firm	0.237* (0.126)	-0.103 (0.086)				0.245** (0.122)	-0.0446 (0.084)	-0.0564 (0.083)
CEO's tenure		-0.00574 (0.005)					-0.00373 (0.005)	-0.00687 (0.005)
CEO's earnings (log)		0.158*** (0.054)					0.152*** (0.056)	0.141** (0.057)
CEO's age		0.0100 (0.007)						0.00836 (0.007)
CEO's origin (foreign)		0.0316 (0.144)						0.0150 (0.151)
Firm characteristics	Y	Y	N	N	Y	Y	Y	Y
Firm fixed- effects	Y	Y	Y	Y	Y	Y	Y	Y
N	149	99	156	156	149	149	99	99
Adj. R ²	0.380	0.564	0.299	0.307	0.381	0.409	0.578	0.572

Notes. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses. Firm fixed effects include firms' industries and locations. Firm characteristics include the control of firms' size and age categories.

In the first column of Table 3.5, the fourth column of Table 3.3 is shown, for ease of comparison. In the second column, CEO characteristics are included in the model, next to the management practices score. We see that management is still significantly positively associated with firm productivity when CEO biographical characteristics are taken into account. Starting from the third column and adding control variables incrementally, we show the results where firm

productivity is estimated using model 3 to test Hypothesis 3, examining IL's and management practices' distinct association with productivity.

In column 6, when we include CEO IL leadership behaviors and management practices, we see that both factors are significant predictors of productivity, also when several important firm characteristics are controlled for. One standard deviation increase (around 0.56 points improvement over a 5-point scale) in the management quality corresponds with approximately 8% increase in firm productivity. Moreover, CEO IL behaviors still explain a significant variance of productivity across firms; reaching near 17% higher productivity when IL behaviors score increases one standard deviation (around 0.9 points over a 7-point scale), all other independent variables held constant. The results thus support Hypothesis 3. For completeness, columns 7 and 8 show the results when we add again the CEO characteristics, but at the expense of a smaller sample. The main result of column 6 remains unchanged.

4.4. IL's Interaction with Management Practices

In the final step, to test Hypothesis 4, we investigate IL's interaction with management practices using model 4, and examine whether the interaction of management practices and IL behaviors is positively associated with firm productivity. The results are depicted in Table 3.6 below.

Table 3.6: IL's Interaction with Management in Predicting Productivity

<i>DV: (log) Productivity</i>	(1)	(2)	(3)	(4)	(5)	(6)
Management	0.110*** (0.041)	0.120*** (0.041)	0.0893** (0.038)	0.0807** (0.038)	0.144*** (0.050)	0.141** (0.053)
IL	0.0767* (0.040)	0.157** (0.061)	0.164*** (0.058)	0.167*** (0.059)	0.124* (0.063)	0.116* (0.064)
M x IL	-0.00547 (0.038)	-0.0149 (0.038)	-0.0102 (0.037)	-0.0269 (0.038)	-0.0764 (0.050)	-0.0660 (0.053)
TFL		-0.102* (0.059)	-0.118** (0.055)	-0.118** (0.056)	-0.0831 (0.061)	-0.0711 (0.060)
Capital Intensity			0.126**** (0.037)	0.0959** (0.040)	0.129*** (0.048)	0.126** (0.051)
MNE firm				0.255** (0.123)	-0.0146 (0.090)	-0.0262 (0.090)
CEO's tenure					-0.00367 (0.005)	-0.00596 (0.005)
CEO's earnings (log)					0.141** (0.057)	0.134** (0.059)
CEO's age						0.00583 (0.007)
CEO's origin (foreign)						-0.00662 (0.152)
Firm characteristics	N	N	Y	Y	Y	Y
Firm fixed- effects	Y	Y	Y	Y	Y	Y
N	156	156	149	149	99	99
Adj. R ²	0.294	0.302	0.376	0.406	0.586	0.575

Notes. * p < 0.1, ** p < 0.05, *** p < 0.01, **** p < 0.001 Robust standard errors in parentheses. Firm fixed effects include firms' industries and locations. Firm characteristics include the control of firms' size and age categories.

We observe that in all model specifications, CEO's IL behaviors and firm's management practices separately continue to have significant positive associations with productivity, even when the possible interaction between them is taken into account. However, we do not observe a significant interaction effect in any of our specifications; hence the estimations do not support Hypothesis 4.

5. DISCUSSION AND CONCLUSIONS

Asking whether CEO leadership behaviors and management practices matter for firm productivity, we brought together detailed information regarding the CEO, management practices and firm productivity, building on approaches from different literatures. Through a mixed-method design, in which we combined interview data, survey data and detailed administrative data about the CEO and firm productivity, we tested four hypotheses. First, we show that management practices are positively linked to firm productivity. This result corroborates the previous studies in the stream of literature on management practices (Bloom & Van Reenen, 2007; Scur et al., 2021). Confirming Hypothesis 2, our results indicate that CEO Instrumental Leadership (IL) behaviors are positively associated with firm productivity. We also find that IL behaviors' association is distinct from management practices' link to productivity, such that these are two separate channels (Syverson, 2011) that have differential associations with productivity, thereby confirming Hypothesis 3. Finally, and in contrast with Hypothesis 4, we do not find a significant interaction between CEO leadership behavior and management practices.

With our findings, our study has three contributions. First, by investigating how CEO leadership behaviors are linked to firm productivity, we add to the management literature by providing evidence for the relevance of their actual behaviors. Doing so, we extend the upper echelons theory (Hambrick, 2007) by showing the important role of CEO leadership behaviors, beyond their biographical or background characteristics.

Second, our findings regarding the distinct, differential associations of CEO leadership behaviors and management practices with productivity are critically important for the growing body of research on the relevance of management practices for firm performance (Scur et al., 2021). We show that next to these management practices, the individual manager (the CEO) has a distinct relationship with firm productivity. In doing so, we confirm the observations by Aguinis et al. (2022) that within management literature, there should be more attention and focus on the role of individual managers.

As Hiller and colleagues urged leadership scholars to “bridge separate conversations” (Hiller, DeChurch, Murase, & Doty, 2011), our study tries to integrate central concepts and findings from different literatures. By investigating CEO leadership behaviors, we thereby contribute to the leadership literature by providing the first empirical evidence that relates the instrumental leadership of the CEO to firm productivity (Antonakis & House, 2014). Notably, and in line with Antonakis and House (2014), we find that for this performance indicator, transformational leadership of CEOs is not a relevant factor, indicating that IL has separate and specific qualities relevant for CEOs. Our findings provide a deeper insight into the relevance of not only management practices but also managers’ behaviors for firm productivity.

Our study has three limitations. First, endogeneity might be an issue. For instance, more productive firms can have the means to invest more in their management practices, such as installing better production planning and performance monitoring systems. Likewise, well-managed firms can build better HR systems to recruit the best CEOs with good instrumental leadership behaviors. Therefore, we want to emphasize again that we do not claim any causal relationship in our study; the empirical evidence we provide shows mere positive associations between IL behaviors and firm productivity. Future research could involve intervention studies, where leadership behavior and management practices are developed and measured in a controlled manner (Bloom et al., 2013).

A second limitation is related to the survey methodology to measure CEO behaviors. We rely on a plant manager’s observations and assessment of CEO IL behaviors, and therefore these are subjective perceptions of CEO behaviors. Note that our other two methods, interviews and objective firm productivity data, do not have these limitations, thereby circumventing common source bias. Still, we hope that future research will test our findings, using other sources to assess CEO leadership behaviors.

Finally, our sample is not very large, although this sample size is rather comparable with other studies into CEOs and firm performance (e.g., Krause et al., 2022; Ling et al., 2007; Ling et al., 2008; Luo et al., 2014; Wang et al., 2011). This is the case because behavioral information about CEOs is not very easy to gain access to. Importantly, we checked whether our final sample is representative of the manufacturing sector in the Netherlands, which was the case (results available upon request).

To conclude, our results also have practical implications, by showcasing that next to management practices also the individual manager, namely the CEO, matters. Specifically, our results point to the relevance of Instrumental Leadership behaviors. Thus, in the selection, but

especially in the development and evaluation of CEOs, specific attention should be given to such behaviors. Since behavior can be trained, firms can also invest time and resources in developing these behaviors of their executives.

Chapter 4

Firm Heterogeneity in Export Performance: Management Practices as the Missing Link[†]

ABSTRACT

This paper examines the relationship between firms' management quality and their export performance. While it is a well-established fact that exporters are more productive than non-exporters, the specific factors contributing to the variability in productivity among firms and, consequently, their heterogeneity in export performance have not been extensively explored to date. To address this gap, we analyze a comprehensive administrative dataset of manufacturing firms in the Netherlands, which we have matched with information on their management practices. The results of our analysis indicate that firms with higher management quality achieve greater export revenues. Importantly, our findings reveal that a firm's productivity is endogenously linked to its management practices. This connection between management and productivity accounts for a portion of the variability in exports observed across firms. It is noteworthy that the impact of management on exports extends beyond its role in enhancing a firm's productivity.

[†] This chapter is co-authored by Eda Aral, Harry Garretsen, Janka I. Stoker, Marcel van den Berg, and Angie Mounir. We are grateful to Lotte de Haan and Rabobank for data collection in the surveys of management practices. Additionally, we would like to thank to the Dutch Ministry of Economic Affairs and Climate Policy for funding the research, and Statistics Netherlands (CBS), Marcel van den Berg, Angie Mounir and Ahmed Boutorat for data studies at CBS. The authors have benefited from the feedback of Steven Brakman.

1. INTRODUCTION

Management's importance for firm performance has received considerable attention in the fields of management and economics. Since the introduction of the World Management Survey (WMS) (Bloom & Van Reenen, 2007), the variance in firms' management practices can be measured and compared in a more systematic way which enables us to explore how this variance is related to differentiating performance outcomes, namely the heterogeneity in exports. Until today, the international economics literature pointed to the productivity differences across firms to explain the heterogeneity in their export performance without much attention to the determinants of productivity, which lead to such heterogeneity. In this paper, we focus on management and its role in firms' productivity and export performance.

In the international economics literature, it is a stylized fact that exporters have higher productivity, even before they enter the competition in international markets (Bernard, Eaton, Jensen, & Kortum, 2003; Melitz, 2003). A large body of theoretical and empirical research points to the variance of productivity across firms as a major determinant of firms' export performance (Bernard & Jensen, 1999; Bernard, Jensen, & Lawrence, 1995; Bernard, Jensen, Redding, & Schott, 2007; Melitz & Redding, 2014). A common assumption in this literature is that firms draw a productivity level from a given productivity distribution and sort into differentiating productivity levels (Helpman, Melitz, & Yeaple, 2004). With the fixed costs related to entering international markets, only firms above a certain level of productivity can compete in export markets. In this perspective, the firm productivity is given and assumed exogenous.

There is also a separate strand of literature which treats productivity as the outcome variable and hence as endogenous, and investigates the large variation in firm-level productivity. The variation in productivity levels across firms is linked to a number of factors including technology and human capital (Abowd & Kramarz, 2005; Black & Lynch, 2001; Brynjolfsson & Hitt, 2003; Fox & Smeets, 2011; Iranzo, Schivardi, & Tosetti, 2008), human resource practices (Ichniowski & Shaw, 2003; Lazear, 2000), organizational structure (Janod & Saint-Martin, 2004; Schoar, 2002), product market structure and competition (Chaney & Ossa, 2013; De Loecker, 2011; Syverson, 2011), regulatory environment, and labor market dynamics (Bartelsman & Doms, 2000; Bassanini, Nunziata, & Venn, 2009; Haltiwanger, Scarpetta, & Schweiger, 2008 2008).

In this literature, the WMS project is an important milestone that sheds light on the black box of total factor productivity. The WMS researchers crafted a survey tool to systematically measure the management practices in organizations internationally. Within the WMS project,

Bloom, Sadun and Van Reenen (2016) suggest a model of production where management, akin to a technology, is an important predictor of variation in productivity. Through numerous studies, it is shown that the management practices in firms are positively correlated with firm productivity. Furthermore, the field experiment by Bloom et al. (2013) provides evidence that suggests a causal impact of structured management on productivity. Based on these empirical findings, it can be concluded that between-firm productivity heterogeneity can be consistently explained by managerial differences across firms. In other words, productivity can be considered as a function of management practices.

On the one hand, productivity is pointed out as the main determinant of export heterogeneity; while on the other hand, productivity is addressed as a function of management. This indicates a need to understand the links between management, productivity, and exports. However, this multidirectional relationship has not been studied extensively in the international economics literature, and the background of productivity differentiations leading to export heterogeneity has remained unclear. Previous research in this area focused on management's direct link to various performance indicators in internationally diversified firms. Heyman, Norbäck and Hammarberg (2019) study why heterogeneity exists in FDI productivity. They find that the differences in foreign MNEs' global management practices are an important determinant of productivity among foreign affiliates. How management's association with productivity further translates into export performance is not covered in their study. For a sample of Spanish manufacturing firms, Serrano and Myro (2019) investigate how managerial differences relate to firms' international diversification, such as exporting and FDI activities. For this, they use a self-constructed management quality index, which indicates firms' abilities in leadership, innovation, collaboration, digitization, management of results, partnerships and collaboration for resources. They find, firstly, that exporters, multinationals and FDIIs have a management and productivity premia compared to non-exporters and domestic firms; and secondly, that the firms that start exporting and engaging in FDI are better managed but not necessarily more productive than firms that do not start international diversification. Although they provide useful insights into management's link to exports, the detailed management quality index by Serrano and Myro (2019) is unique to their sample thus not generalizable, and used only in the estimation of starting international engagement which does not necessarily reflect high export performance. Bloom et al. (2021) study how management shapes export performance. They show that American and Chinese firms with higher management scores are more likely to export, have more export destinations, and export higher volumes and products of better quality. While this study presents valuable evidence regarding firms' export performances in the world's largest export economies, their discussion is

mainly limited to management's direct link to exports. Hence, how management practices are linked to exports and whether their association is through management's determining role in productivity is not fully understood, to date.

In this paper, we bring management's association with productivity into focus and investigate the ternary relationship between management, productivity and exports, by using a detailed firm-level dataset of manufacturing Dutch firms, matched with unique WMS input which informs us about the firms' management practices. Our empirical investigation uses administrative data on 385 medium-sized manufacturing firms in the Netherlands from 2018. We examine how management is associated with productivity and how this association reflects to exports. To reach a better understanding of how firm heterogeneity in exports is accounted for managerial and non-managerial factors of productivity, we systematically examine the various channels through which management practices might matter. Our analysis results first reconfirm that better-managed firms export more and that the quality of management practices is a significant predictor of firm productivity, even when it is controlled for numerous other factors. More importantly, our results suggest that management practices endogenize productivity partly but significantly, in shaping firm's export performance.

In doing so, our study has multiple contributions. First, we contribute to heterogeneous firms theory in the literature of international trade (Bernard et al., 2007; Bernard, Jensen, Redding, & Schott, 2012; Melitz, 2003; Redding, 2011) by giving a detailed account of how firm productivity is shaped by structured management practices, and how it reflects on exports. We are among the first to investigate the firm heterogeneity in exports with a focus on productivity's association with management practices as a key component, approaching to productivity as an endogenous firm characteristic, rather than a merely exogenous one that predicts exports. With this, we also speak to the literature on endogenous firm productivity (Bernard, Redding, & Schott, 2011; Lee, 2021; Mayer, Melitz, & Ottaviano, 2014; Redding, 2011). Second, we contribute to the growing literature of empirical economics of management by exploring the direct and indirect links from management practices to exports.

Finally, our findings also have practical contributions. It is critical to establish the links that go from management to productivity and to exports to inform the policymakers about how impactful the policies targeted to stimulate growth in productivity and export volumes, by, for example, supporting management training or eliminating market frictions that hinder the development of management practices, might correlate with better outcomes in the economy. There will be valuable insights for businesses too. Understanding management's true potential is

essential for directing the right investments to increase management quality in the firm. Utilizing the WMS management practices in this research has key importance in this respect, as the WMS provides a clear recipe of universally applicable practices that all firms can adopt or benchmark their current practices in core managerial areas.

2. LITERATURE AND CONCEPTUAL MODEL

2.1. Management Practices as Predictor of Exports

Management's connection to exports has long been a topic of interest in the field of international business. An overview of this literature shows that there are certain managerial capabilities and activities that can predict higher export performance, however, the evidence does not systematically cover core management practices across firms: Top management's commitment and employee training, for example, are highlighted in the review by Sousa, Martínez-López and Coelho (2008) and Lages, Silva and Styles (2009). Cadogan et al. (Cadogan, Diamantopoulos, & De Mortanges, 1999; Cadogan, Diamantopoulos, & Siguaw, 2002) point to export market-oriented activities, such as export intelligence generation and dissemination, which can be considered as knowledge management capabilities; and coordinating mechanisms that include effective communication of targets. Besides the importance of organizational learning, Fernández-Mesa and Alegre (2015) address the importance of innovativeness in firm management to improve export performance.

There is a clear indication that there are certain managerial actions that positively correlate with export performance, but a common understanding of core and comparable management practices' connection to exports is still lacking. However, this line of research suggests several mechanisms that explain how management practices enhance firms' export performance: The quality of managerial practices regarding the tasks that managers undertake in various stages of production, such as introducing modern techniques of manufacturing and maintaining high-quality production through continuous performance tracking, ultimately affect firm's sales capabilities in export markets¹¹.

Good monitoring practices and communication of targets reduce the frictions that may stem from principal-agent problems in the firm (Eisenhardt, 1989; Holmstrom, 1982) and enable

¹¹ The literature on the relationship between trade and tasks suggests that the complexity of tasks in the production process is critical in regards to the trends in international trade (Grossman & Rossi-Hansberg, 2008).

better performance both in manufacturing and marketing. Structured practices in targets management with good market orientation capabilities, built on the information about foreign demand, customers, competitors and environmental factors, can improve firms' export performance (Eslava et al., 2015; He, Brouthers, & Filatotchev, 2013). And finally, people management practices that involve selectively hiring to build a competent workforce with the necessary skills for operating in international markets can increase firms' competitive advantage in exports (Molina & Muendler, 2013). In a recent study focusing on the direct link between management and export activities, Bloom et al. (2021) show that firms with higher management scores achieve better product quality and higher price-to-quality ratio for exported goods, thus they accomplish better results in exports.

2.2. Management Practices as Predictor of Firm Productivity

It has been well-established in the literatures of organizational economics and human resource management that certain managerial practices are positively associated with firm productivity (Bartel, Ichniowski, & Shaw, 2007; Black & Lynch, 2001; Combs, Liu, Hall, & Ketchen, 2006; Ichniowski, Shaw, & Prennushi, 1997). However, WMS is the first widespread survey tool to collect firm-level information on management practices in an internationally standard and consistent manner. Addressing the unexplained productivity differentials across firms, the WMS is initiated by Bloom and Van Reenen (2007) in collaboration with a leading international management consultancy firm. The WMS defines 18 key management practices of industrial firms and scores firms' practices in these topics, with an innovative, interview-based evaluation methodology. The management practices resemble the key principles of Lean manufacturing, quality and inventory control procedures, and high-performance human resource management practices. They cover the core managerial activities in manufacturing firms, which entail a useful benchmark to assess firms' management quality in the key areas of management (Bloom & Van Reenen, 2007); monitoring, targets and people management. Averaging firms' scores for the 18 management practices, WMS offers a single, overall management score which is found to be positively associated with many indicators of firm performance; first and foremost with productivity, survival, growth, and exports (Bloom et al., 2013; Bloom et al., 2021; Bloom & Van Reenen, 2007). The management practices are listed and explained briefly in Appendix Table A1.

Bloom, Sadun and Van Reenen (2016) suggest a model of production, where management is considered as a technology, as an intangible capital stock, in which output monotonically increases. They argue that good management is like a universally applicable technology in the sense that it raises productivity independent of the firm's characteristics or environment. In this

perspective, which goes back to Lucas (1978), management is a major component of total factor productivity and productivity differences are consequences of variations in firms' management practices.

For our study, the field experiment with management practices by Bloom et al. (2013) provides motivating empirical evidence that management can influence firms' productivity. In India over the 2008-2011 period, the researchers examined manufacturing plants in a randomized controlled trial setting. They did the diagnostic assessment of management practices in place in all plants and then provided management consulting and intervention for the plants in the treatment group. The treated plants were observed for their performance in various indicators for the following three years. Among the plants that received the management treatment, a significant improvement in firms' productivity was observed, in comparison to the control group of plants with no management treatment. This result was causally attributed to the rise in firms' management quality.

2.3. Productivity as Predictor of Exports

Research in international trade emphasizes consistent heterogeneity in many firm-level aspects even within narrowly defined industries. Differences between firms are commonly attributed to firm size, capital and skill intensity, production capacity and quality (Bernard et al., 2007), but most crucially to productivity according to the theoretical model by Melitz (2003). In this model, firms face a market entry fee, which becomes sunk costs once the firm enters the market. Only after entering the market, its randomly allocated productivity level and whether it is sufficient to cover the entry costs becomes known to the firm. Firms whose productivity level does not exceed the entry costs exit the market. Therefore, the firms that are sufficiently productive to cover the fixed and variable costs of exporting can enter to and survive in the export markets. A heterogeneity of productivity among exporters is observed, even before entry due to the necessity of covering high costs related to modifying production to please foreign tastes, building a sales network, covering tariffs and transport costs (Bernard et al., 2003; Melitz, 2003). Many empirical studies have provided evidence for the Melitz model, which suggests that productivity drives or predicts exports (Aw, Chung, & Roberts, 2000; Bernard & Jensen, 1999; Bernard, Jensen, & Schott, 2006; Delgado, Farinas, & Ruano, 2002; Isgut, 2001; López, 2009; Pavcnik, 2002; Sharma & Mishra, 2011; Trefler, 2004; Wagner, 2007).

With the theoretical and empirical agreement on the connection between export performance and productivity heterogeneity in the international trade literature, it is assumed that

the productivity variance across firms is exogenous to firms. Exceptions to this mainstream perspective are present in the research regarding endogenous firm productivity (Redding, 2011), in which firms' productivity-altering behaviors and the underlying mechanisms for the selection, high-performance and survival of more productive firms in export markets are investigated. For example, in response to customer demand and concentrating on their core competences, firms add or drop products to (or from) their product range (Bernard et al., 2011; Eckel & Neary, 2010). Furthermore, firms make revenue-enhancing investments, involving technology adoption (Costantini & Melitz, 2009; Lileeva & Trefler, 2010), and product or process innovation that increase production efficiency. Cassiman et al. (2010) examine how product innovation is related to increased productivity, which induces entering export markets. Moreover, firms make choices regarding workforce skill composition (Yeaple, 2005); Caliendo and Rossi-Hansberg (2012) address the impact of structural reorganization of knowledge-based hierarchies on productivity to lead to higher trade gains.

Although firm productivity is endogenous on the whole (Redding, 2011), the possible drivers of variance in productivity that lead to differences in export performance have not been investigated extensively, specifically regarding management practices' role in productivity.

2.4 Conceptual Model: The Relationship between Management, Productivity and Exports

In the preceding subsections, we first addressed the research that links the quality of management to exports, and explained how management is also documented as a driver of productivity. Then, we visited the mainstream perspective in the international economics literature, which points to the productivity heterogeneity across exporters. In this study, we bring the three concepts together and thereby aim to examine the link from management to exports more closely, by exploring whether and to what extent management's link to exports goes through productivity.

How can management practices relate to exports through productivity? Firstly, at the value-added side, good management can reduce unit costs by reduction of inefficiencies through the use of modern manufacturing techniques; lower input requirements by better planning through sophisticated target setting; and decrease the number of delays and costly mistakes through good employee training, effective performance tracking and problem documentation (Ichniowski & Shaw, 1999; Milgrom & Roberts, 1990). Secondly, at the labor supply side, good people management practices mean investing in firm's human capital towards employment and retaining of capable employees with good technical skills, and incentivizing the employees to serve better to

firms' targets, which altogether contribute to more efficient production capabilities. Isgut (2001) observe such human capital investment behaviors in new exporter firms, and Clerides, Lach and Tybout (1998) observe higher reliance on skilled labor among exporters, while Balshvik (2011) and Parrotta and Pozzoli (2012) document the productivity increase in firms, which selectively recruit employees with higher skills. Furthermore, Lee (2021) suggests a model where well-managed firms have the advantage of skilled human capital, first, to upgrade their technology and product quality via R&D investments and, second, to decentralize and take advantage of trade openness; therefore they are able to acquire more gains from exports.

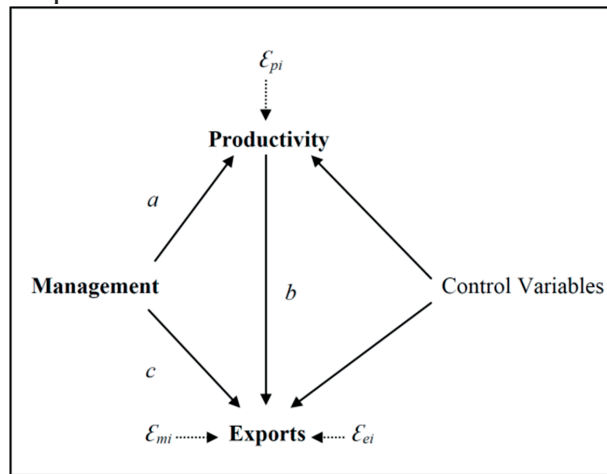
Based on these we suggest the conceptual model in Figure 4.1 to analyze management's links to exports. In this figure, the arrow *c* denotes management's direct link to exports, while arrows *a* and *b* together show the indirect link from management to exports that goes through productivity. Our hypotheses are summarized below:

Hypothesis 1. *Firms with higher management quality earn higher export revenues.*

Hypothesis 2. *Firms with higher management quality have higher productivity.*

Hypothesis 3. *Firms with higher management quality earn higher export revenues by achieving higher productivity.*

Figure 4.1: Conceptual Model



3. DATA AND METHODOLOGY

3.1. Design and Sample

Following the research set-up of previous WMS studies (Bloom et al., 2014; Bloom & Van Reenen, 2007), we measure the quality of management practices in firms using the WMS methodology. The WMS study in the Netherlands took place in 2018 (Aral et al., 2020). A random sample of 2700 medium (at least 50 employees) and large (250+ employees) manufacturing firms in the Netherlands was drawn from the Orbis firm register. With a response rate of 17 percent, a total of 459 observations made our sample¹², representing approximately one-quarter of manufacturing activity in the Netherlands in 2018. Due to changing data availability, sample size dropped to around 350 observations in estimations. The foreignness and export participation ratios in our sample are observed at 45.7% and 94.1%, respectively, while these ratios are 33.2% and 92.2% among the population of all manufacturing firms in the Netherlands, making our sample a representative one (van den Berg et al., 2019).

The WMS uses an interview tool that is conducted in a standardized method. In the surveys, participant firms' plant managers are targeted to be interviewed, so that they have overview information about the managerial practices and day-to-day operations as well. The interviews are conducted by telephone, by trained interviewers with business experience or education. The interviewers do not know about the firms' performances or financial information. To ensure this, randomly sampled medium-sized firms that are not known by name and public reports are selected for the survey. The survey is "double-blind", meaning that interviewers do not know about the firm besides its name, industry and contact number and interviewed managers do not know that the firm is being scored for management quality. The interviewers ask open-ended questions to interviewed managers, in the manager's native language, with a continued discussion eliciting examples until the interviewer can make an accurate evaluation of the firm's practices and get a good understanding of the managerial quality in the firm¹³.

¹² The sample is based on a joint project of the University of Groningen and Rabobank. We conducted a survey of management practices in The Netherlands. Then, we approached a subset of the sample for the leadership survey which made the basis for the study in chapter 3. Related, the sample of chapter 3 is smaller than the sample of this chapter.

¹³ The methodology of the WMS project, ensuring the reliability and validity of the measurement, is explained in detail in Appendix A.

3.2. Variables

Management Practices

The management practices of WMS cover the core managerial activities in manufacturing firms, which entail a useful benchmark to assess firms' management quality in three¹⁴ key areas of management (Bloom et al., 2014). First, *monitoring*: Are modern manufacturing techniques introduced and used for cost efficiency and quality improvement objectives? How well do organizations monitor the operations inside the firm? Second, *targets*: Do organizations set the right targets, track the outcomes continuously, communicate the targets effectively, and take appropriate action if the targets and the performance outcomes are inconsistent? Third, *people management*: Are organizations promoting and rewarding employees based on performance, prioritizing selective hiring, developing skills, making room for talent, and trying to keep their best employees?

Interviewers score firms for 18 management practices from 1 (worst practice) to 5 (best practice). The unweighted average of all practice scores makes up the overall management score of the firm. As the scoring might change across 18 management practices, we use the standardized average of all the practices in the firm (z-scores), with a mean of 0 and a standard deviation of 1.

Productivity

This information is obtained from the databases maintained by Statistics Netherlands. For the firm-level productivity variable, we compute the value-added per employee in Euro amounts, using mainly the Structural Business Statistics database. We operationalize labor productivity as log-transformed in our estimations.

Exports

The databases of Trade in Goods and Services Statistics provide information on all goods and services exports by individual firms registered in the Netherlands. In our analysis, we use the log transformed total revenues from goods and services exported by firms, yearly. Because the sample consists of manufacturing firms, service exports make a minuscule part of the total export revenues. The database includes firms' exporter status over the years. The exporter status variable

¹⁴ In the earlier publications of WMS studies, the management practices were grouped in four areas of management, namely operations, monitoring, targets and people management, whereas in the later papers the same 18 practices were grouped in monitoring, targets and people management, without a content change.

has three levels: structural or incidental exporters and non-exporters. Almost all the firms in our sample are structural exporters of goods though. Because of this, we do not use exporter status as an outcome variable in our study.

Control Variables

The Registry of Business Demographics, derived from the General Business Register, allows us to see firms' ownership status. We use a "foreign" dummy, to distinguish firms that are ultimately controlled by a foreign owner or partner; when we refer to "foreign firms" in this paper we address these firms. Domestic firms are, thus, the ones controlled by Dutch owner(s) or partner(s).

Controlling for foreign firms is critical. Foreign firms are, for example, the subsidiaries of multinationals that operate in the market of the Netherlands. This type of market access entails high fixed costs, which require a high threshold of productivity and efficiency (Helpman et al., 2004). From a variety of studies in international economics, it is now well established that firms which can enter foreign markets are more productive, more capital-intensive, to an extent substantially exceeding between-industry differences (Doms & Jensen, 2007) and we observe this in our sample. If more productive foreign firms are more export-oriented compared to domestic firms, not controlling for foreignness could bias our estimations of how management and productivity are linked to exports, as Alvarez and Lopez address (2005). Table 4.1A shows that foreign firms are generally different from domestic firms in our sample. Foreign firms are larger, more productive, better managed and they export higher amounts, on average.

Using the Statistics of Finances of Enterprises database, we compute the capital intensity as the logged sum of tangible and intangible assets per employee, in thousand Euros. This variable can be computed at the enterprise group level, not at the firm (or business entity) level like other variables. This is a critical control variable since it is an indicator of firms' production scale and technology. Scale and technology advantages are highly relevant determinants of export performance as numerous studies have addressed before (Alvarez & Lopez, 2005; Clerides et al., 1998).

Besides capital intensity and foreignness, our control variables include firm size in terms of logged number of full-time employment; a set of industry dummies (2-digit NACE); a dummy set for the location of the firm as 12 Dutch provinces; and a dummy set for the firm age, in three categories for the life cycle of firms: 3-5 years; 5-10 years; 10 or more years old. Firm size is related

to scale advantages in production as well as the availability of financial resources and sales network, which are also related to firm age. Industry and location dummies are crucial to control for industry- and location-related fixed-effects such as specific entry costs, factor prices, skill intensities and skill supply, firm density in the location, and the industry that affect the competition, all of which can influence export performance ultimately.

The data from different sources regarding firm characteristics, financials and productivity are merged using a unique identification number that is assigned by Statistics Netherlands to each firm in the General Business Register, individually. Finally, we match the WMS input of Dutch firms with their export, production and administrative information.

3.3. Descriptive Statistics

Table 4.1a displays the summary statistics of the variables studied.

Table 4.1a: Descriptive Statistics

	All Firms (N=422)	Foreign Firms (N=193)	Domestic Firms (N=229)
Export Revenue	41,619.81 (84,058.21)	60,374.39 (102,298.00)	25,813.54 (60,709.97)
Productivity	97.25 (63.59)	119.36 (79.63)	78.65 (37.03)
Management Score	3.03 (0.54)	3.20 (0.47)	2.89 (0.56)
Firm Size	240.94 (388.72)	294.11 (493.71)	196.14 (263.30)
Firm Age	33.87 (19.26)	31.26 (17.68)	36.06 (20.27)
Capital Intensity	800.43 (3,198.27)	756.01 (1,964.364)	824.69 (3,896.46)
# Structural Exporters	397	192	208

Notes. Standard deviations are in parentheses. Values in the table are for the year 2018, except for the capital intensity statistics, which are from 2017. Foreign firms are multinationals, controlled by a foreign owner or partner. Export revenue is the total value of goods and services exported, in thousand Euros. Productivity is value-added per employee, in thousand Euros. Management is scored in the WMS survey, on a scale of 1 (worst) to 5 (best). Firm size is the number of employees, employed full-time in the business entity. Firm age is the number of years since the founding of the firm. Around 87% of the firms in the sample are 10 or more years old; less than 3% of the firms are younger than 3 years old. Capital intensity is the sum of tangible and intangible assets per employee, in thousand Euros. The exporter status variable has three levels: structural or incidental exporters and non-exporters. Number of observations drops for Productivity, Capital Intensity and Exporter Status variables, namely to 405, 372, and 413 respectively.

Table 4.1b below shows the correlations between variables of interest. Better managed firms are exporting more, they are more productive and larger. More productive and larger firms also export more. Foreign firms are found to be better managed, more productive and exporting higher amounts.

Table 4.1b: Correlations

	Management Score	Export Revenues	Productivity	Foreignness	Firm Size	Capital Intensity
Export Revenues	0.27*					
Productivity	0.34*	0.36*				
Foreignness	0.28*	0.23*	0.38*			
Firm Size	0.21*	0.41*	0.13*	0.13*		
Capital Intensity	0.19*	0.02	0.36*	0.18*	-0.08	
Firm Age	-0.06	0.09	0.04	-0.05	0.12*	0.13

Notes. Pairwise correlations between variables are calculated with the values year 2018 as management practices are scored in 2018, except of capital intensity whose data is from 2017. All pairwise correlations with stars are significant at 5% significance level. Logged values of productivity, export revenues, capital intensity, and firm size; and standardized management scores are used in the calculations of correlations.

3.4. Empirical Strategy

The empirical strategy consists of four steps, designed along our conceptual model and propositions.

The Association between Management and Exports

First, we explore the direct association between management and exports, which is denoted by the link *c* in Figure 1. The cross-sectional regression model takes the following form:

$$E_i = c_0 + c_{me}M_i + c_{ke}K_i + c_{fe}foreign_i + c_{ze}controls_i + \varepsilon_{mi} \quad (1)$$

where *i* denotes the firm. The dependent variable E_i is the logged total of goods and services exported. The variable M_i is the standardized average score of all the management practices in the firm (z-scores), and K_i stands for the capital intensity of firm *i*. In estimating model 1, we expect c_{me} to be significantly positively correlated with the dependent variable.

The Association between Management and Productivity

In this second step, we look at the link *a* in Figure 4.1. We regress productivity on management to establish that management is a predictor of productivity. Here, a_{mp} is expected to be significant.

$$P_i = a_0 + a_{mp}M_i + a_{kp}K_i + a_{fp}foreign_i + a_{zp}controls_i + \varepsilon_{pi} \quad (2)$$

The Indirect Link

An indirect link between variables can be examined using mediation analysis (Hayes, 2009; Zhao, Lynch Jr. & Chen, 2010). In this approach, the independent variable (management) predicts the mediator (productivity) and the dependent variable (exports), and the mediator (productivity) predicts the dependent variable (exports). In this regard, expecting an indirect-only relationship, where management's link to exports goes solely through productivity would be an incomplete perspective as we outlined in our theoretical explanations referring to international business and management literature.

At this point, to examine the indirect link and test our proposed model, we take a different approach and use a method that is akin to an instrumental variable (IV) method. Our method can strictly not be seen as an IV model, since the core idea of IV method is that exogenous regressors are used as instruments (Antonakis et al., 2014). Our instrument of interest, management practices, see the model in Figure 4.1, is not exogenous in the sense that the impact on exports only goes via productivity, as would have to be the case for the management variable to qualify as a valid instrument. Specifically, management practices are also seen to potentially exert a direct impact on exports, thereby violating the exogeneity condition of IV method¹⁵. But we adopt this approach nevertheless, since our aim is not establishing causality in a model with endogenous variables, but examining whether there is an association between management and exports where management's link to exports possibly goes through productivity. We thus use this approach merely as a technique to examine an indirect link.

Proposing that there is an indirect link from management practices to exports via productivity, we use management score as an instrument for productivity. To test this proposition, we utilize two-stage least squares (2SLS) regressions. In the first step, we regress productivity on management, using model 2 and the standard OLS procedure. The predicted value of P_i , which is P'_i , is then used in the second stage, using model 3 below. This second stage is also a standard OLS procedure of exports regressed on predicted productivity, alongside the control variables. This is denoted by link **b** in Figure 4.1.

$$E_i = b_0 + b_{pe}P'_i + b_{ze}controls_i + \varepsilon_{ei} \quad (3)$$

¹⁵ Flores and Flores-Lagunes (2013); Kolesár et al. (2015) and Nevo and Rosen (2012) also discuss detailed approaches with instrumental variable analysis where exclusion restriction is not imposed.

4. RESULTS

4.1. The Association between Management and Exports

We first examine the direct association between the management score and the export revenues, which is denoted by link *c* in Figure 4.1. Using model 1, we check whether there is a positive relationship between management and exports, when it is controlled for a detailed set of firm characteristics, industry and location. The results of these regression estimations are shown in Table 4.2 below.

Table 4.2: Estimation Results: The Association between Management and Exports

<i>Dep. Variable: (log) Export Revenues</i>			
	(1)	(2)	(3)
Management	0.558*** (0.139)	0.388** (0.156)	0.340** (0.159)
Capital Intensity		0.0756 (0.069)	0.0624 (0.066)
Firm size (log)		1.075*** (0.165)	1.032*** (0.163)
Foreignness			0.514** (0.237)
Firm controls	N	Y	Y
Fixed effects	Y	Y	Y
N	408	359	359
Adj. R ²	0.263	0.354	0.359

Notes. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$. Robust standard errors, clustered by firm, are in parentheses. Management scores and firm controls from 2018 are used in the estimations; only the capital intensity variable is from 2017. Foreignness is a dummy variable, which takes the value 1 when the firm is a multinational, controlled by a foreign owner or partner. Firm controls include firm age categories (3-5 years; 5-10 years; 10 or more years) and firm size (logged number of employees). Fixed effects include industries (2 digits NACE) and firm location (Dutch provinces). Other variables are explained below Table 4.1a: Descriptive Statistics. When controlled for interview noise via interviewer dummies and the duration of the interview, the significant coefficient of management remains significant with a larger coefficient but the number of observations drops to 202. As there is no significant correlation between the noise variables and management, and no overestimation bias, we leave out the noise variables in the estimations.

Management practices are positively correlated with firms' export performance, when the full set of control variables are accounted for. As depicted in column 3 in Table 4.2, one standard deviation (0.54 points over a 5-point scale) increase in the management score is associated with around 34 percent increase in export revenues in the same year. Besides firms with higher management scores, foreign firms are found to export significantly more. When we examine how the control variables are linked to export performance, we see that larger firms gain higher export revenues. Firm age is found to be insignificant in predicting exports in our sample.

4.2. The Association between Management and Productivity

Second, we regress productivity on management using model 2, which is denoted by the link *a* in Figure 4.1, to confirm that productivity can be predicted by management practices. The estimation results are shown in Table 4.3.

Table 4.3: Estimation Results: The Association between Management and Productivity

<i>Dep. Variable: (log) Productivity</i>	
Management	0.0911**** (0.026)
Capital Intensity	0.0694**** (0.016)
Firm size (log)	0.0604* (0.033)
Foreignness	0.179**** (0.053)
Firm controls	Y
Fixed effects	Y
N	354
Adj. R ²	0.400

Notes. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$. Robust standard errors, clustered by firm, are in parentheses. The firm controls include firm age categories (3-5 years; 5-10 years; 10 or more years) and firm size (logged number of employees). Fixed effects include industries (2 digits NACE) and firm location (Dutch provinces). Other variables are explained below Table 4.1a.

As we expected, we observe a positive and significant relationship between the management score and the productivity level of firms, in line with the existing empirical evidence

in the WMS literature (Bloom et al., 2013). One standard deviation upwards change in the firms' management scores correspond to almost 7 percent higher productivity, when controlled for full set of firm characteristics, industry and location fixed effects, as also documented by Aral et al. (2020).

4.3. The Indirect Link

The theoretical background we presented and the two prior estimations hint at the presence of an indirect link between management and exports going through productivity. To examine this, we test our proposed model by using the 2SLS estimation approach as described in our empirical strategy above. We use firm's management score and two other highly relevant controls for productivity, which are foreignness and capital intensity, as regressors for productivity. We see in the second stage estimation, using model 3, that productivity significantly predicts export revenues, as shown in Table 4.4. The stages of 2SLS analysis are explained in detail below the table.

Table 4.4: 2SLS Results

<i>Dep. Variable: (log) Export Revenues</i>	
Productivity (P')	2.371**** (0.637)
Firm size (log)	0.918**** (0.184)
Fixed Effects & Controls	Y
N	345
Adj. R ²	0.241

Notes. **** $p < 0.001$. Robust standard errors, clustered by firm, are in parentheses. Fixed effects include industries (2 digits NACE) and firm location (Dutch provinces). Controls include firm age categories (3-5 years; 5-10 years; 10 or more years). Variables are explained below Table 4.1a. Results show the second stage estimation results for predicting the logged export revenues of 2018. The control variables of firm age and location are found to be insignificant in predicting export performance in this estimation.

In the 2SLS approach, we first identify the cross-sectional explanation of productivity by the management score. In this first stage of the 2SLS, management is found significantly predicting productivity, with all controls of firms' characteristics and fixed effects ($b=0.094$, $p=0.000$), parallel to the results shown in Table 4.3. Together with foreignness and capital intensity of the firm, the management score explain a meaningful part of the variance in firm's same year productivity, $F(3,344) = 19.355$, $p<0.000$; partial R^2 of 0.197. In this model, the endogeneity test is significant at

10% level, suggesting that management, foreignness and capital intensity are associated with productivity, $F(1,344) = 3.10$, $p=0.079$. The Sargan statistic ($\chi^2(2) = 1.73$, $p=0.421$) allows to exclude these variables from the estimation of exports in the second stage of the 2SLS regression. The constructed instrument, where management is an instrument can be seen as an attempt to test the indirect linked, although the exclusion restriction is not satisfied theoretically, when the relationship between these variables are considered (to see this point, recall Figure 4.1 and specifically 'link c' that allows for a direct effect of management practices on exports).

However, these results are not sufficient to infer that management's association with exports goes mainly through firm productivity. Is the management score a strong enough determinant of productivity, so as to explain the firm heterogeneity in exports? When management is used as the only variable to predict productivity in the first stage, the exogeneity hypothesis cannot be rejected ($p=0.174$), the partial R^2 of first stage regressions decreases to 0.048; therefore management does not serve as a strong enough instrument to use in this specific approach, although management explains a significant variation in productivity as shown in Table 4.3.

Does productivity still explain export performance significantly, when management is excluded from the estimation of productivity? Here, we estimated productivity by foreignness and capital intensity in the first stage of 2SLS, then used this instrumented productivity in the second stage to predict the export performance. Although, the partial R^2 is around an acceptable level (0.126), the test of endogeneity is insignificant ($p=0.452$), suggesting that these other instruments (i.e., foreignness and capital intensity) are not enough to use as a proxy for productivity, or instrumenting productivity without the management practices dimension is not suitable.

Together, these results can be read as the link from management to exports is not only through labor productivity. Yet, management practices are a substantial part of what makes firm productivity, which in turn constitutes a major determinant of firm heterogeneity in export performance.

5. SUMMARY AND CONCLUSIONS

Does a firm's management quality matter for its export performance? If so, to what extent and how is management linked to exports? Seeking answers to these questions, we investigated management's determining role in productivity, which has been pointed out as a major driver of firm heterogeneity in exports in the international economics literature.

Using a sample from the Netherlands with detailed firm-level data and information on management practices, we first show that firms' management practices have a significant, positive association with firms' export revenues, also when important firm characteristics are accounted for, such as size and capital intensity that determine the scale and technology superiorities, and foreignness that brings substantial cost and know-how advantages in exports. Consistent with the empirical economics of management and international economics literatures, we confirm the positive associations between firms' management and productivity, as well as between productivity and exports.

In contribution to the international economics literature, we then proceed to find out whether productivity's connection to firm heterogeneity in exports is driven by between-firm variations in the quality of management as a major determinant of productivity. The results of our analysis suggest that firm productivity is partly endogenized through management practices; in other words, management practices are indirectly linked with firms' export performance through management's association with productivity to a partial extent. The indirect link is assumed to be only partial, because management practices cannot be the sole driver of the productivity variance across firms that lead to firm heterogeneity in exports. Besides what we observe, there might be omitted variables that are relevant to firm productivity and lead to differences in export performance. For example, firm's employees' knowledge and experience, firm's innovativeness, and managers' leadership skills and styles can affect productivity in firms. More importantly, our empirical strategy of using instrumental variables is imperfect. In this methodology, it is critical to use exogenous instruments, which usually poses a serious challenge for IV methodology to find valid instruments, leading to the use of weak instruments in several examples (Flores & Flores-Lagunes, 2013). Violating the exogeneity assumption, the limitation of our study is that our model and analysis suggest that management, our main instrument for productivity, is also associated with exports, making it an imperfect instrument for the IV method. Nevertheless, we use this method to examine the indirect link between management and exports, without claiming causality between endogenous variables. Therefore, the results should be interpreted with caution.

Speaking to the organizational economics of literature, our results show that management is an essential component that makes up firm's productivity, but its impacts in the firm are not limited to its productivity outcomes. Although the management practices of WMS, which resemble the Lean management principles, have a strong emphasis on manufacturing techniques, operations and continuous monitoring, they seem to bring the firm more benefits besides production efficiency. The targets management practices that emphasize the balance and interconnectedness

between firm's financial and nonfinancial targets can foster firm's competitiveness, for example, in marketing, building a network for foreign sales, and attaining the standards that please foreign buyers' taste. The people management practices focusing on building high-quality human capital within the firm with skills that are useful for international trade, and retaining firm-specific export experience and knowledge within the firm will positively reflect on firm's export performance, as Mion and Opromolla (2014) also point. Collectively, good management practices can lead to higher performance in exports, alongside their positive relation to firm productivity.

Our study is limited by the absence of detailed human capital information of firms. High-skilled employees would benefit firms in achieving high-quality production; high-quality products could be sold for higher prices; and this would lead to higher export revenues for the firms. Moreover, highly skilled employees would be more capable in adapting to sophisticated management practices, and therefore they would respond better to the improvement efforts of management (Coff & Kryscynski, 2011; Shin & Konrad, 2017; Wright, Coff, & Moliterno, 2014; Wright, McMahan, & McWilliams, 1994). Not having detailed human capital data, we cannot assess whether it influences management's relationships with exports and productivity.

In our study, we use the management scores of firms from a single survey. Although we tested and confirmed that there is no significant interviewer bias so as to alter our results, there might be various measurement errors in capturing and assessing firms' management quality, as Bloom and Van Reenen address (2007). Furthermore, we cannot study the impact of a change in firms' management practices over time. Hence, an interesting avenue for future research can be observing the management practices of firms for multiple years and examining the possible outcomes of changing management quality in firms in a longer time span. It can help us to reach more conclusive findings about management's role in shaping firm productivity and exports. Another informative future research would be to study the outcomes of management practices from a closer perspective. A field experiment of providing management consultancy to various departments of exporting firms would help us to observe and distinguish the direct effects of improved management on exports, and indirect results on production-related performance indicators. Such a study would complement the field experiment on management practices by Bloom et al. (2013) and the more recent work by Bloom et al. (2021) on the management-exports relationship.

Until now, the explanations on firm heterogeneity have been mainly limited to firms' productivity, besides firm size, technology and innovativeness. The evidence we present sheds light on an important determinant at the background, the management practices that shape productivity

and other factors that differentiate firms in exports. This information can be useful in drafting policies aimed at improving exporters' performance. Especially with the widespread use of management surveys at the national level, such as the Management and Organizational Practices Survey (MOPS) that have been or will be issued as part of censuses in many countries including the USA, the UK, Canada, Australia, Germany, Japan, etc., it will be possible to develop more effective interventions in the economies (Buffington, Foster, Jarmin, & Ohlmacher, 2017). Understanding management practices' full potential within complex firm organizations can help to design and maintain better firms that work productively with improved efficiency

Chapter 5

Summary and Discussion

The disparities in productivity across firms have numerous significant implications for firms, countries and their people, such as the living standards of countries, resource allocation among firms, the composition of industries, firm profitability, growth, internationalization, and environmental impact, as well as wealth and income distribution among individuals, and possibly much more (Acemoglu & Dell, 2010; De Loecker & Syverson, 2021; Haldane, 2017; Melitz, 2003). Motivated by the striking productivity differences across firms, I studied the managerial antecedents of productivity in this thesis. In an attempt to better understand how management practices relate to productivity, I studied management practices' universality versus contingency. I also investigated CEOs' role in productivity via their leadership behaviors. Moreover, I zoomed in on management practices' share in shaping productivity to learn how this association translates into firms' export performance. As the black box of productivity is manifold, I employed a multidisciplinary approach drawing insights from various fields. In this chapter, I conclude by shortly summarizing the findings and contributions of my three empirical studies, and by exploring new research directions emerging from this work.

1. SUMMARY AND THEORETICAL CONTRIBUTIONS

In the second chapter, I examined the extent to which WMS management practices are universally applicable. I zoomed in on the varying effectiveness of people management practices across different firm contexts and national institutional environments. Within the internal framework of the firm, I observed that human capital of employees moderates the effectiveness of people management practices. The findings uncovered a positive association between people management practices and productivity, with higher human capital strengthening this relationship. However, no evidence was found for a moderation relationship between people management practices and cultural values or national employment protection legislation.

By researching how context affects the people management – productivity link, this chapter makes the following contributions. Firstly, reexamining the WMS using various perspectives from HRM and international business literature, my findings underpin the universality of the management practices by providing evidence that the “best” practices are positively associated with

productivity *regardless* of the differences in cultural values and employment protection regulations across countries (Combs et al., 2006; Dastmalchian et al., 2020; Huselid, 1995; Pfeffer, 1994 & 1998; Rabl et al., 2014). With extensive globalization, it seems reasonable that there is a convergence of management theories and know-how around the world, leading to common practices and understanding of management (Mayrhofer, Brewster, & Pernkopf, 2021). Furthermore, this chapter contributes to the resource-based theory and provides evidence that the intangible resource of human capital is critically important for the effectiveness of management practices in today's knowledge-based economy (Barney, 1991; Haskel & Westlake, 2018).

In the third chapter, addressing the “managerless approach” that has been prevalent in economics (Aguinis et al., 2022), I focused on the role of CEOs and their leadership behaviors alongside management practices, in relation to firm productivity. Specifically, I combined perspectives from strategic management and leadership literatures with the management practices of organizational economics to understand how CEOs' Instrumental Leadership (IL) behaviors relate to firm performance, with and beyond management practices of the firm. I also explored the interaction between leadership behaviors and management practices, since they do not occur in isolation and it is plausible to expect good management and leadership to complement each other. The findings indicate that both CEOs' IL behaviors and management practices explain a significant part of the variance in firm productivity, even when controlling for several relevant CEO characteristics. The study does not indicate an interaction between leadership behaviors and management practices. Therefore, based on these results I conclude that CEO behaviors and management practices are not mutually exclusive, nor substitutes - they have distinct associations with productivity.

Bridging economics with management and leadership literatures, with its multi-disciplinary approach this study improves the understanding of productivity heterogeneity with unique findings, and contributes to several fields. Firstly, speaking to the growing body of research on top managers and their impacts (e.g., Bandiera et al., 2020; Bennedsen, Pérez-González, & Wolfenzon, 2020; Quigley & Hambrick, 2015), I contribute to the management literature by providing evidence for the relevance of CEOs' actual behaviors. Doing so, I also contribute to the upper-echelons theory (Hambrick & Mason, 1984; Hambrick, 2007). Focusing specifically on CEOs' IL behaviors, I secondly contribute to the leadership literature, in which there has been a paucity of empirical studies in this respect. Thirdly, my findings regarding the distinct, differential associations of CEO's IL behaviors and firm's management practices with productivity are complementing leadership,

strategic management and organizational economics literatures, as I show that strategic leaders' role in influencing firm productivity cannot be replaced by firm's management practices.

In the fourth chapter, I delved into the international economics literature, where between-firm productivity differences are also a central topic, but with a critical difference compared to the angle in my other chapters. In this chapter, I shifted the focus on productivity and approached it as a determinant and as an outcome at the same time. Corroborating productivity as a key determinant of firms' export performance heterogeneity, I investigated the role of management practices for productivity differences between firms that shape this heterogeneity. The results show that management practices as well as productivity are positively related with firms' exports. More importantly, the results suggest that part of the productivity variation that explains firms' export performance differences is due to the variation in firms' management practices.

With these findings, I make the following contributions. First, by giving a detailed account of how firm productivity is shaped by structured management practices, and how it reflects on exports, I contribute to heterogeneous firms theory in the literature of international trade (Bernard et al., 2007; Bernard, Jensen, Redding, & Schott, 2012; Melitz, 2003; Redding, 2011). This study is among the first to investigate the firm heterogeneity in exports with a focus on productivity's association with management practices as a key component, approaching to productivity as an endogenous firm characteristic, rather than a merely exogenous one that predicts exports. Therefore, this study also speaks to the literature on endogenous firm productivity (Bernard, Redding, & Schott, 2011; Lee, 2021; Mayer, Melitz, & Ottaviano, 2014; Redding, 2011). Second, I contribute to the growing literature of empirical economics of management, and broadly to the management literature by providing structured evidence for universal management practices' link to firms' exports.

Overall, the three empirical studies obviously do not solve the productivity puzzle fully, but they do make it a bit less ambiguous by addressing open questions in various fields regarding the drivers of firm productivity differences.

2. PRACTICAL IMPLICATIONS

The findings of this thesis also have practical implications that are of interest to policymakers and firms. Chapter 2 suggest that the WMS can serve as a benchmark in assessing firms' management quality, and using its management practices in policy shaping and consulting can be useful for improving firm productivity generally. In the recent years, census bureaus in

various countries (e.g., USA, UK, Germany, Denmark, etc.) have started projects of collecting management practices data via large-scale surveys on firms (Buffington et al., 2017; Jarmin, 2019; Scur et al., 2021). Widespread and longitudinal use of such information can improve our understanding of the strengths and weaknesses in our economies, facilitate customized solutions, and enable development in management quality and productivity overall. Moreover, the results of chapter 2 with respect to the role of human capital highlight the necessity for understanding how employee abilities add value in a firm. Given the interaction between management quality and human capital, businesses can benefit from identifying the right skill compositions for their structure, and integrating this into their talent management practices such as hiring, training, rewarding and promoting.

The findings of chapter 3 are relevant for firms that want to improve their productivity via their strategic leaders. The results suggest that instrumental leadership behaviors of CEOs are beneficial for productivity. Since training these IL behaviors in leaders is very well possible (Antonakis & House, 2014), firms could invest in leadership development programs within the organization to train their strategic leaders so that they are able to execute instrumental leadership.

Chapter 4 has practical implications related to the importance of evaluating and improving management practices to enhance productivity and facilitate export growth. Understanding management practices' role and further potentials for firm's key performance targets is also relevant for policymakers to design the policies targeted to stimulate growth in productivity and export volumes, by, for example, supporting management education or eliminating market frictions to ignite competition, which is established to be beneficial for better management and productivity (Bloom & Van Reenen, 2007; Syverson, 2011).

Building bridges across diverse perspectives, the combined contributions of my three empirical chapters enhance our understanding of how management practices, CEOs and their leadership behaviors are linked to productivity, a key concept of performance.

3. LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

Each of my chapters described limitations and suggestions for future research. In this final chapter, I would like to highlight four general limitations of my studies that lead to suggestions for future research. They concern context, measurement of behavior, causality and change.

3.1. Context

First, a relevant and timely topic in management research is context (Combs et al., 2006; Garretsen, Stoker, & Weber, 2020; Jiang & Messersmith, 2018; Purcell, 1999; Rabl et al., 2014). By now, it is widely accepted that understanding the role of context is crucial. In the second chapter of my thesis, I tried to address the possible relevance of context for the relationship between management practices and performance, by investigating varying contexts in terms of human capital, cultural values and labor markets across countries. My results show that human capital matters as a contextual variable. But in order to get a better grip on the relevance of human capital, my measurement of human capital was maybe not specific enough. I was only able to examine the *average* level of employees' human capital, which has two downsides.

Firstly, it was measured by the attainment of a tertiary degree, which does not fully indicate the variety of skills and capabilities of the workforce. The firms are heterogeneous also in their skill demands (Deming & Kahn, 2018), especially in times of technological change and digital transformation where novel skills are demanded (e.g., Alekseeva et al., 2021; Cnossen, Piracha, & Tchente, 2021). A more detailed measurement of employee skills, with a closer look at the composition of, for example, cognitive, analytical, and social skills across industries can improve our understanding of how employee human capital can relate to the management-productivity relationship.

Secondly, taking the average of human capital for *all* employees ignores the diversity of roles *within* firms, notably the diversity between employees and managers. Bender et al. (2018) show that managerial human capital is a major channel between management practices and firm productivity. Here *managerial* human capital refers to the degrees, knowledge and capabilities of individual managers, and thus are not the same as leadership behaviors, which I studied in chapter 3. Both their findings and mine jointly point to the importance of individual managers' capabilities and behaviors in firms. Hence, future research should pay specific attention to the role of managerial human capital.

Moreover, in my study I was not able to provide empirical evidence for the impact of different institutional settings on the relationship between management practices and productivity. However, this does not necessarily imply that there is no effect of such contextual characteristics on the impact of management practices, and my findings are not to be seen as definitive evidence for the "one size fits all" approach. Clearly, more research is needed. Building on my findings in chapters 2, further research could focus on two other relevant aspects.

Firstly, exploring the mechanisms that link management practices to productivity, such as employee abilities, engagement, motivation, empowerment, or knowledge sharing can offer a fruitful area. The preferences of people in, e.g., communication styles, decision-making processes and work-life balance vary according to the institutional contexts, such as different cultural settings and industry characteristics (Chadwick & Flinchbaugh, 2021).

Second, recent contextual changes in organizations can be a fruitful context for future research. This new setting goes beyond culture but changes the way of work, due to the increasing share of remote working that includes working from home and hybrid working. It is observed in a study of 27 countries in 2021-2022 that 1.5 days per week on average are worked from home (Aksoy et al., 2022) and that this share is still similar in 2023 (Bloom, Han, & Liang, 2023). The studies show that the hybrid setting has been altering the structure of the working week, improving job-satisfaction and reducing attrition, which can have implications for the firm productivity. Therefore, new studies could be carried out on how hybrid work settings affect the outcomes of management practices and leadership behaviors.

3.2. Measurement of Behavior

The second limitation that I want to mention in this final chapter relates to the measurement of leadership behaviors. My study in chapter 3 on the role of CEO leadership behaviors in combination with the contribution of management practices for performance is one of the first studies that include these different variables. In this chapter, I investigated the relationship between CEOs' instrumental leadership behaviors and firm productivity. To measure leadership behaviors of CEOs, I relied on subjective follower perceptions of IL behaviors. Obviously, such perceptions, which may not measure the *actual* behavior, are not free from limitations as addressed by Banks, Woznyj, and Mansfield (2021) as a general critique for the field (see also Fischer & Sitkin, 2023).

Future research could therefore make use of recent developments in the field of management and leadership, where novel and more objective measures to assess leaders' behaviors are coming up. Some delve into leaders' agendas to observe actual behavior in terms of meetings and activities, looking for patterns in their managerial time allocation and attention distribution (Bandiera et al., 2020; Dessein & Santos, 2021; Lo et al., 2022). Additionally, analyzing leaders' communication styles, both verbal and non-verbal, through rhetoric, speeches, and physical cues has been explored (Antonakis et al., 2022; Antonakis & Eubanks, 2017; Bastardo, Jacquart, & Antonakis, 2022; de Vries, Bakker-Pieper, & Oostenveld, 2010; Jensen et al., 2023). Understanding the impact of CEOs

and other top managers' behaviors on firm performance necessitates a comprehensive investigation that I was not able to execute in one single study.

3.3. Causality

Third, although the causal relationship between management practices and firm performance has been established in other studies (notably in Bloom et al., 2013), the designs of my three empirical studies where I use survey data and objective firm data, do not allow conclusions with respect to causality. Future research could set-up experimental designs that do tackle causality issues, like firm-level or individual-level interventions, such as manager or leader trainings (Antonakis, Fenley, & Liechti, 2011; Banks, Woznyj, & Mansfield, 2021). Moreover, exogenous shocks that force significant changes in leadership or leadership styles (e.g., due to crises like the 2008 financial crisis or the Covid-19 pandemic) can serve as natural experiment settings (see e.g., Garretsen et al., 2022; Stoker, Garretsen, & Soudis, 2019).

3.4. Change

Finally, due to data limitations, I was not able to look at possible *changes* in management practices within firms – a common drawback in the WMS literature, mostly due to the costly methodology (Bloom et al., 2014; Scur et al., 2021). Besides the between-firm differences, an important part of the variation of both productivity and also managerial quality can probably also be observed *within firms*, as documented by Bloom et al. (2019) in a study where management differences were measured across plants in different locations. This phenomenon makes longitudinal analysis a critical necessity. Tracking firms' management practices over time, observing how managers affect firms' management practices and how these jointly impact firm productivity can shed more light on the firm heterogeneity issue.

4. CLOSING REMARKS ON PRODUCTIVITY

I started this thesis with the famous quote of “*Productivity isn't everything, but, in the long run, it is almost everything*” by Krugman (1994) and throughout the thesis, firm productivity was considered as the primary performance indicator. But viewing productivity as the primary performance indicator can be interpreted as an oversimplified, normative, and also rather narrow perspective on performance. This was and is not at all my intention. Clearly, the relentless pursuit of pushing productivity higher can have negative consequences for employees, society and the environment. While productivity is associated with efficiency improvements and reduced waste (Womack &

Jones, 2010), the unremitting drive for high productivity, firm growth, and consumerism harms the environment (Kilbourne & Pickett, 2008). Promoting productivity growth while reducing reliance on natural resources and emphasizing education, innovation, and knowledge utilization for productivity are of utmost importance.

Furthermore, it is crucial to reevaluate our focus and consider alternative performance indicators, such as environmental responsibility, employee well-being, and sustainable growth or degrowth. Luckily, many firms and organizations currently aim to achieve more and more diverse goals, either because of intrinsic motives or because society demands it. In 2015, the United Nations adopted the 17 Sustainable Development Goals (SDGs), which have become a part of firms' strategic programs and a criterion to assess firm value today (Berrone et al., 2021; Park, Lee, & Kim, 2014). Decoupling productivity growth from environmental degradation, growth promoted with decent job creation and innovation are among the SDGs that are targeted for 2030 in the sustainable development agenda (visit sdgs.un.org).

In the same vein, the stakeholder theory (Freeman, 1984) advocates that firms should not solely focus on profit or productivity maximization for shareholders, but should also consider the interests and well-being of a broader spectrum of stakeholders, including employees, customers, suppliers, and the communities at large, as firms' activities have far-reaching consequences beyond their economic performance (Harrison, Bosse, & Phillips, 2010; Laplume, Sonpar, & Litz, 2008). So, future research can contribute by providing a deeper understanding of how management practices, including those examined in this thesis, as well as additional practices, and leadership behaviors and characteristics, are associated not only with productivity, but, maybe even more importantly, with these alternative performance outcomes.

APPENDICES

Appendix A. The World Management Survey (WMS)

In an attempt to understand the heterogeneity of firm productivity, the WMS was developed by Bloom and Van Reenen (2007) in collaboration with a leading international management consultancy firm, as an innovative survey instrument for collecting reliable and comparable information on the use of key management practices. The WMS defines 18 key management practices of industrial firms and scores firms' practices in these 18 topics, with an interview-based evaluation methodology. The 18 practices relate to three broad areas of management: monitoring, targets and people (incentives) management. In the earlier publications of WMS studies, the practices were grouped in four areas including operations, but without a content change in the set of 18 management practices. The practices are listed in Appendix Table A1.

In the surveys, participant firms' plant managers were targeted to be interviewed, so that they had overview information about the managerial practices and day-to-day operations as well. The interviews were conducted by telephone, by trained interviewers who had some business experience. The interviewers did not know about the firms' performances or financial information. To ensure this, randomly sampled medium-sized firms that were not known by name and public reports were selected for the survey. The survey was "double-blind", meaning that interviewers did not know about the firm besides its name, industry and contact number, and managers did not know that the firm being scored for management quality.

The interviewers asked open-ended questions to interviewed managers, in the manager's native language, with a continued discussion eliciting examples until the interviewer could make an accurate evaluation of the firm's practices, and got a good understanding of the managerial quality in the firm. Interviewers scored firms for each practice, from 1 (worst practice) to 5 (best practice). Since the scaling may vary across practices, the scores were normalized (converted to z-scores). The unweighted average of all z-scores makes up the overall management score of the firm.

To control for interview-related biases, a set of information was collected on the interview process, such as the duration and timing of the interview, the interviewer, and the interviewee; e.g., the gender, seniority, etc. A majority of the interviews were listened to and scored independently by a second, silent monitor. The correlation across scores for double-scored interviews was high enough considering inter-rater reliability (0.887 as reported in Bloom et al.,

2014). Also, a number of repeat interviews were conducted with another manager from each firm, by another interviewer at another time. A high correlation of scores was observed (Bloom & Van Reenen, 2007; Bloom et al., 2014), assuring that the scoring had no significant relationship with the measurement error.

Table A1: WMS Management Practices and Related Explanatory Questions

Management Practices	Managerial Area	Score from 1 to 5 based on
1. Introduction of new manufacturing techniques	Monitoring	What aspects of manufacturing have been formally introduced, including just-in-time delivery from suppliers, automation, flexible manpower, support systems, attitudes, and behavior?
2. Rationale for introduction of modern manufacturing techniques	Monitoring	Were modern manufacturing techniques adopted just because others were using them, or are they linked to meeting business objectives like reducing costs and improving quality?
3. Process problem documentation	Monitoring	Are process improvements made only when problems arise, or are they actively sought out for continuous improvement as part of normal business processes?
4. Performance tracking	Monitoring	Is tracking ad hoc and incomplete, or is performance continually tracked and communicated to all staff?
5. Performance review	Monitoring	Is performance reviewed infrequently and only on a success/failure scale, or is performance reviewed continually with an expectation of continuous improvement?
6. Performance dialogue	Monitoring	In review/performance conversations, to what extent are the purpose, data, agenda, and follow-up steps (like coaching) clear to all parties?
7. Consequence management	People (Incentives)	To what extent does failure to achieve agreed objectives carry consequences, which can include retraining or reassignment to other jobs?
8. Target balance	Targets	Are the goals exclusively financial, or is there a balance of financial and nonfinancial targets?
9. Target interconnection	Targets	Are goals based on accounting value, or are they based on shareholder value in a way that works through business units and ultimately is connected to individual performance expectations?

10. Target time horizon	Targets	Does top management focus mainly on the short term, or does it visualize short-term targets as a “staircase” toward the main focus on long-term goals?
11. Target stretching	Targets	Are goals too easy to achieve, especially for some “sacred cow” areas of the firm, or are goals demanding but attainable for all parts of the firm?
12. Performance clarity	Targets	Are performance measures ill-defined, poorly understood, and private, or are they well-defined, clearly communicated, and made public?
13. Managing human capital	People (Incentives)	<i>(Instilling a talent mindset)</i> To what extent are senior managers evaluated and held accountable for attracting, retaining, and developing talent throughout the organization?
14. Rewarding high performance	People (Incentives)	<i>(Building a high-performance culture)</i> To what extent are people in the firm rewarded equally irrespective of performance level, or is performance clearly related to accountability and rewards?
15. Fixing poor performers	People (Incentives)	<i>(Making room for talent)</i> Are poor performers rarely removed, or are they retrained and/or moved into different roles or out of the company as soon as the weakness is identified?
16. Promoting high performers	People (Incentives)	<i>(Developing talent)</i> Are people promoted mainly on the basis of tenure, or does the firm actively identify, develop, and promote its top performers?
17. Attracting human capital	People (Incentives)	<i>(Creating a distinctive value)</i> Do competitors offer stronger reasons for talented people to join their companies, or does a firm provide a wide range of reasons to encourage talented people to join?
18. Retaining human capital	People (Incentives)	Does the firm do relatively little to retain top talent, or does it do whatever it takes to retain top talent when they look likely to leave?

Source. The full set of questions that are asked to score each dimension are included in Bloom and Van Reenen (2007) and also at www.worldmanagementsurvey.com.

Appendix B: Supplementary Material for Chapter 2

Table B1: Countries' Scores on Individualism versus Collectivism

Australia	90	Italy	76
China	20	Japan	46
Germany	67	Netherlands	80
Great Britain	89	Poland	60
Greece	35	Portugal	27
India	48	Sweden	71
Ireland	70		
		<i>Mean</i>	60
		<i>Median</i>	67

Source. Hofstede, Hofstede & Minkov (2010). Northern Ireland and Republic of Ireland have been scored once as Ireland for cultural values in Hofstede et al. (2010).

Table B2: Countries' EPL Indices on Employment Protection Legislation

	2006	2007	2008	2009	2010	2018
Australia			1.63	1.63		
China	2.86	2.86	2.86		3.01	
Germany	2.95			2.78	2.78	
Great Britain	1.72	1.72	1.77	1.77	1.77	
Greece	2.93				2.93	
India	2.61		2.61	2.61	2.61	
Ireland	1.91	1.91	1.86		1.86	
Italy	3.15				3.21	
Japan	2.14				2.06	
Netherlands						2.72
Poland	2.41				2.43	
Portugal	3.98				3.36	
Sweden	2.58				2.62	

Source. OECD Employment Protection Database (2020b)

Notes. The index is an aggregated measure of the strictness of employment protection legislations, scaled between 0 and 6, from less to more protected workers, respectively. The scores here reflect the strictness of employment protection for regular employment contracts, and individual and collective dismissals. The EPL values that belong to the year in which firms in the country were interviewed are used in the analysis and showed here. 2006 and 2007 EPL indices are obtained from Version 1, 2008-2010 values are obtained from Version 3, and 2018 value for Netherlands is obtained from Version 4 of the database "Strictness of employment protection legislation: regular employment" (OECD, 2020b). China and India do not have EPL indices for 2006 and 2007; hence 2008 values are used for the analysis. The EPL indices for Ireland are used for both Northern Ireland and Republic of Ireland. The mean value of the EPL indices of the countries in the sample over the years is 2.25.

Table B3: Estimations of Moderation without Country Fixed-Effects

	(I)	(II)
<i>Dependent Variable: Log average labor productivity</i>		
People Management	0.349*** (0.0768)	0.177* (0.0982)
Human Capital	0.0404*** (0.0134)	0.0275** (0.0133)
Individualism	0.0139*** (0.00245)	
Individualism * People M.	-0.00258** (0.00118)	
Strictness of EPL		0.0531 (0.136)
EPL * People M.		0.0169 (0.0403)
Control Variables	Yes	Yes
Country Dummies	No	No
Observations	3,830	3,830
Adj. R-squared	0.435	0.424

Notes. * $p < .05$; ** $p < .01$; *** $p < .001$ All columns are estimated by OLS, with model (5) of chapter 2 except country dummies. Standard errors are in parentheses under coefficient estimates, clustered by firm. The dependent variable is log average productivity. Industry, year, firm size, human capital, general, and noise controls are included in all estimations here.

Table B4: Estimation Results for Additional Cultural Values

GLOBE Cultural Value Dimensions	Wald Tests Statistics
Institutional Collectivism Practices (as is)	$F_{1,2754} = 0.01, p = .9222$
Institutional Collectivism Values (should be)	$F_{1,2754} = 0.01, p = .9222$
Power Distance Practices (as is)	$F_{1,2754} = 0.70, p = .4044$
Power Distance Values (should be)	$F_{1,2754} = 0.03, p = .8662$
Performance Orientation Practices (as is)	$F_{1,2754} = 1.18, p = .2783$
Performance Orientation Values (should be)	$F_{1,2754} = 2.76, p = .0969$
HOFSTEDE Cultural Value Dimensions	
Power Distance	$F_{1,2754} = 4.58, p = .0325$
Masculinity vs Femininity	$F_{1,2754} = 2.28, p = .1313$

Notes. Wald tests are run after OLS estimations with model (5) of chapter 2, where the dependent variable is log average productivity, and the standard errors are clustered by firm. Industry, country, year, firm size, human capital, general, and noise controls are included in all the estimations. The results are robust to excluding country dummies. The cultural value of *power distance* (Hofstede et al., 2010) seems to be significantly interacting with people management. The positive interaction, which is only observed at 95% confidence interval, seems to be driven by the firms in Poland, India and Greece. These countries commonly have large power distance together with a thick left tail of badly managed firms that have low people management scores.

Table B5: Summary Results for the Estimations in Dichotomies

	People Management Score Coefficients	Observations	Adjusted R-Squared
<i>Dependent Variable: Log average labor productivity</i>			
Collectivist	0.185*** (0.0487)	1,436	0.457
Individualist	0.215*** (0.0369)	2,394	0.357
Strict EPL	0.249*** (0.0463)	1,288	0.515
Not strict EPL	0.163*** (0.0366)	2,542	0.442

Notes. * $p < .05$; ** $p < .01$; *** $p < .001$ All columns are estimated by OLS, with model (3) of chapter 2. Standard errors are in parentheses under coefficient estimates, clustered by firm. The dependent variable is log average productivity. Industry, country, year, firm size, human capital, general, and noise controls are included in all estimations here. Other details of the variables are provided under Table 2.2 of chapter 2. The individualist – collectivist dichotomy is created by dividing the sample of countries at the mean value, where countries with individualism scores lower than 60 are considered collectivist. Adopting a broader divide at score 50 (as in Gantenbein, Kind, & Volonté, 2019; Hofstede et al. 2010) yields the same results. The strict – not-strict EPL dichotomy cut-off value is 2.25, which is the mean of the EPL indices in our sample. Wald tests fail to reject the null hypotheses (for individualism dichotomy, $p = .235$; for EPL dichotomy, $p = .180$), implying that people management practices are not significantly differently associated with productivity in dichotomized environments.

Appendix C: Supplementary Material for Chapter 3

Table C1: Instrumental Leadership Behaviors

- I. Strategic Leadership
 - A. *Environmental monitoring (EM)*
 - 1. understands the constraints of our organization
 - 2. senses what needs to be changed in our organization
 - 3. recognizes the strengths of our organization
 - 4. capitalizes on opportunities presented by the external environment
 - B. *Strategy formulation and implementation (SF)*
 - 1. develops specific policies to support his/her vision
 - 2. sets specific objectives so that the mission can be accomplished
 - 3. ensures that his/her vision is understood in specific terms
 - 4. translates the mission into specific goals

- II. Follower Work Facilitation
 - C. *Path-goal facilitation (PG)*
 - 1. removes obstacles to my goal attainment
 - 2. ensures that I have sufficient resources to reach my goals
 - 3. clarifies the path to my goal attainment
 - 4. facilitates my goal achievement
 - D. *Outcome monitoring (OM)*
 - 1. helps me correct my mistakes
 - 2. assists me to learn from my mistakes
 - 3. provides me with information concerning how mistakes can be avoided
 - 4. provides me with constructive feedback about my mistakes

Source. Antonakis & House (2014)

Table C2: Variance Inflation Factors (VIF)

	Model 1	Model 2	Model 3	Model 4
IL	-	3.63	3.75	3.75
Management	1.54	-	2.46	2.59
IL x M	-	-	-	2.44
CEO earnings	-	2.01	2.05	2.07
CEO tenure	-	2.43	2.56	2.60
CEO age	-	2.07	2.07	2.24
CEO Origin	-	1.72	1.74	1.77
TFL	-	3.42	3.43	3.53
Capital Intensity	1.98	2.74	2.95	2.99
MNE	1.58	2.48	2.48	2.58
Mean VIF	1.70	2.56	2.61	2.66

Notes. The VIF values below 5 are assumed acceptable regarding the possibility of multicollinearity among regressors in the linear estimation models.

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English Summary

Productivity, defined as the efficiency in converting inputs to outputs, is intricately linked to a country's development, employment levels, income disparities, and overall quality of life. At the micro-level, productivity is closely associated with firm performance, encompassing aspects like business growth and profitability. Two noteworthy empirical observations regarding productivity are the substantial variation between firms and the persistence of differences in firms' productivity levels over time. This persistence discounts measurement errors as a primary explanation, emphasizing the necessity to discover drivers or predictors of productivity.

The predictors of productivity variation across firms have been extensively explored in economics, management, and public policy domains. Macro and meso-level factors, including product market structure, regulatory frameworks, trade liberalization, and competition, all seem to influence firms to take productivity-enhancing actions. Labor market dynamics, shaped by factors like the employment protection legislation, also play a role in influencing productivity. Firm-level drivers of productivity encompass technological disparities, research and development investments, and innovations in products and processes. Additionally, a positive link between productivity and human capital has been established, where employees' and managers' abilities, skills and efforts are observed to influence productivity.

Yet, despite careful efforts to account for material, capital, and labor inputs, a significant unexplained variance in productivity across firms persists. Therefore, explaining firm productivity differences remains a *puzzle*. Notably, outside the field of economics, the important role of management or managerial quality for firm productivity has a long and well-documented history. Over the past two decades, the quality of a firm's management and the variation in this quality across firms has also emerged in the field of economics as a crucial but also challenging factor to understand the differences in firm productivity. This recent research by the economists Bloom, Lemos, Sadun, Scur, and Van Reenen (Scur et al., 2021) emphasizes the measurable and influential role of management practices in explaining firm performance.

In order to assess the role of management practices in the productivity variation across firms, the World Management Survey (WMS) project (Bloom & Van Reenen, 2007) has revolutionized the measurement of management practices by providing a standardized, comparable metric across firms and countries. Through detailed interviews, the WMS quantifies firms' management quality in monitoring, targets, and people management, yielding a management score that is found to be positively correlated with productivity and multiple other firm performance

indicators. The project's significance extends to management practices' role as a driver of firm productivity, as evidenced by a field experiment demonstrating causal links between improved management practices and increased productivity. Consistent evidence and its methodological strengths, including high response rates and minimized biases, make the WMS a reliable measurement and benchmarking tool for systematically comparing management practices across various entities. Hence, *management practices* as measured using the WMS methodology, is the main tool in this thesis.

The thesis builds on this work, and addresses two challenges that arise from the related literature. Firstly, although the relevance of management practices for productivity has been studied intensively, much uncertainty still exists about the universality of these practices. Secondly, this strand of literature has mostly ignored the possible role of individual managers, in relation to management practices. These challenges (*universal or context-specific* and *manager versus management*) inspired the first two empirical studies in this thesis. Furthermore, the WMS enables new research avenues, particularly in topics related to the productivity variation among firms, with its methodological benefits in standardizing the measurement of management quality and making widespread surveys feasible. The link of productivity variation to firms' export performance heterogeneity has been a major area of interest within the field of international economics, which is addressed in the third empirical study of this thesis.

The first empirical study of the thesis is presented in **chapter 2**, which bridges the topic of management practices with human resource management literature, addressing the universal or context-specific nature of management practices as measured by the WMS. Focusing on people management practices within the WMS, the study explores their universal applicability and potential variations based on firms' contexts. The research delves into the internal context of firms, emphasizing firm-level human capital's role in moderating the relationship between people management practices and productivity. It also examines the external context of firms at the country-level, considering cultural values, specifically "individualism versus collectivism," and labor market regulations, specifically employment protection legislation. Using the WMS database from 14 countries, the analysis demonstrates a positive association between people management practices and productivity, strengthened by human capital. While no moderation effects are found for cultural values or employment protection legislation, the study offers cross-sectional empirical evidence for the universality of WMS management practices, highlighting their positive link with productivity across diverse contexts. The findings from this chapter contribute to management literature and underpin the arguments of convergence of management practices globally. Furthermore, this chapter provides empirical evidence that the intangible resource of human capital

can be critically important for the effectiveness of management practices in today's knowledge-based economy.

Next, **chapter 3** addresses the *manager vs. management* challenge, focusing on the role of CEOs and their instrumental leadership behaviors alongside management practices, in relation to firm productivity. Instrumental leadership (IL) encompasses (perceived) leader behaviors such as environmental monitoring, strategy formulation, path-goal facilitation, and outcome monitoring, emphasizing the achievement of tasks. To provide a comprehensive account of firm productivity, the research combines information on CEOs' IL behaviors with data on firms' management practices, with the aim to examine the distinct and collective contributions of CEO IL behaviors and management practices to productivity, exploring potential interactions that can enhance CEO effectiveness. Drawing insights from strategic management and organizational economics literature, the study considers various CEO and firm characteristics. The sample comprises 156 manufacturing firms in the Netherlands, surveyed for the WMS management practices and CEOs' leadership behaviors. The analysis reveals that both CEOs' IL behaviors and management practices significantly explain variance in firm productivity, even after controlling for multiple CEO characteristics. Importantly, CEO behaviors and management practices exhibit unique associations with productivity, without observable interaction in the sample. This study contributes to management and leadership fields by highlighting the relevance of CEOs' actual behaviors of instrumental leadership. The findings underscore the distinct roles of CEO IL behaviors and firm management practices in influencing productivity. The research provides valuable insights for organizations seeking to improve productivity through the leadership of CEOs, assuming that the link we address with our cross-sectional evidence is present.

Chapter 4 addresses firm heterogeneity in the perspective of international economics, focusing on productivity differences across firms as a determinant of their export performance. Drawing on international business insights and prior WMS studies, it offers cross-sectional evidence that management practices predict productivity, exports, and the link between productivity and exports. Here, a firm-level dataset of 385 manufacturing firms in the Netherlands is combined with detailed administrative and managerial data to examine management practices' association with productivity and exports. Results reconfirm that management practices significantly predict firm productivity. Moreover, well-managed firms exhibit higher export revenues, even after accounting for other relevant firm characteristics. Crucially, productivity variations predicting export heterogeneity are attributed, in part, to differences in management practices. Although a causal mechanism cannot be established due to the cross-sectional nature of the data, the contributions of this study include a detailed account of how management practices

of manufacturing Dutch firms are related to firm productivity and exports performance, contributing to the literature on heterogeneous firms in international trade. Additionally, this research addresses productivity as an endogenous firm characteristic, contributing to the literature on endogenous firm productivity with the specific focus on managerial practices. Practical implications highlight the importance of evaluating and improving management practices for enhanced productivity and export growth, offering insights for policymakers to design effective strategies to support growth in productivity and exports, assuming that the causal relation we propose is present.

The complexities in measuring management and the challenges of *universal or context-specific* and *manager vs. management* have brought some limitations also in this thesis, specifically regarding *context, measurement of behavior, causality, and change*. **Chapter 5** addresses these limitations, including the specific directions for future research that they offer.

Our exploration of context in chapter 2 focuses on human capital, cultural values, and employment protection in labor markets across countries. However, limitations exist particularly in the measurement of human capital, as the measure we use (educational attainment) is a limited one. Moreover, it disregards the role of diversity across roles within firms. To enhance our understanding, future research should employ a more detailed measurement of employee skills, considering cognitive, analytical, and social skills across organizations and industries. Additionally, specific attention to the role of managerial human capital is imperative for a comprehensive analysis.

Chapter 3 investigates individual leadership behaviors of CEOs. However, this measurement of behaviors consists of subjective follower perceptions, which clearly has limitations. Future research should leverage recent developments, employing objective measures such as analyzing managers' agendas, communication styles, and physical cues for a more nuanced understanding of leader behaviors.

Furthermore, the one-wave survey designs in our studies limit our research to cross-sectional settings and hinder conclusive statements on causality between management, leadership, productivity and exports. Future research could employ experimental designs (e.g., intervention studies) and leverage exogenous shocks as natural experiments to delve into causal relationships. Data limitations also prevent an examination of changes in management practices and leadership within firms. Longitudinal analysis is recommended to track management practices and leadership over time, discerning how individual managers influence these practices and their collective impact on firm productivity.

The thesis concludes with a reminder of the complexity surrounding productivity as a primary performance indicator. The pursuit of productivity must be balanced with considerations for employee well-being, environmental responsibility, and sustainable growth. Future research can contribute by exploring how management practices and leadership are associated not only with productivity, but also with alternative performance outcomes, aligning with evolving societal and environmental priorities.

Nederlandse Samenvatting

Productiviteit, oftewel de efficiëntie waarmee input wordt omgezet in output, is onlosmakelijk verbonden met de economische ontwikkeling, werkgelegenheid, inkomensongelijkheid en de algehele kwaliteit van leven in een land. Op microniveau hangt productiviteit nauw samen met de prestaties van een bedrijf. Hierbij zijn aspecten als bedrijfsgroei en winstgevendheid relevant. Twee opvallende empirische observaties met betrekking tot productiviteit zijn de grote variatie tussen bedrijven, en de hardnekkigheid van verschillen in de productiviteitsniveaus van bedrijven in de loop der tijd. Hierbij worden meetfouten als primaire verklaring uitgesloten, en wordt de nadruk gelegd op de noodzaak om determinanten of voorspellers van bedrijfsproductiviteit te ontdekken.

De determinanten van productiviteitsverschillen tussen bedrijven zijn binnen de vakgebieden economie, management en overheidsbeleid uitgebreid bestudeerd. Factoren op macro- en mesoniveau, waaronder de productmarktstructuur, reguleringskaders, liberalisatie en concurrentie, lijken bedrijven allemaal te kunnen stimuleren om hun productiviteit te verbeteren. Ook ontwikkelingen op de arbeidsmarkt, die worden beïnvloed door factoren als wetgeving op het gebied van ontslagbescherming, beïnvloeden de productiviteit. Aanjagers van productiviteit op het individuele bedrijfsniveau omvatten aspecten als technologische verschillen, investeringen in onderzoek en ontwikkeling, en product- en procesinnovatie. Ook is er een positieve relatie tussen productiviteit en menselijk kapitaal, waarbij de capaciteiten, vaardigheden en inzet van zowel werknemers als managers de productiviteit lijken te beïnvloeden.

Maar ondanks een zorgvuldig meewegen van invloeden op het gebied van deze inputs blijven er tussen bedrijven onverklaarbaar grote verschillen in productiviteit bestaan. Het verklaren van deze verschillen blijft dan ook een *puzzel*. Interessant genoeg wordt er over de belangrijke rol van de kwaliteit van management en managers in de productiviteit van bedrijven buiten het vakgebied van de economie al lang en veel geschreven. In de afgelopen twee decennia is ook binnen het domein van de economie de kwaliteit van het management van een bedrijf en verschillen in managementkwaliteit tussen bedrijven naar voren gekomen als een belangrijke maar ook lastige meetbare factor voor het verklaren van productiviteitsverschillen tussen bedrijven. In een recente studie van Bloom, Lemos, Sadun, Scur en Van Reenen (Scur et al., 2021) wordt de belangrijke rol van managementpraktijken in het verklaren van bedrijfsprestaties echter wel degelijk benadrukt.

Om de rol van managementpraktijken in productiviteitsverschillen tussen bedrijven te bepalen, is binnen het project World Management Survey (WMS) (Bloom & Van Reenen, 2007) een nieuwe meetmethode voor managementpraktijken geïntroduceerd in de vorm van een gestandaardiseerde, vergelijkbare methode die geschikt is om die praktijken voor bedrijven en landen te meten en te vergelijken. Door middel van diepgaande interviews met managers kwantificeert de WMS-methode de managementkwaliteit van bedrijven op het gebied van monitoring, doelstellingen en personeelsmanagement. De hieruit voortvloeiende totale managementscore blijkt positief gecorreleerd te zijn aan productiviteit en verschillende andere prestatie-indicatoren. Het WMS project toont ook aan dat managementpraktijken de bedrijfsproductiviteit beïnvloeden. In een veldexperiment zijn namelijk causale verbanden aangetoond tussen verbeterde managementpraktijken en verbeterde productiviteit. Met deze consistente bewijzen en methodologische sterke punten, waaronder hoge respons en minimale bias in de antwoorden, is de WMS een betrouwbaar meet- en benchmarkinstrument voor het systematisch vergelijken van managementpraktijken in verschillende organisaties. In dit proefschrift wordt daarom met name gebruikgemaakt van de WMS-methode om *managementpraktijken* te meten.

Dit proefschrift bouwt voort op deze literatuur en methode en behandelt twee problemen die daaruit voortkomen. Ten eerste bestaat er nog veel onzekerheid over hoe universeel deze praktijken zijn, ondanks het feit dat de relevantie van managementpraktijken voor productiviteit al uitvoerig is onderzocht. Ten tweede is in deze tak van de literatuur de mogelijke rol van individuele managers in relatie tot managementpraktijken grotendeels genegeerd. De eerste twee empirische studies in dit proefschrift zijn geïnspireerd op deze problemen (*universeel of contextspecifiek* en *manager versus management*). Dankzij de methodologische voordelen van het gestandaardiseerd meten van managementkwaliteit en het mogelijk maken van grootschalig onderzoek, maakt de WMS bovendien nieuwe onderzoeksrichtingen mogelijk, met name op het gebied van onderwerpen die te maken hebben met productiviteitsverschillen tussen bedrijven. De link tussen productiviteitsverschillen en heterogeniteit in exportprestaties, die binnen het vakgebied van de internationale economie flink in de belangstelling staat, wordt in de derde empirische studie van dit proefschrift besproken.

De eerste empirische studie van dit proefschrift is te vinden in **hoofdstuk 2**. In dit hoofdstuk wordt een link gelegd tussen managementpraktijken en de literatuur over human resource management, en wordt de universele of contextspecifieke aard van door de WMS gemeten managementpraktijken onderzocht. Het hoofdstuk richt zich op mensgerichte managementpraktijken binnen de WMS methode en onderzoekt hun universele toepasbaarheid en

potentiële variaties op basis van de context van bedrijven. Het onderzoek gaat in op de interne context van bedrijven, met nadruk op de rol van menselijk kapitaal op bedrijfsniveau bij de matiging van de relatie tussen personeelsmanagement en productiviteit. Ook de externe context van bedrijven wordt onderzocht. Hierbij wordt gekeken naar culturele waarden op landenniveau, in het bijzonder 'individualisme versus collectivisme', en regelgeving binnen de arbeidsmarkt, in het bijzonder wetgeving op het gebied van ontslagbescherming. De analyse van de WMS-database met gegevens uit 14 landen laat een positieve associatie zien tussen personeelsmanagement en productiviteit, die nog wordt versterkt door menselijk kapitaal. Terwijl er geen significante effecten lijken te zijn van culturele waarden of wetgeving op het gebied van ontslagbescherming, biedt de studie cross-sectioneel empirisch bewijs op basis van de WMS methodiek en wordt het positieve verband met productiviteit in verschillende contexten bevestigd. De bevindingen van dit hoofdstuk dragen bij aan de managementliteratuur en onderbouwen de argumenten voor een wereldwijde gelijktrekking van managementpraktijken. Bovendien wordt in dit hoofdstuk empirisch bewezen dat menselijk kapitaal, zijnde een immateriële vorm van kapitaal, van essentieel belang kan zijn voor de effectiviteit van managementpraktijken in de hedendaagse kenniseconomie.

In **hoofdstuk 3** wordt vervolgens het probleem van *manager versus management* besproken en nader geanalyseerd. De focus ligt hierbij op de rol van CEO's en hun 'instrumentele leiderschap', de managementpraktijken, en hun beider relatie tot bedrijfsproductiviteit. Instrumenteel leiderschap (IL) gaat over (percepties van) leiderschapsgedragingen zoals het monitoren van de omgeving, strategieformulering, faciliteren van paden voor werknemers om doelen te bereiken, of uitkomstmonitoring, dit alles met een nadruk op het succesvol uitvoeren van taken. Om een volledig overzicht te bieden van de bedrijfsproductiviteit, wordt in het onderzoek informatie over de IL-gedragingen van CEO's gecombineerd met data over de managementpraktijken van bedrijven. Het doel hiervan is te achterhalen in hoeverre IL-gedragingen en managementpraktijken separaat en gezamenlijk bijdragen aan de productiviteit, en te bekijken of interacties tussen managementkwaliteiten en IL-gedragingen de productiviteit kunnen verbeteren. Op basis van inzichten uit literatuur op het gebied van strategisch management en organisatie-economie worden in deze studie diverse kenmerken van CEO's en bedrijven onder de loep genomen. De steekproef bestond uit 156 industriële bedrijven in Nederland, die zijn onderzocht op WMS-managementpraktijken en leiderschapsgedragingen van CEO's. Uit de analyse blijkt dat zowel de IL-gedragingen van CEO's als de managementpraktijken zelfs na controle voor meerdere kenmerken van CEO's in duidelijke mate verschillen in bedrijfsproductiviteit verklaren. Belangrijk om te vermelden is dat leiderschapsgedragingen van CEO's en managementpraktijken unieke associaties vertonen met productiviteit, zonder een significante interactie. Deze studie draagt bij

aan onderzoek op het gebied van management en leiderschap door licht te werpen op de relevantie van de daadwerkelijke gedragingen van instrumenteel leiderschap door CEO's. De bevindingen ondersteunen de separate bijdragen die IL-gedragingen van CEO's en managementpraktijken hebben voor productiviteit. Het onderzoek waardevolle inzichten voor organisaties die hun productiviteit willen verhogen via het leiderschap van hun CEO.

In **hoofdstuk 4** kijken we naar de heterogeniteit van bedrijven vanuit het perspectief van de internationale economie. De focus ligt op productiviteitsverschillen tussen bedrijven als determinant voor hun exportprestaties. Op basis van internationale bedrijfskundige inzichten en eerdere WMS-studies wordt in dit hoofdstuk cross-sectioneel bewijs geleverd dat managementpraktijken voorspellers zijn voor productiviteit, voor export en voor de link tussen productiviteit en export. Hierbij is een dataset op bedrijfsniveau van 385 industriële bedrijven in Nederland gecombineerd met gedetailleerde administratieve en managementgegevens om de associatie tussen managementpraktijken aan de ene kant en productiviteit en export aan de andere kant te onderzoeken. De resultaten bevestigen dat managementpraktijken significante voorspellers zijn voor de bedrijfsproductiviteit. Bovendien laten goed bestuurde bedrijven hogere exportinkomsten zien, ook als andere relevante bedrijfskenmerken worden meegewogen. Cruciaal hierbij is dat productiviteitsverschillen die heterogeniteit in export voorspellen deels worden toegeschreven aan verschillen in managementpraktijken. Hoewel hier vanwege de cross-sectionele aard van de data geen causaliteit kan worden aangetoond, biedt deze studie een gedetailleerd inzicht hoe de managementpraktijken van een aantal Nederlandse productiebedrijven gerelateerd zijn aan bedrijfsproductiviteit en exportprestaties, waarmee een bijdrage wordt geleverd aan de literatuur over heterogeniteit van bedrijven daar waar het hun internationale handelsactiviteiten betreft. In dit onderzoek wordt productiviteit bovendien beschouwd als een endogeen bedrijfskenmerk, waarmee wordt bijgedragen aan de literatuur over endogene bedrijfsproductiviteit met bijzondere aandacht voor managementpraktijken. Praktische implicaties ondersteunen het belang van het evalueren en verbeteren van managementpraktijken om de productiviteits- en exportcijfers te verbeteren. Aan de hand van de hiermee geboden inzichten kunnen beleidsmakers effectieve strategieën ontwikkelen om de productiviteit en export te helpen groeien, ervan uitgaande dat de door ons voorgestelde causale relatie inderdaad aanwezig is.

De problemen die komen kijken bij het meten van management en de dilemma's van *universeel of contextspecifiek* en *manager versus management* hebben in dit proefschrift ook beperkingen opgeleverd, vooral in termen van *context*, *meten van gedrag*, *causaliteit* en *verandering*. In **hoofdstuk 5** worden deze beperkingen besproken en worden specifieke richtingen voor toekomstig onderzoek voorgesteld.

Onze verkenning van de context in hoofdstuk 2 is gericht op menselijk kapitaal, culturele waarden en ontslagbescherming in arbeidsmarkten in verschillende landen. Hier bestaan echter beperkingen, met name op het gebied van het meten van menselijk kapitaal: de maatstaf die wij gebruiken (opleidingsniveau) is namelijk beperkt. Bovendien wordt hierbij de rol van diversiteit tussen de verschillende functies binnen bedrijven genegeerd. Voor een dieper inzicht zou in toekomstig onderzoek gebruikgemaakt moeten worden van een meer gedetailleerde maatstaf voor werknemersvaardigheden, waarbij cognitieve, analytische en sociale vaardigheden in verschillende organisaties en branches in het oog worden genomen. Daarnaast is specifieke aandacht voor de rol van bestuurlijk menselijk kapitaal onmisbaar voor een volledige analyse.

In hoofdstuk 3 wordt onderzoek gedaan naar individuele leiderschapsgedragingen door CEO's. Deze meting van gedragingen bestaat echter uit subjectieve opvattingen van hun medewerkers en is daardoor logischerwijze beperkt. Voor een meer genuanceerd inzicht in leiderschapsgedragingen zou toekomstig onderzoek meer gebruik moeten maken van objectieve maatstaven zoals het analyseren van de agenda's van managers, communicatiestijlen en fysieke eigenschappen van CEOs.

Ons onderzoek is eenmalig uitgevoerd en is dus alleen cross-sectioneel, zodat er geen conclusies getrokken kunnen worden over causale verbanden tussen management, leiderschap, productiviteit en export. Toekomstig onderzoek zou gebruik kunnen maken van experimentele ontwerpen (bijv. interventiestudies) en exogene schokken kunnen inzetten als natuurlijke experimenten om causale verbanden te onderzoeken. Door beperkingen in de gegevens konden ook veranderingen in managementpraktijken en leiderschap binnen bedrijven niet worden onderzocht. In een lange-termijn analyse kunnen managementpraktijken en leiderschap op de lange termijn worden onderzocht en kan worden bekeken hoe individuele managers deze praktijken beïnvloeden en welke collectieve invloed ze hebben op de bedrijfsproductiviteit.

Het proefschrift wordt afgesloten met een verwijzing naar de complexiteit van productiviteit als primaire prestatie-indicator. In het streven naar meer productiviteit moet aandacht blijven uitgaan naar het welzijn van werknemers, zorg voor het milieu en duurzame groei. Toekomstig onderzoek kan hieraan bijdragen door te bestuderen hoe managementpraktijken en leiderschap niet alleen samenhangen met productiviteit, maar ook met alternatieve prestatie-uitkomsten die samenhangen met veranderende prioriteiten op het gebied van maatschappij en milieu.



The Productivity Puzzle, Management Practices and Leadership

Eda Aral



The research direction of this thesis is sparked by the puzzling variation in productivity among firms, underscoring the importance of understanding the drivers of productivity better. This thesis encompasses three empirical studies, each tackling a distinct challenge in productivity and management research. It is grounded in the framework of the World Management Survey (WMS), which offers a standardized approach to assess management practices and their relation to differences in performance indicators like firm productivity.

The first study explores the universality of people management practices within the WMS framework across fourteen countries. It focuses on the role of firm-level human capital, and the cultural values and employment protection legislation in firms' institutional environment. The results suggest that firms' human capital is positively associated with people management practices' effectiveness, and that the practices are universally linked to productivity without being significantly moderated by cultural context or regulatory factors of employment protection.

The second study taps into individual managers' role and investigates the influence of CEOs' instrumental leadership behaviors alongside management practices for firm productivity. Analyzing data from Dutch manufacturing firms, it concludes that both CEO leadership behaviors and management practices independently are associated with productivity, emphasizing the unique roles of CEOs and firm management.

The third study examines the link between management practices, productivity, and export performance in Dutch manufacturing firms. It finds that better-managed firms tend to have higher productivity and export revenues, suggesting a relationship between management practices' role in firm productivity and the heterogeneity in firms' export performances.