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What role will leadership play in driving the future of UK manufacturing?

Future of Manufacturing Project: Evidence Paper 15

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What role will leadership play in driving the future of UK manufacturing?

By

Dr Rebecca Homkes

London Business School

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I. Introduction: Leadership and management

I.1 Introduction: Why leadership and management?

The nature of the manufacturing industry and its role in the UK economy is undergoing a period of substantial change. This is a given, and the focal point of the Foresight Future of Manufacturing initiative, which aims to provide a mid and long-term look at the future of manufacturing within the UK. Many variables – economic, political, technological and sociological – will be at play, and these forces will interact in powerful and unpredictable ways. At the heart of these dynamic forces will be those at the forefront of the UK firms – the leaders and managers. This begs the question driving this report: What is the role of leadership and management in the future of UK manufacturing?

It is fair to say that leadership is one of the most talked about yet least understood concepts in business and society. Even more so, the so-called “leadership crisis” across the UK is a topic gaining increasing coverage and related concern. Many recent industry reports, studies and certainly the popular press continue to give credence to the notion that a leadership and management deficit within UK organisations are undermining the ability of its firms to execute their strategies, adapt to change, and manage their businesses for successful results. Yet while the criticality of leadership and management continues to gain credence, the related disciplined study of these topics is unfortunately notably lagging. The fields are characterised as fuzzy, inconsistent, and disjointed, and most attempts at the measurement of these practices in place - a few exceptions outstanding - are rather dismal. Such a status prevents cumulative knowledge building, and it also highlights the need for more concreteness and disciplined study, which would facilitate the ability to translate evidence into actionable policy and business-led action. Thus, the purpose of the current report is to delve into these topics in more detail from a mixed disciplined approach; one that combines academic research, empirical business studies and company-specific work, with government agency led studies and commission-based reports. While the end result is by requirement too brief to give the full depth to the topics that they deserve, it hopefully sheds light on these topics for the UK manufacturing context, reviews the existing evidence on leadership and management, and furthers the agenda for future research and possible policy recommendations as we look to the future of the industry.

I.2 Aims of the study

As part of the Foresight Initiative on the Future of Manufacturing, this report covers the role of leadership and management in the future of the manufacturing industry, with a targeted focus on both the mid-term (2020) and the longer term (2050). The aim of this research is to investigate the key topics of leadership and management, including the distinctions between them and what the terms encompass going forward, rather than just relying on these historical or traditional conceptions. The key objectives of this report were also to examine what is known regarding the role of leadership and management in firm performance, what evidence base exists regarding leadership and management in the UK, and critically, what the role of leadership and management should and will be in driving the future performance of firms in the UK manufacturing industry.

1.3 Scope of study, methodology, and limitations

These are encompassing topics, and within the limited setting of this report, neither can be given full justice. Before moving forward, it is worth noting that this report cannot give full credence or coverage to these weighty topics nor probe all areas in the level of detail that narrower reviews can cover. Thus the aim is to provide an overview of the key issues and outline the main arguments related to the issues at hand. To do so, this study first distinguishes leadership and management; it then critically breaks down these topics into clearer units of analysis: the role of leaders and managers, leadership and management characteristics, behaviours, skills and qualifications, and practices and processes. Such distinctions are not an exercise in terminology but a necessary step in order to explore and discuss the topics with the rigour the disciplines require. After this initial definition setting and background review, the main focus of the report is based on looking to the role of leaders in the future of the industry; the introduction of the R.A.C.E. leadership framework (Resilience, Agility, Coordination, and Equipping the leadership pipeline) denoting the four key factors identified as critical for manufacturing leaders; the profiles of the current CEOs in the manufacturing industry; the UK's lagging position when comparing the measurement of management practices across countries; the possible constraints and barriers to increasing the capacity of leadership and management in the UK; and the implications and related recommendations.

Given the encompassing nature of the report and the issues covered, a mixed methodology was employed to pull together the evidence¹ and lead to the recommendations and implications. The first came from a systematic review of the academic literature on the following topics: the difference between leadership and management, the link between leadership and management and performance, effective leadership and management in the manufacturing industry and leadership and management in the UK context. These original results, which numbered in the hundreds, were then cut down to focus on only those that addressed one of the topics above directly or provided a meta-analysis of one of the key foci above; this resulted in over 150 articles. The next step was a review of institutes and commissions that have conducted surveys and reviews on management and leadership or the future of the manufacturing industry, and this report especially focused on reviews and reports dated within the past four years. Three specific pieces of the report are informed by specific methodologies: the introduction of the CEO database and profile of UK manufacturing CEOs (section 3), the evidence from the WMS survey (section 4), and the presentation of the RACE framework (section 5), and the detailed methodology of these pieces is presented separately in the introduction to these sections. The final sections relating to barriers to enhancing management and leadership and final implications are based on the related reviews as well as a small set of interviews with industry leaders and academics focused within these areas.

1.4 Defining the topic of leadership and management and unit of analysis

Are leadership and management different? While this question has been at the heart of long existing debate, it is fair to say it is not yet resolved. Which naturally follows into the second question: even if they are different, does it matter? Leadership and management are often used interchangeably, but there are differences between the two roles. While this report is not meant

¹ A full list of references is available in the appendix.

to provide a definitive notion of both, pragmatism of definition is needed to work towards the implications and recommendations covered in the concluding sections. As discussed later, though the confines between them are increasingly blurred, there are differences that will continue to hold moving forward.

The overriding focus for this report is on those who exercise leadership within manufacturing firms (in section 3, this is specifically focused on the CEOs of the manufacturing firms), which is an overlapping set with those who are in formal management roles. However, leaders and managers cannot only be determined by where in the firm hierarchy they sit, as it is not the case that leaders only sit at the top of the firm and management occupy the middle rungs. Both occur at multiple layers across the organisation, and individuals can be both leaders and managers. While some would argue leaders and managers are simply different kinds of individuals (Zaleznik 1977), most works suggest, as does this report that people can possess both leadership and management skills, many will serve both functions within their careers, and these skills can be developed. The main themes are reviewed in the following section, which summarises that while these are distinct concepts, leadership and management are not substitutes for each other, nor is one superior to the other; both are critical to the organisation.

Specificity on the unit of analysis involves more than distinguishing between leadership and management; instead, it entails breaking down these encompassing topics into more concrete, or at least manageable, chunks. This report makes the distinctions between the following aspects of leadership and management: leaders and managers; leadership and management skills, behaviours, practices, and processes, which are discussed below. More crispness in definition assists in informing the evidence base that can be built, and while the unit of analysis throughout the report shifts across these, it remains anchored clearly within one of these, though this can be challenged at times as most existing reviews or studies do not distinguish amongst these concepts.

1.5 Roadmap of the report

This report proceeds as follows. The second section presents a background to the key topics and explores the notions of leadership and management in more detail. It reviews the relevant literature on the subject areas with special emphasis on the distinctions between them and the most widely utilised theories of leadership and management. The section also presents a critical assessment of current reviews and identifies key lacks in the existing literature. In the third section, the CEO profile dataset is introduced and presented: the work is the first encompassing dataset of its kind to present the full profiles of 600 CEOs in the manufacturing industry, including characteristics such as age, gender, tenure, nationality, and educational background. The UK CEOs are compared to their peers in the United States and Germany, and a limited analysis is presented of the relationship between these CEO characteristics and firm management practices, performance and growth. The fourth section presents the existing evidence base regarding the state of UK leadership and management. As many of these have been covered elsewhere, its main focus returns to the topic of management practices, and using the joint LSE/Stanford/Harvard World Management Survey (WMS) study, the state of management in the UK and relationship between management and firm performance is examined for the UK manufacturing context. The UK's lagging position in the global management league tables is discussed, as well as the key factors that explain the differences in management across firms and countries. The fifth section examines the notion of leadership with particular emphasis on the future of the role for leaders in the manufacturing industry. This section introduces a framework to embody the key characteristics that define this role for future leaders to compete within the increasingly challenging global context. These are the R.A.C.E.

factors (Resilience, Agility, Coordination, Equipping the leadership pipeline), which are further developed. The subsequent sixth section explores ways that leadership and management can be enhanced, and the section also addresses barriers that exist which are hindering increasing the capacity of leadership and management practices, especially within the UK manufacturing industry. The seventh part recaps the main arguments, addresses the implications of the report's main findings, and presents an initial take at policy recommendations. It then concludes by focusing on some specific needs for further research into leadership and management in the UK.

2. Leadership and management: Background to the topic

2.1 Leadership versus management: Is there a difference?

Leadership and management are topics that immediately conjure thousands of varied, and often overlapping, images and notions. While the literature on leadership spans several centuries, dating from writings of ancient philosophers such as Aristotle, Plato and Pareto, the literature on management is comparatively rather new - mostly dating from the first of the twentieth century. Despite their varied conceptual births, it has become commonplace to use the terms interchangeably, or at least within the same sentence when referring to organisational strengths, or deficiencies.

That said, both within the academic literature and common managerial practice, there has been a long-ranging debate as to how leadership and management are similar or differentiated from the other. On one hand, the terms are often used interchangeably while others argue adamantly that leaders and managers are fundamentally different people, and leadership and management opposing sets of behaviours. In contrast, many others attempt to offer a distinct, and often harsh, differentiation between the two. Though many have contributed to the debate, little sound empirical evidence exists clearly differentiating between the two.

Though difficult to trace the origins of the debate, many refer to Zaleznik's influential and rather controversial article in 1977 where he proposed that while managers are tough, analytical, persistent, and smart – all needed qualities, none of these were qualities of leadership. Instead, he argues that for organisations to flourish they needed the inspiration, passion and vision that leadership entailed. Indeed, this debate between the qualities of managers and leaders persists today. While some argue that these are very fundamentally different concepts (Kotter 2001; Perloff 2004), even to the extent that managers are not necessarily capable of being leaders, others argue these are complementary, if not overlapping roles. Zaleznik (1977) argued that the critical difference between the two was in their conception of chaos and order, whereas managers seek control and order, leaders not only tolerate lack of structure and/or chaos but almost thrive on it. Indeed the notion of control (managers) versus change (leaders) is a central point in most differentiations between the two. Others have taken similar notions, with some tending to conflate bureaucracy and administration with management and vision and direction with leadership.

One aspect that tends to emerge from the reviews is that there can often be an almost negative connotation associated with management. Thus as a starting point, any discussion of the two must compare good leadership to good management and poor leadership to poor management (See Malik 2009 for a more detailed discussion of this point). Looking forward for the manufacturing industry, equating the role of a manager to that as controller, a supply chain optimiser, or a hopeless bureaucrat is not incredibly helpful. These traditional distinctions between leaders and managers are also rather historical, so it can rightly be argued that as the business model of UK manufacturing firms adapts, the notions of leadership and management

must adapt with them.² As Denning (2010) notes, the key challenge is that both leaders and managers must be part of leading the transformation of firms into this newer, updated way of organising.

This is also not to argue we need more of one than another. While some argue most companies are lacking leaders (Kotter 2013), others argue that the most recent financial crisis, which was particularly severe in the UK, is evidence that companies had become over led and under managed (Birkinshaw 2010). While it would be easy to simply suggest that manufacturing firms need both, the issue is more complex in nature. Yes, firms need both leaders and managers, and the reality is that in a number of UK firms, many are asked to play both roles. Thus as a starting point, we can say firms need leaders who can manage others and managers with the capability to lead. It is also important to move past traditional, hierarchical notions of the terms and focus on how these roles will continue to evolve in the future firm, which will also be evolving in organisational and operational manners.

The continuance of this debate – and it will continue – does raise the question of whether or not this matters. This report argues that it does. For one, using the terms interchangeably leads to complications and confusions over the different roles leaders and managers should play within the firm. As argued by Kotter (2001), lacking proper distinction between the two leads to difficulties in measuring, assessing, hiring, and developing of both within the firm. As a discipline, it also means we lack precision in the understanding, and usefulness, of current work and studies on the topics.³ As this distinction could consume an entire report, these arguments are summarised in the Appendix, which denotes the body of works distinguishing between leadership and management, leaders and managers, and the differences between the roles of the two.

2.2: Leadership versus management: Distinguishing the topics

Much of the lack of consensus surrounding the role of leaders and managers stems from the fact that the concepts are simultaneously used to refer to either the people within the roles or their characteristics as well as varied sets of styles, behaviours, actions, and practices. Clarity on what leadership and management entails is necessary, especially as precisions on these conceptions will influence any recommended actions leading to enhanced leadership and management capacity.

In its most basic forms, we can distinguish the topic into the following:

- People within the roles (the leaders and managers); and
- Leadership and management:
- Characteristics;
- Behaviours;
- Skills (and qualifications); and
- Practices and processes

² For related arguments, see Martin and Schmidt (2010); Hagel, Brown and Davison (2012); and Denning (2010). For more on the future business models of manufacturing within the UK, see Spring (2013), a Foresight evidence paper.

³ For more on these debates see Kotter 2006; Goerdon and Yukl 2004; Zacaro and Horn 2003; and Zaleznik 1998.

These distinctions will form the basis of the remaining report and analysis. For most discussion, however, the primary unit of analysis, or focus, will be on those who exercise leadership within the firm (specifically the CEO function as in section 3), and the report also presents separate focus on skills and qualifications and practices and processes, as the latter two are those with the most robust evidence base.

Leaders and managers: The people

This refers to the people serving within the roles of leaders and managers. This does not imply that leaders are only the senior executives at the top of the organisational chart and managers fill all other ranks until the bottom rungs of individual contributors or team leaders. Leaders and managers are located throughout the organisation, and one's title cannot be assumed to be synonymous with role as either leader or manager.

When referring to leadership and management in terms of the "people" as the unit of analysis, evidence often becomes anecdotal and is almost always case study based. When it comes to leadership-based research, studies that focus here tend to be associated with the demographic or trait-based approaches (See section 2.3). Of course there is value in assessing how the people in place are performing in their roles, but on a macro level, these studies or interventions are less useful for building future capacity as they often lack generalizability. There is also little conclusive evidence that some types of people are better leaders than others, despite repeated attempts to test such notions (See section 2.6.1). Thus, when it comes to making a case for evidence-based policy, the focus looking forward should be more on specific practices, processes, and behaviours of leaders and managers, rather than targeting an ideal profile of the people for these roles. That said, as part of this research, this report will touch upon the leader as the unit of analysis in section 3.

Leaders and managers: Characteristics and behaviours

Much research within these topics, especially associated with leadership, focuses on leadership characteristics and attempts to attribute certain characteristics with leadership and firm performance. To do so, studies must distinguish between three factors: leaders in the post; their characteristics; or the behaviours they exemplify. The most commonly cited leadership characteristics associated with effectiveness are charisma, ambitious, motivated, risk-taking, creative, and supportive. While it is probably true that certain ones are more effective or useful than others, these characteristics are quite nebulous, lacking in precision, and inherently difficult to measure. More significantly, there is no solid grounding of research saying which characteristics are more associated with performance than others, and this often varies even for the same leader and organisation over time (House and Aditya 1997). Thus there is an argument that perhaps less attention should be focused here when considering the role of leadership in the future of the industry.

The same principle holds true when considering leadership behaviours, where the remaining majority of the research lies. Some would argue that leadership is all about behaviour, and that especially in environments of increasing change this is more critical than ever. Kotter (2001) claims that the key behaviours of leaders are to seek change and movement, establish direction, align people and communicate goals and motivate and inspire others. Management behaviours are to keep order and consistency, provide structure and define processes, focus on controlling and solving issues, and define incentives to reward good work, among others. Again, both are critical but while managers provide structure and control, leaders provide inspiration, energy and motivation. This is similar to that expressed by Bennis (1989) who defines leadership behaviours

as innovation, challenging the status quo, and dealing with longer term issues whereas managers do more to administer work, copy what has been done before, and deal with shorter term issues. However, as is argued in later sections, while there are some elements within Kotter and Bennis's view to build upon, these conceptions are too narrow for the present purposes, and they also present too dichotomous a view of the two.

Skills associated with leadership and management

There has been increased focus in recent years in the specific skills associated with leadership and management, and with this a focus on ways to enhance or build these skills within manufacturing firms in the UK. These can range from the very technical to those that are more conceptual (such as the ability to analyse complex situations) or interpersonal. Skills are by nature easier to measure and assess than traits or behaviours, though they may often manifest themselves in similar ways. Increasing research is exploring the level of skills of the leaders and managers within the UK, often showing noted deficiencies, especially in the areas of performance management, coaching, and managing and leading change. Leadership and management skills can also be targeted and developed, leading to formal qualifications. These can stem both internally, such as on or off-the-job development activities to externally through specific university or business school courses. As an area, skills and qualifications are one where intervention can be more directly targeted, which is returned to in the concluding sections.

Leadership and management practices: The practices and processes

When it comes to practices and processes, there is a more stable ground for establishing “best” practice, even with a future focus, and there is also a larger body of evidence. While the notion of best practice can itself be debated, there is evidence, based within the manufacturing industry, that certain sets of practices are linked to performance outcomes across firms and may go far in explaining differences in productivity and performance across firms, thus an area this report will dedicate focus to in following sections. When the report uses practices and processes, it refers to the mechanisms leaders and managers use to translate firm-wide objectives into actions. These are the processes to set firm-wide priorities, cascade these into objectives, measure progress in meeting these, and reward or address performance (or lack thereof). Generally, we can distinguish management practices as what managers and leaders do as part of their jobs (or roles) within the firm. Management *practices*, for instance, can involve setting team and personal objectives, arranging tasks and accountability along these, developing skills and talent, among many others (See also Mol and Birkinshaw 2009). *Processes*, while related, refer to the routines that govern the work within the firm, and are usually associated with actionable tools and mechanisms. Processes can also be more informal, in that they do not have to be associated with bureaucracy or heavy administration.

Traditional managerial work focuses the majority, if not all, attention on practices and processes on activities associated with ensuring alignment up and down the firm hierarchy. This view of practices assumes that organisations are hierarchies—picture an organisation chart with the CEO perched atop the pyramid. While hierarchy is the backbone of many manufacturing firms, this is not the most helpful image in a world where work is often complex and non-routine, markets are volatile, and many activities take place outside of command-and-control reporting lines. The reality is that work does not flow top-down, it cuts across organisational silos and stems from outside the organisation, passing across multiple nodes in a complex network of activities. This means that for most managers, getting things done means getting things done with and through others, both across the organisational matrixes and through webs of matrices, alliances, and partnerships. Thus while these traditional management practices and processes

are still relevant, just as critical are processes that encompass two additional elements: those that ensure coordination across units and with key business partners and processes to ensure the firm adapts as circumstances change.

Thus to encompass a future focus, we must expand the view of practices and processes from purely those associated with alignment to also encompass coordination and adaptation. Just as critical is to focus on the context in which these practices must be adopted into the firm, which will be returned to in later sections. Also, as discussed, while some current literature often associates practices and processes with being burdensome, stifling, or limiting, which can lead to overly systemised and routinized working ways that prevent necessary adaptation or innovation, there is some evidence that having strong management practices in place can be associated with higher levels of innovation and investment in new research and development.

Terminology matters: Why the distinctions

Finally, terminology matters and is considered in order to move from the more anecdotal, case-centric nature of current studies and towards cumulative evidence building. The above is not an exercise in lexicon but an effort to make clear the “what” of focus when discussing topics of management and leadership. When it comes to management and leadership, the distinction between them matters going forward, as conceptual clarity is needed to provide the needed pragmatic base for furthering actionable recommendations, and this report will continue to segment amongst these main categories.

2.3 Theories of leadership

This section includes a brief overview of the main bodies of research on leadership, especially the main theories that encompass leadership studies. As the body of scholarship on these topics is encompassing, this serves only as a brief introduction; interested readers should see the sources listed in the Appendix for further reading, as well as a comprehensive review by House and Aditya (1997). As a note, specific leadership competency frameworks or firm specific models are not addressed for space limitations, but are returned to in later sections relating to leadership and management development. The main theories can be segmented into the following categories, which are acknowledged as primary themes in existing reviews.

2.3.1 Trait focused

Trait-focused studies formed much of the beginnings of leadership theory. Works within this realm tended to list traits or qualities associated with leaders or leadership and were focused on identifying the most key characteristics associated with successful leaders. The origins of these theories lay in the belief that if the most critical traits could be identified, then firms could recruit, select and train for these traits in leadership positions. Certain, most cited characteristics are notably charisma, intelligence, emotional intelligence and control, technical skill, among others, but the absence of these characterises does not disqualify one from being a “leader.” While these theories still permeate many leadership works, they are faulted for lack of consistency and inability to lead to generalizable conclusions regarding success factors of leaders.

With a base in 1930s-1950s, the works identified a large number of personal and physical characteristics and motives, but the key problem was that few findings were replicated across studies. After a brief period, it is said to have re-emerged in the literature, with some more support that these traits matter, and more developments which have furthered their applicability. For example House, Shane and Herold (1996) report findings that traits are stable over a period

of time, but not for life; thus we can only predict behaviour in short term but this can have long term consequences. More recent work which has received some empirical support focused on motivation for achievement (McClelland 1985; House et al. 1991) and power motivation (McClelland 1975) attempting to link motivations to leadership effectiveness.

In sum, while trait theories are still faulted with having units of focus difficult to measure, and as a body of works being largely inconclusive, there have been a number of traits that emerge that seem to differentiate leaders from others (mainly energy, intelligence, self-confidence). More so, situation influences do seem to matter as to which traits are more effective, as furthered in section 2.3.4 below.

2.3.2 Behavioural or state-focused

Behavioural (or state-focused) theories are one of the areas that have perhaps attracted the most attention. These theories focus more so on what leaders *do* rather than their traits or qualities. The main emphasis is on variations in human behaviour and relationships, and these draw associations between these and output and performance. These works are guided by the view of a near universality of leadership behaviours - ones that were observable (either in action or by asking subordinates) - as more effective than others (House and Aditya (1997).

While helpful in noting key leadership behaviours, a fault of these theories was their lack of guidance as to which behaviours would lead to better results in different circumstances. There was also less attention given to role demands of the leaders. Behaviours, perhaps even more so than traits, can also be difficult to measure accurately, especially in comparable ways across studies and time, which plagued cumulative or cross-study lesson building in these areas. While a major early contribution of this work was in distinguishing between two key leadership behaviours: task-oriented and people-oriented, even after a few decades of work, clear inconsistencies emerged and a single pattern of effective behaviours was still lacking. These and other noted faults led to the emergence of the contingency or situational approaches, as below.

2.3.2 Situational or contingent

To address some of the key faults of trait-focused and behavioural theories, contingency (or situational) theories are those that related leadership to the situation in which it is being exercised. Many researchers argued that there are differences in required leadership styles in different situations or even at different levels in the same organisation. One of the first to look into situational variables impact on leadership behaviours was Fiedler's Contingency Model of Leadership (1967) who noted these were contingent on factors, the task or relationship oriented. Fiedler says that leadership effectiveness depends on how favourable the condition is, and also how much control the leader has over the situation (Fiedler 1967; 1971). Developments of these theories garnered empirical support, and later studies, situated within Cognitive Resource Theory, explored the relationship between person variables (intelligence, experience) and stress, which also suggested implications for leadership selection and stress reduction training (Fiedler 1996).

Another key body of works in this realm were the Path-Goal Theory of House (1971) which noted that effective leadership behaviours would be determined by the situation and moderated by environmental factors. Key factors said to influence these are the relationship between leaders and members (varying from loyal, favourable to unfavourable), task structure, and position power (which is amount of power the organisation has given the leader, whether this is

real or perceived). Other works also consider contingency upon maturity level of followers in relation to the task (Hershey and Blanchard 1988). It is important to note that less than being good or bad, the preferences are said to be motivated by either fulfilling a task or building solid interpersonal relationships. Others suggest context varies in a continuum (Tannenbaum and Schmidt 1973), for example, one going from autocratic to democratic.

While these works have more support, they also generated inconsistent results (Bryman 1997) and became less popular, so it is fair to say the universal versus situational leadership still prevails, with the former being partially verified in findings. Recent work into the UK and US context (Hamlin 2004) supported the view of House and Aditya (1997) that leadership behaviours could be “universally expected, accepted, and effective across organizations, industries and cultures” as well as Bass (1997) in the universality of some behaviours, and Bennis (1999) in the universality of some competencies. Without more methodologically comparable studies, this remains an open question with many still contending leadership factors are situational or context specific

2.3.4 New leadership approach (Transformational vs. Transactional leadership)

While different terminology can be used to group together this set of theories, a large and emerging body of works can be categorised as New Leadership approach, which focus on the distinctions between transformational and transactional leadership. Whereas transactional leadership is often associated with “traditional” leadership perspectives, and a focus on the exchange between leaders and followers, Burns (1978) describes transformational leadership as more than simply being charismatic or ensuring followers’ compliance, but rather that transformational leadership results in “a relationship of mutual stimulation and elevation that converts followers into leaders and may convert leaders into moral agents” (1978, 4). Leaders who embody this are able to transform both leaders and followers into people who both adhere to new sets of values and goals. Bass’s work suggests that while transactional leaders are concerned with implementing decisions, quality of performance, and goal achievement, transformational leaders were able to raise awareness levels of their followers (Bass 1985). Covey’s (1992) distinctions between the two are summarised in the table below.

Table 2.1: Transformational versus transactional leadership

Transformational Leadership	Transactional Leadership
<ul style="list-style-type: none"> • Builds on a man's need for meaning • Is preoccupied with purposes and values, morals, and ethics • Transcends daily affairs • Is orientated toward long-term goals without compromising human values and principles • Focuses more on missions and strategies • Releases human potential – identifying and developing new talent • Designs and redesigns jobs to make them meaningful and challenging • Aligns internal structures and systems to reinforce overarching values and goals 	<ul style="list-style-type: none"> • Builds on man's need to get a job done and make a living • Is preoccupied with power and position, politics and perks • Is mired in daily affairs • Is short-term and hard data orientated • Focuses on tactical issues • Relies on human relations to lubricate human interactions • Follows and fulfils role expectations by striving to work effectively within current systems • Supports structures and systems that reinforce the bottom line, maximise efficiency, and guarantee short-term profits

Source: Covey 1992

Original works were highly descriptive but did little to explain the processes or internal motivations which led to the emergence of one or the other. Later works furthered these notions to distinguish key behaviours leaders should encompass within these types (Bass and Avolio 1994), which also led to much of the groundings of the Multifactor Leadership Questionnaire (MLQ)⁴, frequently used to measure and assess leadership behaviours.

2.3.5 Leader versus follower

Another set of theories focuses on the role of the relationship between the leader(s) and the follower(s), especially as to examining the interdependencies between the roles. One of the most popular notions with this realm is that of “Servant Leadership” which focuses on the leaders’ duties to serve others. Greenleaf (1970) describes this relationship in his original essays on the topic as “begin[ing] with the natural feeling that one wants to serve, to serve first. Then conscious choice brings one to aspire to lead....The leader first and the servant-first are two extreme types....The difference manifests itself in the care taken by the servant-first to make sure other people’s highest priority needs are being served.” Others within this realm focus on specific roles leaders must take, such as providing others an opportunity to lead or asking questions, in order to be effective leaders. More recent work has suggested a strong link between servant leaders and factors such as the regard they receive from employees or productivity (Grant 2013). This body of work has led into a growing field of its own, focusing on training and developing leaders who embody these key characteristics.⁵

2.4 Theories of management practices

While there are some overlaps with the above, it is also worth briefly considering the main theories that cover the role of management practices within the firm setting. Again, though these

⁴ <http://www.mindgarden.com/products/mlq.htm>

⁵ See <https://greenleaf.org/what-is-servant-leadership/> for more details on servant leadership.

are varied and cut across multiple disciplines, for present purposes the report considers three primary themes.

2.4.1 Management as a factor of production

These theories suggest that management is another factor of production, like labour or capital. In this view there is a market price for the management input, and this price will determine the optimal level. For example, firms in regions with low wage rates for workers with engineering or MBA qualifications may optimally hire more of these types of workers, leading to better measured management practices. As a result, while differences in management practices will be correlated with differences in productivity (assuming managerial inputs are correctly measured) they should not be systematically correlated with differences in profitability. The WMS results discussed in Section 4 show some support for this, as a strong correlation between management practices and the level of manager and worker education was found, and while this does not prove causality, it is suggestive of it. The study also finds that across countries - and especially in the UK context - manager and workers with the right skills are noted as a key constraint to improving management practices.

2.4.2 Management as a technology

This theory of management suggests differences across firms are differences in management technology, based on the notion that management, like efficiency, is free to firms so that better management should strictly speaking increase firm performance and profitability. The idea here is that management is a type of process innovation that can be utilised by many firms. For example, the major management innovations of the last two centuries such as the American System of Production, Scientific Management, Mass Production, the M-Form Organisation, Total Quality Management and Lean manufacturing are process innovations which have spread across firms in the US, Europe and Asia. These process innovations are similar to product innovations, which are non-rivalled but diffuse slowly because of the informational complexity around their introduction. For example, it took the American automotive industry several decades to replicate the Japanese system of Lean Manufacturing despite the system's increasingly obvious superiority from the 1980s onwards. All of these models take (firm-level) management quality as fixed over time. Treating management as a technology, one could consider it to change over time as new managerial techniques arise and firms choose whether to adopt these or not. In this sense Japan's Lean manufacturing techniques or Wal-Mart's supply chain management are genuine economy-wide productivity breakthroughs. From this perspective, management could be considered like other models of firm adoption and innovation with all of the attendant modelling issues of information, fixed costs, spill overs and so on. Alternatively, one could take an evolutionary economics approach following Nelson and Winter (1982), in which firms follow a set of management routines. Well-managed firms prosper, grow and generate new firms from spin-offs, while badly managed firms shrink and exit. Empirically we also find some evidence for this theoretical approach, in that well managed firms do make higher profits on average, suggesting good management is more than just a paid for factor. The case study literature and world of management guru books is also replete with examples of management best-practices that can be copied to improve firm performance. This more anecdotal literature also suggests that management is a type of technology that firms can adopt.

2.4.3 Management as design (contingent management)

The contingency theory suggests that rather than a notion of best practice, no single managerial style, organisational structure or set of practices is effective for all firms; instead, it is the fit

between management and the nature of the firm that matters. For example, team-based incentives will work well in industries with joint production while in industries with individual production, individual incentives may be more appropriate. In other words all practices are contingent on the industry and environment faced by the firm. This approach has a long history in management science, going back at least to Woodward (1958) and is now the dominant paradigm in fields like organisational behaviour and human resource management. Organisational and Personnel economics has also focused here, analysing the circumstances under which different designs of firms could raise productivity (e.g. decentralization, incentive pay, outsourcing, etc.). There will always be some element of the design approach at play when firms choose management practices. In the WMS results, reviewed in Section four, the researchers' focused on collecting information on management practices that the team (based on related research) believed should raise productivity; for example, practices such as using data systematically to make operational decisions and taking worker performance into account when making promotion decisions.

2.5 Measuring and assessing management and leadership:

While the above is useful in context setting, one key concern moving forward is how leadership and management can be assessed. Assessment or measurement matters as this informs our ability to enhance these in the future and links to the need for evidence-based policy and recommendations. Of course, these topics are inherently difficult to quantify, but it is worth briefly discussing the challenge and status of existing attempts.

The first is distinguishing between two aspects: measuring leadership versus asking about leadership. This is a critical point that is too often missed, as most existing studies, surveys and reviews - including the majority of those viewing the UK context - do the latter. The distinction is significant; as the above section noted, even after decades of research on these topics and literally thousands of studies, there is still no coherent conception of either leadership or management. Despite this, organisations and academics continue to ask employees to rate or assess the quality of these two terms within their own firms, usually without a standard or benchmark of comparison. This clearly seems a tall order, and one which readers should rightly question the rigour of the results. Simply put, most employees are ill-placed to answer general or vague notions regarding leadership or management. More so, when surveys or studies ask about how employees feel about leadership and management without clearly specifying the unit of analysis, this confuses the main notions held within these topics (between the people, skills, behaviours or practices), as distinguished above. Thus the study results are hard to quantify or make actionable, and even more difficult, if not impossible, to compare and analyse across studies and time.

Measuring, on the other hand, attempts to quantify or assess the quality of management or leadership within the firm through an objective measure. Unfortunately, fewer attempts have been made in this regard, especially in the UK manufacturing context. Section 4 explores one of the largest and most comprehensive in the UK manufacturing context, the World Management Survey relating to management practices, and section 5 explores a few notable studies attempting to quantify leadership. The concluding section returns to this point regarding areas needed for future research.⁶

⁶ While the topic of measuring leadership and management is significant, it deserving of more coverage, given the specifications of this report this is limited to the discussion above. Interested readers should reference the appendix for list of suggested studies.

2.6 Leadership, management and performance and limitations of existing works

The quality of company leadership is widely seen as key in maintaining and improving competitiveness, and the leadership of the firm CEO has long been proclaimed as an important, if not the most important, factor necessary for the success of the company. Despite this long-standing and widely held view, empirical evidence still remains rather limited when it comes to measuring and explaining the link between CEO or company leader influence and organisational performance, even though many attempts have been made in this regard. A few main reasons lead to this noted gap in the evidence. Critically, the majority of existing works and studies deal with issues of leader or leadership effectiveness, and are thus more concerned with the relationships between leaders and their immediate followers (Bass 1990). Not only do these often neglect organisational or contextual factors, but they remain within this limited focus rather than attempting to link leadership effectiveness to organisational performance. This partly stems from the fact that most, and nearly all earlier, leadership and management studies are focused on supervisory rather than strategic leadership, which is mostly at lower levels of the organisation.

While these studies of leader and manager effectiveness could fill volumes, recent reviews suggest that few of these findings can be generalised beyond particular organisational contexts (Axelsson 1998). Many other researchers also caution the idea of generalizable leadership effectiveness traits, behaviours or competencies that can be transferred across firms, sectors and industries.⁷ Much of this is attributed to weaknesses in research design, and varying methodologies, designs, and methods used across researchers and teams. Despite lacking, large-scale empirical evidence, the notion of the importance of leadership to organisational effectiveness remains strong. Many celebrated examples of this can be found in case studies, anecdotal reports, and smaller-scale studies.⁸ Some go as far as to claim that leadership is one of the largest determinants of success of an organisation, or even an entire country (Fiedler 1996). A few studies have shown the leadership can account for performance outcomes in identical conditions (See Thorlindsson 1987 regarding Icelandic fishing ships), while others focus on specific types of leadership, such as transformational leadership, to show explicit links with varying performance indicators (See O'Regan et al. 2005 regarding small engineering and electronic firms in the UK).

Before moving on, a few brief summary remarks and noted limitation of the above are also warranted. As for leadership theories, in sum despite their faults, the trait theories identified some traits that may have near universality, though more so in the US and UK than cross-culturally. These traits have also largely been a foundation for competency frameworks many UK organisations are using, though it is wondered how useful these frameworks, especially those more generically created, will be moving forward. The behavioural school has also identified some generic dimensions of behaviour that have significance for leadership effectiveness, though the universality versus contextual elements of this discussion are still far from resolved. Regardless, we now have several theories of leadership, which explain or predict an important aspect of leadership, but many directions remain underexplored when considering what matters for leaders, especially looking to 2020 and beyond.

⁷ See, for example, Harrow and Willcocks (1990) or Garavan and McGuire (2001).

⁸ See, for example, Quick (1992) or Simms (1997), as cited in Ogbonna and Harris 2000.

Considerable advances have been made in these fields of work, but there are still limitations, especially when compiling the relevant studies and reviews. First, when it comes to the leadership theories and frameworks, one of the biggest faults is that many still suffer from an over emphasis on a single or individual leader. This is less helpful when working towards a future focus, as leadership is becoming more dispersed and distributed throughout the firm. Most are based on limited sample sizes, preventing authoritative conclusions. As also reflected by recent reviews within the UK context (Bolden et al. 2003) most works focus on identifying leadership inputs (qualities, characteristics) and outputs (metrics, standards) but little attention to the processes between them; thus, cumulative understanding of the translation, or process, between these is still too limited. As noted by House and Aditya (1997) in their conclusions of a major review of existing works, much scholarship in the field failed to build on other's contributions, leading a wide body of leadership and management literatures that are still not integrated fully. The emphasis on identifying universal traits or behaviours or patterns also means less attention has been focused on the diversity of these aspects of leadership, meaning less is known about how these different facets are operationalised into the firm setting.

It is also clear that many existing studies, and even more so leadership or management frameworks applied within organisations, suffer from a lack of a robust research base. Many researchers are continuing to call for more evaluation of leadership and management development (Perren and Burgoyne 2001; Rodgers et al. 2003), as will be further developed in section 6. Further, there are too few works that are taking a future focus. Much of these theories and studies attempt to assign qualities, behaviours or characteristics post-hoc and build an understanding of leadership or management from there. Far fewer works attempt to build an understanding of what works to improve organisational performance, and what aspects will be most related to sustainable performance for organisations going forward. Many of these theories, and the frameworks they are based upon, are rather static, historical, and inflexible when it comes to unit of focus. In the rapidly changing environment firms are competing within, the leadership models must be dynamic to respond to this. Finally, while most acknowledge context matters, less has been done to prove what works better in some organisational or environmental contexts than others, especially on a large-n or longitudinal basis.

There are still transferable implications from the existing theoretical base on which these broader notions have been developed, and these are intertwined into the remainder of this report. This pertinent issue of leadership and management's role in driving organisational performance is also returned to section 6 denoting the gains to be had by focusing on these roles, where UK specific evidence is also discussed.

3. Leaders in the manufacturing industry: Presenting the profile of manufacturing CEOs in the UK and comparison to global peers

3.1 Leading manufacturing firms: Introduction to CEO profiles summary

Before moving onto aspects of leadership and management behaviours, skills and practices, this section focuses on the leaders themselves as the unit of analysis. One key specification for this report was conducting a detailed look at *who* the current leaders were within the UK manufacturing industry. That is, what defines the current universe of CEOs in the UK manufacturing industry, especially in terms of background, education, and tenure. Besides understanding what constituted the current population of UK leaders in the industry, an additional motivation was to know how these leaders compare to other countries, as well as to investigate whether, and how much, this matters. Thus, as part of this research and at the specific request of the Foresight Team, the first large-scale CEO profile dataset was created, which now covers 600 manufacturing firms across three countries: the UK, the United States and Germany.

The data presented previews the management profiles of 200 firms within each country, and the firms are split between two categories. The first is data on the CEOs of the largest 100 manufacturing firms (defined by revenue) across the three countries.⁹ The second is data on the CEOs of a randomly selected set of small and medium-sized manufacturing firms, which will be termed small to medium-sized management set firms and abbreviated SM for the purposes of this initial review. The SM set was drawn from the larger dataset of firms surveyed post 2008 within the LSE World Management Survey project (See section 4 of this report). While the entire dataset consists of over 9,000 firms, the focus here was only the most recently surveyed firms for which the current CEO would have more likely been in position. For the UK, these 100 firms were drawn from a sample of 242 firms, balanced across industry and region to mirror the full sample. For the US, the randomly selected small and medium-sized manufacturing firms were taken from a larger list of 325 firms.¹⁰ They were sampled in such a way that provided for a balanced geographical distribution, with 38 U.S. states represented. In Germany, there were 93 firms in the post 2008 management dataset, so all firms were included.

⁹ The author and the Foresight Initiative would like to thank the JCA GROUP (London) and specifically Jan Hall, Fleur Evans, and Fred Watkinson for assistance in compiling the list of the top 100 firms.

¹⁰ Of the 98 small and medium-sized firms sampled, 32 of them are subsidiaries of larger companies and eight of them are parent companies to other subsidiaries.

3.2 CEOs and firms in focus: Overview of the firms within the CEO dataset

Size and ownership

In the UK SM firms, there are 101 CEOs as one firm had a jointly-held position. On average each SM firm has four manufacturing sites worldwide and roughly 400 employees. The average firm among the largest 100 manufacturing firms has 21,696 employees worldwide. All of the top-100 firms are publically listed whereas only six of the SM firms are public (as of fiscal year 2012). In terms of ownership, 42 out of the 100 medium-size firms are family businesses (one publically owned) and 58 are Joint Ventures.¹¹ In the US the average firm sampled has roughly 500 employees employed at its primary manufacturing site. The average firm among the largest 100 manufacturing firms has roughly 38,000 employees employed worldwide. For the German SM firms, on average there were 608 employees within the SM firms and over 27,000 in the top-100 while the median number of employees was 298 and 6611, respectively. Each of these firms had on average 3.5 site locations, though the median was one. See Table 3.1 and Table 3.2, below, for detailed information on the firms of focus.

Table 3.1. CEO profile dataset manufacturing firms' overview: Averages

	CEO profile dataset manufacturing firms background:					
	UK		US		Germany	
	SM	top-100	SM	top-100	SM	top-100
Employees (Global)	398(100)	21,696(97)		59,236 (97)	608 (86)	27,810 (100)
Employees (Country)	-	-	1,755 (35)	-	-	-
Employees (Establishment)	-	-	504 (69)	-	-	-
No. of Sites	3.8(100)	-	2.1 (86)	-	3.5 (86)	-
Revenue(\$th 2011)	75,502 (100)	1,365,000 (100)		26,393,000 (100)	154,182 (84)	7,776,000 (100)
EBITDA(\$th 2011)	7,201 (100)	-		-	11,799 (80)	-

**Note: Number in parentheses indicates sample from which analysis drawn, as not all firms have full profiles given data availability.*

¹¹ Note full ownership data is not complete for 100% of the firms given data availability.

Table 3.2. CEO profile dataset manufacturing firms' overview: Medians

CEO profile dataset manufacturing firms background: Medians						
	UK		US		Germany	
	SM	top-100	SM	top-100	SM	top-100
Employees (Global)	227 (100)	7,326 (97)	-	38,400 (97)	298 (86)	6,661 (98)
Employees (Country)	-	-	400 (35)	-	-	-
Employees (Establishment)	-	-	200 (69)	-	-	-
No. of Sites	3.8(100)	-	1 (86)	-	1 (86)	-
Revenue(\$th 2011)	37,833 (100)	7,510,000(97)	96,515 (73)	13,050,000 (100)	63,363 (84)	1,195,000 (100)
EBITDA(\$th 2011)	2,167 (98)	-	-	-	6,251 (80)	-

**Note: Number in parentheses indicates sample from which analysis drawn, as not all firms have full profiles given data availability.*

Firm regional breakdown

In the UK, the firms covered twelve regions, as in Table 3.3 below. In the US, as mentioned, 38 states were represented within the SM data. The top-100 US firms were located in states. In Germany, SM data firms cover 14 regions. Among them, Nordrhein-Westfalen has most manufacturing firms covered with 20, followed by Baden Württemberg at 18. Brandenburg, Rheinland-Pfalz and Saarland have only one SM manufacturing firm in the sample.

Table 3.3. UK firm breakdown by region: SM and top-100 firms

Region	Number of SM firms	Number of top-100 firms	% SM Firm sample	% top-100 Firm sample
North East	5	1410	5%	3.32%
North West	10	4514	10%	10.63%
Yorkshire and the Humber	9	3380	9%	7.96%
East Midlands	13	3095	13%	7.29%
West Midlands	20	3570	20%	8.41%
East	8	4130	8%	9.72%
London	2	7760	2%	18.27%
South East	20	6740	20%	15.87%
South West	11	3490	11%	8.22%
Wales	2	1555	2%	3.66%
Scotland	0	1625	0%	3.83%
Northern Ireland	0	1200	0%	2.83%

Firm financial performance

In the UK in fiscal year 2011¹², the SM firms reported on average revenue of £53,926,531 with a median of £247,720. Of these 100 SM firms, average EBITDA was £4,657,639 and median EBITDA was £2,167,389. For the top-100 revenue averaged with a median of £944,311,493, and the largest manufacturing firm in terms of revenue in the UK was Cobham Composites Limited with £4,857,383,092 turnover in 2011. On average the top-100 firm's market capital

¹² Note that all currency is denoted in GBP for FY 2011 at the following exchange rates USD/GBP: 1.54610, and EUR/GBP: 1.19492.

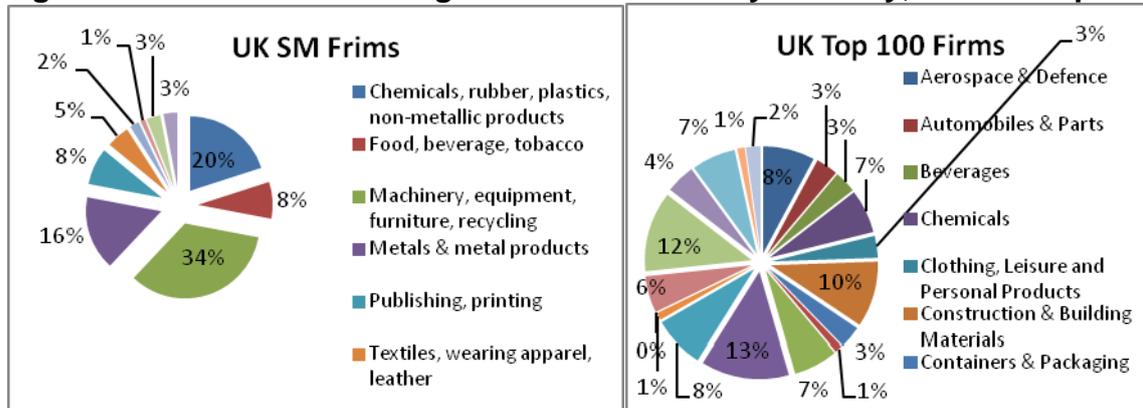
ranged from £483 million to £84,895 million. There is only market capital data for six of the SM firms, and this average and median were £10.4 million and £8.66 million, respectively.

In the US for fiscal year 2011, the SM firms reported on average revenue of £96,515,226 with a median of £29,234,849. On average US top-100 firms reported revenue of £2,639,935, with a median of £12,824. The market capital of these top-100 firms ranged from £11,000 million to £269,000 million. In Germany for fiscal year 2011, the SM firms reported on average revenue of £154,182,135 with a median of £63,363,301. Of these 100 SM firms, average EBITDA was £11,799,741 and median EBITDA was 6,251,212. Of the top-100 firms, average revenue was £ 7,776 million with a median of £1,195 million. The average firm market capital ranged from £93million to £68,512 million for these top-100 firms.

Firm industry coverage

When considering the top-100 firms in the UK manufacturing industry, these cover 19 industries¹³, with the most firms (12) operating within the broad subsector of “Engineering & Machinery,” followed by 11 firms operating in the “Mining” subsector and seven firms in the “Aerospace & Defence” subsector. Within the SM sample, ten subsectors are represented. “Machinery, equipment, furniture, recycling” had the most firms represented with 34 companies, with “Chemicals, rubber, plastics, non-metallic products” and “Metals & metal products” following with 20 and 16 firms, respectively. The full industry breakdown can be seen in Figure 3.1 and 3.2, below. As mentioned above, 42 of these SM firms were family-owned. These were distributed relatively evenly among industry sectors; however, all three companies within the subsector “Wood, cork, paper sector” were family businesses. The industry breakdown of family firms can be seen in Figure 3.2 below.

Figure 3.1: UK manufacturing firms breakdown by industry, SM and top-100



¹³ Note that industry subsector is determined by UKSIC code based on Structure and explanatory notes of UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007) given by Office for National Statistics. See the following: <http://www.ons.gov.uk/ons/guide-method/classifications/current-standard-classifications/standard-industrial-classification/index.html> .

Figure 3.2. UK manufacturing firms distribution by industry, SM family-owned firms

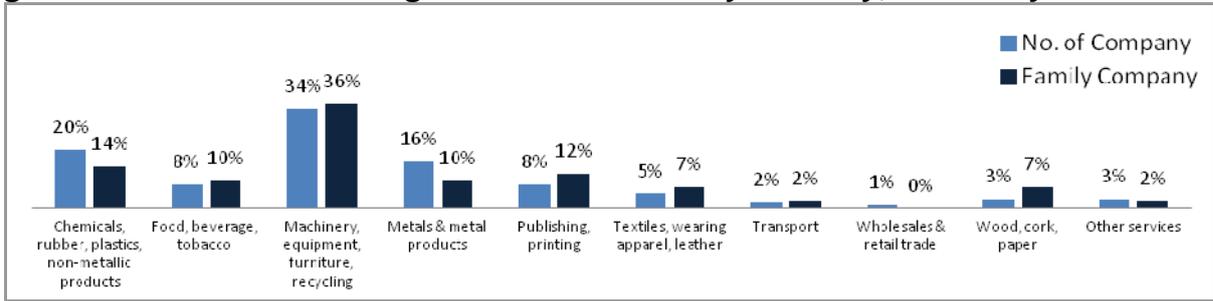
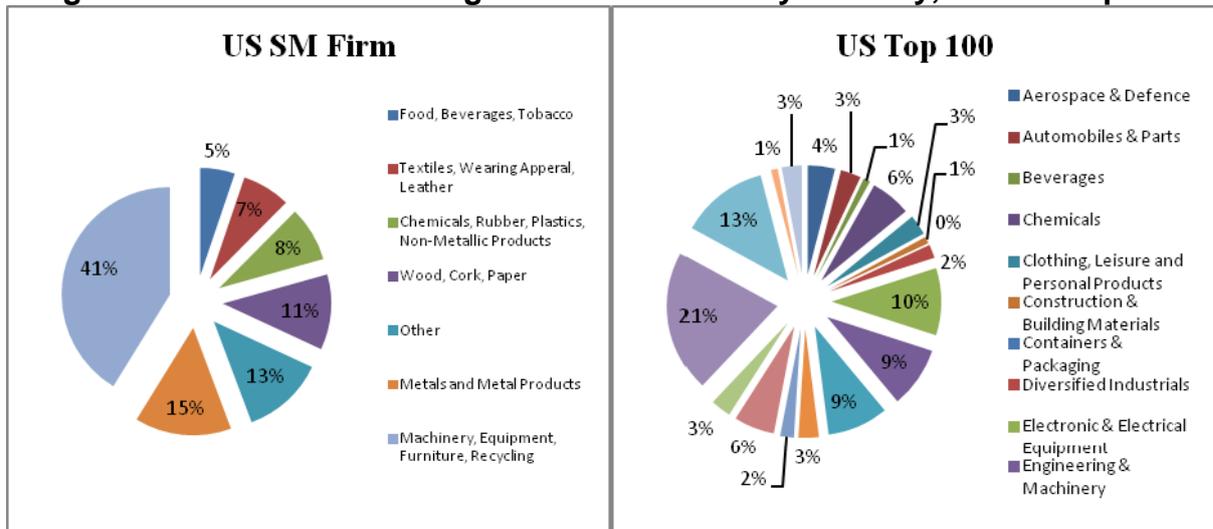
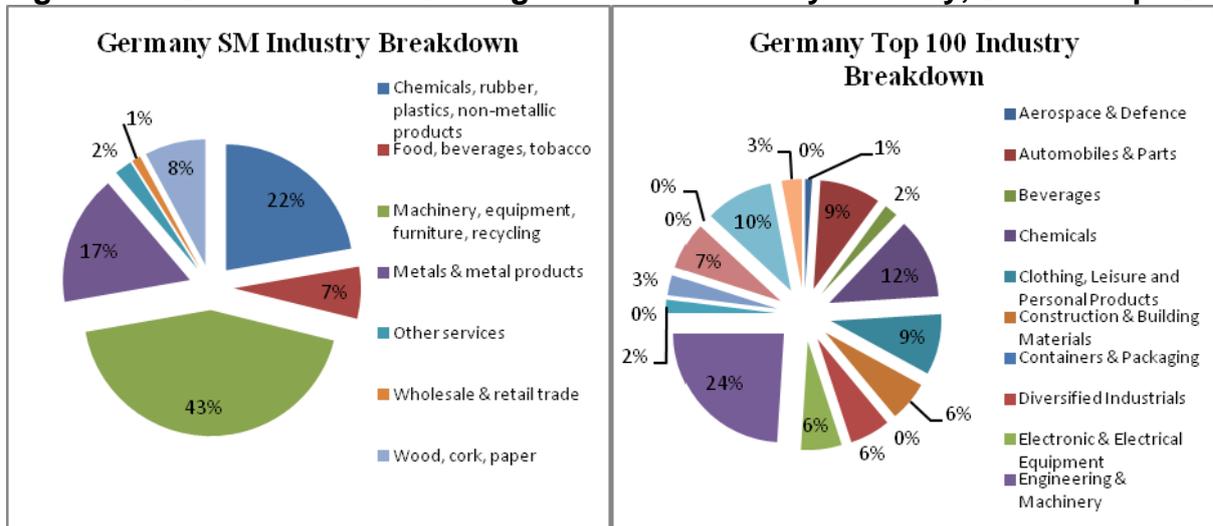


Figure 3.3: US manufacturing firms breakdown by industry, SM and top-100



The top-100 firms in the German manufacturing industry cover 15 industries, with 24 firms operating within the broad subsector of “Engineering & Machinery”, followed by 11 firms in the “Chemicals” subsector and ten firms in the “Pharmaceuticals and Biotechnology” subsector. Within the SM sample, ten subsectors are represented. “Machinery, equipment, furniture, recycling” had the most firms represented with 43 companies, with “Chemicals, rubber, plastics, non-metallic products” and “Metals & metal products” following with 22 and 17 firms, respectively. The full industry breakdown can be seen in Figure 3.4 below.

Figure 3.4: German manufacturing firm breakdown by industry, SM and top-100



3.3 CEO profiles across UK and comparative country manufacturing firms: Tenure, age, and gender

3.3.1 Tenure

In the UK, CEOs of the SM firms generally have been within their posts longer than CEOs of top-100 firms, both as employees in the company and the role of CEO. The average years for CEOs within the SM firm averaged 15.6 years, which compares to 10.8 years for the top-100 CEOs. Similarly, the CEOs on average have been in their positions for 11.1 years in SM firms, while the number drops to 5.5 years in the top-100 firms. Across the SM firms, four were founders of the company, 44 of the CEOs were promoted from within the firm, and 22 came to the company from another firm.¹⁴ This is roughly similar for the top-100 firms, as 66 of these CEOs were internally promoted to CEO while 34 were external hires. On average executives were in the firm three years before entering the CEO post, though for certain sectors (specifically “Publishing, printing” and “Other services”) this was slightly longer, and this internal promotion was on average fastest in the transport sector. See Tables 3.4 and 3.5 below for detailed information as well as the additional exhibits below.

Table 3.4 Average tenure in company and CEO position by subsector: UK SM firms

Average tenure in company and CEO position by subsector: UK SM firms					
Sector	No CEOs in total	Avg. Years in role	Med. Years in role	Avg. Years in company	Med. Years in Company
Machinery, equipment, furniture, recycling	32	11.7	9.5	14.3	12
Chemicals, rubber, plastics, non-metallic products	19	10.1	7	14.9	22
Metals & metal products	14	13.1	9	16.1	16
Food, beverage, tobacco	9	10.1	10.5	25.1	20
Publishing, printing	8	15.6	20	19	34
Textiles, wearing apparel, leather	5	6.3	19.5	9	21
Transport	3	3.0	5	4	13
Wood, cork, paper	3	15.0	3	18	4
Other services	3	15.7	2	26.7	2
Overall	96	11.1	17	15.6	17

Table 3.5 Average tenure in company and CEO position by subsector: UK top-100 firms

Average tenure in company and CEO position by subsector: UK top-100 firms					
Sector	No CEOs	Avg. Years in role	Median Years in role	Avg. Years in company	Median Years in company
Aerospace & Defence	7	3.50	1.9	7.7	5.9
Automobiles & Parts	3	3.17	1.3	9.3	7.4
Beverages	4	5.50	4.8	10.8	12.8
Chemicals	6	7.10	6.3	12.3	7
Clothing, Leisure and Personal Products	3	3.67	2.9	12.0	13.2
Construction & Building Materials	9	5.64	5.6	12.1	8
Containers & Packaging	3	9.83	3.1	12.1	10
Diversified Industrials	1	17.10	17.1	19.1	19.1

¹⁴ Note that this information is incomplete for 30 firms given limited data availability.

What role will leadership play in driving the future of UK manufacturing?

Electronic & Electrical Equipment	6	9.27	4.5	11.9	7.45
Engineering & Machinery	12	4.72	4.8	11.5	9.1
Food Producers & Processors	7	4.74	5.7	12.5	5.7
Forestry & Paper	1	5.60	5.6	5.6	5.6
Information Technology Hardware	5	8.60	7.4	11.7	8.3
Mining	11	3.18	2.9	8.4	6.1
Oil & Gas	13	6.93	5.8	9.5	6.3
Pharmaceuticals and Biotechnology	6	4.85	5.2	6.8	6.9
Steel & Other Metals	1	1.30	1.3	1.30	1.30
Tobacco	2	2.35	2.4	14.60	14.60
Overall	100	5.61	5	10.43	7.35

Just as in the UK, across the US CEOs of SM firms generally have more experience as CEO than their counterparts in the top-100. The average CEO of a SM firm has been in his or her position for 10 years (median of nine years), which compares to only five years (median of 3.7 years) of experience for a top-100 CEO. Years within the respective companies are similar between the two groups, with the average CEO of a small or medium-sized firm having 17.6 years of company tenure (median of 16 years) and the average CEO of a top-100 firm having 18 years (median of 16 years). In Germany, the situation is similar: CEOs in an average SM firm stay in the company and their executive role significantly longer than those in top-100 firms. CEOs in SM firms on average have been in the company for 12.4 years, while this is 9.6 for the top-100. When it comes to the CEO role, this was on average nine years (median of seven years) for a CEO within a SM firm and 5.9 years (median of 4.8 years) for those within the top-100.

3.3.2 Age and gender

Neither age nor gender of CEOs varies much across the three countries. In the UK, all of the CEOs in the SM firms are male, while in the top-100 firms only three were female. There is little difference in age across the two groups, as within the UK the average age of the CEOs of the SM firms is 53 while in the top-100 firms this is 48.7. The median age is the same across both groups at 52 years. Within the US, the ages of CEOs of the largest 100 manufacturing firms and of small and medium-sized manufacturing firms are similar at an average of 58. The median age between the two differs by only two years at 59 for the top-100 and 57 for the SM firms. Manufacturing CEOs in the US are also predominately male, and this is true for both top-100 firms and for the SM firms. Of the CEOs of small and medium-sized firms, 97% are male, and 94% of the CEOs of top-100 firms are male. For the six female CEOs, none had been in the post longer than six years. In Germany, the average age of a CEO of a top-100 firm is 48, and the average age of a CEO in a SM firms is 52. The median age between the two differs by only two years at 54 for the top-100 and 52 for the SM firms. Manufacturing CEOs in the Germany samples are also predominately male both for SM firms and top-100 firms. All CEOs in top 100 firms are male, and 95% of the SM firms are male. This data is summarised in the table 3.6 below.

Table 3.6 Age and Gender across Manufacturing firms CEOs, UK, US and German firms

Age and Gender across Manufacturing firms CEOs						
	UK		US		Germany	
	SM	top-100	SM	top-100	SM	top-100
Percent Male	100%(101)	97% (100)	97% (87)	94% (100)	96%(140)**	100% (100)
Percent female	0 (101)	3% (100)	3% (87)	6% (100)	4% (140)	0 (100)
Average Age	53 (101)	49 (100)	58 (65)	58 (100)	52 (103)	48 (100)
Median Age	52 (101)	52 (100)	57 (65)	59 (100)	52 (103)	54 (100)
Average Tenure in post	11.1 (96)	5.6 (100)	10.3 (65)	5.0 (100)	9.2 (34)	5.9 (100)
Median Tenure in post	8.5 (96)	4.5 (100)	9.5 (65)	3.7 (100)	7.0 (29)	4.8 (100)
Average Tenure within firm	15.5 (100)	10.4 (100)	17.6 (58)	18.0 (100)	12.4 (29)	9.6 (100)
Median Tenure within firm	15.5 (100)	7.4 (100)	16.0 (58)	16 (100)	8 (29)	8.4 (100)

*Note: Number in parentheses indicates sample size from which number was drawn, as all firm profiles are not yet complete

**Note: 27 German firms had a dual CEO role, so numbers are over 100,

3.4 CEO profiles: Education and experience

In the UK SM firms, among the 44 executives with education profiles available, only seven have not received university-level education.¹⁵ Ten have MSc degrees, nine MBA degrees, and two a PhD degree, both of which are honourable doctorate degrees. These figures are much higher across the top-100 UK manufacturing firms' CEOs. For top-100 UK firms, the percentage of CEOs with an MBA is almost four times higher at 26% and 10 CEOs have a PhD. Of the top-100 CEOs, six also have an MSc. Across both sets of firms, over 80% of CEOs finished their bachelor-level study (16 of the top-100 CEOs are still being confirmed regarding university education).

In the SM firms in the UK, 23% of CEOs have studied for a formal degree (we have not been able to track training outside the country) outside the UK, among which, three of them have studied in State University of New York at Plattsburgh. For the remaining 77% who obtained their degree in the UK, the distribution is rather dispersed. Three CEOs studied in Loughborough University, which accounts for the most, followed by Oxford University and Leeds University (both with two).

In the US, most manufacturing CEOs have a university degree, and this is true for CEOs of firms of all sizes. However, beyond the bachelor's degree, CEOs of top-100 firms are generally more educated than are CEOs of small and medium-sized firms. This is true for every level of education beyond the bachelor's degree, and especially true for the JD and PhD degrees. The institutions at which manufacturing CEOs earned their bachelor's degrees are well represented, with no college accounting for more than 5% of the degrees in each group. At the graduate degree level, however, degrees are concentrated among many of the top business schools in the US, with Harvard Business School being the institution at which the majority of manufacturing CEOs earned a graduate degree (25%). CEOs of top-100 firms hold a much larger percentage of their degrees from non-US institutions (19%) than do CEOs of small and

¹⁵ As a note, educational levels and qualifications are not equal across countries. The definition and requirements for university-level, MBA and PhD degree attainment vary widely across the three countries of focus (citation here), so while the numerical comparisons are made in this section this is not an attempt to set the degrees as equal.

medium-sized firms (5.8%). In Germany, 27 out of 42 CEOs (for which we have educational profiles) of medium-sized firms have a doctorate degree. Compared to top-100 German firms, the ratio of being a PhD is 39 out of 100. However, only 7 CEOs in medium-sized and 11 in top-100 firms have MBA degree, and 3 CEOs in medium-sized and 10 in top-100 finished master study. 37 out of 42 have a bachelor's degree; the percentage is similar in top-100 firms, which is 84%.

While there are 42 family firms in the UK sample, full profiles only exist for 19. Of these, 14 of these CEOs had a degree, and among them 21% have MBA degrees, 11% have master degrees, and 73% finished bachelor's study. All finished their study within the UK. While the subjects studied varied, only five of these 42 CEOs completed a major now related to their company's industry.

Table 3.7 Education levels across Manufacturing firms CEOs, UK, US and German firms

Education of manufacturing firm CEOs						
	UK		US		Germany	
	SM	top-100	SM	top-100	SM	top-100
Percent with BA/BSc	84% (44)	83% (100)	94.6% (74)	99% (100)	88% (42)	84% (100)
Percent with MSc	23% (44)	6% (100)	9.5% (74)	15% (100)	7% (42)	10% (100)
Percent with MBA	20% (44)	29% (100)	40.5%(74)	52% (100)	16.7% (42)	11% (100)
Percent with JD	0 (44)	1% (100)	1.4%(74)	5% (100)	0 (42)	0 (100)
Percent with PhD	5% (44)	10% (100)	2.7%(74)	9% (100)	64% (42)	39% (100)
Percent with degree outside home country	23% (43)	24% (100)	5.8% (69)	19% (100)	-	-

**Note: Number in parentheses indicates sample size from which number was drawn, as all firm profiles are not yet complete*

Education discipline

In terms of their educational background, there is great diversity in degrees obtained by these CEOs within the SM firms, with the most being obtained in engineering at 16.7% followed by economics and finance at 13.3% and chemistry at 13.3%. For the SM firms, educational backgrounds varied across the sectors represented. "Textiles, wearing apparel, leather" have the highest education percentage, with 80% of their CEOs holding a university level degree, whereas none of the CEOs in "Wood, cork, paper" sectors in our sample have a university degree. In addition, only three out of 20 executives in Chemicals, rubber, plastics, non-metallic products sector have an engineering or chemistry degree, and only one studied printing out of the eight Publishing, printing sector. Among the CEOs in the top 100 firms, the most (at 43%) have backgrounds in engineering; this is followed by economics and accountancy, at 32%. Six of the 79 CEOs have a law degree. There is also no cluster phenomenon for educational background on any of the sectors represented.

In the US, the top three disciplines studied at the bachelor level are engineering, business and economics, and this holds true regardless of firm size. 32% out of 54 CEOs in SM firms have an engineering degree, 15% in business, and 11% in economics. The following major areas of study are marketing (9%), accounting (9%) and political science (7%), with other majors accounting for the remaining 11%. For US Top 100 firms, CEO's backgrounds are more diversified. 43% of the CEOs studied engineering in universities, 32% have a degree in economics and accountancy, 7% in natural science and 6% in law. In addition, 22% out of 79 CEOs are chartered accountants, despite that this may not be their stated subject-based educational background.

For German CEOs, most (88%) have obtained bachelor degrees. Nearly two-thirds (64%) of CEOs from SM firms have PhD degrees, and the number drops to 39% of CEOs from Top-100 German firms, but these are higher than the figures of UK and US. In terms of subjects manufacturing CEOs studied, full profiles are only available for 18 of the German SM CEOs given data restrictions, and of these 18 CEOs, half (nine) of them have a BA/BS in an engineering discipline, while the other nine were split across many sectors. Finally, across the SM firms in the UK, ten of the CEOs, or 16%, (of the 63 with full profiles) have international working experience.

3.5 Analysis and implications

What emerges from the above is that on average, the profiles of CEOs in the UK are roughly similar to their counterparts on the US and Germany. Leaders of UK manufacturing firms are predominately male and have been in their roles for around eleven years for the SM firms and five years for the top-100 firms. Tenure is 15 and ten years within the firm, which is roughly in line with CEOs in Germany and the US. While fewer CEOs in the UK - in both SM and top-100 firms - have degrees than those in the US, the number of degrees is roughly in line with CEOs in Germany. There is a more sizable gap when it comes to CEOs with MBAs, as less than 30% have these within the UK while this is over 50% for CEOs in the top-100 firms for the US.

While interesting in themselves, the results above are merely descriptive, and they can only serve as a snapshot of the existing leaders within the UK manufacturing industry. To further explore the initial CEO profiles, correlation between CEO characteristics and firms' performance in terms of revenue growth was examined, based on company accounts data from 2009 to 2011. As a caveat, however, the main data we have is cross sectional; therefore, establishing the causal impact of CEO characteristics on performance is not possible. In addition, when only including those with full profile information who had been within their position for at least three years, the sample size drops below 150. After performing basic analysis, a few preliminary results were obtained, which are briefly discussed.

First, the number of years each CEO has been in his or her role is positively associated with revenue growth, and this result is highly statistically significant (at the 1% level for a one-tailed t-test). While there was also a relationship between number of years each CEO has been at his/her company, which is negatively associated with revenue growth, this result is not statistically significant. CEO age was found to be positively associated with revenue growth, and this result is statistically significant at the 5% level for a one-tailed t-test. When it comes to education, whether each CEO holds a PhD is positively associated with revenue growth; this result is significant at the 1% level for a one-sided t-test. There was a negative association with revenue growth and CEOs holding a JD, which was significant at the 1% level. Neither the relationship between MSc and MBA degrees and revenue growth were statistically significant. Finally, being a CEO of an American company (as opposed to a UK company) is positively associated with revenue growth, and this result is significant at the 10% level for a one-sided t-test. Being a CEO of a top-100 company is positively associated with revenue growth, and this result is significant at the 1% level for a one-sided t-test

In summation, the profile of manufacturing CEOs is roughly comparable across countries, with no major difference in age, tenure or background. One slight difference that emerged is in educational levels, however, as fewer UK managers have MBAs or business related education than their peers in the US. This may be an area to explore when it comes to advanced or executive training for these CEOs, as well as the management and leadership pipeline, which will be returned to in the recommendations section. While there were some associations found

between education and tenure and firm performance, these results should be viewed with some caution given the low sample size. Given these factors, and that the other demographic variables are so similar, this report suggests there is little argument for targeting certain types of leaders within these firms, especially given the lack of significant evidence that certain profiles of leaders are more effective than others. Thus the remainder of this report will focus more so on the behaviours, skills, and practices and processes, which can be more influenced by business and political attention.¹⁶

¹⁶ Given the limitations mentioned, there is little scope for expanding this preliminary analysis without substantially expanding the sample size, which is being done as part of the ongoing work on these topics.

4. Evidence base: Leadership and management in UK manufacturing firms and focus of UK deficit in management practices

The past section focused on the leader as the unit of analysis, and specifically on what encompasses the current universe of CEOs in the UK and comparative countries. This section returns to the notion of leadership and management behaviours, skills, practices and processes and, to the extent possible, reviews the existing evidence regarding both management and leadership.

4.1 Evidence base – UK management and leadership

The Foresight initiative is focused on the medium term and the implications for leadership and management looking towards 2020 and 2050. Before moving onto suggested frameworks and recommendations for the future roles, however, it is helpful to examine evidence of the current state of management and leadership in the UK. As the second section detailed, the evidence, while numerous in terms of studies, is more limited when it comes to rigorous measurement of leadership and management, especially specifically the UK manufacturing context. Yet there are a set of recent studies worth outlining, especially those which take the UK focus. To maintain consistency and clarity of concepts, these are distinguished into the categories of leaders and managers introduced above: behaviours, skills, qualifications, and practices/processes. Given the nature of the research and existing evidence, however, there will be some aggregation, and existing studies with no clear unit of analysis (especially those that relied on “asking” rather than “measuring”) are placed into the category of perceptions of current leaders and managers.

Leaders and managers: Perceptions of, supply, and characteristics

There are many studies outlining current perceptions of the UK’s leaders and managers, mainly from employees within the respective organisations. While generally addressed in more vague terms, these also often relate to the current and future supply as well as main characteristics. The studies below are not exhaustive but representative of this evidence base.

For instance, the Chartered Management Institute (CMI) 2012 study says that 43 percent of managers reported that they considered their line manager to be ineffective or highly ineffective, compared to 57 percent reporting their manager to be effective or highly effective (McBain et al. 2012). The same study found that managers in higher performing organisations, as defined by the study’s metrics of business, people and organisational performance, were more likely to report their line managers were effective or highly effective, at 80%, compared to only 39% in lower performing organisations.

The DDI Global Leadership Forecast (Boatman and Wellins 2011) which surveyed 2600 organisations across 74 countries¹⁷ found that only 38% of senior leaders and 18% of HR professionals rated leadership within their firms as high. However, the study also found that those that rated leaders as high quality were 13% more likely to outperform competitors in the

¹⁷ The DDI study surveyed 2600 organisations in 74 countries and a base of 1897 Human Resource leaders and 12,423 senior leaders. In the UK, 63% were MNCs.

metrics the study tracked (mainly quality of service and products, financial performance, and customer satisfaction). Even more worryingly, only 20% of the HR professionals rated the pipeline of leaders, or leaders in waiting, as strong or very strong.

Leaders and managers: Skills and qualifications

The necessity of leadership and management skills, and leaders and managers with the appropriate skills, is a recurring topic of concern within the UK manufacturing industry, as the evidence points to lacks in these regards. As discussed in Section 4.3, below, when studying nearly 10,000 manufacturing firms across more than 20 countries, the WMS team found that UK firms were among the lowest ranked in terms of managers and non-managers with degrees. As another, the 2012 Chartered Institute of Personnel and Development (CIPD) Annual Survey Report found that 72% of organisations in England reported a deficit of management and leadership skills,¹⁸ and this is more likely to occur in smaller organisations. This echoes their earlier findings, when 65% of UK organisations said senior managers were deficient in management and leadership skills, whereas 85% reported the same for line managers and supervisors. This noted deficiency was highest in the manufacturing sector at 86%. The survey also reports that in those firms where more importance was given to these skills (as self-assessed by the survey respondents), the less likely the organisation was to report deficits of these skills. In 2013, 41% of private sector organisations reported a skills gap, notably in the areas of performance management, coaching/mentoring, and leading and managing change.

UK managers are also less qualified on a comparative basis, according to a 2007 study by the CMI (Wilton et al. 2007). The report noted less than 40% of managers and senior officials were qualified at level 4 or above, compared to around 80 percent in other professional occupations. It also found few managers actually held specific management or leadership qualifications, and the report estimated that the proportion of managers with management-related qualifications will not raise much above 20 per cent in the longer term. The 2012 UK Commission for Employment and Skills UKCES report presented a similar picture, finding that unskilled managers represented 11 percent of the UK's skills deficit (UKCES 2012). The CMI's 2012 report (Bradley et al. 2012) did not address these same statistics; instead the report¹⁹ covered perceptions of qualifications and the impact of these qualifications on the managers and their organisations. The study was concerned with a range of qualifications including both vocational qualifications (such as awards, certificates and diplomas in management, leadership, coaching and mentoring) and academic qualifications (such as management, leadership and business related degrees, post graduate and other higher education qualifications), thus it took a rather broad focus. It found an overwhelming positive view of managers' and leaders' desire for qualifications as well as their perceived impact. While the majority, over 90%, said the management qualifications improved their work and 85% that qualification helped them make lasting changes to the way they manage and lead, only 60% agreed that they had their line manager's backing to use the new skills on the job.

¹⁸ The CIPD survey was sent to over 21,000 of their learning and talent development specialists in the UK; a response rate of 4.7% resulted in 1004 people answering, 13% of these were from the manufacturing sector but only 20% of the entire survey population was senior managers/ directors or executives.

¹⁹ The CMI sent an online survey to 20,000 CMI members, selected on the basis of having a management qualification – one of the criteria for full CMI membership. A total of 1,185 responses were received (6% response rate); 7% of respondents were from the manufacturing industry.

Leaders and managers: Practices and processes

Another body of studies addresses leadership and management practices more explicitly, and many suggest the UK lags when it comes to adopting and benefiting from management practices and processes. In Michael Porter's assessment of the UK's competitiveness in 2003 (Porter and Ketels 2003), the UK's slowness in adopting modern practices was cited as one of its key weaknesses. Even when the UK adopts these practices, it appears to reap less benefit from them as its global peers,²⁰ which makes understanding this challenge an even greater priority. The topic of practices and processes, and the UK in comparative perspective, are left purposely brief here as these take the focus of sections 4.3 and 4.4 below.

4.2 Limitations of existing studies

While these studies provide a useful starting point, there are some key limitations that must be noted. First, most work focused on studying management and leadership in the UK is based on case studies or small sets of company research. Those that do survey a wider population do so with survey techniques and methodology that depend on asking about leadership and management more than robust attempts at measurement. While there are a few exceptions, for example studying the level of qualifications obtained is inherently more objective than perceptions of managers and leaders in place, as a whole the existing research base remains unsatisfying. More so, there is little that is focused solely on the manufacturing industry, as the majority of work is done UK-wide. While this is to be expected, it is likely that the challenges facing the manufacturing industry may be distinct from those economy-wide, and understanding this specific industry and the unique challenges it faces in these regards is a key aim of Foresight and related initiatives.

4.3. UK manufacturing and management practices: Evidence from World Management survey (WMS)

As mentioned above, the popular press, business schools and industry experts have long stressed the importance of good management in driving differences in performance and productivity across firms, but this is an area to which academic economists have traditionally paid less attention. More recently this research agenda has expanded, with more works investigating the importance of management practices for performance.²¹ The relationship between leadership and management was briefly discussed above in Section 2, so here the focus is specifically on the role of management practices in driving organisational performance. This subsection presents the work of the World Management Survey (WMS), which is being conducted jointly by the London School of Economics, Stanford University and Harvard University. To date, this is the most comprehensive and robust evidence base on the topic of management practices within the UK, and is most relevant given its base in the manufacturing industry.

²⁰ See for example Bloom, Nicholas, Raffaella Sadun, and John Van Reenen. 2012. "Americans Do IT Better: US Multinationals and the Productivity Miracle." *American Economic Review*, 102(1): 167-201. See also Dintenfass, M. (1992) *The decline of industrial Britain 1870-1980*, London: Routledge; Delbridge, R. and Lowe, J. (1998) 'British manufacturing in perspective' in Delbridge, R. and Lowe, J. (eds.) *Manufacturing in transition*, London: Routledge.

²¹ For example, Ichinowski, Shaw, and Prennushi (1997), Sutton, (2007) and Bloom and Van Reenen (2007).

4.3.1. WMS: Background and measuring management practices

The chief purpose of the research is to understand how and why management practices vary not only across countries but also across firms and industries. To address this, the study works to measure and define management practices in a systematic way. As above, there is vast literature on the theory and measurement of management practices²² that offers a spread of opinions on the definition, scope, and impact of different practices, as well as a debate on whether “best practices” exist or whether every management practice is contingent. The management scoring grid within this work was developed jointly with a management consulting firm as a first-contact guide to firms’ management quality. As such it targets a set of core operational management practices that have a direct impact on firm performance based on the consultants’ experience, and that can be easily measured in an initial appraisal.

To measure management practices, the team used an interview-based evaluation tool that defines and scores from one (“worst practice”) to five (“best practice”) across 18 key management practices. Table 4.1 lists the management questions used across the manufacturing firms as well as the scoring grid. The evaluation tool attempts to measure management practices in four key areas. First, operations management: How “lean” is the firm and what elements of modern manufacturing practices have been introduced. Second: monitoring: How well do organisations monitor what goes on inside the firm, and use this information for continuous improvement? Third, targets: Do organisations set the right targets, track the right outcomes, and take appropriate action if the two are inconsistent? Four, people or talent: Are organisations promoting and rewarding employees based on performance, prioritizing hiring, and trying to keep their best employees?

Table 4.1 World Management Survey Management Practices scoring grid

	Score 1	Score 3	Score 5
(1) Modern manufacturing, introduction	Other than Just-In-Time (JIT) delivery from suppliers few modern manufacturing techniques have been introduced, (or have been introduced in an ad-hoc manner)	Some aspects of modern manufacturing techniques have been introduced, through informal/isolated change programs	All major aspects of modern manufacturing have been introduced (Just-In-Time, automation, flexible manpower, support systems, attitudes and behaviour) in a formal way
(2) Modern manufacturing, rationale	Modern manufacturing techniques were introduced because others were using them.	Modern manufacturing techniques were introduced to reduce costs	Modern manufacturing techniques were introduced to enable us to meet our business objectives (including costs)
(3) Process problem documentation	No, process improvements are made when problems occur.	Improvements are made in one week workshops involving all staff, to improve performance in their area of the plant	Exposing problems in a structured way is integral to individuals’ responsibilities and resolution occurs as a part of normal business processes rather than

²² Details of the survey can be found online at www.worldmanagementsurvey.com. This survey was originally developed by McKinsey, but most of the concepts in the questionnaire overlap with the existing management literature. For example, the emphasis on repeated and persistent organisational processes is similar to the literature on static and dynamic routines (Eisenhardt & Martin, 2000; Nelson & Winter, 1982; Winter, 2003; see Becker, 2004, for a review). Conceptually, the survey is also related to the idea that intangible firm-specific assets and organisational processes are crucial in determining firm performance, a key element of the resource-based view of the firm (Barney & Arian, 2001; see Barney & Griffin, 1992, for a review). Finally, the section of the survey dedicated to human resources (HR) practices—and in particular the attention to the selection, rewards, and training given to employees—is consistent with the literature dedicated to high-performance work systems (e.g., Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009; Lepak, Liao, Chung, & Harden, 2006; Pfeffer, 1999a, 1999b; Pfeffer & Veiga, 1999). Bloom and Van Reenen (2010) discussed the links between their work and the more general HR management literature. In terms of methodology, the WMS work shares the same emphasis on data and econometric identification issues discussed in Becker and Huselid (1998) and Huselid and Becker (1996).

What role will leadership play in driving the future of UK manufacturing?

	Score 1	Score 3	Score 5
			by extraordinary effort/teams
(4) Performance tracking	Measures tracked do not indicate directly if overall business objectives are being met. Tracking is an ad-hoc process (certain processes aren't tracked at all)	Most key performance indicators are tracked formally. Tracking is overseen by senior management.	Performance is continuously tracked and communicated, both formally and informally, to all staff using a range of visual management tools.
(5) Performance review	Performance is reviewed infrequently or in an un-meaningful way, e.g. only success or failure is noted.	Performance is reviewed periodically with successes and failures identified. Results are communicated to senior management. No clear follow-up plan is adopted.	Performance is continually reviewed, based on indicators tracked. All aspects are followed up ensure continuous improvement. Results are communicated to all staff
(6) Performance dialogue	The right data or information for a constructive discussion is often not present or conversations overly focus on data that is not meaningful. Clear agenda is not known and purpose is not stated explicitly	Review conversations are held with the appropriate data and information present. Objectives of meetings are clear to all participating and a clear agenda is present. Conversations do not, as a matter of course, drive to the root causes of the problems.	Regular review/performance conversations focus on problem solving and addressing root causes. Purpose, agenda and follow-up steps are clear to all. Meetings are an opportunity for constructive feedback and coaching.
(7) Consequence management	Failure to achieve agreed objectives does not carry any consequences	Failure to achieve agreed results is tolerated for a period before action is taken.	A failure to achieve agreed targets drives retraining in identified areas of weakness or moving individuals to where their skills are appropriate
(8) Target balance	Goals are exclusively financial or operational	Goals include non-financial targets, which form part of the performance appraisal of top management only (they are not reinforced throughout the rest of organisation)	Goals are a balance of financial and non-financial targets. Senior managers believe the non-financial targets are often more inspiring and challenging than financials alone.
(9) Target interconnection	Goals are based purely on accounting figures (with no clear connection to shareholder value)	Corporate goals are based on shareholder value but are not clearly communicated down to individuals	Corporate goals focus on shareholder value. They increase in specificity as they cascade through business units ultimately defining individual performance expectations.
(10) Target time horizon	Top management's main focus is on short term targets	There are short and long-term goals for all levels of the organisation. As they are set independently, they are not necessarily linked to each other	Long term goals are translated into specific short term targets so that short term targets become a "staircase" to reach long term goals
(11) Targets are stretching	Goals are either too easy or impossible to achieve; managers provide low estimates to ensure easy goals	In most areas, top management pushes for aggressive goals based on solid economic rationale. There are a few "sacred cows" that are not held to the same rigorous standard	Goals are genuinely demanding for all divisions. They are grounded in solid, solid economic rationale
(12) Performance clarity	Performance measures are complex and not clearly understood. Individual performance is not made public	Performance measures are well defined and communicated; performance is public in all levels but comparisons are discouraged	Performance measures are well defined, strongly communicated and reinforced at all reviews; performance and rankings are made public to induce competition
(13) Managing human capital	Senior management do not communicate that attracting, retaining and developing talent throughout the organisation is a top priority	Senior management believe and communicate that having top talent throughout the organisation is a key way to win	Senior managers are evaluated and held accountable on the strength of the talent pool they actively build
(14) Rewarding high-performance	People within our firm are rewarded equally irrespective of performance level	Our company has an evaluation system for the awarding of performance related rewards	We strive to outperform the competitors by providing ambitious stretch targets with clear performance related accountability and rewards
(15) Removing poor performers	Poor performers are rarely removed from their positions	Suspected poor performers stay in a position for a few years before action is taken	We move poor performers out of the company or to less critical roles as soon as a weakness is identified
(16) Promoting high performers	People are promoted primarily upon the basis of tenure	People are promoted upon the basis of performance	We actively identify, develop and promote our top performers

	Score 1	Score 3	Score 5
(17) Attracting human capital	Our competitors offer stronger reasons for talented people to join their companies	Our value proposition to those joining our company is comparable to those offered by others in the sector.	We provide a unique value proposition to encourage talented people join our company above our competitors
(18) Retaining human capital	We do little to try to keep our top talent.	We usually work hard to keep our top talent.	We do whatever it takes to retain our top talent.

The methodology defines a badly managed organisation as one that fails to track performance, has no effective targets, and bases promotions on tenure with no system to address persistent employee underperformance. In contrast, a well-managed organisation is defined as one that continuously monitors and attempts to improve its processes, sets comprehensive and stretching targets, and promotes high-performing employees and fixes (by training or exit) underperforming employees. To collect the data, teams of MBA-type students conducted the telephone interviews (in the native language of the managers), and the conversation-based questionnaire was completed by plant managers in the manufacturing firms. This level of middle managers was purposely selected, as they were senior enough to have an overview of management practices but not so senior as to be detached from day-to-day operations.

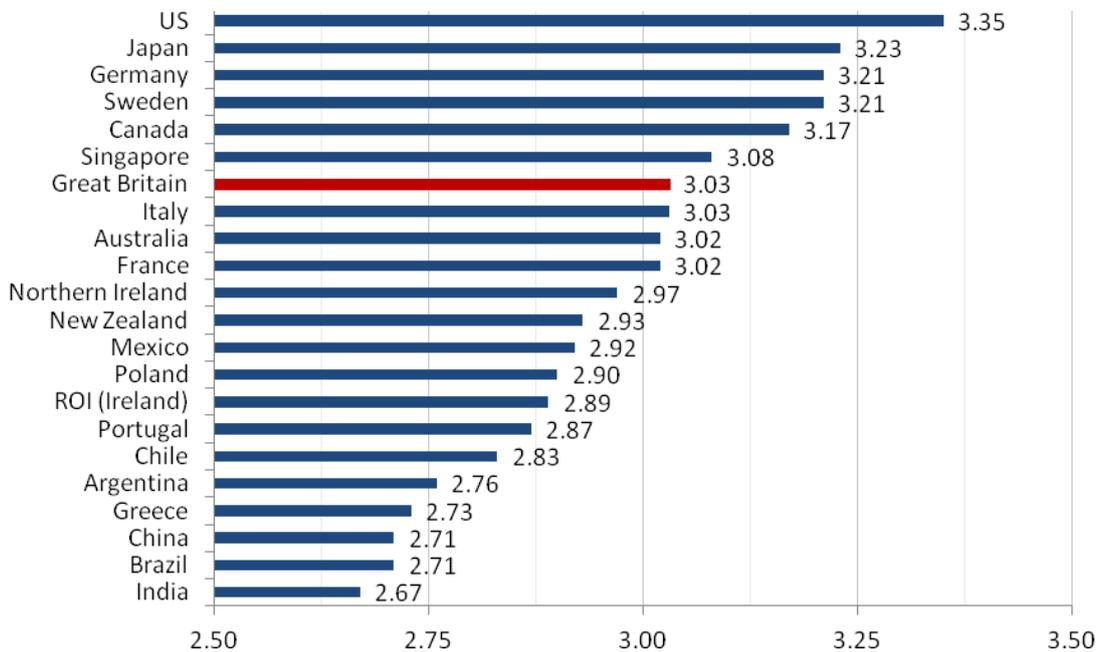
The significant component of the methodology is the double-blind survey technique. The first part of this double-blind technique was that managers were not told they were being scored or shown the scoring grid. They were told only that they were being “interviewed about management practices.” The interviewers also asked “open” questions in the survey. As an example, for the first question on monitoring, the question would be posed as “Tell me how you monitor your production process” rather than closed questions such as “Do you monitor your production daily [yes/no]?” or a closed question that includes subjective ranking (as most of the studies above used) such as “How well monitored are your processes.” The interviewer would use the combined responses against a set, objective scale to code, or score, the response. The other side of our double-blind approach was that interviewers were not told in advance anything about the organisation’s performance; they were provided only with the organisation’s name, telephone number, and industry. This works to avoid systematic scoring biases.

The team randomly sampled medium-sized firms (employing between 100 and 5,000 workers). From 2004 to 2013, there have been 1,214 firms sampled in the UK, randomly drawn from the population of companies with between 100 and 5,000 employees whose primary code was in manufacturing. For the UK this firm population data came from Bureau Van Dijk’s ORBIS database. Of these, 270 were surveyed across multiple time periods (2004, 2006, and 2009) meaning the data is also building a longitudinal panel of UK management practices in manufacturing across time.

4.3.2 World Management Survey: Describing management practices across countries and UK position

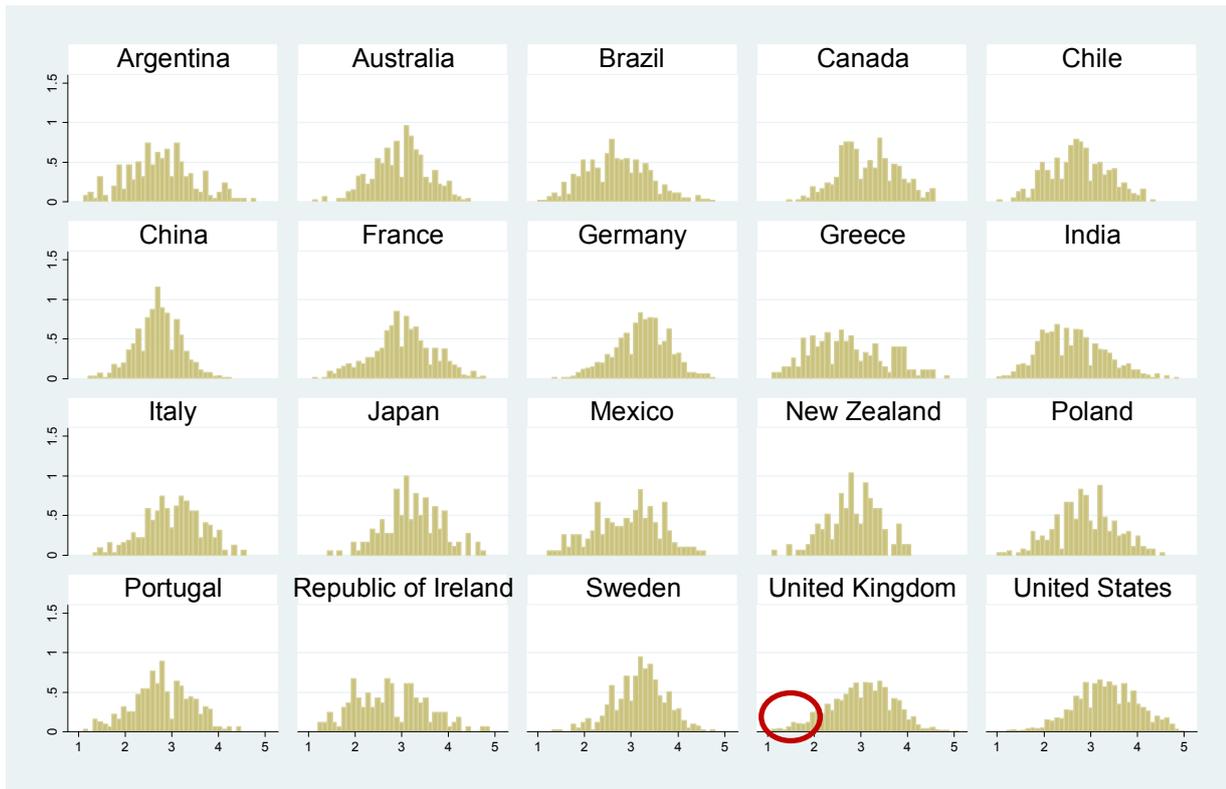
When plotting the cross-country rankings, the UK management scores are distinctly mid-table by international comparisons (See Figure 4.1), falling below the US, Japan, Germany, Sweden and Canada but comparable to most other developed countries. In particular UK management practices are similar to those in the rest of Northern Europe and Australia and clearly higher than those in Southern Europe and developing countries like China and India. This cross-country ranking is perhaps not surprising, since it approximates the cross-country productivity ranking. Although the study cannot offer a rigorous argument here about the magnitude of any causal effect, it certainly appears plausible that management practices should be viewed as part of the determinants of national productivity. A regression of GDP per capita on management practices across 17 countries yields an R-squared of 0.81.

Figure 4.1 Management practice scores across countries



What does the distribution of management practices look like *within* countries? Figure 4.2 plots a management histogram on a country-by-country basis, showing the far wider dispersion of management practices across firms compared to across countries. In the UK, like in other developed countries, there is a wide spread of management practices. However, what is evident within the UK is the larger tail of poorly managed firms, those with an average management practice score of less than 2.0. This “tail” of low performers, while obvious in some developing countries like Brazil and India, is notably absent in the best performers such as the US. As above, these overall management scores are separated into three broad categories: monitoring, targets, and incentives; the country-level scores are shown in Table 4.2. For ease of comparison, average scores are given in the bottom row of the table. U.S. management has by far the largest advantage in incentives (with Canada and Germany following) and the second-largest advantage in monitoring and target-setting (behind Sweden and Japan, respectively). However, the data also describe how management styles differ across countries. In the United States, India, and China, managerial use of incentives (relative to the average country) is substantially greater than use of monitoring and target-setting, while in Japan, Sweden, and Germany, managerial use of monitoring and target setting (relative to the average) far exceeds the use of incentives (relative to the average). There could be many reasons for this pattern of specialization across countries. One factor is that the lighter labour market regulations in the United States make it easier to remove poor performers and to reward high performers.

Figure 4.2 Management practice distribution of scores across countries



Has this changed over time? The re-survey of firms in 2009 shows there had been improvements, presumably as best practices diffuse across firms due to competitive pressure, learning and other forces. The average UK firm in the 2009 sample has a management score of 3.17 compared to only 3.06 in 2006, suggesting that the UK has increased its score by about 0.11. This is a substantial if one considers the UK-US management gap is around 0.34. In regards to areas of management, although there has been broad improvement in all areas, “operations management” shows the greatest one. This is intuitive as the spread of lean manufacturing systems is closest to a technology of all the management indicators.

Table 4.2 Management practices scores by country and area of management

Country	Overall	Monitoring	Targets	Incentives	Firm Interview
	Management	Management	Management	Management	
Argentina	2.76	3.08	2.67	2.56	246
Australia	3.02	3.27	3.02	2.75	392
Brazil	2.71	3.06	2.69	2.55	568
Canada	3.17	3.54	3.07	2.94	378
Chile	2.83	3.14	2.72	2.67	316
China	2.71	2.90	2.62	2.69	742
France	3.02	3.41	2.95	2.73	586
Germany	3.23	3.57	3.21	2.98	639
Greece	2.73	2.97	2.65	2.58	248
India	2.67	2.91	2.66	2.63	715
Italy	3.02	3.25	3.09	2.76	284
Japan	3.23	3.50	3.34	2.92	176
Mexico	2.92	3.29	2.89	2.71	188
New Zealand	2.93	3.18	2.96	2.63	106
Poland	2.90	3.12	2.94	2.83	350
Portugal	2.87	3.27	2.83	2.59	247
Republic of Ireland	2.89	3.14	2.81	2.79	106
Sweden	3.20	3.63	3.18	2.83	382
U.K.	3.02	3.32	2.97	2.85	1214
U.S.	3.35	3.57	3.25	3.25	1196
Average	2.99	3.28	2.94	2.82	9079

Improvement in firm management scores was three times as large when there was a new manager (an increase of 0.20) than when the old manager was still in place (an increase of only 0.06). This is very interesting as it suggests that new managers may be much better at creating changes than incumbent managers (“it’s hard to teach old dogs new tricks”). An alternative interpretation is that having a new manager reflects a broader re-organisation occurring in the firm.²³ Looking at the different dimensions, the largest relative change between old and new managers appears to be in performance management, and the main reason for the improvement in firms with new managers seems to be the elimination of below-average practices. Although one should be careful of over-interpreting these correlations, these findings suggest that rotating managers in different roles has some advantages for firms, to avoid incumbents getting “stuck in their ways.”

4.3.3 World Management Survey: Explaining differences in management and UK implications

While these results are not causal, there are a few different explanations for differences in management practices across firms. These main drivers involve ownership, multinationals, competition, and skills.

²³ The study also finds that longer-tenured managers tend to take more jaundiced views of the firm’s overall management quality.

Ownership type

The manufacturing firms can be divided by ultimate ownership: including dispersed shareholders, family ownership with an external chief executive officer, family ownership with a family chief executive officer, owned by the founder or the managers of the firm, and owned by private equity or private individuals. One interesting group that emerges surrounds family firms, which the research defines as firms owned by the descendants of the founder—that is, sons, grandsons, and great-grandsons, and more rarely, daughters, granddaughters, etc. Those that are family owned and also family managed (“Family, family CEO”) have a large tail of badly managed firms, while the family owned but externally managed (“Family, external CEO”) look very similar to dispersed shareholders. The reason appears to be that many family firms adopt a rule of primogeniture, so that the eldest son becomes the chief executive officer, regardless of merit considerations. The UK has many more family-run and -owned firms than the United States, which is likely to be related to the estate tax exemption for inherited business assets in the UK.

Since family firms typically have less debt, product market competition may not be as effective in driving them out of business if they are badly managed. Without debt firms have to cover operating costs (e.g., salaries and wages) but not capital costs (e.g., the rent on property or equipment since these were typically bought outright many years ago). Hence, family firms can continue to generate positive cash flow while generating economic losses because their family owners are subsidizing them through cheap capital.

Firms with private equity ownership appear well managed, in particular when compared to family- and government-owned firms (Bloom, Sadun, & Van Reenen, 2009). These findings are consistent with empirical studies indicating that private equity transactions in the United States and the United Kingdom result in a substantial increase in productivity (Cumming, Siegel, & Wright, 2007; Harris, Siegel, & Wright, 2005; Lichtenberg & Siegel, 1990; Siegel & Simons, 2010). Thus, the pattern in recent years of private equity firms purchasing firms in Europe and Asia that were previously under family or government management may make some economic sense.

A perhaps surprising result is that “founder-owned, founder-CEO firms”—where the current chief executive officer founded the firm—are the worst managed on average. One potential explanation is that the entrepreneurial skills required of a start-up (e.g., creativity and risk taking) are not the same skills required when a firm grows large enough to enter the sample (at least 100 employees). A mature firm needs to move beyond informal rules, and these may be implemented more effectively by a professional manager (see, for example, Boeker & Karichalil, 2002 and Davila, Foster, & Jia, 2010).

Multinationals

When comparing domestic firms (those with no production facilities abroad) against foreign multinationals, two results stand out. First, foreign multinationals are better managed than domestic firms. Second, foreign multinationals seem able to partially “transport” their better practices abroad despite often-difficult local circumstances, in that foreign multinationals continue to exhibit higher quality of management practices, even related to incentives, as they spread globally. When further distinguished by export status, a clear pecking order is revealed: Average management scores were lowest for non-exporters (2.62), next lowest for non-multinational exporters (2.89), and highest for multinationals (3.25).

Competition

The manufacturing managers were also asked to identify the number of competitors they faced in the marketplace. The study also found that the average management score was significantly higher when firms reported facing more competitors. This also held when using other measures of competition for manufacturing firms not reported by managers, such as the import penetration rates (measured by imports as a share of domestic production) or Lerner indices of competition.²⁴

A concern with all of the associations of management with “driving factors” such as competition is that the correlation is spurious and not causal. In the case of competition, this may cause an underestimate of the positive effect of competition, as a particularly well-managed organisation would be likely to drive badly managed rivals out of business and so reduce the number of rivals, lowering measured competition. This idea can sometimes be directly tested; for example, Bloom, Propper, Seiler, and Van Reenen (2010) did so based on a “natural experiment” involving the closing of hospitals in the United Kingdom. Politicians control exit and entry and tend to keep hospitals open in politically marginal districts, and this creates some random variation in the number of hospitals across different areas. Using this variation the authors find that the positive causal effect of competition on management (and clinical outcomes such as survival rates) is *stronger* than the simple correlation would suggest.

That more competitive markets are associated with better management practices could arise through a variety of channels. For example, one route for competition to improve management practices may be through selection, with badly run firms, hospitals, or schools exiting more speedily in competitive markets. A second route may be through incentives to improve practices, which could be sharper when competition “raises the stakes” either because efficiency improvements have a larger impact on shifting market share or because managers are more fearful of losing their jobs.²⁵

Skills

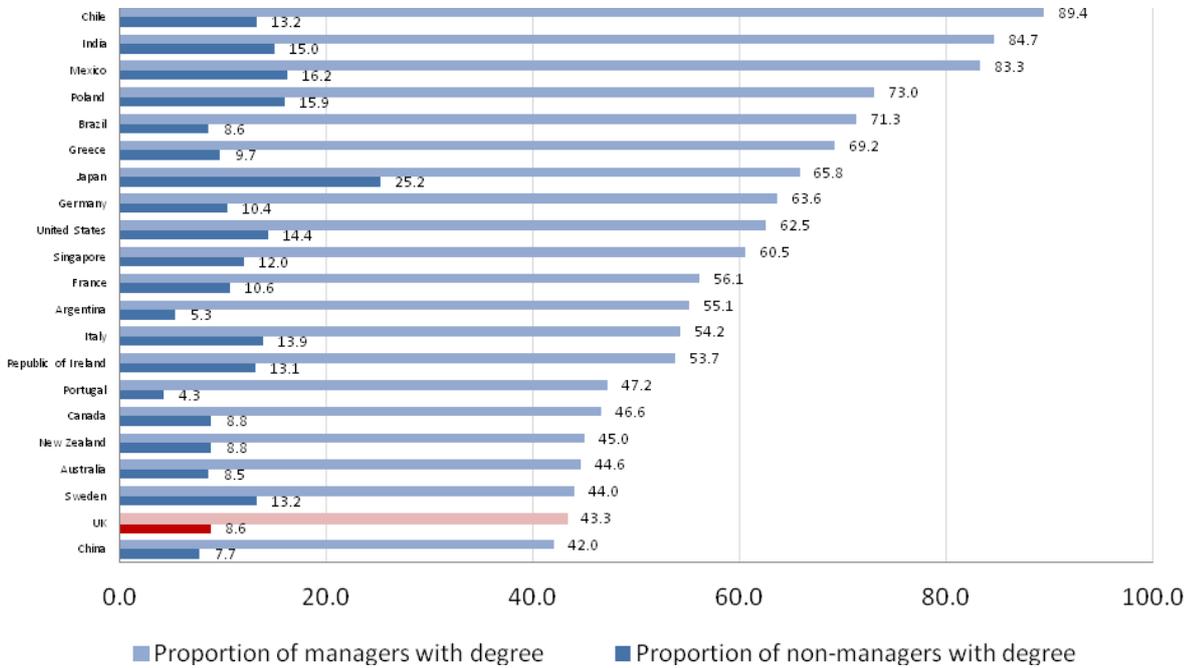
One recurring theme throughout this report, and discussion of leadership and management more broadly, is the significance of skills, both general educational skills as well as management or leadership-specific. Another resounding finding is that the education of managers and workers is strongly correlated with high management scores. Of course, a causal relationship cannot be inferred from this association. However, it is plausible that managers with a college degree are more likely to be aware of the benefits of modern management practices, such as lean manufacturing. More surprisingly perhaps, is that worker education level is also positively associated with management scores, suggesting that implementing many of these practices may be easier when the workforce is more knowledgeable. Many of the best practices in Table 4.1 require significant initiative from workers, such as the Japanese-inspired lean manufacturing techniques. The study suggests that more basic business education—for example, around capital budgeting, data analysis, and standard human resources practices—could help improve management in many countries. This holds particularly true in developing countries, such as India where on-going and recent fieldwork has provided supportive evidence on this (Bloom et

²⁴ See Bloom and Van Reenen (2007) for details.

²⁵ The competition impact fits well with the evolutionary economics paradigm (Nelson & Winter, 1982). When competition is measured by the number of firms, more firms could also improve the ability of owners or regulators to implement “yardstick” competition and improve management. Underperformance is often easier to spot when organisations have local competitors to be evaluated against.

al. 2013). These findings are of particular concern given the low levels of skill intensity within UK manufacturing firms, as shown in Figure 4.3.

Figure 4.3 Managers and non-managers with degrees across countries



4.3.4 World Management survey: Implications and UK manufacturing management

In summary, when using a methodology which aims to measure, rather than ask about management practices, the research finds that that the UK has a deficit in management quality relative to the US, Germany, Japan and Sweden, though it is comparable to France and Italy, above Portugal, Greece, and well above emerging countries such as Brazil, India and China. There is a large variation of management quality across firms in all countries and much of what accounts for the cross country differences is the absence (e.g. US) or strong presence (e.g. India, UK) of a long tail of poorly managed firms. If the quality of the poorly managed firms could be lifted even up to the median, this would be a tremendous improvement. This management deficit is likely to be a cause of the UK’s productivity gap with countries like the US, Germany, and Japan. Thus, if the UK wants to increase competitiveness vis-à-vis such countries, considering how to improve management practices is an area to target, especially as practices can be more readily addressed, targeted, and developed within firms. These findings are especially relevant as these are based specifically within manufacturing firms.

Before moving onto the wider implications, a few caveats are worth mentioning. First, as above, there are many management practices that are contingent on the firms’ business environment and product, such as strategy, finance, M&A, and marketing, and this WMS study deliberately focused on a narrow subset of basic management practices for which best practices most likely exist: those practices that seem likely to raise the efficiency of firms’ production of goods and services.²⁶ Second, even this core set of best practices almost surely changes over time. For

²⁶ It is an open question whether high scores on this management practices grid are beneficial, neutral, or detrimental to innovation (the generation of *new* goods and services). On one hand, management practices may be complements to innovation, as efficiently organizing a research team is likely to get more “bang” for every R&D

example, the advent of cheap computers now makes it relatively more attractive to undertake continuous performance measurement and related analysis. Third, addressing management practices implies focusing as much (if not more) on the “how” of the development and implementation rather than just the “what” of the practices, however, as furthered below.

5. Future of UK leadership roles: Present framework for defining characteristics of future leaders

5.1 Context: Leaders in the future manufacturing industry

The previous sections outlined the state of leadership and management theories, the relationship between leadership and management and performance, and the existing evidence base across the “people”, traits, behaviours, skills and qualifications, and practices and processes. In this section the emphasis returns to one of the key focuses of the Foresight Initiative, specifically, the future role of leadership and management. In exploring this concept, the focus is on developing a framework or model on which we can structure our thinking on which behaviours, skills, practices and process to build capacity around within UK firms. As in the overarching themes of the Initiative, the framework is based on the needed capacities to compete in the mid-term (2020) as well as looking to 2050. The report introduces the R.A.C.E. framework to present the four key factors necessary to future proof UK manufacturing firms and help UK leaders embrace the challenges the future manufacturing context will bring. These are remembered via the acronyms R.A.C.E. for Resilience, Agility, Coordination, and Equipping the leadership pipeline. While R.A.C.E. is applicable to both leaders and managers, the focus here is specifically on a framework for those within leadership roles of UK firms.

The development of this framework arose from multiple sources. The first was an extensive survey of existing surveys, reports, and studies regarding the future state of the manufacturing industry, especially in the UK context. This was complemented by a thorough review of the existing evidence on the current capacity of leadership and management, the highlights of which are discussed above in section 4. The other evidence comes from an overview of reports and analysis of the future role of leadership and management (non-sector specific) from both academic and managerial publications. Finally interviews and discussions with key thought leaders in this sector supplemented the framing of the four aspects of the R.A.C.E. Framework. Of course these are encompassing, but not exhaustive, terms, and the framework is meant to serve as a way to structure thought and discussion regarding the future role of leaders in the UK rather than as a checklist that must be met.

While the four aspects are detailed below, together these encompass the key role senior leaders must take to “future-proof” their firms. Doing so is a proactive rather than reactive measure leaders should consistently reinforce within their companies, and the role of future proofing represents a balance between the adaptability needed to respond to often volatile market conditions with the capacity to build and sustain organisations that will compete moving forward. To future proof their organisations, senior leaders are responsible for setting a clear strategic direction for their firms, committing to a credible strategy, and ensuring this is widely understood throughout the organisation; however, they must remain open to opportunities that appear along the way. Thus the focus should be on the specific practices, processes and behaviours that leaders and managers must put into practice to do this. The R.A.C.E. framework helps guide this understanding.

5.2 Future Framework: Resilience, Agility, Coordination, Equipping the leadership pipeline

One aspect the reviews make clear is that manufacturers in the UK face increasingly turbulent markets, interdependent supply chains, and heightened levels of uncertainty. To not only survive but compete in this context will require leaders to embrace certain factors and also build the necessary skills and capabilities within their firms to reinforce these. This will require the resilience to weather the storms combined with capacity to adapt as circumstances change; the agility to spot changes in the marketplace and the speed to put those insights into action; enhanced coordination within the firms' divisions and units and also along the entire supply chain and wider ecosystem; and equipping the leadership pipeline to build on-going managerial and leadership capacity in the firm.

Four key factors for UK leaders to compete in the global manufacturing race

Resilience

UK manufacturing firms are - and will continue to - operate in an environment where risks, shocks and change are commonplace rather than isolated. Thus competing involves not just muddling through volatile conditions but having the ability to both weather the storms and anticipate and adapt to market changes. As such, resilience will remain increasingly critical for manufacturing firms. Resilience can be thought of as the capacity of an organisation to withstand shocks, tolerate disturbance without collapsing, rebuild itself when necessary and continually improve itself. Critically, resilience is not about rebounding from a shock or crisis, instead it is, as described by Hamel and Valikangas in a recent Harvard Business Review article: "it's about continuously anticipating and adjusting to deep, secular trends that can permanently impair the earning power of a core business. It's about having the capacity to change before the case for change becomes desperately obvious" (Hamel and Valikangas 2003, 14).

Resilience, as agility below, can be both individual leader level and organisational level. Resilience concerns the ability for leaders to ensure their strategies and business models not only withstand change but anticipate and adapt to it; thus leaders must ensure their firms can absorb short-term shocks while being agile enough to adapt over the longer term. This is a tough challenge for senior leaders, who will be forced to simultaneously manage short-term risks while balancing longer-term opportunities: focusing on one or the other is not an option. While this sounds like common sense, evidence shows that UK manufacturing leaders tend to focus on one or the other, at a detriment to their current and future competitiveness. Resilience is a quality that's becoming ever more important in today's highly connected world, where previously isolated risks have become both contagious and commonplace.

To "weather the storm" means not just surviving through but adapting to the changes and the challenges they bring. When it comes to developing resilience at the individual level, this involves either focusing on personal characteristics (attributes such as perspective and awareness), environmental attributes (such as having exposure to environment and ability to learn and adapt to it), or both. This can be developed through workforce through specified developed initiatives and targeted interventions, building a culture that supports resilience, and developing management practices and processes within the firm that will work to reinforce these (See CIPD 2011 for guidance on developing workforce resilience). Those manufacturing firms who will enjoy competitive advantage in light of the future challenges the industry will bring will have leaders who seek to build systems and processes to make sense of the environment, build

a culture and capacity to generate strategic options, and continually reallocate resources to their best use²⁷.

Agility

Globalisation, economic change, regulation, tougher governance, there are many conflicting forces firms face, both now and moving forward. Manufacturing leaders will continue to face increasing uncertainty and complexity, and even ambiguity as they compete within their industry. Leading their firms through the upcoming challenges the next 40 years will bring requires the capability to sense and respond to changes in the business environment. Turbulent markets will bring opportunities as well as threats, thus both organisational agility and leadership agility will be increasingly important. While agility can be defined in varying ways, at a firm-level it signifies the ability to take advantage of opportunities and respond to change while countering opposing threats, especially those stemming from volatile market conditions. Organisational agility is also defined as the ability for companies to identify and capture opportunities more quickly than rivals (Sull 2009). Leader, or workforce agility, is associated with the ability of employees to respond strategically to uncertainty, and is certainly a needed component to creating organisational agility (Prahalad and Hamel 1990).

Future leaders must be agile without losing all focus or direction; that is, agility does not signify lack of strategic direction but rather the ability to spot and size opportunities and key market changes. Becoming comfortable with ambiguity and change while not losing focus or direction will be a necessary, if not easy, task future leaders and managers must embrace.

Agility is a key concern of current leaders, and one acknowledged that will grow in demand moving forward. A 2009 survey of 349 executives²⁸ by the Economist Intelligence Unit found that while 90% said organisational agility was critical for business success, 27% said their lack of agility put them at a competitive disadvantage. Another study conducted by researchers at MIT found agile firms grew revenue 37% faster and generate 39% higher profits than non-agile companies (Noel and Charan 1989). Respondents in Economist Intelligence Unit survey noted that slowed decision-making, siloed behaviours or conflicting goals, and risk-averse cultures were the biggest obstacles to improving their agility. When it comes to workforce agility, a 2002 study of over 500 UK companies found five key capabilities encompassed what these firms embraced, and these were intelligence, competency, collaboration, culture, and information (Breu et al. 2001).

Leaders looking to develop agile leaders and managers consider a few key aspects. One is the need to set a credible strategy and direction, which provides enough structure to let managers know what falls within the strategy, allocate resources to these opportunities, and make the needed decisions when faced with strategic choices yet allowing enough flexibility to adapt to changing market conditions or surprising new opportunities. Leaders and managers also need to promote real-time information sharing, honest and candid discussions of how things are working or not working, and decision-making that facilitates appropriate speed in action. These are supported by both firm management processes, such as incentive systems, development programs or training, as well as cultural elements that embody coordination and trust. Enhanced knowledge sharing is also critical, which can be enabled by technology and related IT advancements.

²⁷ See Hamel and Valikangas 2003 as well as Sull and Homkes 2013.

²⁸ 60 respondents were from the UK; the largest country population in the sample.

While agility is closely related to the notion of resilience, above, they are distinct concepts. Together, though, they represent a key balance firms and their leaders must embrace. A recent study of US firms defined the difference as agility being “the capacity for moving quickly to spot and exploit opportunities” with resiliency representing the capacity to resist, absorb, and respond to unexpected and disruptive change (Economist Intelligence Unit 2009).

Coordination

As firms become more networked (rather than hierarchical), manufacturing work becomes more complex and adaptive (rather than simple and routine), and markets and competition constantly shift (rather than remaining relatively stable) coordination becomes more critical. For manufacturing leaders and managers, getting things done involves getting things done with and through others, most of whom do not fall within traditional hierarchical report lines – or even within the same firm. This dynamic applies to complex, matrixed organisations as well as manufacturing small to medium sized enterprises (SMEs). Just as critically, manufacturing firms operate and compete in a wider ecosystem, so coordination with key business partners and stakeholders is more significant than ever. This means senior leaders must ensure a coordination focus within and outside their companies. The coordination challenge is also accelerated by the pace at which UK firms are merging and acquiring other businesses: the 2012 PWC CEO survey found that over 40% of UK CEOs planned on making a domestic deal and 30% a cross-border deal within the next few years (PWC 2013).

Practically this means they must promote and ensure coordination across the firm and build better practices and processes of coordination both internally and externally. While the increased significance of coordination in the manufacturing industry is frequently cited, it has not transitioned into the leadership dialogue, which is a critical lag. As the senior leader in the organisation, the CEO is the critical embodiment of how much the work promotes coordination in practice rather than in name only. This comes both from their personal behaviours, which help reinforce and build the culture of coordination, as well as specific practices and processes which reinforce this.

As this topic is developed further in related evidence papers, it is left purposely brief here.

Equipping the leadership pipeline

Competing in the future also entails manufacturing leaders build organisations that will continue to compete in the future, and one of the most critical elements in this regard is to not just having the right leaders in place but to have a visible, tested pipeline of high potential leaders. This fourth element of the framework, equipping the leadership pipeline, denotes this process of recruiting, developing, training and eventually promoting a steady cohort of managers throughout the firm. Equipping the leadership pipeline is inherently future oriented; it is concerned with ensuring that UK firms have the right leaders and managers, at all levels, to meet future business needs. The actions of doing so need to take on a future focus, which will be a challenge to many organisations. A leadership pipeline is not simply a steady progression of talent up a vertical line, nor can assume that managers who do well in one role will do well, or even desire, more managerial or leadership responsibility. The traits needed to excel often differ greatly from what they were doing in their past roles. Examples of this abound across manufacturing firms, and on an anecdotal level most can think of examples of excellent sales representatives or engineers performing poorly when “promoted” to a managerial role, where either due to lack of skill or talent performance across the team suffers. Strong talent must be proactively identified, coached, and developed rather than slotted into roles that free as others retire. Doing so also means developing future leaders should be seen as part of the executive

role, rather than regulated to human resources (HR), and one a related point, the HR function in future-forward firms is becoming more strategically integrated role.

Recent studies and surveys of CEOs suggest many believe their fate rests on the strength of their leadership talent in waiting, or “bench strength,” yet most firms acknowledge they struggle greatly here. Though 84% of UK CEOs claim to have an active succession planning programme in place according to a 2012 PWC survey, fewer UK CEOs have programmes to facilitate this, such as rotations to different functions or challenges or global mobility programmes in place than their peers in Germany, France or US, and less UK firms offer shadowing of senior executives than Germany or France, though a higher percentage claimed this than in the US (PWC 2013). This stems from many factors, such as lack of future focus within the firms, operational, short-termist rather than longer term focus, and failing to dedicate the appropriate time and resources to leadership pipeline and succession planning, among others. There is a growing body of evidence that suggests UK weakness here. For one, in the WMS studies mentioned above, the one practice with the weakest score across UK firms was that of “instilling a talent mind-set,” or specifically the set of questions around recruiting and developing the right talent for the firm. A recent Corporate Research Forum (CRF) study found that only 56% of UK CEO’s are satisfied with their organisation’s ability to fill senior positions, while 42% are actively dissatisfied with it. This is particularly alarming considering the average tenure for a UK CEO has decreased by 18 months in the past decade according to the CRF,²⁹ which means planning and preparing for the future is more critical than ever. In another recent study of HR executives in 14 countries by career management firm Risk Management, leadership planning was cited as a key risk in the UK, with one-fifth of respondents saying lacking high potential leaders was their greatest challenge in 2013 and only 15% saying their organisation had a robust leadership pipeline in place.

5.3 Future role: CEOs role in future proofing their organisations and state of affairs

Thus the key role leaders must take is to build and maintain the organisational hardware (practices, processes, information systems, resource allocation processes) and software (culture that supports performance, talent focus) to support future performance. A key element needed within this hardware is the management systems: the management practices and processes in place throughout the firm (See section 4 on how UK firms have a deficit when it comes to these management practices). This further implies that the role of the CEO is not to be hands-on executor but rather to build organisational hardware and software.

5.3.1. CEOs role and the R.A.C.E. framework

The above sections detailed the challenges facing current, and future, leaders of UK manufacturing companies and also outlined the characteristics, embodied in the R.A.C.E. framework, this reports suggests they most embody. This begs the immediate question of how well equipped UK manufacturing leaders are with these skill sets, and what evidence we have to substantiate this. Unfortunately, while there are a set of smaller surveys asking UK leaders their perceptions on some of these factors, we have less robust evidence on the how equipped the UK leadership pipeline overall is to embrace these four factors. There is some evidence across the factors, as summarised across the four above, but moving forward more evidence and

²⁹ This report covers all industries, and was not specific to manufacturing.

studies fixated within the manufacturing industry would help move this dialogue forward. As a note, building this evidence base is part of the ongoing focus of the current work, and is also returned to in the concluding sections below.

5.3.2 Future leadership: Expanding our view

When considering the future role of leadership for UK manufacturing firms, it will also be necessary to expand the view of leadership from that of the CEO or executive team to that of leadership distributed throughout the firms.

Role of top team: Too much emphasis has been placed on the role of the CEO alone, and looking forward, the focus of leadership should be expanded beyond that of the top leader. The era of the single decision maker at the top is not as relevant for the future of the industry, and while there is a critical role for the senior executive, we are better placed focusing our research and related recommendations on the role of the top team. That is, more emphasis should be placed on researching the leadership practices of the top executives, or the senior leadership team, specifically within the UK manufacturing context. Scholarship on top team demographics, team working environments, and characteristics of top team effectiveness have been ongoing (See, for example, Edmondson et al. 2003), and focusing this more so on the UK would add to this agenda and build a stronger evidence base of the state of leadership in the UK.

Role of distributed leadership throughout the organisation: Leadership, as mentioned at the onset, is also not confined to the top level of an organisational chart, and especially as manufacturing firms evolve, operationally and organisationally, there is a need to focus on leadership distributed throughout the firm. These notions are also often associated with dispersed or emergent leadership, and the need for “leaderful” organisations (Raelin 2003). Distributed leaders are the cohort of managers in key positions throughout the organisation who ensure that activities are aligned with strategy, across units, and with changing market conditions. In small or very simple organisations, it may be possible for a single leader at the top to single-handedly drive execution. As organisations grow larger, more complex, or increasingly geographically dispersed, however, distributed leaders become more critical in maintaining the vertical, horizontal, and external alignment necessary to perform and compete through volatile markets (Sull and Homkes 2013). Yet research on the role of distributed leaders in the UK context is still limited, and expanding the view beyond the C-suite to encompass this next band of leaders would also contribute to our understanding of leadership within the UK.

6. Making needed gains: Barriers to enhancing leadership and management within UK manufacturing activities and enhancing leadership and management

6.1 Enhancing leadership and management in the UK

The above sections outlined the topics of leadership and management, the evidence base of where the UK manufacturing context stands and also presented a framework for considering the critical aspects future UK leaders must embrace in order to “future proof” their firms moving forward. Embracing these overriding themes will help move this agenda forwards.

First, enhancing leadership and management **starts with a future focus**. This implies that rather than relying on traditional and long-held notions of leadership and management, and the related frameworks these encompass, building towards the future must embrace the context and challenges the manufacturing industry faces. While traditional leadership roles of strategic direction setting, setting and communicating a clear, organisational context, and making tough decisions (strategic, operational, and people-based), among others, are just as critical, leaders must also build capabilities to lead in the future. This involves the notions of leadership resilience and agility, ensuring coordination across the ecosystem, and ensuring the leadership pipeline is being continually developed. These are certainly not the only necessary skillsets or capabilities, but the framework can help structure thinking and direction setting around building these future capabilities. A second key part is a thorough **evidence base**. This relates to the industry-wide setting as well as internal to the individual firms. Within the firm, any aspect of leadership and management enhancement, whether related to planning, development, training or skills targeting must begin with an evidence-based, data-based, review of the current needs and context. Aligning leadership and management agendas more closely to evidence-based management, what Rousseau refers to as “translating principles based on best evidence into organizational practices....[when] practicing managers develop into experts who make organizational decisions informed by social science and organizational research (2006, 256), will go farther in building future capacity rather than relying on idiosyncratic cues, personal preferences, or single firm cases. This should also, however, be done in building more alignment of leadership and management development with the firm’s strategic direction, a necessary and too often missing element for many UK firms (AIM and CMI 2010; McBain et al. 2012). Third, **context is critical**. Leadership and management must be developed within both the macro and micro, firm-level context, which means practices cannot be blindly or universally applied. Adapting behaviours, skills and practices into the firm means that these must be embedded within the contextual environment in which the firm operates, which cannot be assumed to be straightforward. Context also relates to firms creating a supportive and collaborative context in which new leadership and management practices can be developed and adopted, rather than stifling these through top-down implementation or codified routines that leave no room for innovation or the agility mentioned in the R.A.C.E. framework above (See also AIM and CMI 2010). These three characteristics are highly compatible and complementary, but striking the right balance between a future focus, evidence based and context appropriate will be a continuing challenge for UK manufacturing leaders.

Outside of these three, enhancing management and leadership will involve focusing on a few key areas related to leadership and management development and training and performance and talent management systems. The importance of skills and qualifications are returned to in the implications section below.

6.1.1. Leadership and management development

Unfortunately leadership development has become a catchall for many, often competing initiatives, across organisations, and manufacturing firms in the UK are no exception. There is no one clear definition of leadership development across firms, nor within firms, as this will vary across the developmental timeline of the firms' leaders; however, best practices can exist when it comes to planning, conducting, and assessing leadership development. While some firms do this exceptionally well in the UK, many others struggle to gain the impact desired from such efforts.

Effective development starts by having clearly defined skill sets and outcomes intended to achieve. On this, the 2011 DDI study found UK managers cited the skills of driving and managing change, executing strategy, and coaching and developing others as most critical with driving and managing change, executing strategy, and making difficult decisions as most critical going forward (Boatman and Wellins 2011). These are also skills fitting within the R.A.C.E. framework detailed above. Interestingly, UK leaders rated these skills more important than their global peers, who ranked developing future talent and fostering creativity/ innovation as the most critical.

Development must be anchored in reality of the firm and macroeconomic and environmental situation, conducted by those with senior experience, and followed up with appropriately. The first is to say that there is no one mode or model of training, which seems obvious, but many firms continue to cycle employees through similar models and frameworks, or rely on externally provided ones, without doing a thorough needs-based assessment. Appropriate development and training must also be proactive rather than reactive (see for example Kubr and Prokopenko 1989), and focused on developing needed future skills. What is also critical to leadership and management development is that appropriate follow-up is ensured (Torrington et al. 2005). These sessions and trainings should also be integrated into ways of working and seen as regular, even if not frequent events, rather than conducted as one-off events, which studies show is unfortunately too often the case in many UK firms. Regular evaluation of the initiatives is another critical element to make these effective, and one in which many UK firms are also seen to be lacking (McBain et al. 2012).

The "how" of leadership development is also critical, and can involve methods such as coaching, internal training, mentoring, formal workshops and training, and external provided courses, among others. The 2013 CIPD survey found that in UK organisations, on-the-job training, in-house development programmes, and coaching by line managers were cited as the most effective learning and talent development practices, as well as the most utilised (along with instructor-led training). However, in a related study (though one with slightly different findings) the CMI/Penna work (McBain et al. 2012) shows that the most frequently used types of training by organisations were not those managers rated as most effective, highlighting an apparent mismatch between provision and effectiveness. The study also showed that managers had difficulty identifying the most effective development activities. Perhaps more worryingly, less than half of these HR professionals and senior leaders rated the effectiveness of their leadership development as high, which is a point returned to in the barriers section below.

Obviously, effective development requires a resource investment. For many UK firms, especially emerging from the recent economic crisis, resources are being pulled rather than added to these initiatives. For example, the DDI study also found that fewer organisations in the UK increased development budgets as compared to their global peers, and though many planned to increase these in upcoming years this was still less than across countries. In existing businesses, all resource allocation is reallocation, and thus deploying effective development systems means that the firm's most critical resources - the financial resources, human and leadership capital and senior leadership time – must be allocated here to the extent necessary.

6.1.2 Performance and talent management systems

While there is no clear cut division between all of these aspects, one can distinguish between talent management and performance management systems. Both of these are anchored in the discussion of management practices discussed in section five, and the WMS scoring grid assesses many of these in the UK context (See Table 4.1). The DDI 2011 study defines these as “mission-critical processes that ensure organisations have the right quantity and quality of people in place to meet current and future business priorities” (Boatman and Wellins 2011). This definition squarely places these within the R.A.C.E. framework's focus on equipping the leadership pipeline, and also touches on the set of management practices assessed within the WMS framework. While these systems have traditionally been mostly associated with the HR function, competing in the future necessitates that performance management systems become a strategic component within the firm, not solely a functional-based one.

The DDI study notes UK organisations assessed talent management systems more highly than leadership development. An important component of talent systems, however, is the recruitment or selection process into the firm, and here only around one-third of UK firms noted they were using validated tools for making these critical selection decisions. Even more so, nearly 40% of UK HR professional noted that most leadership appointments were considered failures; these findings are echoed in the WMS findings. The 2011 DDI Leadership Forecast also found that succession management was the weakest rated of all aspects of management systems. Another study (CIPD 2013), found that while nearly three-fifths of the organisations they surveyed reported undertaking talent management activities, only 8% rank these as very effective. For the UK, coaching and in-house development were cited as the most effective talent management activities. Talent management systems also work to equip the leadership pipeline, and here, especially when it comes to grooming the executive role, the UK may also lack its global peers. The PWC survey of CEOs found that less UK firms offered executive development programmes than the global average (PWC 2013).

Within the firm, the performance management system involve the processes that surround setting individual objectives, linking these objectives to business unit and firm-wide strategies, recognising and rewarding performance, providing the necessary resources for employees to hit these objectives, and developing the necessary skillsets so they can achieve them. However, while these traditional notions of performance management systems are still valid, looking towards the future these should also build in elements of agility (e.g. renegotiating these objectives as circumstances change) and coordination (e.g. recognising and reward behaviour which reinforces coordination and collaboration). While in some firms there are cultural mechanisms which support these, there is much less evidence that within the UK context firms are expanding their views in this way.

6.2 Gains to enhancing leadership and management for UK manufacturing firms

The potential gains to improving management and leadership in the UK are significant. As the WMS research suggest, lagging UK management practices, can be a key explanatory factor in the productivity differences between the UK and its global peers. Nearly two decades ago, however, a similar link had been explored, with one study suggesting that management quality was a major source of productivity differences between Japanese and American companies, rather than country-specific factors (Lieberman, Lau and Williams 1990). While the link between management and performance had long been espoused, it is more recently that economists began to examine the subject in more depth. Lazear and Kathryn (2002), for example, found that managerial quality had a significant and positive effect on worker productivity.

Improving management systems stands to contribute significantly to the bottom-line. It has been found that firms with better levels of management are also those that are better financial performers, and this difference is significant. The over twenty country study of management practices within the WMS work finds that a significant amount of productivity and performance difference across countries and firms within countries could be attributed to differences in management practices. Firms with good management are more productive, more profitable, grow faster and are less likely to go bankrupt. For example, going from bad management (the 25th percentile of management practices) to good management (the 75th percentile of management practices) is associated with a 3% higher return on capital employed (ROCE) and 70% faster growth. Specifically, on the study's scale of one to five, firms with one point higher average management score have about 52 log points (69%) higher labour productivity. This implies a one standard deviation change in management (.6664) is associated with about a 45% increase in labour productivity, or a 45% increase in sales, holding employment constant.

Within the UK context, though conducted via a standard survey methodology, the 2012 Department for Education and Skills study on managerial qualifications found that better qualified managers were more likely to be associated with better qualified workforces and were also more innovative. Another report by the Chartered Institute of Personnel Development (2011) suggested that enhanced people management practices within the UK could lead to productivity improvements of 18% and profitability enhancements of 19%. The 2010 UK Commission for Employment and Skills and Skills' National Strategic Skills Audit also found a link between quality of management and leadership and business success. The recent CMI/Pena work notes that a combination of commitment to management and leadership development, alignment to business strategy, and supporting HR practices could explain as much as 32% of variation in people performance across organisations as well as more than 20% of variation in their organisational performance measures (McBain et al. 2012). An earlier study by the Department for Education and Skills also finds better qualified managers are associated with more highly qualified workforces (Bosworth et al. 2002).

Many studies have also looked at the link between skills (training, qualifications) with performance and found a substantial benefit of boosting skill level of leaders and managers. The Leitch Review of Skills suggested solid management is linked to business performance, and quoted that over half of CBI employers "cite improving management and leadership skills as the most significant factor contributing to competitiveness" (Leitch Review 2006). Many works attempt to establish a link between qualifications and productivity, with an MBA, diploma, and bachelor degree being perceived as leading to most gains in productivity (Wilton et al. 2007), which are similar sentiments to those expressed by the managers themselves. Performance and productivity are not the only gains associated with boosting skills and qualifications, as other

studies have found that more qualified managers are more innovative (Bosworth et al. 2002), more engaged (McBain et al. 2012), and such order effects are also reportedly linked to performance and productivity (Gallup 2013). While this report is mainly focusing on potential gains in regards to firm performance rather than other factors such as worker wellbeing or employee engagement, a large body of studies find that better led and managed firms are also more likely to be associated with these factors (e.g. Rayton, Dodge and D'Analeze 2012; MacLeod and Clarke 2009; CBI 2011).

The consequences of not addressing leadership and management can also be considered alarming. Work by the CMI and Penna in 2012 suggests that ineffective management could be costing UK businesses over 19 billion per year in lost working hours. The figures stem from the studies work that show the amount of working hours lost to inefficient managers and management practices, such as unclear communication, lack of support, and micro-management. Another finding emerging from the WMS longitudinal panel is the strong link between management practices and exit. Firms that exited the market, or “died,” between 2006 and 2009 were those with much lower management scores in 2006.³⁰ Thus firms with poor management practices are much less likely to survive over time, and this relationship holds true in the UK and all other countries. This is echoed in a recent poll by the insolvency trade body R3, which found that poor management causes over 50% of corporate failures, while almost 40% of failed businesses could have potentially been saved if professional advice had been sought earlier.

6.3 Barriers to improving leadership and management practices

If the gains to management and leadership are so significant, and the impetus to better compete in the future apparently so strong, why are UK manufacturing firms not doing more to improve their leadership and management? This section addresses the key barriers that could slow or prevent UK firms from enhancing leadership and management, both in the near and longer term. Given the existing evidence, the unit of analysis remains more focused on practices and processes in this section, though many of these barriers apply across.

One overriding barrier, which could continue to be a hindrance moving forward, is the lack of UK manufacturing firms to approach leadership and management with a future focus. Too many firms are still relying on traditional conceptions of these, and there is a need to update our models of leadership and development systems and training. Another overriding barrier is the timeframe in which leadership and management capacity are often considered. There is a persisting tendency to consider these within a short term view, especially for smaller or resource-constrained firms, which leads to either cutting these activities in slower times or focusing on immediate needs rather than capacity building. There is also a strong, and persisting, inclination to overestimate current performance or capacity in terms of management and leadership, and thus underestimate the need to improve or enhance these capabilities and the related management and leadership practices and processes.

This subsection addresses briefly the barriers of resources, skills, knowing what management practices to adopt, inadequate training, failure to embed the training, and leader or manager blind spots.

³⁰ A test of the effect of management on survival is significant at the 10% level or greater in every country except France.

Resources

Building leadership and management capacity is an investment firms must undertake, and especially during weaker economic times, one that often gets cut first. This investment relates to training and development, improving management practices and systems, recruitment and retention efforts, qualifications and skills training, among others. Recent studies do find that the majority of organisations are investing in and conducting leadership and management development. For example, the CMI survey found considerable levels of investment by organisations in management and leadership development, with an average spend per manager, per annum, is £1,414. The study also finds that high performing organisations invest 36 percent more than low performing organisations (by the study's definition or performance) at £1,738 compared to £1,275. The DDI also finds investment being made in these areas by UK firms, though less than those made by the UK's global peers.

Targeting resources into management and leadership, however, is still a burden in many organisations. For example, in a recent UK Skills survey, the most cited barrier by employers for not providing training was the financial costs. The 2013 CIPD survey also finds that less than 10% of organisations reported that funding circumstances had improved since 2012, with around half of the private sector organisations reporting this had stayed the same (the study did not break out by manufacturing across all metrics). The study also finds resources on hand for learning and development were tightly linked to the organisation's overall economic condition. Moving forward, one-fifth of the firms surveyed reported that this budget would probably decrease moving forward.

What is critical to note, however, is that improving management practices does not have to be resource intensive. When it comes to many aspects of leadership and management, especially behaviours and practices, these are areas firms can enhance without substantial investment. Aspects such as coaching and mentoring, as well as implementing some of the sets of management practices, such as the ones presented in Table 4.1, can be applied even in times of constrained budgets. The WMS findings also suggest that improving management practices can be a highly leveraged means of gaining more output without significant monetary investment. Related research has shown that a single point improvement in a firm's management practice scores is associated with output equivalent to that produced by a 25 percent increase in the labour force or a 65 percent increase in invested capital. This observation holds true even after controlling for a variety of factors, including the firm's country, sector and skill level, ownership type, size, and profitability (McKinsey 2009).

Managers and leaders with the appropriate skills

Rarely does a conversation about leadership and management in the UK proceed without discussion of related leadership skills, as this report has noted. While skills are an addressable issue in their own right, that the UK manufacturing firms have less skill intensity than their global peers is also contributing to weaker leadership and management practices and processes. As mentioned in section 4, differences in skills intensity is a key driver of the differences in management practices across countries. As the UK manufacturing firms had some of the lowest levels of skilled managers and non-managers across the countries sampled by the WMS, this could be a significant barrier especially within the medium sized firms that were more of the study's focus.

Lack of skills is also one of the biggest constraints to improving leadership and management. During the 2009 WMS research study that re-interviewed UK firms, the researches asked

managers to reflect upon the constraints they face while trying to improve their firm's management practices. The study found that a scarcity of managers with the right skills turned out to be the most important factor that respondents believed held back managerial improvements. Nearly one-third of the UK managers surveyed considered that "hiring managers with the right skills" was a major constraint, with a further 23% considering this a minor constraint. Hiring non-managers with the right skills was considered a major constraint by 19% of respondents.

When it comes to specific skills UK firms lack, the 2013 CIPD study also finds that organisations most cite performance management (noted by more than half), change management, people management and coaching/ mentoring/developing staff and leading people and people. As the above section referenced, UK managers also hold lower levels of qualifications, which can be seen as another barrier to improving leadership and management. The notion of skills is returned to in the concluding section.

Knowing what management practices to adopt

Another barrier facing future leaders and managers is knowing what practices they need to adapt, as well as develop to compete in the future. This holds for both the midterm (2020) and the longer-term (2050). This presents a barrier for many reasons. First, many discussions regarding management and leadership assume there is one standard best practice, fairly well known, and the issue is implementation of these practices within the firm. Unfortunately this view can be misleading and even undermine the ability for managers to successfully adopt strong practices. Many debate the notion that best practices even exist (AIM and CMI 2010), as too much is contextual or firm-specific, or that copying other practices only lead to poor imitation. While it is not argued that UK firms should strive for imitation of practices or context is not crucial (See below), studies suggest that for some areas of management and leadership there can be best, or at least best accepted practice, for which evidence shows a strong links to performance. The WMS work suggests as much, especially in regards to practices such as monitoring and tracking performance, cascading objectives, and reinforcing and rewarding objectives. For other aspects of practice, there will not be one model or best way of operating as context may factor more into play.

While future practices need to be embraced, currently known management practices are not all obsolete, far from the case. In fact, for many manufacturing firms, especially smaller enterprises, knowing which practices to adapt is a critical, current barrier, and will most likely continue to be so. For example, in 2009 a LSE/BIS study, when asking UK managers about constraints to improving their practices, found that outside of skills the next most important factor was a lack of knowledge over what management practices to introduce. 11% of respondents considered that "not knowing what new management practices to introduce" were a major obstacle, and a further 23% considered this a minor obstacle. These informational barriers to business learning would be the factor that a "diffusion" model of management as a technology would consider most important (see Bloom, Genakos, Sadun and Van Reenen 2010 and section two above).

As the R.A.C.E. framework also denotes, many of the skills and capabilities future industry leaders must develop may not sit within traditional management and leadership training schemes, especially those based on traditional hierarchical notions of the firm and its management systems. Thus the challenge lies in developing management and leader skills for organisations to compete in the future, which are those that develop practices and processes around agility, innovation, and coordination as well as more commonly accepted practices. Many of these practices can be developed through a mix of codifying internal ways of work, sharing

and leveraging best practices across the network, and collaborating with others. This latter element further reinforces the need to enhance and promote coordination as a key leadership focus.

Inadequate training

Despite the on-going nature of development, in many firms it is not delivering the desired outcomes. Even managers' own self assessments show that most find their firms' attempts at this weak or ineffective. Why might this be? Part of the explanation lies in the three factors cited at the onset to this section, which are all too lacking: taking a future focus regarding skills needed and a longer term view, beginning with a thorough assessment of the needs, and ensuring context is taken into consideration. The evidence shows UK manufacturing firms, and organisations in general, are not all doing these needed steps first. This implies needed skills may not be developed, as the critical component of assessing what skills need to be developed and setting clear objectives and outcomes for the training are being missed.

Another key issue stems from the lack of evaluation and follow-up of these development initiatives. While this has become more critical for manufacturing firms emerging from the recent crisis, where costs and the bottom line are more of a focus than ever, it is still an area where firms are facing difficulty. Evaluating development initiatives, while difficult, is an area where many have made considerable progress in developing metrics, indicators, and frameworks. While some UK manufacturing firms may be embracing some of these, it seems to be largely ineffective. In the 2013 CIPD study, over 90% of respondents said that they assessed the impact of development activities in some way, but with varying methods and consistency. While over 75% used at least one of the provided methods at least frequently, nearly three-quarters reported that they had difficulties measuring or testing their development activities. Related to the above, it also emerges that around 64% said that this was not prioritised, 58% the data was difficult to access, and nearly half that they did not have the skills or resources internally to develop these metrics. A similar lack of evaluation holds when it comes to assessing the impact of qualification programs: the 2012 CMI report showed most firms lacked robust systems to evaluate the impact of these programs.

Failure to embed or adopt the training

Effective development or training must not only be based on an assessment and contextual factors, but also be followed-up with and embedded within the existing firm and its way of operating. This seems to be lacking in the UK context as well, which is not surprising given the relative lack of assessment and measurement of many of the initiatives. Specifically, the CMI study cited above also noted that only 47% of managers reported they had the appropriate opportunities to use the skills and knowledge they have gained, which the study says suggests that even when organisations make the investment they fail to reap the gains from these.

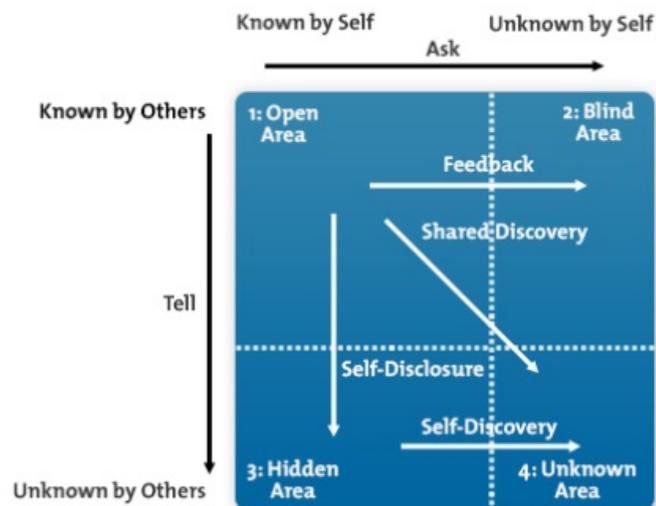
Leader and manager constraints

While this report does not have the scope to cover this topic in full, a few points related to leader and manager specific constraints are worth mentioning. One key factor relates to blind spots, which are common expression for areas of training and development needs that should be addressed but are unknown to the manager or leader needing that development. These are

often associated as one of four areas of knowledge described in the Johari Window, as below (Table 6.1):

- *Arena or Open area: Known by the manager about him/herself and is also known by others*
- *Blind spot: Unknown by the person about him/herself but which others know*
- *Façade: Manager knows about him/herself that others do not know*
- *Unknown: Unknown by the person about him/herself and is also unknown by others*

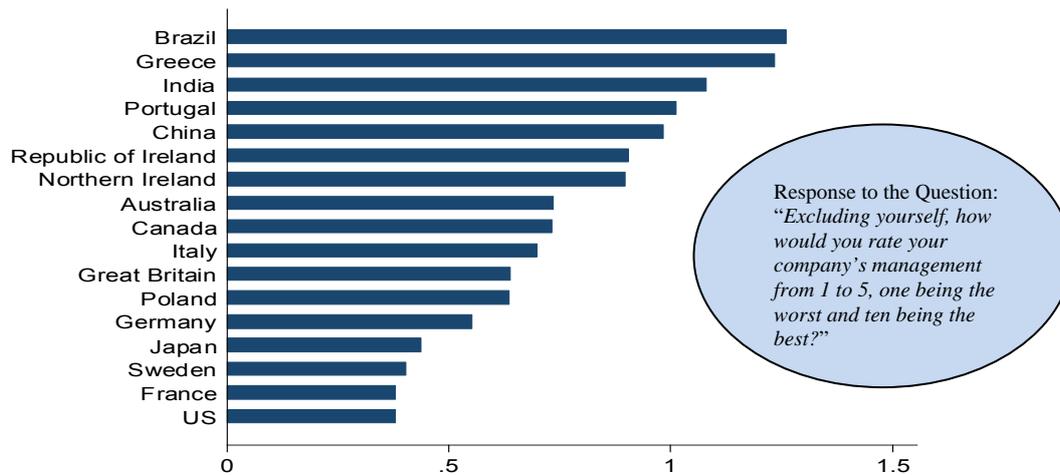
Figure 6.1: Johari Window



These area critical issues in leadership development, as blind spot areas can only be addressed well by training if the manger knows, and acknowledges, this is an area for development. Interestingly, the 2011 UK Skills survey finds that the main reason for not providing training is that UK employers feel their staff are fully proficient or do not need additional training. While not specific to the manufacturing sector, this and related findings are perhaps indicative of recurring blind spots within UK firms.

This relates to another finding from the WMS work, which finds that managers are very poor at assessing the quality of management within their own organisations. At the end of the survey, the WMS team asks managers to assess their own firms, on a scale of one (worst) to ten (global best practice). The researchers found managers overestimated the quality of their organisation's management by amounts ranging from 0.4 in the United States to 1.4 among Greek and Brazilian managers, as in Figure 6.2.

Figure 6.2: Optimism index: Manufacturing managers actual score minus self-score



Note: Managers self-score less the LSE/Stanford team's assessed Management score Based on 8,261 management interviews between 2006 and 2010.

Thus many barriers both internal and external exist to enhancing management and leadership in the UK, but these can be addressed and overcome, from a micro firm perspective as well as macro, industry-wide approach. As the other evidence papers discuss the macro variables in detail, these are not covered here, but ways to enhance future roles of leadership and management are addressed below.

7. Conclusions, takeaways and implications

7.1 Key points and direction setting

As the manufacturing industry looks towards the future, especially stretching to 2050, the complexities and interdependencies of this industry will continue to grow. As industry dynamics evolve, the role of management and leadership will continue to evolve as well, meaning that the leaders and managers at the forefront of these firms will continue to gain heightened attention. As they do, there is an increasing need to build a clear, evidence-based and focused agenda of what the future characteristics, behaviours, skills and qualifications, and practices and processes of these future leaders and managers will entail and then work to enhance the quality and capacity of leadership and management in the UK. It is questionable whether the majority of the leaders and managers in the UK are equipped to be effective in this changing landscape; existing evidence suggests there are deficits in the current capacity. Moving forward, the relationship between leadership and management and firm performance will also continue to be scrutinised and further examined in an effort to better isolate the ways and mechanisms in which they can be enhanced to improve firm performance. Thus there is a heightened urgency to building a coherent agenda to boost leadership and management capacity.

7.2 Implications and recommendations

The results of this review lead to many implications, policy considerations, and directions for future research. These are considered amongst those that are cross-cutting as well as implications for business and industry, for policymakers, and for current leaders and managers.

7.2.1 Cross-cutting implications

Several cross-cutting implications emerged, or those which address the wider subject moving forward and multiple stakeholders. The first relates to the need for more clarity when it comes to discussions, studies and policies - both firm specific and macro-based - that regard leadership and management. More specificity is required on the unit of analysis at focus within these topics, and this applies to studies and reviews, internal firm frameworks and training, and policy and ecosystem wide actions taken. Vague or general conceptions of the terms will do little to provide the effective evidence base needed to truly move towards an agenda of enhancing leadership and management in the future. While the specific segmentations this report utilises do not have to be generally applied, more distinction between traits, behaviours, skills, and practices when it comes to leadership and management would be useful.

Government, industry, and individual firms must also take a long-term view of leadership and management, which entails laying a strong foundation for the future, ensuring mid and longer-range capacity development, and working to build confidence for the future, even in tougher current risk environments. This will involve taking a more strategic approach to leadership and management development, especially in terms of skills and qualifications, training and development needs, and addressing the future pipeline and capacity. A tendency towards a shorter term view, which is manifest through practices such as hiring or training to fill immediate needs or programs addressed at quick-fix implementation for firms, will not move the needle when it comes to boosting capacity for the future - i.e. 2020 and beyond.

There is also a need for a thorough inventory of current initiatives, schemes and programs targeting leadership and management. This report found undertaking this incredibly difficult to complete, which is an issue, as this raises the question of how confusing the landscape of schemes must be to firm leaders and managers seeking them. In addition, there is a risk of overlapping, and potentially competing, schemes and initiatives targeting this area. Also, lacking a coherent mapping, there are certainly some areas of leadership and management not being fully covered or addressed, or certain types of firms not being covered under existing programmes. Doing such an inventory will involve pulling together government-led, government-funded (such as those under BIS's Leadership and Management (L&M) Network Group or the Growth Accelerator) and industry-led and funded initiatives (e.g. the Manufacturing Institute's Growth Programme) into one common area or resource. This is not to argue that these should be consolidated or run under the same body. There are clear ways that public, private, and academic bodies have clear value to add. Nor is the suggestion to aggregate, rank or necessarily immediately eliminate any but rather build an ecosystem wide conception of what is being addressed and how it is being approached. Pulling together and organising this picture would allow a more accurate assessment of where the major gaps are at present.

Another cross-cutting implication is that we can isolate some (though not all) aspects of best practices or consensus on certain areas where a standard or benchmark can be set and achieved. Based on the review, this is especially the case regarding leadership and management skills; qualifications; and certain practices and processes – especially those related to performance tracking and review meetings. Thus there is more momentum, and end impact, to be gained by focusing more coherently on these areas rather than targeting certain profiles or characteristics of leaders and managers – or the topics at large – where too many existing initiatives focus. Of course there will always be an element that is largely dependent upon the individual firm context: not all skills and practices will be universal. The argument is not to blindly apply one common set of practices and processes across all firms, but rather to acknowledge there is a common ground of accepted best practice in certain areas. Once these areas are isolated, joined up action should be targeted here. Context will certainly play a large role in the implementation of these, thus any coherent program or action must address this with just as much vigour as the identification and definition of the skills or practices, and actions should be taken to make practices and processes practical and workable inside the manufacturing firm context. Thus the report is not suggesting universal solutions to management or leadership, but to combine aspects of established practices with those most suited for the firm setting, and second, ensuring the “how” of implementation is clear.

7.2.2. Implications for business and industry

This review also suggests actionable recommendations for firms within the industry. The first is the need to raise attention and significance given to leadership and management. Some firms place these in paramount importance, but many companies still assume leaders and managers, and leadership and management, will “take care of themselves,” which the evidence shows is simply not the case, in the UK or elsewhere. A notion of business as usual will not lead to success in an industry with rapid changes, especially as some firms are dedicating attention and rapidly improving in these regards. While enhanced attention to leadership and management falls across many areas, it does not only imply more dedication of resource. Resources are one area where UK manufacturing firms may be particularly constrained at present, but this is not the only way to boost attention and focus on the topics.

One critical area for industry and individual firms to address relates to skills and qualifications. Education of managers and workers exhibits a strong association with management practice

capacity, as most evidenced by the WMS findings. While a causal relationship is not inferred from this, it is plausible that managers with a college degree are more likely to be aware of the benefits of modern management practices, such as lean manufacturing. More surprisingly perhaps, is that worker education level is also positively associated with management scores, suggesting that implementing many of these practices may be easier when the workforce is more knowledgeable. Many of the best practices noted in the study (see Table 5.1) also require significant initiative from workers, such as the Japanese-inspired lean manufacturing techniques.

Evidence also suggests that smaller firms have greater needs in these areas, so industry-wide schemes to offer greater levels of skills and management training to these firms may be needed (Bloom et al. 2011b). While there are on-going initiatives in this area, smaller firms may be unaware of these opportunities that are available to them. Leaders and managers in smaller firms may also struggle to make the time for such training or courses, especially in a difficult economic climate. For individual firms, adapting a longer-term view on building capacity, while difficult, will be needed. Across the manufacturing industry, existing initiatives and courses should also be evaluated to ensure time and resource-constrained firms are able to take full advantage. The recent BIS report *Leadership and Management in the UK*, addressed several of these existing opportunities (Bloom et al. 2011b).

Another area to dedicate more attention is boosting capacity for leadership and management practices and processes. The evidence suggests there is a significant prize to be had by simply adopting good practices in these areas. Even more so, improving practices is a highly efficient way for firms to leverage their existing labour and capital, yet too few firms within the UK have done enough to assess their current capacity in these practices and work to enhance them. Those that do so will give themselves an opportunity to access more rapid, cost-effective and sustainable competitive advantage. While the WMS findings suggest a set of commonly-accepted management practices that make a difference for firm performance, this is not an exhaustive set of practices. In the rapidly changing environment which characterises the competitive landscape of the manufacturing industry, new ways of working and competing mean that firms cannot simply rely on these traditional, accepted practices. While these practices and processes will remain critical, this is not a complete view of what is needed; instead, firms should also incorporate practices that enhance coordination and adaptation. Leaders must also consider those practices and processes that facilitate coordination with key business partners as well as those internal to the firm. This will mean that firms should innovate and reach outside their own walls when it comes to building these practices and processes, and as such opportunities for knowledge sharing would be beneficial, especially for smaller firms who may be exposed to less industry-accepted best practices. Also, as mentioned at the onset, practices cannot be blindly adopted into every firm setting; there will be key aspects that are context dependent. Degree of fit matters (Sousa and Voss 2008), and it will continue to do so, which industry leaders must take into account.

At the macro and the micro-firm level, an evidence-based knowledge of firm strengths and weaknesses is a necessary starting point. When it comes to leadership and management development, manufacturing firms should also start with a thorough assessment of their existing schemes and programs to re-evaluate whether these are still appropriate for building future leadership and management capacity. Firms also need to identify the areas in which they should target resources for performance improvements; one way to do this is through benchmarking the firm's management practices globally and against other firms in the sector. This is only a first step, however, as the next step is for firms to identify, based on their strategy, the areas where their existing management and leadership is the weakest. The barriers to implementation mean that it may not be sufficient to expect that managers in expert contexts can simply use best

practice and other guidelines as a self-diagnosis. These are also areas where implementing these changes will involve either support, be it from industry or policy, which supporting correctly designed interventions that address the barriers to adoption of best and appropriate practices.

Finally, UK leaders and managers will be leading their firms through increasing challenges. To be successful, they will need to have the skills and capabilities to be both personally effective as well as successfully execute their firms' strategies for results. Key here will be a focus on talent development, specifically management and leadership training and development. This is just as critical as the recruitment systems, or bringing in quality people to the firm and performance management systems; most firms attest that the latter are more common. Leaders and managers within the firms must also proactively work to identify and address potential barriers preventing them from building capacity in these areas. For some firms, this will require cross-firm and industry coordination, as they must overcome the barrier of knowing what practices and processes to adapt. For many it will mean tackling the commonly identified challenge in this regard which is to move from theory to practice. In some aspects this will be translating common sense to common practice, but in others it involves creating the leadership and management infrastructure to lay these upon.

7.2.3 Implications for policymakers

Policy attention to the issues of leadership and management has grown significantly in recent years - and it will continue to do so - which necessitates more rigorous attention to the most appropriate role to play in these regards. While many efforts have made inroads, several reviews suggest that policy attention has not always been effective enough in attempts to influence internal workings of a firm. This Foresight Initiative provides a great opportunity for policymakers to re-examine roles in this regards, and this report suggests several implications for policymakers as well in addition to the cross-cutting initiatives mentioned above.

First, clarity on scope and focus is critical. We must move past general or vague efforts in these regards and demand more specificity in which aspects of leadership and management are studied; this will help to better lead attention to those which are most lacking and thus demand the most attention. From commissioning studies to funding schemes and programs, political attention will be more impactful if the goal is more narrowly focused on either the people within the roles (and their characteristics), or behaviours, skills and qualifications, and/ or practices and processes. Of course there will be overlap across these at times, and initiatives can target multiple of these segmentations, but policymakers – and their counterparts in industry and academia - should be more insistent that the target of leadership and management is clearly articulated.

There continues to be a need for more evidence-based policy, which while often mentioned has not transferred satisfactorily to the leadership and management context. That these are encompassing topics is not an excuse for neglecting methodological rigour in evaluation and studies, which means we should put less regard on studies, surveys and research not conducted with such. As the report detailed, evidence comes from assessment and measurement, and there are too many studies conducted within this space in the UK that rely solely on asking questions rather than attempting measurement.

It is just as critical to thoroughly assess existing policies in place targeting these areas, but unfortunately most of the current evaluations performed are highly unsatisfactory. To really build up a good knowledge base, we need to consider proper evaluations of business policies to calculate the effects. There is a wide range of quantitative evaluation techniques, most

convincing of which are randomized control trials, discussed briefly below, though other strategies such as rules, eligibility and matching techniques to programs exist.

The best way to establish causality between leadership and management improvement policies and performance would be to conduct randomized control trials, which have been done in manufacturing firms in other countries showing remarkably large effects (Bloom et al. 2011a). A possible initiative would be to market a managerial improvements program, most likely involving heavily subsidised high quality consultancy, and collect applicants. Eligibility can be restricted to certain firms based on size, industry or geographical area prior to the marketing. Eligible applicants would then be randomised in or out of the program as in a clinical trial and then treatment and control are followed and tracked. If causal effect can be established, we could look at which types of intervention had been most effective, which groups of firms are most affected, and eventually, the timeframe of the effects.

Policymakers should also attempt for more clarity on where they can create and capture the most value when it comes to enhancing leadership and management. It is not clear that political attention can target these different pieces in equal ways. For example, it is quite likely that political attention on enhancing skills and qualifications could dramatically move the needle, especially if done in coordinated measures across the ecosystem (i.e. with industry associations, business schools, etc.). This would also help to answer the recurring call from current manufacturing CEOs for more policymaker attention to boosting the skill level within the industry (PWC 2013).

Another area where value can be created by policy intervention, already discussed briefly, is focusing on practices and processes. Here there is a solid evidence base and clear deficit in UK capacity as compared globally, and there is also an established research base of how this capacity could be boosted. As the overall performance of the UK in this regard is held back by the large number of firms with weak management practices, if the quality of the practices within poorly managed firms could be lifted even up to the median, this would be a tremendous improvement. While there are no universal best practices relevant across all firms, there are areas riper for broad implementation, and we think specifically of the roughly 20 dimensions studied in the WMS work. Specific interventions and targeted training in basic management practices addressed to these weaker firms could generate significant value economy-wide.

Focusing on the practice themselves is only one step, as mentioned above. There will also be a need to focus on the “how” of implementing these within the firm. This is especially relevant given we know skill levels are weaker in many UK manufacturing firms, especially the smaller ones. An effective way to do this is through “action learning” programmes, which are based primarily inside the firm setting rather than the classroom. These can be conducted with an established consultancy or related body; for example, teams of MBAs students working with a consultancy or industry/ academic lead, who facilitate the firms’ leaders and managers in building and implementing the practices on site, with continued contact, follow-up, and measurement. Evidence is building which suggests that long-term and measurable impact is more likely to come from this form of learning rather than classroom or virtual based training schemes; thus, funded schemes along these lines could work well, and also further the linkage between industry, policymakers and academia that is being called for across evidence papers for this review.

Outside of firm interventions and targeted education and training, there are specific ways policy could work to improve management and leadership practices and processes through more interventionist measures. One relates to the finding of the relative weakness of management

capacity in family-owned, family-managed firms. Some of this heterogeneity is undoubtedly due to cultural factors and hard to change. Nevertheless, it would be useful to think of ways of spreading our knowledge of the cost of family-run businesses and encourage families to at least consider getting some alternative expertise in when they reach a certain size. The inheritance tax system provides an exemption for business assets passed through the family. Withdrawing this exemption may incentivize family business owners to reconsider their business structure and bring in professional managers, thus improving their business's management quality and overall profitability. Incidentally, it would also increase government revenue and possibly reduce intergenerational inequality.

Competition also matters. A resounding finding is that firms exposed to heightened levels of competition have higher capacity of leadership and management, especially when it comes to practices and processes. Thus increasing product market competition is perhaps the most important way to boost management quality. The UK has a relatively good record here with strong competition policy, but there are areas for improvement. One is to reduce the regulatory barriers to setting up and expanding businesses. The cost of regulation may be adversely affecting the success of future businesses. Moreover the total regulatory impact may be greater than the sum of the effects from individual regulations.

The area of leadership and management skills is another area that demands political attention. Skills are highly correlated with better leadership and management, as evidenced by much of the research presented here, and this relates to both manager and workers skills. This makes sense: it is hard to effectively lead and manage well an organization where large numbers of workers lack the relevant skills. The UK has a relatively poor record here when compared to the US and Germany, across the level of CEO, managers, and works (See sections 3 and 4, above), so one straightforward implication is to focus on education and job training. Smaller firms seem have particular problems in getting access to skills and information, so targeting current activities to firms with between 100 and 300 employees is another area to consider. Related to this, we need to better examine the types of industry-specific market failures that could lead to the under-supply of managerial skills to smaller firms. This also relates to the need to facilitate the creation of management education courses and facilities as a measure for increasing the supply of capable managers for small firms.

When it comes to skills and skilled leaders and managers, policymakers should also work to increase the supply of human capital by allowing university expansion and increasing the availability of travel/work visas for experienced managers from other well managed countries such as the US. This is an area where current changes to the immigration policy could be detrimental to future leadership and management capacity in the industry. The continued elimination of highly skilled migrant visas and past schemes which encouraged highly skilled and qualified individuals to stay in the country (such as the former post-study work visa) will only further drain skilled and talented individuals from the UK economy and increase the skills gap as compared to other countries. For example, over 70% of technology post-graduates are overseas students, who under current reforms face extreme difficulty to stay and work within UK industry. Most are forced to leave the country before they even receive their graduate degrees. Newly revised policies also are working to prevent new, highly skilled migrants from entering the industry. Rather than being seen as a drain to UK job seekers, highly skilled migrants who wish to enter the manufacturing industry should be seen as a way to bring needed international talent and expertise to UK firms, as more channels should be considered to allow this.

Regarding specific deficits in leadership and management, firms with more weaknesses, especially related to skills and access to information on best practice, were smaller firms. This

suggests that the smaller companies are struggling to recruit and retain the talent they need and get needed advice. Although there are drawbacks to keeping small firms on an “artificial life support system,” it is worth considering how to target existing policies (e.g. over business advice and skill support) to firms with 100-250 employees. These are not the very smallest firms but are a substantial group whose growth is crucial to prosperity.

Finally, the pipeline, or supply of future talent in leadership and management is an area for attention. As the demand for leadership and management increases, there will be an even greater need for highly developed and skilled leaders and managers to drive business growth. Policymakers should target the areas of the pipeline they can most readily influence, which seems to be in the areas of industry exposure at younger ages, university partnerships and targeting, and enhancing leadership and management development, especially to smaller or resource constrained firms. Other evidence papers as part of the Foresight Initiative are also currently addressing this gap.

As a final note, while the above distinguishes these into segments, one overriding message that developing and enhancing UK leadership and management is a shared responsibility, and large-scale initiatives and development schemes should not be done in isolation but rather as cross-sector cutting initiatives, ensuring that a “joined up” approach is taken to future leadership and management development.

7.3 Call for future research

The results of this evidence paper have also suggested ample grounds for both short term and longer term, ongoing research into the topics of leadership and management.

7.3.1 Short term evidence base

This report suggests a few areas where expanding current research base would be most effective in the short term. First, if it is an end product be deemed important to the ongoing work of the Foresight initiative, it would be useful to expand the profiles of CEO manufacturing firms to have a better base here. While 600 is a start, the sample sizes are too small for detailed analysis, which limits the interpretations of the final results. This especially relates to the emerging findings on education and background, and it would be good to know if this slight deficiency holds when the sample size expands. That said, going beyond profiles is another critical next step, and conducting a thorough diagnosis of leadership and management capacity in UK manufacturing firms to inform policy decisions and actions is recommended. There are a few options available in this regard. One would be to conduct a large-n survey, either phone or paper based, which is designed using survey methodology geared towards measuring versus “asking about” these topics, and it should be geared to target specific aspects of leadership and management for which actionable policy or implementation plans could be based around, rather than perceptions or qualities in general. The UK is awash in studies of the latter; future survey work should be focused, targeted and more rigorously designed.

Another area recommended is for the UK to replicate the Management and Organisational Practices (MOP) work conducted in the US.³¹ In the work, the LSE and Stanford researchers worked with partners in the US Census Bureau to conduct a first-in-kind large scale survey across 30,000 establishments across the US to measure and assess management and

³¹ http://www.census.gov/newsroom/releases/archives/economic_surveys/cb13-03.html See also Bloom et al. 2013.

organizational practices. The robust and cognitively tested survey tool was based on “closed” questions which is much more straightforward to implement than the in-depth World Management Survey WMS method but still upheld the rigour of the methodology. It has been implemented in the US in over 30,000 establishments in 2010 of all sizes from single employer firms upwards and is currently ongoing in Germany. This is attractive as the tool has already been developed and tested, for a manufacturing base, in the US. The work has also uncovered striking results regarding the impact of structured management practices on better firm performance, and the researchers also found impact of employee education and skills, firm size and exporting status continue to relationship with performance. There is huge value in having the same basic questionnaire as was used in the US, as this would enable benchmarking the UK against the US, which is typically the productivity frontier. As this report discusses, management practices are also a clearly specified part of the leadership and management themes, and one in which actionable, implementable recommendations could follow.

7.3.2 On-going research agenda

As part of the on-going research agenda, a few recommendations seem clear. One is to insist that research or studies, especially those publically funded clearly specify their unit of analysis, rather than targeting leadership or management generally. There is also a need for more disciplined effort made to measure and assess these aspects of leadership and management, rather than continue to ask about these within the firms, questions that are not as methodologically robust are less helpful in making actionable recommendations.

When it comes to practices, it is becoming clear than the notion of “best practice” is not applicable in all, or even most instances, and some of today’s “best practices” may be profoundly inadequate for firms moving forward (Hamel and Valikangas 2003; AIM and CMI 2012; Goddard and Eccles 2013). That said, little work has been done in the manufacturing context as to how firms generate and embed practices in a way that could be transferrable across the industry. We also need to better understand which practices may be of generic, transferrable value and where value will be more context specific. It is also critical to focus not just on isolating individual behaviours, skills, and practices and processes but to focus as well on the interrelationships and complementarities between practices and behaviours. While fully understanding the interdependencies amongst practices is a call outside the scope of focus, many researchers are making strides in understanding these relationships (See, for example Subramony 2009 for an overview).

Critically, we also need to understand more on the “how” of implementing practices rather than just what the practices are, which will involve more rigour in researching appropriate methods of implementation and evaluation. There is still much needed in understanding on to make these practices and processes transferable across different firms’ contexts. As noted above, a direct, causal relationship cannot be inferred, so more effort should be dedicated to understanding the interworking of practices and performance, as well as how these interact with changing context over time.

There is also a need to move from just examining relationships to better understanding causality. Many correlations in the evidence base between leadership and management and performance are suggestive; these cannot be interpreted as causal. The only way to really overcome this problem is to run some randomised control trials where some improvements in management are introduced and the changes in performance are tracked over time. This is feasible to do, and suggested in earlier works as well. Specifically, a simple protocol is to market a managerial improvements program (e.g. free of heavily subsidized high quality consultancy) and collect

applicants. Eligibility can be restricted to certain firms based on size, industry or geographical area prior to the marketing. Eligible applicants are randomized in or out of the program as in a clinical trial and then treatment and control are followed up. If a causal effect can be established, we could look at (a) what types of intervention are most effective; (b) which groups of firms are most affected? and (c) whether the effects are short term or long-lasting?

Finally, all of the above recommendations unite under the common theme of more demand for evidence-based policy making, which starts from a robust and methodologically demanding research agenda.

7.4 Conclusions

On the face of it, the idea of improving leadership and management practices may sound good in theory, but less urgent when it comes to other areas the Foresight Initiative is addressing.

Thus, there is a risk that we will continue to cite these areas as important but continue to fail to address them in the most impactful way. Given the potential impact on productivity and performance enhancements could bring, however, such changes could be radical. Research shows direct relationships between quality of leadership and management, especially leadership and management skills, practices and processes, and business outcomes. Transforming management and leadership capacity, especially through specified behaviours, skills, and practices and processes will have major benefits for firms, and this will translate more broadly. Firms, industry, academia and government share a joint burden to ensure that future leaders and managers are prepared to succeed, despite the known turbulence the future of this industry will bring.

Appendix A: Leaders versus Management – overview of the topics

The table below summarises recent works distinguishing between the roles of leaders and managers.

	Leaders are those, and leadership is....	Managers are those, and management is....	Source
	--is about inspiring and supporting people to do things.	-- is about telling others what to do.	Bennis 1989
	-- is about the future.	-- is about the present.	Sarros 1992
	You lead people.	You manage "things."	Capowski 1994
	--creates new paradigms. -- works on the system. --is heart	--works within the paradigm. -- works within the system. --is soul	Covey et al. 1994
	-- produces change, often a dramatic one. --involves having a vision of what the organization can become in the future --energizes people to overcome major political, bureaucratic, and resource barriers to change by satisfying basic human needs.	--brings a degree of predictability and order. -- is more formal and scientific in nature and makes use of methodical techniques to solve problems. --monitors the results against plans and then plans and organizes to close the performance gap	DuBrin 1995
	-- focuses on the creation of a common vision. It achieves results by persuading. -- involves motivating people to contribute to the vision and encouraging them to align their self-interest with that of the organization.	-- is more about controlling. It achieves results by commanding. --involves allocation of scarce resources to achieve an organization's objectives, set priorities, design work, and achieve results.	Weathersby 1999
	-- operates in a trust-based environment. --Under leadership, employees are empowered by trust and given the freedom to fulfill their job responsibilities. --reframes the present employees of an organization through training and not rehiring.	-- seeks to control by fear. --Under management, roles are rigidly defined within the organization; management controls the processes through the power of a small group instead of total team input. -- emphasis is on rehiring resources, not reframing employees with more training.	Kumle and Kelly 2000
	-- is a relationship (selecting talent, motivating, coaching, and building trust) between the leader and the led that can energize an organization.	-- is a function (planning, budgeting, evaluating, and facilitating) that must be exercised in any business.	Maccoby 2000
	-- get organizations and people to change -- select talent, motivate, coach, and build trust -- are more about soul (or heart) rather than mind.	-- write business plans, set budgets and monitor programs --plan, budget, evaluate and facilitate -- are more about mind	Maccoby 2000
	-- are visionary, passionate, creative, flexible, inspiring, innovative, courageous, imaginative, experimental and	-- are rational, consulting, persistent, problem solving, tough-minded, analytical, structured, deliberate, authoritative, and	Capowski 1994

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	<p>initiators of change. They draw their power from their personal traits and attributes. They make use of their referent power to influence the followers</p> <p>-- --have good intuition and insight</p>	<p>stabilizing. They draw their power from their position and authority.</p> <p>--have good analytical ability</p>	
	<p>All leaders are good managers</p> <p>-- are mobilized by their personal power and endorsement of the group.</p>	<p>All managers may not have leadership capabilities.</p> <p>-- are mobilized by authority and position power.</p>	Daft 2003
	<p>-- decide what freight and passengers the train carries and where it is headed.</p> <p>-- have broad perspectives enabling them to peer into the future to determine needs and what changes need to be made for growth and survival.</p> <p>--are strategists</p>	<p>-- make the train run on time</p> <p>-- are guided by the myopic drive to handle routine in order to produce efficiently.</p> <p>--are tacticians</p>	Perloff 2004
	<p>-- Sets direction and develop the vision</p> <p>--Develops strategic plans and achieve the vision</p> <p>--Displays very passionate attitude about the vision and goal</p> <p>-- Promotes useful and dramatic changes, such as new products or approaches to improving labour relations</p>	<p>-- Plans and budgets</p> <p>--Develops process steps and sets timelines</p> <p>--Displays impersonal attitude about the vision and goals</p> <p>--Managers vision order and predictability</p> <p>--Provides expected results consistently to leadership and other stakeholders</p>	Kotterman 2006
	<p>-- produce the potential for dramatic change, chaos and even failure</p> <p>--seeks change and movement</p> <p>--establishes a direction – looks at the big picture, clarifies the situation, creates a vision and determines strategy</p> <p>-- with relation to people – aligns people, communicates goals, builds teams, looks for commitment</p> <p>-- focuses on motivating and inspiring people through empowerment, looking at how to satisfy unmet needs, and energising people</p>	<p>-- produce standards, consistency, predictability</p> <p>--seeks order and consistency</p> <p>-- during planning and budgeting – establishes agendas, sets timetables and allocates resources.</p> <p>-- with relation to staffing – provides structure, job placements and defines rules and processes.</p> <p>-- focuses on control and the solving of issues by taking actions to correct issues, creating solutions and defining incentives to reward good work.</p>	Kotter 1990
	<p>-- are inspiring visionaries concerned about substance.</p> <p>-- leave a great deal to chance.</p> <p>-- adopt a personal and active attitude toward goals.</p> <p>-- develop fresh approaches to longstanding problems and open issues to new options</p> <p>-- work from high-risk positions and are often temperamentally disposed to seek out risk</p> <p>-- concerned with ideas and relate to people in more intuitive and telepathic ways</p> <p>-- establish and break off intensive</p>	<p>-- are planners who have concerns about the process.</p> <p>-- are eager to solve the problems</p> <p>---- have impersonal, if not passive, attitudes toward goals.</p> <p>-- act to limit the choices</p> <p>--work to reduce the risk</p> <p>-- relate to people according to the role they play in a sequence of events or in a decision making process</p> <p>-- rely on moderate and widely distributed attachments</p>	Zaleznik 1977

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one-to one relationships		
<ul style="list-style-type: none"> -- innovates to find new ways of working. -- provides original solutions that can be utilized --places emphasis on the people in the organization. -- tends to focus on longer term problems that exist. -- will ask questions like "What?" and "Why?" -- prefers to challenge the status quo --can best be described as "his or her own person" 	<ul style="list-style-type: none"> -- administers current ways of working -- copies what has been done before and is proven to be effective. -- places emphasis on structure and systems in the organization. -- deals with issues that are short term in nature. -- will ask questions like "How?" and "When?" --sticks with the status quo and works within it. -- can best be described as a "classic good soldier". 	Bennis 1989 a
<p>Influence relationship Leaders and followers Intend real changes Intended changes reflect mutual purposes.</p>	<p>Authority relationship Managers and subordinates Produce and sell goods and/or services Goods/services result from coordinated activities.</p>	Rost 1993
<ul style="list-style-type: none"> -- Creating a vision and Strategy. -- Keeping an eye on the horizon. -- Creating shared culture and values. Helping others grow. Reduce boundaries. -- Focus on people – inspiring and motivating. -- Followers. Based on personal power. --Acting as a coach, facilitator, persuader. Strategic view. Open mind. Asking Innovation Creates change, often radical change. Defining the company values. Creating a shared culture of behaviours. Creating an organizational structure that fits with the needs of the future. Identifying key skills and attributes required for the future. 	<ul style="list-style-type: none"> -- Planning and budgeting -- Keeping an eye on the bottom line. -- Organizing and staffing. Directing and controlling. Creating boundaries. -- Focus on task – produce/sell goods and services. -- Based on a position of power. --Acting as a boss. Organizational skills Problem solving Telling conformity. Maintains stability. Working towards alignment within their own work teams. Communicating the values and making them a reality. Resourcing and recruiting people with the right skills for the future. Ensuring that people develop skills needed in their current job 	Ryan 2007
<ul style="list-style-type: none"> --are visionaries, collaborators, salespeople and negotiators 	<ul style="list-style-type: none"> --are captains, analysts, conductors, and controllers 	Zimmerman 2002
<ul style="list-style-type: none"> --innovate --are original --develop --are concerned with trust and people --inspires trust --have a long range perspective --ask "what" and "why" --eyes are on the horizon --challenge --are their own people --do the right things --conquers the context 	<ul style="list-style-type: none"> --administer --copy --maintain --are concerned with systems, controls procedures, policies and structure --rely on control --have a short range view --ask "how" and "when" --have eyes always on the bottom line --accept the status quo --are the classic good soldiers 	Bennis 198b

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	<ul style="list-style-type: none">--produces visions, concepts, plans and programs.--are concerned with effectiveness--opt for "pull" rather than "push"--provide vision and influence--Becoming a leader is synonymous with becoming yourself	<ul style="list-style-type: none">--do things right--surrenders to the context--adopts the truth from others and implements it without probing the facts.--are concerned with efficiency--opt for "push" rather than "pull"--provide resources--Becoming a manager is becoming what company wants you to become	
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