

# Strategy and management practices: revisiting the World Management Survey

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## Abstract

The World Management Survey (WMS) is a cross-country, cross-industry survey dataset with over 20,000 observations at the establishment-level that is collected through a rigorous and well-documented process. It measures management practices and other key organizational design decisions relevant for firm strategy. While it is well-cited in the Strategy literature, it is severely under-used and better exposure to this data's offerings has the potential to add significant value to the field. It is free and accessible, contributing to the movement towards greater replicability and data access that is essential to further the coherence and strength of our theories in strategic management. We provide an overview of the WMS, illustrate the richness of this data, and suggest avenues where researchers could contribute to existing literature.<sup>1</sup>

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# 1 Introduction

When the first wave of the World Management Survey (WMS) dataset was collected in 2007 [Bloom and Van Reenen, 2007], the core insights were not new to the management and strategy community.<sup>2</sup> A rich literature on the importance of management practices and ownership structures for firm performance already existed, and, while the methodology was novel and the data held promise, approximately 700 data points across four countries was not enough to allow strategy and management scholars to test existing theories or inform new ones. Further, a key part of strategy research is concerned with how *the best firms* create and sustain value, or, how they *push the production frontier* [Porter, 1996]. This dataset was, by design, a random sample of firms and thus was primarily useful for understanding operational effectiveness of the average firm rather than how the best firms out-competed other firms. Almost twenty years later, however, the project has grown to include over 35 countries, four sectors and over 20,000 observations including over 4,000 establishments with repeated observations across time. While the data and its insights have been influential over the past decade — amassing over 150 citations across the top strategy, management and economics journals — it has only been *used* in research by a small fraction of strategy scholars (Table 1).

In this paper we revisit the much-expanded WMS as a *technically new* dataset that can, in its current form, be useful for strategy scholars in exploring a number of open questions in our field. We argue that the WMS is worth revisiting as it (a) has now grown to a useful scale, (b) is free and easily accessible, including with firm identifiers,<sup>3</sup> (c) allows for linkages to many other datasets (including, for example, Orbis Bureau van Dijk, Compustat and Harte Hanks), and (d) has many additional variables beyond management practices, such as ownership and hierarchy measures, collected as a panel over time.

The primary and most consistent research finding out of this data is that greater adoption of the practices measured in the survey is, on average, correlated with better firm performance across

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<sup>2</sup>The primary intended audience at that time was, however, economists who had not yet engaged with a measure of management practices. To that end, the new data did kick-start interest and focus on management and organizational practices in economics, as evidenced by the dataset being cited 63 times and used 13 times in publications across the top 5 economics journals since 2009.

<sup>3</sup>Access to the anonymized dataset is immediate via a simple registration form on the website, and access to the identified data requires only a short application form available on [www.worldmanagementsurvey.org](http://www.worldmanagementsurvey.org).

a range of firm operational and financial outcomes.<sup>4</sup> But there is still much to learn about firm and managers' choices of the management practices they adopt. For example, some firms may well adopt fewer "best practice" structures because they lack the sophistication to do so, but others may be aware of the trade-offs inherent in adopting some of these practices and elect to not do so. Understanding this difference and potential contingencies and strategic fit between practices is important for how we think about competitive advantage [e.g. [Yang and McElheran, 2021](#), [Lemos and Scur, 2019](#)]. There are myriad open questions relating to theories of strategic complementarity, contingency theory, institutional theory in global settings, and strategy process and implementation that the WMS could be used to contribute to in management and strategy research.

There are also "established" topics worth revisiting. For example, the long-held view has that "there is no lasting advantage in adopting modern management practices, because every company will use these techniques if they prove effective" [[Oberholzer-Gee, 2021](#), [Porter, 1996](#)] has been pushed by others who argue that operational practices are integral to successfully devising and implementing strategic choices [[Sadun et al., 2017](#)]. More broadly, what happens if firms are not near the boundary yet and attempt strategic change projects? There is limited evidence on this topic, but certainly indications that "boundary-level" operational capacity is a necessary condition for execution of complex strategies. For example, [Bilicka and Scur \[2021\]](#) show that manufacturing multinational corporations that do not have management best practices in their plants are less able to engage in complex strategies such as earnings management and (legal) profit shifting.

As an exhaustive exploration of all potential topics is untenable, we briefly outline a handful of topics where the data has been cited but not used and more extensively outline one topic in particular that was highlighted in a recent Academy of Management Perspectives symposium: the need for strategic human resources management (SHRM) scholars to rethink their approach to advances in the discipline [[Kehoe, 2021](#)]. The symposium included a number of theoretical advances and the WMS could serve a valuable purpose in allowing scholars to test these new theories using a broad, thorough, and publicly available survey dataset. Specifically, [Snell and Morris \[2021\]](#) write in their symposium paper: "The concepts of fit and alignment have been foundational to the field of strategic human resource management. And while the theoretical premises that underlie

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<sup>4</sup>See [Scur et al. \[2021\]](#) for the latest survey and outline of policy implications.

these concepts remain useful and intuitively compelling, the lack of empirical evidence to support them proves problematic” (p. 219). We propose that the WMS can address this lack of empirical evidence given the breadth of organizations covered across time, geography, and industry, as well as the depth of practices measured and the multi-level nature of the WMS data across establishments within larger organizations.

To be sure, our goal in this paper is not to provide an exhaustive set of potential applications, but rather to illustrate how and why this data is worth revisiting by outlining a handful of topics in Strategy with a clear application, including one more thorough example. The remainder of this paper is organized as follows. Section 2 summarizes the WMS, including a description of the variables and selected summary statistics or figures. Section 3 expands on a set of examples of open questions in the Strategic management literature which the WMS could speak to, including strategic fit between practices, implementation of strategy and strategic human resource management. Section 4 concludes.

## 2 Data

In this section we briefly describe the methodology and outline the key groups of variables within the data that can be instructive in exploring open questions in Strategy research. As there are a number of survey papers already outlining the details of the WMS, we will focus on the core elements of the method and direct interested readers to more thorough descriptions in [Bloom and Van Reenen \[2007\]](#) and [Scur et al. \[2021\]](#).

### 2.1 Data access

The 2007-2014 anonymized dataset with a basic set of variables is available to registered users via the project’s main website: [www.worldmanagementsurvey.org](http://www.worldmanagementsurvey.org).<sup>5</sup> Registration is free and takes seconds to complete, and the data is authorized for general research use with attribution. Researchers who wish to request additional variables or firm identifiers can do so via a data request form on the website, and receive the data after the request is approved and the researcher signs a data

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<sup>5</sup>The latest wave (2022) is expected to become available within 2-3 years of the data being collected.

confidentiality agreement in line with the project’s Institutional Review Board ethics requirements. Requests are reviewed monthly by the WMS core research team primarily to verify credentials and confirm the purpose of use is strictly academic, with nearly all academic projects being quickly approved. Upon publication, the team provides a letter confirming the data use is authorized and authors are welcome to list their papers on the WMS website.

## 2.2 Summary of WMS methodology

The goal of the WMS project has been to measure a well-known and important factor in production systems: quality of management. While research papers and popular articles have long attested to the important role of managers and management practices, in the early 2000s there was not a publicly available dataset that systematically measured a set of key practices across countries and industries. Much of business education relied heavily on case studies, but these are by definition individual cases under special (that is, interesting) contexts with arguably special individuals in charge. While case studies have an important role to play in understanding and teaching best practices, the goal of the WMS project was to provide a complementary dataset to this approach. The idea was to systematically measure these relatively less straightforward practices in a comparable way. Almost 20 years later, it is clear that this is possible and useful to do this, especially in understanding differences across more “average” enterprises that would not be featured in case studies but make up the vast majority of economies across the world.

The WMS data is collected via phone surveys, where trained interviewers cold-call the senior-most manager at an establishment (manufacturing plant, retail outlet, school or hospital department) and persuade them to engage in a 1-hour phone interview about the day-to-day practices at their establishment.<sup>6</sup> Respondents are not offered cash incentives, but do get offered a project summary report at the end of the project. The interview is semi-structured, in that the interviewers know what type of information they are looking for and follow a set of primary questions to extract the appropriate answers. They may go “off-script” with additional questions as they are trained to

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<sup>6</sup>It is important that the respondent is senior enough to have decision-making powers and line control of others, but not too senior so as to be detached from the day-to-day running of the establishment. As such, CEOs and regional managers are not generally the interviewed party but rather plant/operations managers (manufacturing), store managers (retail), school principals (education) or department nurse managers (hospitals).

ask as many follow up questions as necessary to get the relevant information. Questions are open-ended and conversational, so it is not clear to the responding manager what the “right” answer is. Interviewers often ask for examples to back up claims managers make, avoiding biases that could come from misrepresentations or misunderstandings. The advantage of this type of method is that it avoids the manager simply giving the answer she thinks the interviewer wants to hear, and the data collected reflects practices at the firm rather than the manager’s subjective perceptions.

The interview is the primary point of data collection, and there are a number of steps included in the process to ensure high quality data. First, the data is collected in a *double blind* protocol, where the interviewer knows only the name of the establishment (and nothing of their performance), and the manager does not know they are being scored. Second, managers are asked a series of questions that aim to extract information on a set of topics, and the trained interviewers assign scores based on this information (avoiding self-responder bias). Third, interviewers all receive identical training, in English (to ensure common understanding of concepts), but conduct interviews in their native language.<sup>7</sup> Fourth, the WMS maximizes response rates by engaging several follow-up strategies and reaches 40 to 50 percent, which is extremely high relative to other voluntary firms surveys.<sup>8</sup>

Broadly, the interview flows through a set of practices that span operations, monitoring, target setting and people management practices. Each industry sector has between 18 (manufacturing) and 23 (schools) topics and each is scored on a scale of 1 (little to no structure) to 5 (well-structured). The WMS does not measure the skills of the *manager per se* but rather measures the processes embedded in each managerial practice in place within the establishment. Conceptually, the scores for each management topic imply the following:

- A score between 1 to 2 refers to an establishment with practically no structured management practices. Managers report mostly ad-hoc processes and handle day-to-day operations literally day-to-day.
- A score between 2 to 3 refers to an establishment with some informal practices implemented, but these practices consist mostly of a reactive approach to managing the organization.

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<sup>7</sup>Questionnaires were translated and back-translated to ensure appropriate terminology, but translation related issues are minimized in open-ended questions administered via phone surveys with follow-up.

<sup>8</sup>For example, Altig et al. [2020], Ben-David et al. [2013], Bloom et al. [2019], Bartik et al. [2020] where response rates in firms survey range from 0.1% to 13%.

Managers report having some processes that they tend to follow to handle daily operations and planning, but if the manager left the processes would leave with them.

- A score between 3 to 4 refers to an establishment that has a set of formal management process in place and these practices consist mostly of a proactive approach to managing the organization. Managers report following a set of processes that are known to most employees, but also report weaknesses with some of these processes that means they are not routinely followed.
- A score between 4 to 5 refers to an establishment with well-defined strong practices in place which are often seen as best practices in the sector. Managers describe the processes in their firm as part of the culture of their organization, with broad buy-in and strong adherence. Processes are not viewed as hindrances or bureaucratic chores, but rather as integral parts of a well-functioning institution.

### 2.3 Variable descriptions

**Core management practices variables** The manufacturing survey has 18 main practices measured, while the retail survey has 19, the hospitals survey has 21 and the schools survey has 23 main practices. Tables A1 to A4 in the Appendix outline each practice and the primary information collected by the interviewer during the survey. There is a wealth of variation to be explored across firms, across countries, and across questions within the survey. Figure 1 summarizes the distribution of scores across countries for the manufacturing dataset, with the highlighted colored boxes indicating the interquartile range of scores and the grey whiskers covering the distribution of scores beyond the 25th and 75th percentile for each country. The marker indicates the median score for each country and the countries are ordered relative to their median scores by continent. There is substantial variation across and within countries in the overall management score alone.

Beyond the overall scores, Figure 2 exemplifies the variation across questions. For reference, we calculate the average overall management score for each continent and plot it as the horizontal red line. We then separate firms into those with average overall scores that are one standard deviation above the continental average (or, “top-scoring firms”) and those with scores one standard deviation

below the continental average (or, “bottom-scoring firms”). Each column represents a question in the manufacturing survey, and the bar depicts the average score for each question for *top-scoring* (clear bar) and *bottom-scoring* (shaded bar). For example, the average score for a firm in Africa is 2.3, and most firms that score at least 1 standard deviation above the mean also tend to score above the mean in most monitoring practices and some people-management questions (clear bars mostly land above the average line). However, even firms with relatively high average scores do not tend to score highly on overall lean manufacturing and some target-setting questions (clear bands land close and just under the average line). Firms scoring 1 standard deviation below the mean, on average, score far from the mean across most questions (most shaded bars are under a score of 2), with the exception of a couple of people management questions (P3 and P4). In North America, on the other hand, the average score is 3.3 and even firms that score 1 standard deviation below the mean on average tend to score near the average on most monitoring-related practices but far below the mean for most people management topics.

Finally, the individual scores are naturally correlated with each other, but to varying degrees. Figure 3 shows the correlation matrix for the main sub-indices (lean operations, monitoring, targets and people) across the six continents and across industry types. Figure 4, in turn, reports the pairwise correlations between each of the main management practices topics in the manufacturing survey, highlighting correlation coefficients above 0.6 in darker shades, and between 0.4 and 0.6 in mid-blue shades, leaving those under 0.4 in white. There is much to explore in terms of complementarities (or lack thereof) between practices, with little work done thus far in this area.<sup>9</sup>

**Firm and workforce characteristics** The data includes a number of identifiers (such as firm ID,<sup>10</sup> country of operation and postal code) and firm characteristics. The firm characteristics include: industry code (3-digit SIC), foundation date, firm size (number of employees), plant size (number of employees), headquarter co-location identifier, total number of production sites and number of foreign production sites, share of workers who are unionized, share of exporting firms, and firm ownership.

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<sup>9</sup>See Scur et al. [2021] for a simple factor analysis across sectors.

<sup>10</sup>The primary ID in the WMS dataset is generally the ID from the database of the source sampling frame. For the majority of firms, this is the BvD ID from Orbis. For US public firms, the ID is from Compustat. For Australia and New Zealand, the ID is from Dunn and Bradstreet and for Colombia the ID is from Supersociedades.



We provide a visual summary of industry-level data availability in Figure 5. Panel (a) shows the share of observations relative to the full WMS sample for each of the 2-digit industries in the manufacturing sector and continent of operation. The graph is ordered by broad “low to high tech” type of industry and sorted by share of total sample. For example, the most common type of firm sampled is in Food and Kindred Products, followed by Chemical and Allied Products and Machinery and Computer Equipment. Most of the firms in Food and Kindred Products industry are in European and Latin American firms, while about similar shares of firms in the Measuring and Controlling Instruments industry are in Europe and North America. Panel (b), in turn, plots the share of each type of industry (low/mid/high tech) across continents and includes the number of observations within each continent. For example, it is clear that the majority of firms in the African firm sample are in low tech industries, while only 30 percent of the North American firms are in this type of sector.<sup>11</sup>

In Table 2 we provide an overview of the average value of key variables for the firms in the sample across the 35 countries in the manufacturing dataset, separated by continent. We include averages for firm age, firm and plant employment, the share of firms that reported having HQ on-site, the average number of total firm establishments (sites) and the average number of establishments outside of the home country, the share of unionized workers, the average number of reported competitors, the share of output that is exported, the share of firms that export at all, and the sample size (total number of observations in that country).

Table 3, in turn, summarizes the key workforce characteristics in the sample firms. These include the share of workers in the firm that are managers, the share of managers and share of non-managers with college degrees, the average tenure of the interviewed manager, and their perception of the quality of management in their firm.<sup>12</sup>

**Organizational form** The WMS also includes a number of variables that describe a firm’s organizational form. Table 4 provides an overview of the average bonus offered to managers as a percentage of salary, the share of firms that are owned and run by their founders, the share

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<sup>11</sup>We broadly define low tech as industries in SIC 20-27, 31 and 39. High tech industries are defined as SIC 35-38, while those in neither category are classified as “mid” tech, SIC 28-30, 32-34).

<sup>12</sup>Note that this is the only question in the entire survey that asks specifically for an opinion/perception from the respondent manager.

of firms that are owned and run by a family (second+ generation), the share of firms classified as dispersed shareholders (defined as no one shareholder owning more than 25 percent of the firm), the share of firms classified as multinationals, the average hierarchy levels (between shopfloor and plant manager, and shopfloor and CEO), and the average number of direct reports (span of control).<sup>13</sup>

## 2.4 Data validation

There are two primary concerns with new datasets in terms of validation: first, does the data accurately and consistently measure what it purports to measure? And second, does it explain any meaningful variation in relevant outcomes. On accurate measurement, the WMS methodology includes a number of internal checks to ensure that the scores assigned to the manager responses reflect the practices used at the establishment. Checks include “double scoring”, where a second trained interviewer or supervisor silently listens in to the interview and independently assigns scores to the responses given during the primary interviewer’s conversation. The correlation between the two scores is remarkably high, suggesting a high level of congruence between independent interviewers. For a subset of firms, additional interviews were conducted with different managers by different interviewers within the same firm, as well as both in-person and over the phone. All exercises yielded scores that were highly correlated with each other. While some measurement error is bound to exist (scores were not identical, after all), the multiple intermediate checks suggest the data collected is consistently measuring what it is meant to measure.<sup>14</sup>

On relevant measurement, validation in this regard is an empirical question; that is, does this metric explain variation in outcomes that we are interested in? For much of the WMS project’s first decade the primary question of interest was whether the management measure explained differences in firm performance. The dataset has been shared with hundreds of researchers across disciplines and the primary relationship with firm performance outcomes has been found to be consistently positive across firm types, industries and countries, suggesting that while the measure invariably includes some noise and is not exhaustive, it is at least measuring an aspect of management practices

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<sup>13</sup>The hierarchy levels are measured as follows: the count of layers *between* each level, such that a firm that has a layer of shopfloor workers reporting to supervisors who then report to a plant manager have a value of 1. The span of control of the plant manager is defined as the number of *direct* reports to the PM (that is, day-to-day or regular contact).

<sup>14</sup>For further details, see Bloom et al. [2014].

that is meaningful.<sup>15</sup> A more recent set of studies have started considering outcomes beyond performance, such as labor flows [Bender et al., 2018, Cornwell et al., 2021], innovation [Brynjolfsson and McElheran, 2016] and tax planning [Bilicka and Scur, 2021], but few have considered strategic choices and outcomes using this data.

### 3 Potential application: opportunities for strategy research

In this section, we briefly outline potential areas of research that could use a dataset such as the WMS. The breadth of variables and easy access and availability of the WMS creates opportunities for further theory-building and testing in the Strategy research community. The set of questions we highlight as examples broadly fall into the categories of *intra-organizational*, where research questions center what is happening *within* the organization, and *extra-organizational*, where research questions center around what is happening *outside* of the organization. We then build on a specific example with research topics on strategic human resource management. Our goal is to outline the set of topics that were most salient to us as an illustration, though of course there are many more opportunities than we can name here.

#### 3.1 Intra-Organizational Strategy Research.

**Strategic fit between activities** The variables and coverage of the WMS allow for investigations into the complementarity of practices, as well as how the fit between practices may vary by organizational form, managerial characteristics, and other types of heterogeneity in organizational characteristics and resources. An organization is generally defined as a system of interrelated activities [e.g. Levinthal, 1997, Siggelkow, 2002, Furnari et al., 2021], and there is a prominent literature on whether configurations of organizational attributes can predict performance [e.g. Doty et al., 1993], and on the fit between activities [e.g. Simon et al., 2011] and between activities and the organizational environment (e.g. the discussion in Lichtenthaler [2009] on the role of market and technological turbulence). However, much of the research in strategic management has been at a higher, C-suite level, rather than considering how managerial actions can influence the development

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<sup>15</sup>See Scur et al. [2021] for a review, and [www.worldmanagementsurvey.org](http://www.worldmanagementsurvey.org) for a list of related papers.

of strategic resources from the bottom up [Chadwick et al., 2015, Venkatraman, 1990], or rely on “latent factor measures” (from principal component analyses) that are not tangible in directly-useful ways for managers [Bromiley and Rau, 2014]. Further, much of the earlier work had relied extensively on proprietary datasets — for example, the Profit Impact of Market Strategies (PIMS) database [Venkatraman and Prescott, 1990, Ramanujam and Venkatraman, 1984], but such data poses issues both in terms of replicability and equity, as it is likely not accessible to many scholars and especially junior scholars.

The WMS allows insight into a broad range of practices and across multiple organizational types and is free and accessible to all researchers. Figures 4 and 3, for example, illustrates the pair-wise correlation of each of the 18 management practices and main indices measured in the manufacturing survey. The heterogeneity in this high-level set of relationships could motivate research into the strategic fit between practices, clusters of practices including why and how they differ across firms, governance regimes, product market competition levels, having insider vs. outsider managers, or different “flatness” levels. Questions about the effects of bundles of practices [Bloom et al., 2011, Perry-Smith and Blum, 2000] continue to pervade the literature, as researchers examine diversity (e.g. Nishii et al. [2018]) and flexible-work programs (e.g. Choudhury et al. [2021]).<sup>16</sup>

**Implementation and process of strategy.** There is a long literature on strategy implementation [Shrader et al., 1984, Skivington and Daft, 1991, Huff and Reger, 1987], with recent reviews of decision-making in organizations [Joseph and Gaba, 2020] and strategy process [Burgelman et al., 2018]. This literature links with the strategic fit of activities in that it suggests the relationship between implementation of management practices is moderated by the internal fit with these practices [Zatzick et al., 2012, Tenhiala and Laamanen, 2018]. As the WMS data can also be matched to firm performance data, it further allows for considerations of how strategic fit is related to financial outcomes and whether there are optimal combinations across different contexts. The breadth of the WMS dataset would allow strategy scholars to introduce, for example, more nuance into the question of “better design” by considering contingencies of results like in Horovitz and

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<sup>16</sup>For example, data on family-friendly policies, such as the average weekly hours worked, emergency flexibility and daycare subsidies, and the share of women in manager and non-manager roles, can be combined with data on organizational structure to understand the relationship between these two sets of organizational practices.

Thietart [1982], as well as connect with more recent work focusing on the strategic fit of dynamic capabilities (e.g. Fainshmidt et al. [2019]).

The global coverage of the data also allows for revisiting topics that used data from a particular country to verify whether the findings are consistent across countries (that is, still “*within*” but across contexts) — and further explore why there may be differences, if any. For example, Chadwick et al. [2015] tested a theory of commitment-based human resource systems using a detailed dataset of 190 firms from Korea and found that “CEO emphasis on strategic HRM has its primary effects on firm performance through commitment-based HR systems” (p.360). Combining the data on the people management questions with CEO histories of the WMS firms would allow for the theory to be tested across different countries, further adding to our understanding of strategic HRM across different institutional and cultural contexts. Alternatively, researchers could explore whether countries that vary on Hofstede’s dimensions [Hofstede, 1980] differ in the use and effectiveness of commitment-based HRM. A cursory look at data (Figure 3) shows that, in fact, the relevant clusters do vary across countries, suggesting that there is likely worthwhile variation to explore at this level.

### 3.2 Extra-Organizational Strategy Research

Merging the WMS with additional firm-, industry-, and country-level data allows for analyses into questions related to the fit between business practices and an organization’s external context.

**Institutional distance and institutional voids.** Questions of institutional distance have been studied for decades. These include, how the fit between practices can be influenced by regional-level cultural contexts [e.g. Newman and Nollen, 1996, Liberman and Torbiörn, 2000], the extent and method of transmission and adoption of practices across large organizations — especially across countries and large physical and cultural distances [e.g. Szulanski, 1996, Beugelsdijk et al., 2018], and how the structure of industries (in terms of competition, governance or trade) affects the bundles of optimal practices (including environmental practices, as in Delmas and Toffel [2004], and among nonprofit organizations as in Hager and Brudney [2015]). For example, Salomon and Wu [2012] explore “local isomorphism” among bank branches operating in foreign countries, and consider whether various dimensions of country-level measures of distance impact the level of

isomorphism (and types of legitimacy a la [Rana and Sørensen \[2021\]](#)). As the WMS includes information on the location of the firms, it could be useful for studying how the distance from home to focal countries could influence the fit between practices or the relative importance of certain practices or bundles of practices. [Figure 2](#), for example, shows that there is also substantial variation in scores across the various management questions, and that being a “low scoring firm” does not necessarily mean firms get low scores across all management topics. Some contexts seem to be more conducive to certain bundles of practices than others (see, monitoring practices in North America in [Figure 3](#)).

The question of institutional voids and the role of different organizational forms in addressing them has been of increasing focus as strategy researchers shift their focus to emerging markets (e.g. [Shah et al. \[2017\]](#) in the context of non-profits). For example, [Chung and Luo \[2013\]](#) study the role of family firms in filling institutional voids, considering whether the governance structure of family firms may have differential performance implications depending on the strength of local institutions. The detailed ownership data in the WMS could facilitate additional work in this area that considers both the governance of family-firms and their business practices. [Figure 1](#) illustrates that there is sufficient variation within and across countries and [Figure 6](#) shows there is sufficient variation across ownership and governance categories, too. Further, the WMS can also be matched to new metrics, such as the family business legitimacy index (FBLI) from [Berrone et al. \[2020\]](#), to understand how institutional context, organizational form, and management practices interact.

**Relationships between business units and between firms.** Beyond considering the institutional and cultural context, the WMS could address questions regarding how business units and firms relate to one other. First, consider the adoption and transmission of organizational practices across branches of a firm. [Kostova and Roth \[2002\]](#) for example, draw on institutional theory to identify factors that influence the adoption of an organizational practice by subsidiaries of large multinationals (MNCs) using data from 104 subsidiaries across 10 countries. The WMS includes data on MNCs from three times as many countries, including multiple subsidiaries of the same MNC across countries. With such data, researchers could consider which set of conditions enable or hinder transmission of business practices across business units in a rich set of contexts, including

linkages within an MNC or external factors such as agglomeration effects [Shaver and Flyer, 2000, Meyer et al., 2020].

The WMS can also be used extensively in the study of industry competition on a variety of outcomes, where business practices may moderate the effect of competition, depending on the outcome of interest. For example, Bennett et al. [2013] examine the effect of competition on unethical behavior in pursuit of customers. An extension of this work could include exploring whether more formal management practices mitigate (or exacerbate) the ability of individual managers to behave unethically. Similarly, classic models of collusion indicate that similar business models can facilitate collusion between industry participants [e.g. Caves and Porter [1977]]. Researchers could thus consider whether similarity in business practices is associated with higher levels of collusion, how this varies across country and industry levels, and whether certain sets of practices have higher associations with collusive behavior.<sup>17</sup>

### 3.3 WMS and Strategic Human Resource Management

While there are myriad uses of this data in Strategy research, SHRM was highlighted at the 2021 Academy of Management Perspectives symposium as an area of particular opportunity. Using this example, we outline below why the breadth of the WMS data (in practices, industries and countries) and multi-level nature (single- and multi-plant establishments, across time) make it an especially useful dataset for this endeavor.

**Breadth of Practices and Heterogeneity within Practices.** Chadwick and Flinchbaugh [2021] highlight key empirical concerns with current SHRM research that play a role in the conclusion and theory that SHRM is currently able to address. First, they argue that “assuming that the implementation of HR practices in firms is non-random, we expect that the HR practices with the greatest impact on firm performance are also those that are likely to have the least variance across a population of firms, because rational firm actors accurately perceive that these HR practices are important and implement them” (p. 182). Bloom et al. [2012], however, show using WMS data that some basic management practices that are widely recognized as impacting firm performance are,

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<sup>17</sup>Similar to the theory presented in Miklós-Thal and Tucker [2019].

in fact, not implemented consistently. Second, Chadwick and Flinchbaugh [2021] note that much of the prior research has been done from a universalistic perspective, where a single HR system is examined. While there has been significant theoretical emphasis on the importance of horizontal fit [Kehoe, 2021], there has been relatively less empirical evidence that tests the theories, especially across contexts. As such, important questions remain around contingencies and when horizontal fit between practices is associated with stronger firm performance. The WMS, with data from 35 countries and a variety of industries, would allow for work looking beyond a single-industry data or data from primarily large companies in highly developed-countries and help alleviate concerns raised by Chadwick and Flinchbaugh [2021] that individual industries or countries may suffer from a lack of heterogeneity in key practices.

**Breadth of Context Across Countries and Industries.** Snell and Morris [2021] discuss an ecosystem approach for SHRM that considers both the “interactions among elements of the workforce compositions, capabilities, and cultures” and studies such “alignment in an evolutionary way” (p. 219). While this is an evolving theoretical literature, the WMS could be used to build on the empirical side of this ecosystem approach. For example, the WMS data (Table 2) contains information that could be used to understand how workforce characteristics interact with management practices in different competitive environments (i.e. workforce characteristics, including tenure and education level) or operationalize important cultural attributes (i.e. merge with Hofstede Cultural Dimensions).<sup>18</sup> These data could provide a nuanced, broad, and contingency-based view of management practices.

**Multi-level Data at the Establishment and Firm-Level.** Snell and Morris [2021] highlight that there is little research that considers variation within a firm and variation across different organizational structures (e.g. joint ventures etc.), as data on management practices and SHRM has generally been aggregated to the firm level. While there are a number of different ways to disaggregate firm-level data to investigate what is happening within firms, one straightforward way is to consider differences by establishment. For example, do establishments with different managers

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<sup>18</sup>See <https://geerthofstede.com/research-and-vsm/dimension-data-matrix/>. Other relevant context could be gathered from the World Bank Development Indicators. See <https://databank.worldbank.org/source/world-development-indicators>.



have different management practices? Do establishments located in countries with different cultural norms have different management practices? The WMS collects management practice scores at the establishment-level, and includes data for multiple establishments of multi-establishment-firms, allowing for exploration of this line of work.

**Firm Dynamics Observed from Panel Data.** Snell and Morris [2021] highlight another key element missing from SHRM, especially when focused on the universalistic view: dynamics. In particular, the authors highlight that most SHRM research does not account for how management systems may need to change when the environment changes, and that prior research generally does not explicitly consider how the best practices may differ in turbulent environments to allow for more adaptability. The panel component of the WMS could be useful in allowing researchers to examine how 1) management practices changed across time to account for changing external conditions (e.g. macro economic conditions or industry competition); 2) establishments that did or did not change practices performed; and 3) how firms differentially changed practices across their establishments. While there is emerging work in economics looking at this topic [Aghion et al., 2021], there is scope for further exploration from the strategy and management perspective.

## 4 Conclusion

The WMS is an easily accessible, well documented, and detailed survey that researchers can leverage to further strategic management theories relating to questions both internal and external to the firm. In this paper we outlined the key features of this dataset and suggested an illustrative and decidedly non-exhaustive set of potential uses in strategy research. In particular, we briefly highlight uses in intra-organizational and extra-organizational strategy research and more extensively propose uses in the strategic human resource management literature.

Beyond using the dataset itself to test and further develop theories, pairing this data with administrative data or other surveys that are focusing on strategy process and implementation is an exciting and fruitful way forward. For example, Yang et al. [2020] conduct and analyze a survey of CEOs to measure how they design and enact strategies within their firms. Embracing these survey approaches to understand how firms and managers function can help build a new

branch of strategic management that explores strategic decisions via a broader understanding of the context that may allow these decisions to be considered and operationalized. Toward a practitioner perspective, we can focus on understanding how management practices can “springboard strategic renewal” [Oberholzer-Gee, 2021] and develop guidance and findings around when and how it impacts strategic decisions and outcomes.

Finally, contributing to replicability and reproducibility of research is paramount. Across multiple social science fields, providing data access for the purposes of advancing the scientific evidence and promoting replication has been a recent focus, and strategic management is no exception [Bergh et al., 2017, Bettis et al., 2016]. Replication is fundamental for the scientific method, and reproducing results in the same as well as across different contexts is crucial in building a greater evidence base for our theories. Making data and empirical analysis codes widely available are an important part of this process. However, while the calls for replications and data access have been made for decades (e.g. Hubbard et al. [1998]), strategic management has lagged behind economics and management due in part to the more widespread use of proprietary data. Thus, while there are specific questions as outlined above and in the prior section where the WMS can contribute, there is a broader benefit to its format and ease of access. The WMS is available free of charge and readily provided to researchers, promoting further developments and coherence among our theories and findings in Strategic Management.

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## Tables and Figures

Table 1: Summary of citation and uses of the World Management Survey

<b>Strategy and Management</b>	<b>Citations</b>	<b>Uses</b>	<b>Earliest date</b>	<b>Latest date</b>
Management Science	19	5	2014	2021
Journal of Economic Behavior and Organization	12	3	2012	2021
Strategic Management Journal	11	3	2009	2021
Organizational Science	10	0	2010	2020
Journal of Economics and Management Strategy	7	0	2011	2021
Global Strategy Journal	7	0	2013	2021
Journal of Management Studies	5	3	2008	2021
Strategy Science	4	0	2018	2021
Journal of Management	3	0	2011	2021
Strategic Entrepreneurship Journal	2	0	2011	2016
Strategic Organization	1	0	2015	2015
Organization Studies	1	0	2014	2014
Administrative Science Quarterly	0	0	-	-
<b>Human Resources</b>				
Industrial and Labor Relations Review	11	1	2013	2021
Human Resource Management Review	2	0	2018	2020
Human Resource Management Journal	1	0	2021	2021
<b>Economics</b>				
American Economic Review	22	3	2009	2021
Quarterly Journal of Economics	16	4	2009	2021
Economic Journal	9	3	2008	2021
Review of Economic Studies	8	2	2015	2021
Journal of the European Economic Association	6	3	2014	2021
Journal of Political Economy	8	1	2016	2021
Review of Economics and Statistics	7	2	2011	2021
Journal of Labor Economics	7	1	2009	2021
Econometrica	2	0	2009	2016

*Note:* This table lists the number of citations and uses of the World Management Survey across key journals in strategy, management, HR and economics. To build this list we searched for mentions of “World Management Survey” or “Bloom and Van Reenen (2007)” in papers published between 2007 and 2021 across this list of journals. This list is non-exhaustive and omits some important journals that were not accessible via the Cornell library, such as the Academy of Management Journal, the Academy of Management Review and the Academy of Management Perspectives. The goal is merely illustrative of the impact of the WMS dataset on the relevant literatures. It is also likely a lower-bound of this impact, as our “baseline” search would miss articles that only cited the more recent iterations of the survey papers, or only the education or healthcare-specific papers.



Table 2: Summary of firm characteristics: averages across countries

	Firm age	Firm emp	Plant emp	HQ on-site	# sites total	# sites foreign	Union pct	Competitors	Export pct	Exporter pct	N
<b>Africa</b>											
Ethiopia	26.15	429	294	0.70	2	0	56.05	9	10.94	0.25	131
Ghana	28.94	275	207	0.76	1	0	40.88	7	23.56	0.60	108
Kenya	30.90	488	280	0.77	2	0	39.07	8	29.69	0.81	185
Mozambique	23.35	536	163	0.82	2	0	57.13	6	12.37	0.39	109
Nigeria	15.58	523	137	0.77	3	0	22.12	8	7.81	0.30	118
Tanzania	26.89	451	234	0.74	2	1	50.10	6	28.62	0.65	150
Zambia	27.42	332	160	0.68	2	2	52.42	7	18.08	0.66	69
<b>Asia</b>											
China	18.97	732	486	0.78	3	0	45.48	7	39.43	0.84	1072
India	31.52	645	398	0.65	3	1	33.53	8	28.29	0.73	937
Japan	59.09	437	194	0.72	4	3	48.38	8	19.98	0.72	178
Myanmar	13.31	458	361	0.51	1	0	34.71	7	41.90	0.53	147
Singapore	22.90	5060	192	0.58	1	6	10.39	8	45.73	0.74	406
Vietnam	15.28	462	233	0.75	2	0	82.99	8	40.27	0.70	151
<b>Europe</b>											
France	52.08	730	210	0.66	8	5	14.05	7	39.14	0.90	780
Germany	64.48	777	326	0.85	5	3	31.65	7	43.65	0.96	749
Great Britain	52.30	750	192	0.76	6	4	24.34	7	41.17	0.90	1540
Greece	36.73	309	138	0.72	2	1	25.42	7	38.62	0.90	585
Italy	36.54	464	197	0.87	4	2	40.97	8	56.07	0.95	632
Northern Ireland	41.55	599	176	0.68	10	8	19.51	6	29.39	0.58	137
Poland	46.67	434	233	0.78	2	0	20.10	8	35.82	0.90	364
Portugal	45.08	369	219	0.93	2	1	20.25	8	61.19	0.94	410
Republic of Ireland	37.27	547	183	0.63	12	10	41.14	6	33.89	0.65	161
Spain	32.34	291	200	0.83	2	0	28.95	7	46.04	0.90	214
Sweden	70.08	550	269	0.82	4	2	90.80	6	59.88	0.96	404
Turkey	28.34	309	245	0.86	1	0	8.79	8	46.24	0.92	332
<b>Latin America</b>											
Argentina	45.73	502	280	0.72	2	0	71.49	7	20.57	0.80	568
Brazil	36.79	613	320	0.81	3	1	54.53	7	12.50	0.59	1151
Chile	43.40	451	194	0.78	3	2	45.88	7	27.81	0.69	611
Colombia	33.98	386	249	0.82	2	0	5.25	8	16.93	0.67	170
Mexico	37.81	726	346	0.67	3	1	58.49	7	36.85	0.79	525
Nicaragua	30.09	488	292	0.65	2	0	21.92	8	40.38	0.68	97
<b>North America</b>											
Canada	46.67	635	214	0.54	12	8	35.33	7	.	.	419
United States	52.19	1517	233	0.56	9	3	15.66	7	17.53	0.77	1564
<b>Oceania</b>											
Australia	52.89	943	167	0.62	18	19	39.00	7	20.08	0.74	473
New Zealand	44.33	263	105	0.90	8	5	41.14	7	48.33	0.89	151

*Note:* This table uses the full World Management Survey manufacturing dataset and reports the average values for a set of key firm characteristics by country. Countries are ordered alphabetically, separated by continent.

Table 3: Summary of workforce characteristics: averages across countries

	Percent managers	% mgrs w/ degrees	% non-mgrs w/ degrees	Manager tenure	Self-score (out of 5)	N
<b>Africa</b>						
Ethiopia	8.98	58.10	6.07	9.04	3.76	131
Ghana	14.25	69.34	15.23	11.75	3.51	108
Kenya	10.63	65.96	13.14	11.29	3.60	185
Mozambique	9.74	48.80	4.80	11.44	3.72	109
Nigeria	9.51	83.35	23.97	9.98	3.52	118
Tanzania	9.34	58.78	2.99	10.68	3.61	150
Zambia	10.34	61.88	7.97	8.99	3.55	69
<b>Asia</b>						
China	8.36	48.98	13.32	8.75	3.53	1072
India	10.34	82.70	13.91	12.78	3.55	937
Japan	14.66	65.64	25.36	27.57	3.35	178
Myanmar	7.16	69.37	16.42	10.10	3.36	147
Singapore	8.19	56.24	10.28	12.09	3.54	406
Vietnam	12.75	61.99	10.08	8.99	3.56	151
<b>Europe</b>						
France	13.13	56.06	9.40	12.08	3.21	780
Germany	8.51	60.91	9.98	14.39	3.57	749
Great Britain	11.56	42.77	9.01	13.86	3.49	1540
Greece	12.82	69.38	13.01	13.96	3.73	585
Italy	8.28	51.91	11.46	14.12	3.53	632
Poland	9.75	72.77	15.59	13.69	3.41	364
Portugal	11.42	54.38	6.32	14.45	3.64	410
Ireland	11.60	51.91	10.77	12.56	3.57	161
Spain	11.20	63.54	10.88	14.41	3.67	214
Sweden	10.08	44.05	13.19	13.38	3.37	404
Turkey	9.04	81.58	6.94	9.30	3.90	332
<b>Latin America</b>						
Argentina	10.06	51.67	5.80	13.97	3.71	568
Brazil	4.88	72.22	10.05	12.18	3.78	1151
Chile	5.60	79.77	10.47	12.45	3.78	611
Colombia	10.02	67.54	5.08	10.88	3.88	170
Mexico	7.40	83.01	14.34	12.74	4.04	525
Nicaragua	7.02	73.71	13.43	12.22	4.01	97
<b>North America</b>						
Canada	8.22	46.47	8.75	13.76	3.72	419
United States	13.90	61.68	14.91	14.74	3.61	1564
<b>Oceania</b>						
Australia	11.00	44.37	8.26	11.49	3.57	473
New Zealand	10.05	44.43	7.60	12.03	3.58	151

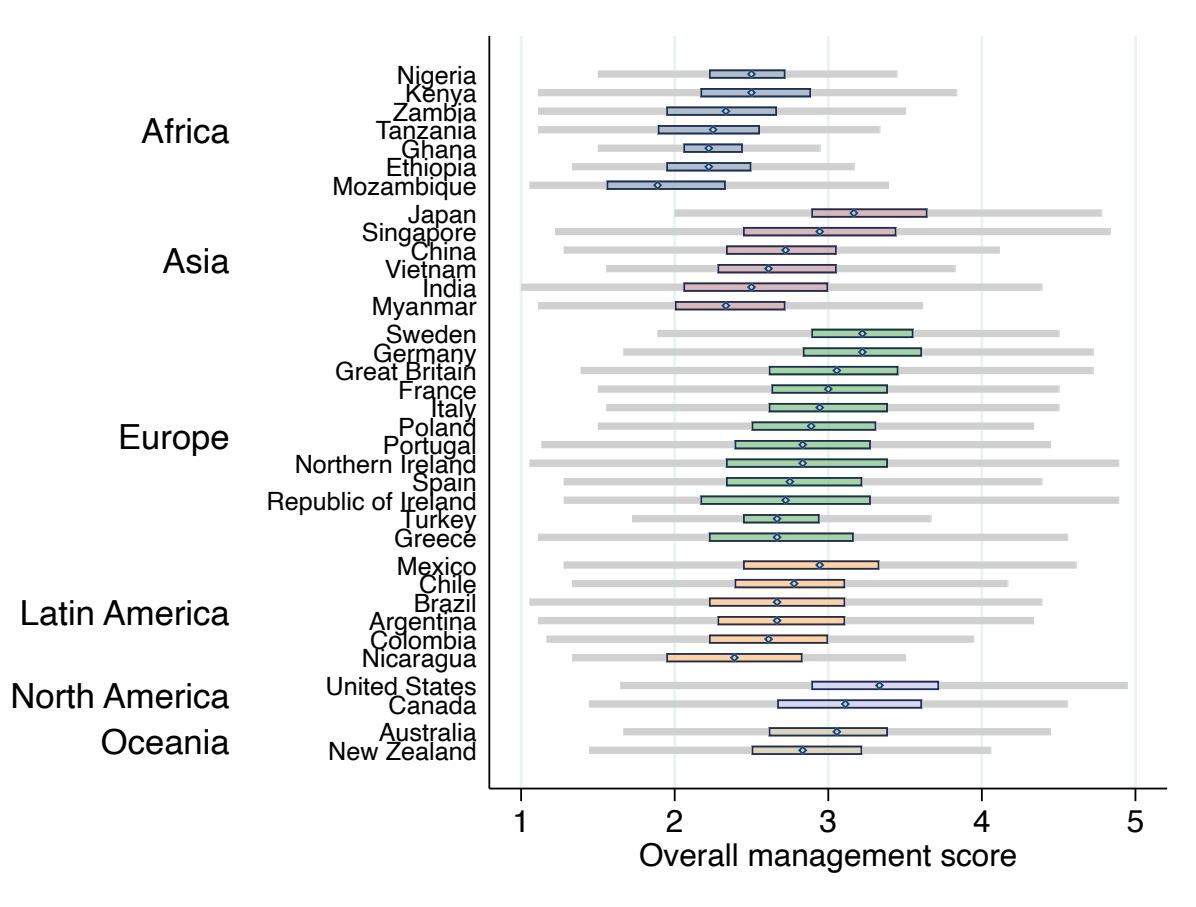
*Note:* This table uses the full World Management Survey manufacturing dataset and reports the average values for a set of key workforce characteristics by country. Countries are ordered alphabetically, separated by continent.

Table 4: Summary of organizational characteristics: averages across countries

	Mgr bonus as % of salary	% founder firm	% family firm	% dispersed shareh. firm	% MNE	Levels to CEO	Levels to PM	Span of control	N
<b>Africa</b>									
Ethiopia	13.24	0.36	0.08	0.00	0.02	3.20	2.11	5	131
Ghana	17.52	0.50	0.07	0.08	0.29	3.42	2.15	5	108
Kenya	16.69	0.33	0.26	0.16	0.17	3.62	2.42	7	185
Mozambique	9.03	0.34	0.08	0.19	0.29	2.02	0.93	5	109
Nigeria	14.65	0.56	0.14	0.16	0.15	3.14	2.40	5	118
Tanzania	15.13	0.34	0.19	0.17	0.24	3.83	2.52	6	150
Zambia	10.60	0.38	0.17	0.14	0.33	3.58	2.43	6	69
<b>Asia</b>									
China	25.04	0.30	0.02	0.23	0.29	4.49	2.90	8	1072
India	9.05	0.47	0.25	0.13	0.13	3.94	2.37	10	937
Japan	24.36	0.02	0.30	0.58	0.37	5.70	3.35	9	178
Myanmar	15.18	0.81	0.03	0.10	0.11	5.35	4.24	6	147
Singapore	17.88	0.19	0.10	0.45	0.45	4.05	2.08	8	406
Vietnam	16.65	0.38	0.03	0.38	0.25	3.39	2.31	7	151
<b>Europe</b>									
France	7.60	0.06	0.21	0.30	0.69	5.70	4.84	15	780
Germany	11.65	0.05	0.32	0.30	0.67	5.11	4.23	15	749
Great Britain	7.12	0.07	0.20	0.37	0.59	4.73	3.28	11	1540
Greece	8.27	0.23	0.34	0.24	0.33	3.43	2.21	6	585
Italy	10.30	0.18	0.36	0.19	0.46	4.20	3.24	12	632
Poland	18.45	0.10	0.07	0.21	0.38	3.44	1.84	10	364
Portugal	8.53	0.22	0.31	0.13	0.44	3.25	2.22	7	410
Republic of Ireland	5.57	0.23	0.17	0.25	0.47	3.59	1.83	7	161
Spain	9.81	0.15	0.34	0.23	0.42	3.04	2.04	7	214
Sweden	8.47	0.04	0.11	0.47	0.71	3.25	2.28	8	404
Turkey	8.45	0.57	0.13	0.02	0.07	3.56	2.42	5	332
<b>Latin America</b>									
Argentina	15.04	0.23	0.34	0.24	0.31	3.56	2.38	7	568
Brazil	7.60	0.35	0.26	0.13	0.20	3.42	2.11	7	1151
Chile	15.07	0.20	0.26	0.29	0.35	3.32	2.13	7	611
Colombia	11.56	0.44	0.24	0.12	0.12	2.91	1.60	7	170
Mexico	13.81	0.27	0.29	0.24	0.38	3.73	2.30	7	525
Nicaragua	18.76	0.30	0.23	0.13	0.24	3.07	1.85	7	97
<b>North America</b>									
Canada	9.88	0.14	0.13	0.30	0.54	4.12	1.84	9	419
United States	12.98	0.10	0.16	0.43	0.53	5.47	3.87	14	1564
<b>Oceania</b>									
Australia	7.16	0.10	0.15	0.44	0.65	4.07	2.17	7	473
New Zealand	6.49	0.18	0.17	0.27	0.58	3.49	1.77	6	151

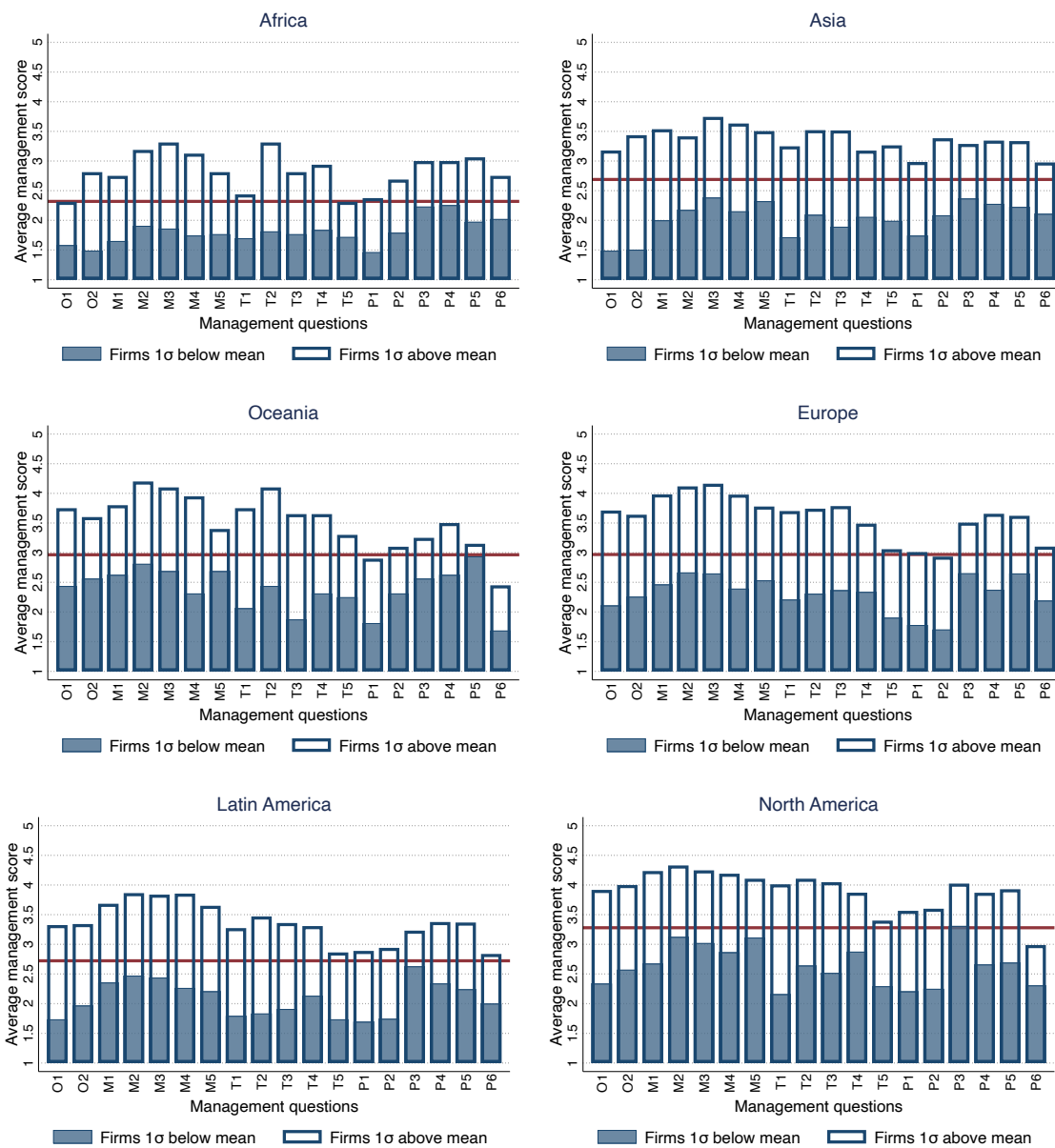
*Note:* This table uses the full World Management Survey manufacturing dataset and reports the average values for a set of key organizational characteristics by country. Countries are ordered alphabetically, separated by continent.

Figure 1: Distribution of scores management scores by country



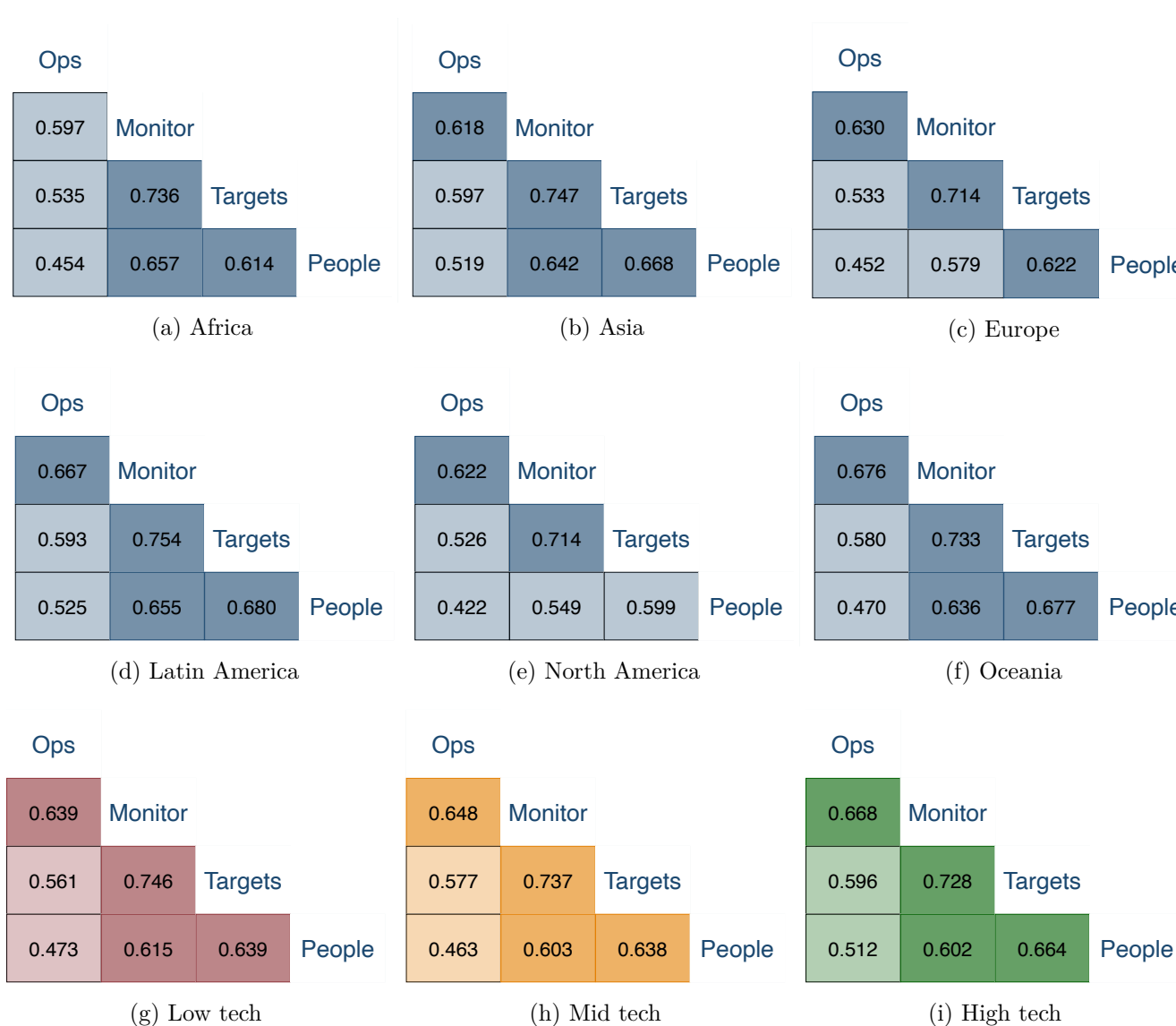
Note: This figure uses the full World Management Survey manufacturing dataset. Total N = 15,798. See Table 2 for the individual country sample sizes. The x-axis denotes the overall management score (average of 18 topics in the survey), and can range from 1 (worst managed) to 5 (best managed). Bars show the distribution of scores within each country, with white diamond plotting the median value, the colored boxes plotting the inter-quartile range and gray whiskers plotting the adjacent minimum and maximum values. Bars are ordered from highest to lowest median value within each continent.

Figure 2: Average scores across individual questions



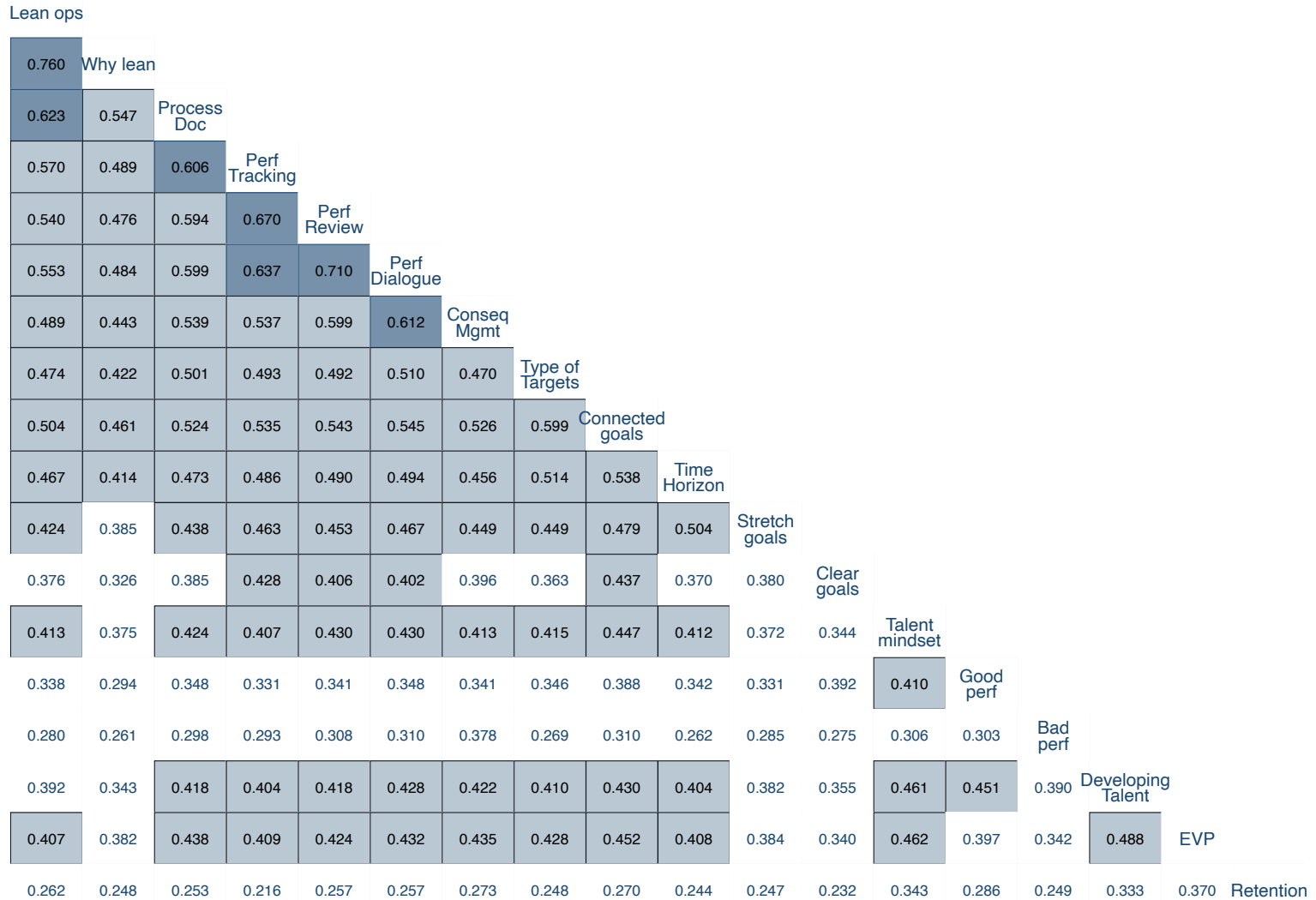
Note: This figure uses the full World Management Survey manufacturing dataset. The y-axis denotes the average management score. Possible scores range from 1 (worst managed) to 5 (best managed). The x-axis iterates over each of the 18 questions in the survey. O denotes topics in the *Operations* sub-group. M denotes topics in the *Monitoring* sub-group. T denotes the questions in the *Target* sub-group. P denotes the questions in the *People* sub-group. For each continent, the red line denotes the average overall score for all firms in that continent. The shaded portion of each bar indicates the average score for firms that score 1 standard deviation below the average score for their continent. The outlined portion of the bar indicates the average score for firms that score 1 standard deviation above the average score for their continent.

Figure 3: Management Indices Correlation Matrices: by contextual groupings



*Note:* This figure uses the full World Management Survey manufacturing dataset and reports the pair-wise correlation matrix for the 4 sub-groups of topics in the WMS manufacturing survey: Operations includes 2 questions (lean operations and why lean); Monitoring includes 5 questions (process documentation, performance tracking, performance review, performance dialogue and consequence management); Target-setting includes 5 questions (types of targets, connected goals, time horizon, stretch goals, and clear goals); People management includes 6 questions (talent mindset, dealing with good performers, dealing with bad performers, developing talent, employee value proposition and retention). The question topic title is listed at the top/right of each column/row. Each box reports the correlation coefficient. Panels (A) to (F) include only firms in each of the respective continents. Panel (G) includes firms across all countries, but only in low-tech mfg industries (SIC 20-27, 31 and 39). Panel (H) includes firms across all countries, but only in mid-tech mfg industries (SIC 28-30, 32-34). Panel (I) includes firms across all countries, but only in high-tech mfg industries (SIC 35-38).

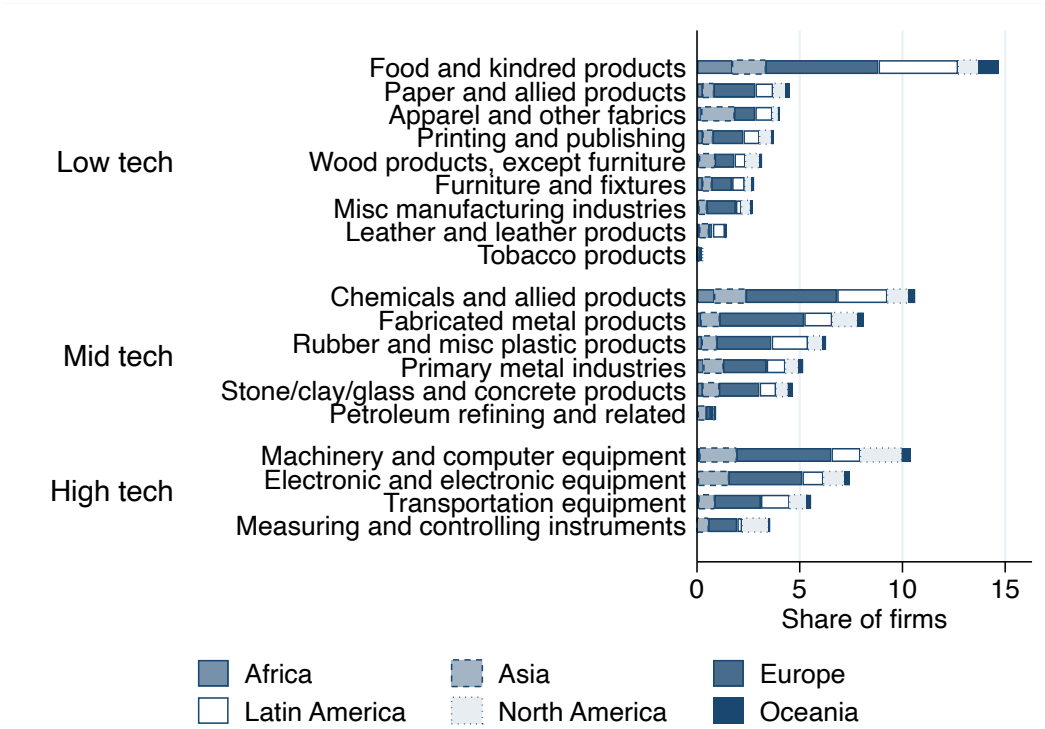
Figure 4: Pair-wise correlation of management questions



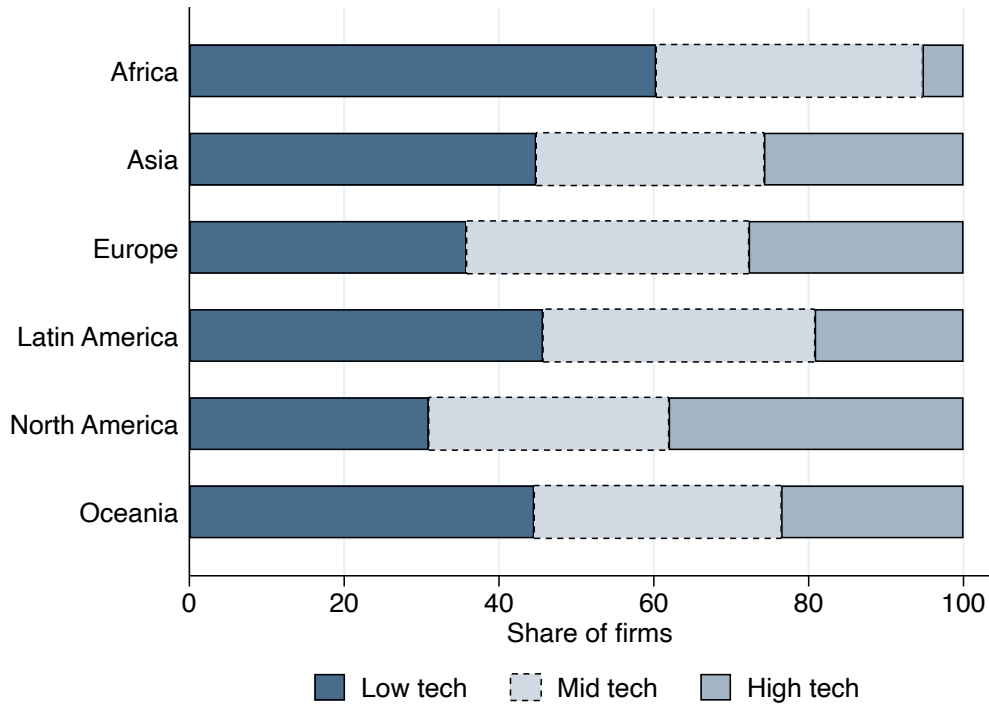
Note: This figure uses the full WMS manufacturing dataset and reports the pair-wise correlation matrix for the 18 topics in the WMS manufacturing survey. The question topic title is listed at the top/right of each column/row. Each box reports the correlation coefficient, and for ease of exposition we highlight in darker shades those coefficients that are above 0.6, in lighter shades the coefficients between 0.4 and 0.6 and leave in white those under 0.4.

Figure 5: Industry share count

(a) Industry share type



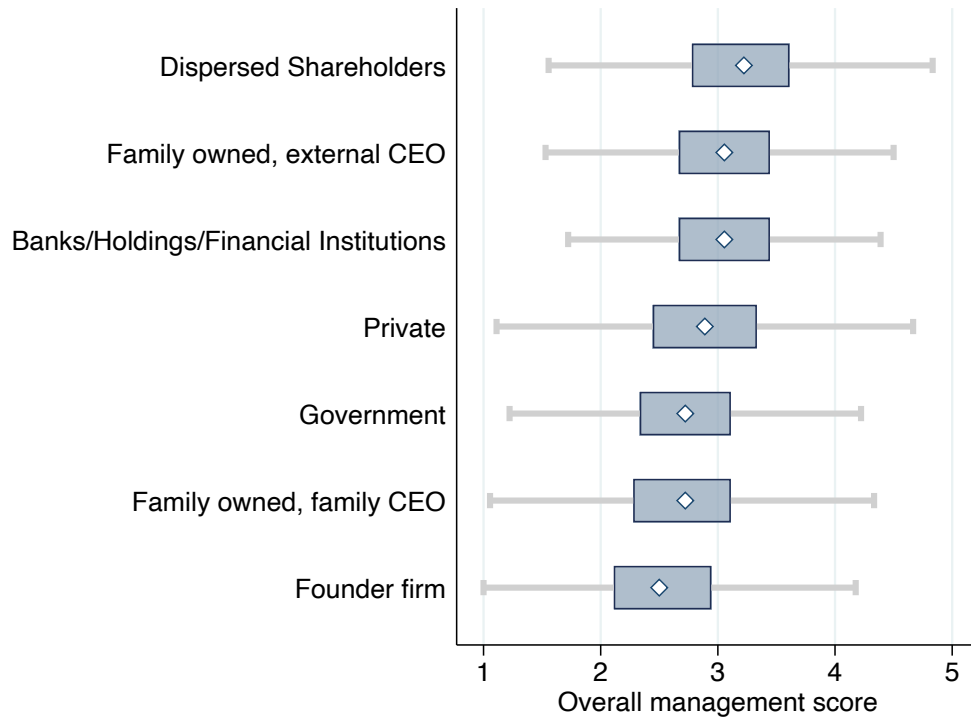
(b) Industry share type (by continent)



Note: This figure uses the full World Management Survey manufacturing dataset. Panel (A) reports the share of firms in the full dataset ( $N = 15,798$ ) that are in each type of industry and continent. Panel (B) reports the share of firms in the dataset across the broad manufacturing industry type, by continent. Low tech industries are those in SIC industries 20-27, 31 and 39. Mid-tech industries are those in SIC industries 28-30, 32-34. High-tech industries are those in SIC 35-38.



Figure 6: Management scores, by ownership type



*Note:* This figure uses the full World Management Survey manufacturing dataset with reported ownership categories. Total N=15,409. Dispersed Shareholders N = 4,239. Banks/Holdings/Financial Institutions N = 245. Private N = 3,488. Government N = 302. Founder firm N = 3,444. Family owned, family CEO N = 2,700. Family owned, external CEO N = 371.

## Appendix

Table A1: World Management Survey Questions: Core Operations

Question topic	Information collected
<b>Manufacturing</b>	
Adoption of modern practices	What aspects of manufacturing have been formally introduced, including just-in-time delivery from suppliers, automation, flexible manpower, support systems, attitudes, and behavior?
Rationale for adoption	Were modern manufacturing techniques adopted just because others were using them, or are they linked to meeting business objectives like reducing costs and improving quality?
<b>Hospitals</b>	
Adoption of modern practices	What is the typical patient journey (or flow) through the hospital? How closely located are wards, theatres, diagnostic centers and consumables? How often do you run into problems with the current layout and pathway management?
Rationale for adoption	What was the rationale for improving the patient pathway? How often do you challenge/streamline the pathway? What factors led to the adoption of these practices?
Standardization of processes	How standardized are the main clinical processes? How clear are they to staff? What tools and resources do staff regularly employ? How do managers monitor protocol adherence?
Good use of human resources	What happens when different areas become busier than others? How do you know which tasks are best suited to different staff? What kind of procedures do you have to assist staff flow and coordination?
<b>Schools</b>	
Data driven planning and transitions	How is data used to inform planning and student transitions? What drove the move towards more data-driven planning and tracking?
Standardization of processes	How standardized are the instructional planning processes in the school? What tools and resources do teachers use to ensure consistent quality? How do leaders monitor and ensure consistency of quality cross classrooms?
Personalization of instruction	How much does the school identify and accommodate individual student needs? How do leaders ensure teachers are effective in personalizing instruction within classrooms? How are parents and students engaged?
Instructional best practices	How do leaders and teachers learn about instructional best practices? How do leaders encourage adoption and knowledge sharing across teachers? How do leaders ensure new practices are being used?

Table A2: World Management Survey Questions: Monitoring and target-setting

Question topic	Information collected
<b>Manufacturing, hospitals and schools</b>	
Process problem documentation	Are process improvements made only when problems arise, or are they actively sought out for continuous improvement as part of normal day-to-day processes?
Performance tracking	Is tracking ad-hoc and incomplete, or is performance continually tracked and communicated to all staff?
Performance review	Is performance reviewed infrequently and only on a success/failure scale, or is performance reviewed continually with an expectation of continuous improvement?
Performance dialogue	In review/performance conversations, to what extent are the purpose, data, agenda, and follow-up steps (like coaching) clear to all parties?
Consequence management	To what extent does failure to achieve agreed objectives carry consequences, which can include retraining or reassignment to other jobs?
Target balance	What type of goals does the organization have? Are they uni-dimensional (say, only financial for firms, or only government-assigned for public sector)? Is there a balance of targets?
Target interconnection	Are goals based on “shareholder value”? Are goals cascaded down the organization in a way that works through units and ultimately is connected to individual performance expectations?
Target time horizon	Do leaders focus mainly on the short term, or do they understand short-term targets as a “staircase” toward the main focus on long-term goals?
Target stretching	Are goals too easy to achieve, especially for some “protected/special” areas of the organization, or are goals demanding but attainable for all areas?
Performance clarity	Are performance measures ill-defined, poorly understood, and private, or are they well-defined, clearly communicated, and made public?

*Note:* Table replicated from Scur et al. [2021]. Notes from the original article: “This table lists the **monitoring and target-setting** management topics covered in the World Management Survey questionnaires. The column “question topic” outlines the broad topic being measured. The last column includes a more detailed explanation of the types of follow-up questions that are asked of the manager to garner the information required for scoring. This set of questions are common to all industries.”

Table A3: World Management Survey Questions: People and incentives

Question topic	Information collected
<b>Manufacturing, hospitals and schools</b>	
Managing human capital	How do leaders show that attracting talent is important for the organization? To what extent are senior managers evaluated and held accountable for attracting, retaining, and developing talent throughout the organization?
Rewarding high performance	To what extent are people in the organization rewarded equally irrespective of performance level, or is performance clearly related to accountability and rewards?
Fixing poor performers	Are poor performers rarely removed, or are they retrained and/or moved into different roles or out of the company as soon as the weakness is identified?
Promoting high performers	Are people promoted mainly on the basis of tenure, or does the organization actively identify, develop, and promote its top performers?
Attracting human capital	Do competitors offer stronger reasons for talented people to join their organizations, or does a firm provide a wide range of reasons to encourage talented people to join?
Retaining human capital	Does the organization do relatively little to retain top talent, or does it do whatever it takes to retain top talent when they look likely to leave?

*Note:* Table replicated from Scur et al. [2021]. Notes from the original article: “This table lists the **people** management topics covered in the World Management Survey questionnaires. The column “question topic” outlines the broad topic being measured. The last column includes a more detailed explanation of the types of follow-up questions that are asked of the manager to garner the information required for scoring. This set of questions are common to all industries.”

Table A4: World Management Survey Questions: Leadership

Question topic	Information collected
<b>Hospitals</b>	
Clearly defined accountability	What is the role of clinicians in improving performance and achieving targets? How are individual clinicians responsible for delivering targets? Does this apply to cost targets as well as quality targets? How do clinicians take on roles to deliver improvements?
<b>Schools</b>	
Leadership vision	What is the school’s vision for the next five years? Do teachers/staff know and understand the vision? Who are they stakeholders for the school and how is the vision communicated? How are they engaged in setting the vision?
Clearly defined accountability	Who is accountable for delivering on school targets? How are individual school leaders held responsible for targets? What authority do you have to impact factors that are important for delivering on the targets?
Clearly defined roles	How are the responsibilities of the school leader defined? How are responsibilities distributed across teachers and staff? How are roles defined? How are they linked to student performance?

*Note:* Table replicated from Scur et al. [2021]. Notes from the original article: “This table lists the **leadership** topics covered in the World Management Survey questionnaires for schools and hospitals. These questions are not part of the manufacturing surveys. The column “question topic” outlines the broad topic being measured. The last column includes a more detailed explanation of the types of follow-up questions that are asked of the manager to garner the information required for scoring.”