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## OPERATIONAL VALUE CREATION IN PRIVATE EQUITY

Exploratory research gauging the divergence in perceived prioritization of private equity's operational improvement measures in normal and recessionary economic conditions

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### **Abstract**

Empirical research was conducted detailing, ranking, and evaluating operational improvement measures in Private Equity. Forty-two operational PE experts were surveyed, gauging the relative prioritization attributed to these measures in normal and recessionary conditions. Ranking these found a strong focus toward cash preserving strategies in economic downturns. Scatter plot analyses crossing evaluation metrics of *Potential Money Multiple Uplift, Complexity, Delivery Risk, Senior Time Commitment* found no clear conclusion on PE tendencies toward *quick wins* or *larger plays*. Additionally, an operational PE to traditional PE historical performance comparison was conducted finding quite consistent outperformance by operational PE funds from 2000 – 2017.

**Keywords:** Private Equity, Operational, Value Creation, Improvement Measures, Recessions

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## Introduction

This empirical research addresses both a gap in Private Equity (PE) literature, and investigates the lack of transparency on the relatively elusive operational value creation strategies in PE, referred to as operational improvement measures. The central research question inspiring this work is as follows:

*What are the actual operational improvement measures employed by PE with their portfolio companies during the holding period, and which are the most critical in economic downturns?*

The intent is to offer transparency around these measures and understand the way operational experts in PE are thinking in diverging economic conditions. In consequence, the second research question asks:

*How do operational PE professionals prioritize these operational improvement measures based on the frequency of implementation in normal and recessionary conditions?*

To understand how operational and traditional PE funds compare performance-wise, a broad historical performance comparison based on net internal rate of return (net IRR) between these fund types is conducted. Given the current pandemic induced economic conditions, this research also examines:

*How do operational and traditional PE funds compare on performance in different market conditions with a specific interest in how each fare during recession conditions?*

Lastly, to achieve greater detail and understanding of the operational improvement measures, this research attempts to attach some evaluation assessment and *clustering* of these measures based on the professional opinions of surveyed operational PE experts, with the following research question as guidance:

*Do operational professionals, in times of economic downturn, aim for quick wins (low hanging fruit of low risk & low return) to drive value or other clusters of improvement measures?*

## **Delimitations**

This section highlights the conscious research decisions made to set clear boundaries and delimit the scope of the study. Collective value creation in PE spans several topics and phases of the investment style, and thus, too broad in its entirety for this research.

A comparative historical performance assessment of operationally inclined PE funds to traditional PE funds was achieved through a collaborative effort between the alternative assets data and analytics firm Preqin and my proprietary list of identified operational PE funds. These funds were classified based on their own statements of operational competence or the presence of operating partners with industry experience. Operational strategies and roles that revolve around the fund's own operations are not considered in this research, and the distinction is paramount.

Value creation in PE buyouts can be achieved and assessed at various points throughout a deal's timeline. This research does not consider the value created upon entry and exit of the buyout. Furthermore, PE value creation is typically attributed to the following commonly discussed value creation topics that *do not* fall within the scope of this research: financial engineering, leverage, arbitrage opportunities, investment strategy, information asymmetry, asset stripping from a "conglomerate discount effect" (Gottschalg and Berg 2005), optimization of capital structure, and deal-making capabilities. This empirical research focuses entirely on the value creation stemming from operational improvements during the investment holding period. However, nuances of strategic change such as incentivization of management, replacing management, the use of operational consultancies, and the speed at which 100-day plans are initiated are also not considered here. The operational improvement measures in consideration are found in Table 1 and further detailed in Appendix A.

## Conceptual Framework

The following section aims to provide a brief overview of the basics of PE, including; the general structure of a PE fund, its processes, a historical snapshot, and the role of operational value creation in PE.

PE is an interesting alternative asset class and a subset within the broader private markets and, therefore, not listed on a public securities exchange (Pitchbook 2020, Møller and Sørensen 2019). Private capital is committed to a fund by Limited Partners (LPs). Given the risk and *illiquid nature of the assets*, fundraising is *typically* restricted to accredited investors such as “pensions and insurance companies, endowments, and high-net-worth individuals” (Chaplinsky 2017). The PE funds are managed and incorporated by General Partners (GPs), who then draw on these committed funds to typically acquire majority and controlling stakes of portfolio companies, typically looking for solid management experience, competitive market positions, and consistent cashflows. Controlling stakes mitigate conflicts of interest when driving value creating strategies. Despite not being within the scope of this research, an important component of the PE practice is leaning on large portions of debt financing provided by institutional lenders such as banks to acquire companies with substantial debt leverage, and consequently, deleverage using company cashflows throughout the deal.

PE pioneers were the first to realize the potential within ineffectively managed companies with Leveraged Buyouts (LBO) first emerging in the 1980s (Kaplan and Strömberg 2008). Then, while public-to-private transactions nearly vanished in the 1990s due to high-profile LBO defaults and bankruptcies tied to the junk bond market crash, LBO firms continued to buy private companies (Kaplan and Strömberg 2008). Twenty years later, in the mid-2000s, the second LBO boom emerged, and public-to-private transactions reappeared (Kaplan and Strömberg 2008).

A PE investment begins with the sourcing, identification, and evaluation of an attractive opportunity. Today, investment rationales cover a multitude of justifications, from undermanaged assets with potential, steady and healthy EBITDA growth, strategic and competitive market positioning, attractive acquisition prices, and EBITDA to effectively deleverage, depreciated distressed assets or restructuring opportunities and general operational improvement opportunities to create value. The mentioned rationales only cover a few of the numerous possible justifications for PE investment.

A raised fund has a predetermined time horizon of typically 10 – 15 years with the possible extension under the Limited Partnership Agreement, exercised in times of unfavorable exit market conditions, such as after the Global Financial Crisis (Bain & Company 2019), or prevailing value-creation potential (Smith 2019). Typically, capital is deployed in five years with the additional years to return the capital to investors (Kaplan and Strömberg 2008). Individual investments are typically held for three to five years; however, more than one-third of deals are held longer than five years, according to Bain's PE industry data (Bain 2020). Returns in PE are not only generated by smart acquisitions and deal-making at the beginning of an investment or solely in the exit opportunities but very much so in the value-enhancing strategies—discussed in the theoretical framework—undertaken throughout the period in which they are held, which is the focal issue of this research. Such active ownership and guidance is achieved by fund GPs taking board of directors seats in order to work hand in hand with the management of their portfolio companies (Matthews, Bye, and Howland 2009).

Portfolio company exits typically fall under four categories. The first is a strategic sale to a corporate acquirer looking to realize potential synergies by building scale or adding new products and geographies, accounting for roughly two-thirds of total buyout exit value (Bain 2020). The second most common exit style, and growing in popularity, is sponsor-to-sponsor deals (secondary buyouts), in which PEs are on both the buy and sell sides of an exit,

accounting for nearly 30% of global buyout value (Bain 2020). The last intended exit is through an Initial Public Offering by selling new stock issuance to public investors. Nevertheless, this form is becoming less popular as regulation hinders a clean sale of a PE fund's entire stake in the asset, and is apparent in declining IPO exits reaching a 10-year low in 2019 (Bain 2020). The very last exit would be in the form of unintended portfolio company bankruptcy.

Ultimately, GPs are convinced they can outperform public markets with high risk-adjusted returns for their LPs (Chaplinsky 2017). In normal economic conditions as well as in the context of recessionary conditions, such as that of the Global Financial Crisis (GFC) 2007 – 2008, PE has been hailed with *new-found appreciation* as an interesting and important asset class for many investors globally (Aigner et al. 2008, Wollaston and Witte 2020, Bain 2020). This can be asserted by the sheer quantity of funding pouring into the industry. They hold vast amounts of Dry Powder (deployable capital) as global *uncalled* private capital is stockpiling despite the majority of that capital being younger than two years (Bain 2020), insinuating that capital is also readily being deployed. The PE asset class offers resilience in a downturn in contrast to public companies. An abundance of access to deployable capital puts PE portfolio company investments in a better standing to weather recessionary conditions than non-PE backed comparable companies. PE-backed companies receive hands-on and strongly incentivized management, access to capital and can maintain a more long-term focus that is less distracted by short-term performance targets. Data shows that PE's best returns generally follow recessions (Wollaston and Witte 2020), with an even greater performance divide between operational PEs and traditional PEs in those times, which is covered in the results section.

This research's investigatory context begins with making the distinction between operationally inclined PE funds and traditional PE funds that do not take active operational ownership. The theoretical model for making this distinction is using PE fund's public

communication of active operational ownership or the manual identification of Operating Partners with industry experience. In theory, this effectively indicates those funds that actively undertake hands-on improvement strategies with their investments and those that don't, relying on more traditional PE value creation strategies. This theoretical approach is supported by prominent work by Morgan Stanley managing directors Matthews, Bye, and Howland (2009) on operating partners and thus, operational improvement as the key to value creation, and similarly supported by notable researchers in the space, Gompers, Kaplan, and Mukharlyamov in their HBR article (2015) studying the backgrounds of PE founders as grounds for *operational engineering* as a fund's value creation philosophy.

This distinction provides a basis upon which to compare historical performance returns as briefly addressed by this work's delimitations. This work has been inspired by additional industry data that finds strong performance divergence between these groups in terms of mid-recession Internal Rate of Return (IRR) and grave differences in post-recession fundraising (Connolly et al. 2020). Such differences in fundraising strongly indicate where LPs are placing their future bets.

## **Theoretical Framework**

PE uses a myriad of mechanisms to create value with their acquired portfolio companies. As the previous section highlights, PE comes off a lengthy history of financial engineering and arbitrage as a primary area of focus for generating value. During the more recent years of PE, increased competition for good deals, abundant access to capital, and the commoditized skill of financial engineering have pushed GPs to differentiate by shifting their focus toward operational value creation. In a similar fashion, a prevalent consensus—detailed in the literature review—finds the growing importance of operational value creation in PE. Rigorous research, both academic and industry lead, on countless PE deals and their subsequent value creation breakdown have begun exclaiming true operational value creation as the largest



proponent of total value creation, accounting for 65% & 69% investment return attribution of *Top* and *Second Quartile* deals respectively (Vester 2011).

Thus, the theoretical concepts delineating the scope of this research are narrowed down to the truly operationally strategic improvement measures employed by PE during the holding periods of their portfolio companies. This encompasses the *interventionist* strategies employed to improve operational efficiencies, preserve cash, expand operations, and grow revenues. Oldroyd (2016), a former Bridgepoint partner, proposed a relatively robust list of key operational improvement measures, or "areas of focus," which build the foundation of the empirical research undertaken.

### **Private Equity's Operational Improvement Measures**

|                               |  |                                      |
|-------------------------------|--|--------------------------------------|
| Major Acquisition Integration | Minor Acquisition Integration                  | Factory Closure / Relocation         |
| Change Manufacturing Process  | Lean Manufacturing                             | Waste Reduction / Right First Time   |
| Energy Use Reduction          | Offshoring / Inshoring / Outsourcing           | SG&A Overhead Reduction              |
| Supply Chain Optimization     | Purchasing Cost Reduction                      | Working Capital Optimization         |
| Pricing                       | Channel Strategy / Optimization                | Sales Force Effectiveness            |
| Marketing Strategy            | Customer First Culture Change                  | Distribution/ Logistics Optimization |
| IT Systems Upgrade            | Property Sale / Opco - Propco                  | Pensions, Insurance, Tax             |
| Financial Reporting And MIS   | Product Line / SKU Rationalization / Reduction |                                      |

*Table 1: A compiled comprehensive list of the most commonly undertaken operational value creating improvement measures as the areas upon which operationally inclined PE funds focus their interventionist efforts. Comprehensive definitions of the list of improvement measures are found in Appendix A*

The last global financial crisis taught PE a great deal leading to expanding operating capabilities, with PE funds now employing “30% more operating partners than they had just five years ago” (Wollaston and Witte 2020, 2). PE consultancy theories propose operationally inclined PE funds to be better prepared to respond to economic dislocation or full recessions than other PE funds given their depth of operational and sector expertise (Wollaston and Witte 2020, 11, Connolly et al. 2020, Bain 2020, Achleitner and Eisenhut 2019). The current timing

of a global pandemic induced recession makes for interesting timely research on the true prevalence and attributed importance of these operational measures in economic downturns.

Thus far, no pervasive theories nor models have been developed to test and gauge an all-encompassing list of operationally implemented value creation measures. Given the deal dependent nature of PE, with deals of grave individual differences of investment style, region, size, industry, and sector, this study's empirical research remains quite theoretical. It does not attempt to evaluate these operational measures on precise counts of implementation occurrence nor exact attributed return values, which I believe would be nearly impossible to effectively quantify. To add value academically and create some degree of transparency for the PE industry, this research simply attempts to shed light on how operational experts are thinking and perceptually gauging at which frequency these improvement measures are employed, gauging the divergence of relative prioritization of these measures in contrasting economic conditions.

Without making specific assumptions on the importance of individual improvement measures, a focus on *revenue generating* strategies is expected in normal economic conditions and *cash preserving* strategies in recessionary conditions, as reiterated in hypothesis 2.

## **Literature Review**

Having presented the conceptual and theoretical frameworks that guide this research, the following literature review aims to provide an overview of the prior academic and industry lead research in this space. Ample literature and industry reports have been published, with the majority investigating PE performance and its measurement. This basis of literature and the research questions provide a foundation on which to develop the hypotheses. The most prominent topics researched are PE performance, performance consistency, the factors driving PE returns, and performance assessment methods as laid out by Gohi and Vyas's literature overview (2016). As a large portion of this existing literature does not pertain to this work's

scope, individual nuances pertaining to this research direction are picked out and detailed further.

Notable work that covers general literature in PE includes (Kaplan and Strömberg 2008) providing a general overview of what PE is and how it functions and investigates the economics of PE and its transactions. Metrick and Yasuda (2011) study what PE managers undertake with their portfolio companies, however, focusing on the importance of private ownership, information asymmetry, the use of debt, compensation incentivization, and comparisons to non-PE backed companies. More recent work by Kaplan and Sensoy (2015) focuses on PE Performance, from average returns to risk adjustments, cyclicalities, and the links between management contracts and fund returns.

### **Private Equity Performance Comparison**

PE performance literature generally concerns itself with the comparison between PE funds and public markets, such as the work of Vissing-Jorgensen and Moskowitz (2002). Further research covers cash flow analysis, returns and risk characteristics of PE, studied by Ljungqvist and Richardson (2003), as well as PE qualities such as fund duration and size of investments that drive variations of PE returns, finding that small investments outperform large ones (Lopez-de-Silanes, Phalippou, and Gottschalg 2015, Vester 2011). Furthermore, Guo, Hotchkiss, and Song (2011) quantify the value creation of LBOs from 2005, nevertheless, documenting only minimal cashflow gains from increased operating efficiency as pertaining to the focus of this research direction, which they, however, attribute to increased tax shields, and management discipline due to the presence of debt and better management incentives among other elements.

The more recent history of PE has seen a growing presence and attributed value of operational teams within PE and so, operationally inclined PE funds, with larger firms progressively expanding in-house operational expertise (Achleitner and Eisenhut 2019, Mullin

and Panas 2014, Klier, Welge, and Harrigan 2009, Phillips and Vatsal 2018, Kaplan and Sensoy 2015, Alvarez and Jenkins 2007, Grufman and Cotzias, n.d., Vester 2011).

### **Persistence of Private Equity Fund Performance**

The persistence of PE performance encompasses another body of literature rigorously investigating fund manager abilities to perform consistently. In an overview of the literature, Gohil, and Vyas summarize that the evidence of performance persistence is quite mixed despite the majority of work finding some notions of persistence (2016). The only literature with pertaining relevance to this research is the work of (Kaplan and Schoar 2005), who attribute their performance persistence findings to the *skill and quality* of GPs, which this work considers in the form of operational competence.

### **Operational Private Equity vs. Traditional Private Equity**

The first two research questions are inspired by the industry-wide increase in operating partners as GPs differentiate themselves toward more operational competencies (Wollaston and Witte 2020, Alvarez and Jenkins 2007, Grufman and Cotzias, n.d.). Coupled with the general notion recognizing the importance of the operational components and competencies in PE, this research grapples with the idea that an element of such *skill and quality* of a GP alluded to in the literature has increasing components of operational expertise and their subsequent effect on portfolio company value and thus, fund performance. This sets the exploratory foundation for developing the first hypothesis:

***Hypothesis 1:** PE funds with GPs of operational competence or dedicated operational value creation teams consistently outperform non-interventionist traditional PE funds in all economic conditions*

To measure the performance comparison, the distinction of operational PE funds to traditional PE funds is made, and historical performance data on average net IRR values collected from Preqin is used, subsequent to a collaborative effort to refine the subset of

operational inclined PE funds. A McKinsey article (Connolly et al. 2020), which initially inspired this research, explores this particular performance comparison with a more limited subset of identified GPs with specialist operational value creation teams and Preqin performance data, concluding that GPs with such teams score a higher average net IRR (+5%) during recession years than funds without *portfolio value-creation teams* (Connolly et al. 2020).

### **Methods of Measuring Private Equity Performance**

The literature on the methods of measuring returns does not generally apply here as this research only makes a standardized, average net IRR comparison between operational PE funds and traditional PE funds. Furthermore, different researched methods of returns measurement, such as a risk and return methodology specific to PE funds, proposed by Driessen, Lin, and Phalippou (2012), remain at high-level PE returns measurement and not the measurement or estimation of risk and return of granular improvement measures. These improvement measures are extremely challenging to gather data on and assess given the highly deal-dependent nature of the industry and the challenge of assigning risk vs. return to the individual measures.

### **Factors Driving Private Equity Returns**

Gohil and Vyas summarize notable literary work on the central factors driving PE returns, which include: macroeconomic factors, such as market cycles, GDP growth, interest rates and bond yields by (Phalippou and Zollo 2006); fund size, fee structures, and information asymmetry by (Marquez, Nanda, and Yavuz 2010); investment strategy and investor sophistication by (Lerner, Schoar, and Wongsunwai 2007); and effects of public market movement by (Gompers et al. 2008). Despite the significance of the mentioned research, they do not directly apply to this research as they do not cover the *interventionist* improvement measures undertaken *during* the holding periods of investments. More pertinent research by Diller and Kaserer (2004) and Aigner et al. (2008) explores the relationship between GP skill

and experience as a precursor to fund performance, similar to the performance persistence research by Kaplan and Schoar (2005) previously mentioned. Irrespective of the research mentioned here, Gohil and Vyas conclude in their literary overview that there is yet strong evidence to be provided to confidently validate “whether superior returns are actually due to GP Skill or otherwise” (2016).

### **Operational Value Creation**

Narrowing in on this research's central scope, Oldroyd (2016), who proposed the comprehensive list of operational improvement measures, highlights the paradox in the consensus around the value attributed to operational improvement. Although simply understood as "process[es] of making a business run more effectively" (Oldroyd 2016), the specifics of these improvements are rarely dissected in detail. As a result, literature pertaining to the detailed elements of operational value creation in PE is sparse. Consequently, there is a gap left in the academic literature on the detailed nuances of operational value creation, upon which this research attempts to simply provide more transparency. Vester (2011), with Ernst & Young (EY), provides the most relevant academic research, evaluating 176 of the largest North American (NA) PE exits—with complete deal information—to determine how and where the value was created. (Vester 2011)

They found that “more than one-half of total value creation in NA PE exits was due to strategic and operational improvements (S&O) in the business” (Vester 2011, 9), with top and second quartile deals having the largest fractions of S&O improvement (two-thirds) and solely financial engineering value creation levers to only secure third quartile value creation performance (Vester 2011, 10). They found that EBITDA growth accounts for more than half of S&O value creation, making it the single largest PE value creation lever (Vester 2011, 10)

Mullin and Panas (2014), for McKinsey & Company, investigate the “black box” that is PE operations, clustering operational strategies under "revenue building, cost reduction, and other

initiatives." Their 30 surveyed PE funds (fewer than this research) placed importance on the revenue building components of sales growth and pricing improvements by anticipated company effort and capability building in *other initiatives* (Mullin and Panas 2014).

Vester (2011) further categorizes the "value growth outperformance components" under: *investment strategy, buying, improving, and selling*, of which only "Improving" pertains to this work. However, amongst value creation strategies as the investment theses, they found that "improving the core business" performed the best scoring "13% more value creation growth than the collective average (Vester 2011, 12). This encompasses a focus on cash, CAPEX management, EBITDA expansion for growth, and cost-cutting (Vester 2011, 12). Nevertheless, the "improving" subset of *value growth components* relates most closely to this research, of which "comprehensive business improvement" therein performs best (Vester 2011, 16). The individual improvement measures presented in the theoretical framework should not be studied in isolation but as components of more all-encompassing deal-by-deal value creation plans (Vester 2011). Matthews, Bye, and Howland (2009), with Morgan Stanley, caution with regards to business improvement areas that it is important to "sort through a sometimes-overwhelming number of potential opportunities. Oldroyd (2016), who proposed the matrix of measures, says PEs, selective as they are, concentrate on three or four measures with any given portfolio company at one time. Attempting more typically overexerts management capacity and returns poor outcomes (Oldroyd 2016).

Vester further dissects the EBITDA growth portion of value creation in his study, finding that 3/4 can be attributed to revenue increasing strategies and only 1/4 to cost reductions (Vester 2011, 10). On a weighted basis, the combined program of cost-reducing and revenue growth improvements performs best (+7% above average value creation) (Vester 2011). Revenue growth performs on par with average value creation, and solely cost-cutting underperforms (Vester 2011). Conversely, a study of operational value creation in Scandinavian PE exits by

Møller and Sørensen (2019) concludes that EBITDA growth outpaces sales growth, insinuating a strong focus on cost structure.

Hypothesis 2 is developed in the hopes of providing added clarity on the generalized selection and, thus, prioritization of individual operational improvement measures from Table 1 by PE's operating professionals and gauges the tendencies toward revenue generating vs. cash preserving strategies in differing economic conditions. Much like PE funds rank the potential operational improvements per deal (Matthews, Bye, and Howland 2009), this research asks that of respondents in a very theoretical and generalized context and thus, hypothesizes:

***Hypothesis 2:** Operational PE experts predominately prioritize revenue generating measures in normal economic conditions, and conversely, cash preserving (cost-reducing) measures in recessionary conditions*

The final portion of this research does not attempt to gauge real performance metrics based on the expert evaluations of the improvement measures, but the *perceived* potential money multiple uplift, complexity, delivery risk, and senior time commitment associated with each. Operational improvement measures used to be ranked simply by the amount of required capital investment, however, this is no longer a sufficient approach (Matthews, Bye, and Howland 2009). Such an approach neglects the less tangible senior management time and commitment, the complexity of the improvement measure, and delivery risk. Oldroyd (2016) also proposes these components of evaluation in his matrix of operational improvement measures. Hypothesis 3 is derived from the intent to cluster the improvement measures based on the previously mentioned evaluation criteria. General clusters expected are *quick wins* (low effort and thus also low value), and *larger plays* (high effort and commitment and high potential value), and a general undetermined middle ground clustering. Hypothesis 3 is as follows:

***Hypothesis 3:** PE Operational experts will aim for improving working capital and focus on quick wins in recessionary conditions.*



In conclusion of the literature reviewed, it is clear that minimal research pertains precisely to this empirical research. Therefore, this work aims to shed light on that gap in the literature by simply providing greater transparency on the way current operational experts in PE are thinking and how they perceive that operational value creation strategies have been employed in normal economic conditions and those that will be employed in recessionary conditions now and looking forwards. Perhaps this work can add value in aiding PE funds with the desired increase in *standardization* of an *operational playbook*, as mentioned by Wollaston and Witte (2020) for EY and Matthews, Bye, and Howland (2009) with Morgan Stanley.

## **Methodology**

Guided by the research questions and hypotheses, this exploratory empirical research design has two main components. The first being a data-driven historical performance analysis and subsequent comparison between the identified subset of operationally inclined PE funds and traditional PE funds—as described in delimitations and conceptual framework sections—with the help of Preqin data and the collaborative effort of operational fund identification. The second, a structured digital survey asking operational PE experts—based on professional opinion—to select, rank, and evaluate operational improvement measures in normal and recessionary economic conditions.

To begin, using trial access to sources such as Mergr and Private Equity International, a list of global PE funds was compiled manually. Using profile descriptions and the presence of operating partners—detailed in the delimitation and conceptual framework sections—certain funds were classified as operationally inclined, which would be compared to all others on an average net IRR performance basis. My list was conjoined with that of Preqin's, which McKinsey used for their research (Connolly et al. 2020) that inspired this work. This list of operational PE funds also served as the list of operational experts to survey for the latter portion

of this research (42 respondents). A Preqin data pull on the final list of operational PE funds, and the rest of the PE industry drew a basis for performance comparison.

The majority of this work concerned itself with the latter portion of this research design. Using the matrix of operational improvement measures proposed by Oldroyd (2016) and the evaluation criteria also proposed in the same article, a digitalized logic branching survey was designed using the Qualtrics *experience management* survey platform. A digital online survey design mitigates respondents' global distribution and the extremely limited time these operational PE experts have. The survey was structured in two intentionally sequential blocks asking first considering normal economic conditions with a perspective on the past and, secondly, the context of recessionary conditions such as now (2020) looking forwards. The conscious decision to *not* randomize the blocks of normal and recessionary contexts was made in order to set an initial baseline of results in which respondents consider the past *normal economic conditions* first, and thereafter, consider how, in the new context of a recession, their opinions of perceived prioritization of improvement measures may adapt. The sample of respondents stems from the list of operationally inclined PE funds, which predominately included experts of operating roles like operating partners or managing directors of said operationally inclined PE funds. It is assumed that they are the most suited to provide professional opinions on the matters of operational improvement measures undertaken with their portfolio companies.

Relatable research was done by Mullin and Panas (2014) with McKinsey & Company, although, with fewer respondents and less globally representative, using the same question design asking based on the anticipated use, or in their case, company effort attributed to select measures. Respondents were asked to select five of 23 improvement measures, which they believe were most frequently implemented until the end of 2019 prior to the Covid-19 induced pandemic and subsequent recessionary conditions. A logic branching survey design enabled

carrying respondents' selections into the following evaluation questions. Then they ranked the five selected from first to last, again in terms of frequency of implementation. They were then asked to evaluate the selected measures on potential money multiple uplift, complexity, delivery risk, senior executive time commitment, and public perception. As mentioned, the second half of the survey asked the same questions; however, in the context of recessionary conditions and how these operational experts will then select, rank, and evaluate improvement measures in the current economic conditions (2020) and looking forward two years. The research design intends to gauge three main elements: the prioritization of these improvement measures, the divergence of prioritization between normal and recessionary conditions, and the clustering of improvement measures based on the evaluation criteria mentioned.

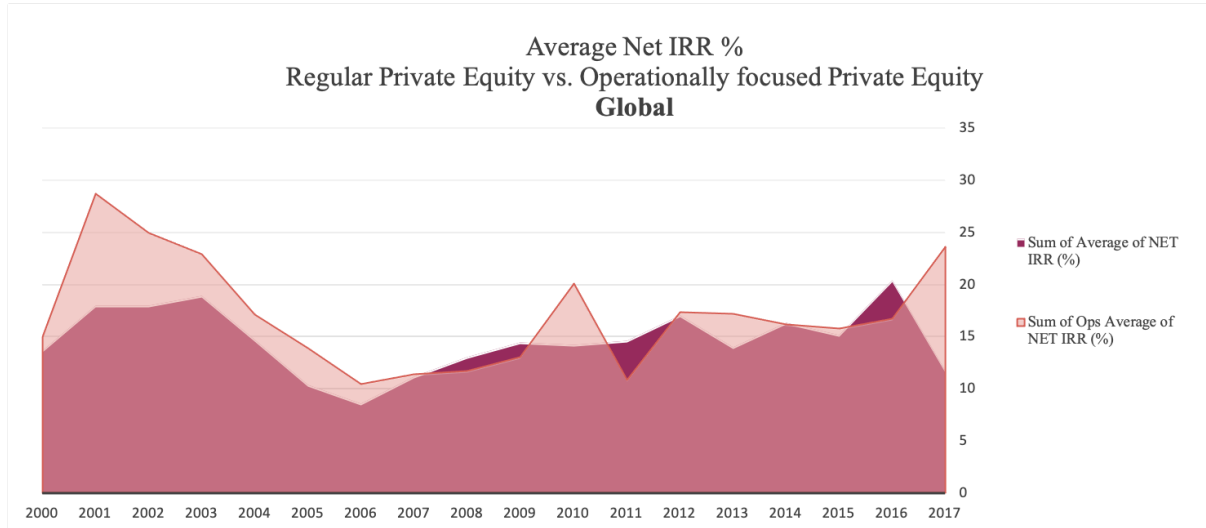
The pervasive limitations of this research lie predominantly in the deal dependent nature of the PE practice. These range from the individuality of deals, industries, industry compositions, sectors, deal sizes, and investment rationales going into deals, such as clear Buy and Build strategies, for example. In addition, surveyed operational experts' experience or lack of experience with the current fund they are with may skew results based on improvement measures employed with only a small sample of past deals. Ultimately, this empirical research design remains quite theoretical and simply aims to provide transparency on how operational PE experts are thinking with regards to prioritizing operational improvement measures and how they perceive the associated value, complexity, and risk of these individual measures.

## **Results**

Proprietary historical performance data considers the years 2000 until 2017—the most recently available Preqin PE performance data—comparing the operational inclined PE funds to traditional PE funds, with said distinction already described in the conceptual framework section. Much like the data collected through the empirical research survey, the Preqin data

split considers Global PE performance data as seen in Figure 1 below, and a North American split and a European split as seen in Appendix B & C.

### Operational PE vs. Traditional PE Historical Performance Comparison



*Figure 1: The graphic depicts the yearly average NET IRR performance comparison between Operational PE funds (Ops) and Traditional PE funds using a collaborative effort in PE fund type distinction with Preqin and resulting proprietary Preqin performance data.*

As seen in Figure 1 and Appendix D, the data clearly shows that while the general market was still suffering at the beginning of the 2000s, coming off the burst of the dot-com bubble and the 9/11 recession, operational PE funds (Ops Average) outperform traditional PE funds (Average). In the considered timeframe, NA operational PE funds outperform in 14 of the 18 years with a total average of plus 2.67 net IRR percentage point (pp) difference and 12 years in the EU with a staggering total average of plus 6.56 pp difference to traditional PE. Globally, operational PE outperforms by an average of 3.89 pp from 2000 until the onset of the GFC in 2007. This specific operational PE performance difference until the onset of the GFC is more pronounced in NA and the EU with average net IRR pp differences of 5.38 and 7.79, respectively. In the years of the GFC (2007 – 2009), the data finds a performance reversal, with traditional PEs performing better, and even more pronounced in the EU, with traditional PE funds performing better by an average of 2.72 pp in those years. However, immediately after the GFC, a larger performance gap is seen with global operational PEs outperforming by 5.85

pp, and again, more pronounced in both NA and EU, with operational PEs outperforming by 7.17 and 10.59 pp, respectively. The years since the GFC and until 2017 saw relatively interchangeable years of outperformance between traditional PEs and operational PEs. Globally, operational PEs just barely outperformed in the years after the GFC until the end of 2017, averaging out at 1.77 pp better, whereas in NA only by an average of 0.58 pp, however, in the EU by 7.70 percentage points, although, predominately due to an extremely high-performing outlier year in 2017 for operational PEs in the EU.

### Prioritization of Operational Improvement Measures

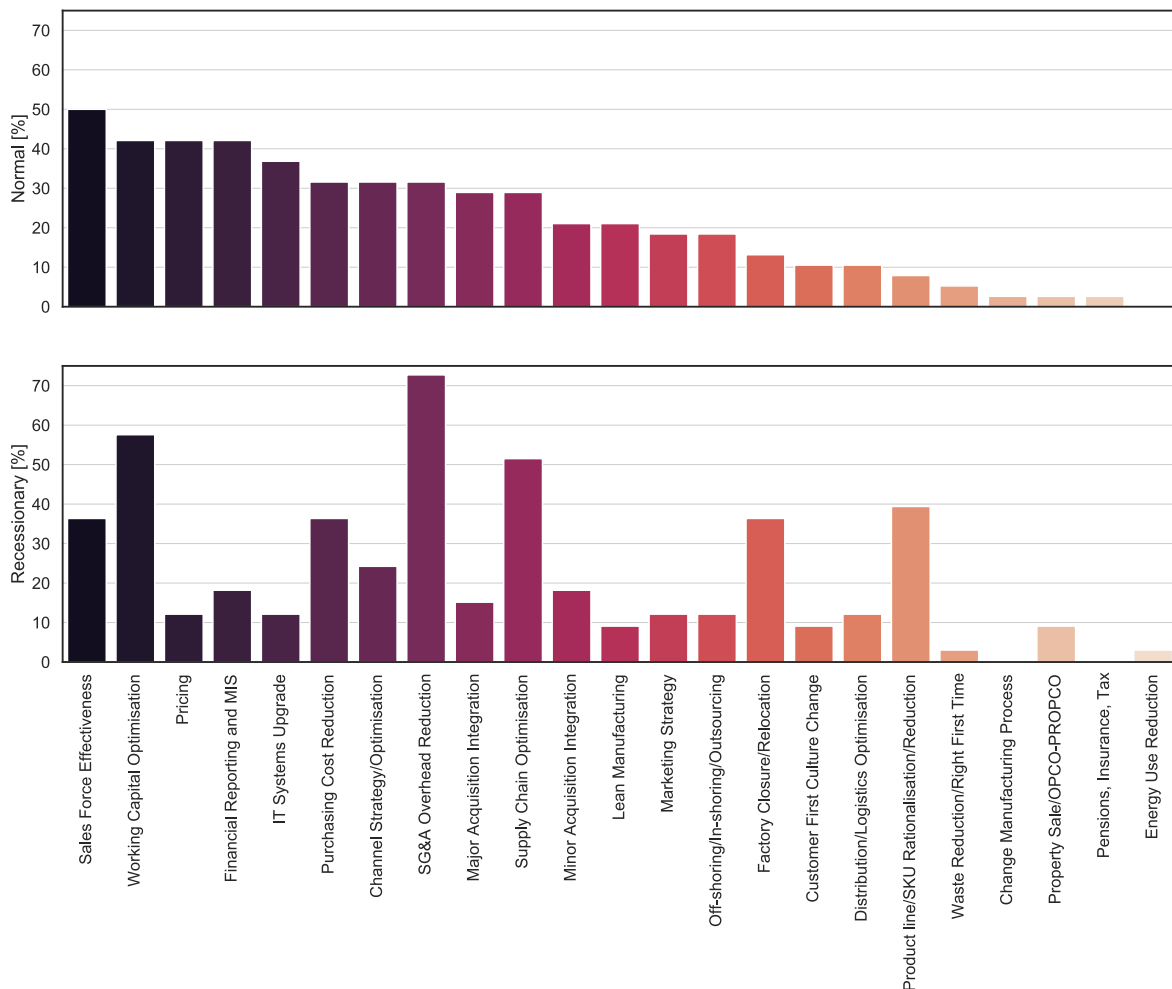


Figure 2: This histogram depicts the relative generalized prioritization of operational improvement measures based on the percentage of operational PE experts selecting them to the top 5 most frequently employed in contrasting economic conditions – normal up until December 2019 and recessionary January 2020 and for the next two years.

The empirical research surveying operational PE experts (42 respondents) provides a relative prioritization of operational improvement measures comparing their generalized importance in contrasting economic conditions, shown in Figure 2 above. In normal conditions, 50% of respondents select Sales Force Effectiveness to the top 5 most frequently employed in years prior and up until December 2019. Working Capital Optimisation, Pricing, and Financial Reporting and MIS are mentioned by more than 42% of respondents, although, Financial Reporting ranking better than Pricing within respondents' top 5 selections. IT Systems Upgrade rounds out to the top 5 with 37% mentions. The lower histogram in Figure 2 shows the divergence of improvement measures prioritization in recessionary conditions. Here the focus shift is readily apparent with SG&A Overhead Reduction claiming the top spot as selected by more than 70% of respondents and nearly always ranked 1<sup>st</sup> in respondents' top 5 selection. Working Capital Optimisation remains in second; however, increases in collective mentions and ranks better than in normal conditions. Supply Chain Optimisation moves into the top 5, selected by more than 50%, and Product Line/SKU Rationalisation/Reduction with nearly 40% mentions, which moved the farthest, having ranked 18<sup>th</sup> in normal conditions. Purchasing Cost Reduction, Factory Closure/Reduction, and Sales Force Effectiveness all tie for 5<sup>th</sup>, with rankings also placing them in that order. Factory Closure makes up the most places from its 15<sup>th</sup> ranking in normal conditions. 60% of the top ten strategies in normal economic conditions classify as *revenue generating* improvement measures, whereas recessionary conditions find 70% of the top ten strategies to be *cash preserving measures*.

## Evaluation and Cluster Analysis of Improvement Measures

Operational PE experts evaluated the improvement measures on metrics of *Potential Money Multiple Uplift* ( $0.1x - 2.0x+$ ), *Complexity* ( $1 - 5$ ), *Delivery Risk* ( $1 - 5$ ), *Senior Time Commitment* ( $1 - 5$ ), and *Publicity* ( $-5 - +5$ ). Figure 3 below depicts the graphical scatter plot of the improvement measures, with the bubble size and shading representing the relative ranking in terms of times selected, presented by Figure 2, also reflecting the differences between normal and recessionary conditions. Appendix F further highlights the empirical survey result values and means supporting the scatter plot analyses.

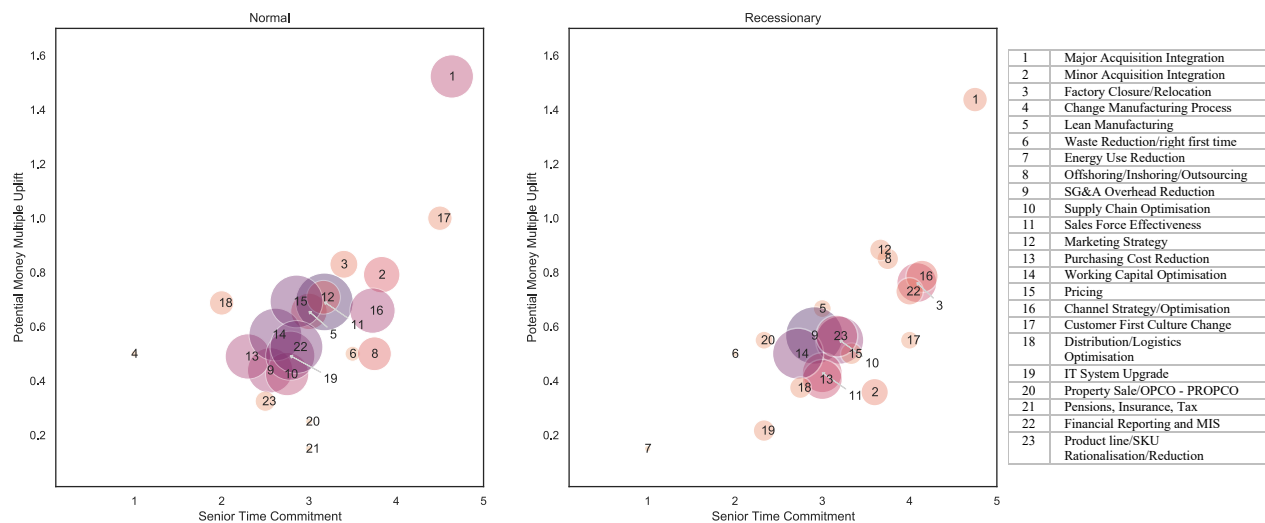


Figure 3: A graphical bubble scatter plot depicting the improvement measures evaluation relationship between Potential Money Multiple Uplift and Senior Time Commitment.

Clear differentiation between *quick wins* and *larger plays* is challenging to make with the given results. No clear linear relationship between *potential value* to *effort* can be deduced as proposed by Matthews, Bye, and Howland (2009). As one may expect, recessionary conditions marginally increase the mean of all measures except for *potential money multiple uplift*, which decreases slightly. Purchasing Cost Reduction, Pricing, and Working Capital Optimisation offer a relatively linear relationship on the front edge of potential value and senior time commitment required in normal conditions. Recessionary conditions tighten the cluster of prioritized measures around 3 out of 5 for *senior time commitment* and nearly  $0.6x$  in *potential money multiple uplift*. In recessionary conditions, both Working Capital Optimisation and

SG&A Overhead Reduction provide sizable positions of *potential money multiple uplift* and lesser *senior time commitment* than other commonly employed measures based on their ranking (bubble size). Standard deviations of the mean results of the individual measures comparing normal and recessionary conditions are not worth any particular notable mention. Further cluster analyses comparing relationships between the metrics as mentioned above are shown in Appendices G – K. The Publicity evaluation metric was not considered further for scatter plot analysis.

## **Discussion & Conclusion**

Again, it is paramount to stress the limitations of this empirical research given the deal dependent nature of PE and the research design based on professional opinions and experience gauging the prioritization and evaluation of said measures, which are inherently challenging to quantify.

The historical performance comparison between operational PE and traditional PE does show that operational PE outperforms on average. In line with differing market conditions since 2000, operational PE has proved to fare better in nearly all conditions. The comparative performance data does generally support hypothesis 1. The only notable mention for traditional PE is its outperformance in the lowest periods of market returns, such as in 2008 during the GFC. One may argue that operationally inclined PEs are more susceptible to heavy downward market movements; however, it appears to be stand-alone years that traditional PE outperforms. The tumultuous years since the GFC until 2017 also show less consistent outperformance by operational PE, however, still coming out on top over traditional PE. Interesting will be how LPs progressively commit their capital, which McKinsey already strongly indicated in their 2020 report considering PE in downturns. Given the findings here, and presuming LPs have access to similar data, the anticipation of LPs increasingly continuing to commit to operational



PE would be supported. Interesting will be future performance data of this sort investigating the post-Covid-19 environment.

A comparable research effort from McKinsey & Company (Mullin and Panas 2014), investigating operational improvement measures, finds a similar leading focus on Sales and Pricing in normal conditions, ranked 2<sup>nd</sup> in their study and 3<sup>rd</sup> in this study. This research design takes a similar form to that of McKinsey's, however, with more respondents and additional effort in specifically surveying operational experts in PE. This research also adds the comparative perspective of normal and recessionary conditions regarding these improvement measures (Figure 2), which no other study does thus far. Clear support of hypothesis 2 is found in the improvement measures ranking portrayed by Figure 2, validating that focus shifts heavily from *revenue generating* measures in normal conditions (60% of top 10 measures) toward *cash preserving* measures in recessionary conditions (70% of top 10 measures), also portrayed and labeled in Appendix E.

Hypothesis 3 is only in part supported, as respondents confirm the heavier importance of Working Capital Optimisation in recessionary times, with more respondents selecting it, and of those, more ranking it higher in their top 5 selection. Although, Working Capital Optimization is deemed a *revenue generating* strategy in normal conditions to foster future growth, in recessionary conditions it is more of a *cash preserving* strategy, providing a liquidity buffer for tough economic times, also noted in the footnote of Appendix E. As alluded to in the results, a clear clustering of *quick wins* (low effort/low-value strategies) or *larger plays* (high value/high effort strategies) is not very conclusive. In recessionary conditions, portrayed in the right scatter plot of Figure 3, and those in Appendices G – K, a differentiated clustering is less apparent as improvement measures of worthy mention consolidate around relatively similar *potential money multiple uplift* and *senior time commitment*. The data provides no clear indication favoring *quick wins* in recessionary conditions, nor the opposite. Generally, the

cluster analyses crossing the different evaluation metrics simply emphasizes the value of SG&A Overhead Reduction, Purchasing Cost Reduction, Financial Reporting, and Working Capital Optimisation with their relatively lower general *complexity, delivery—implementation—risk, and senior time commitment*, while delivering solid *potential money multiple uplift* in contrast to other often-mentioned improvement measures. These are visualized in Figure 3 and Appendices G – K and numbering legend Appendix L.

The results of this research further validate the presence and importance of operational value creation competencies in PE and provide a generalized improvement measure ranking in differing economic conditions and high-level PE internal evaluation in terms of value, effort, complexity, and risk.

### **Directions for future research and academic contribution**

This empirical research on the growing operational presence and competencies in wider PE attempts to provide transparency on several topics, and thus, offering an academic contribution to the existing gap in the literature detailing the operational improvement measures and subsequent insight for PE industry players interested in the significance of operational expertise in differing economic conditions. Perhaps the proposed findings can offer a theoretical benchmark toward which other operationally inclined PE funds can compare the use and prioritization of their operational value creation improvement measures.

Future research could greatly benefit from more recent PE fund performance data and thus, further expand on the operational PE vs. traditional PE dissection and comparison. Further research could expand on LP commitment tendencies between these fund types. A strong shift in LP tendencies may very well sway how PE funds position themselves competence wise for future fundraising and thus, adapt in-house competencies. It will be very interesting to gauge the years following the current Covid-19 induced economic environment and investigate how both operational and traditional PE funds compare performance-wise.

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## Appendixes

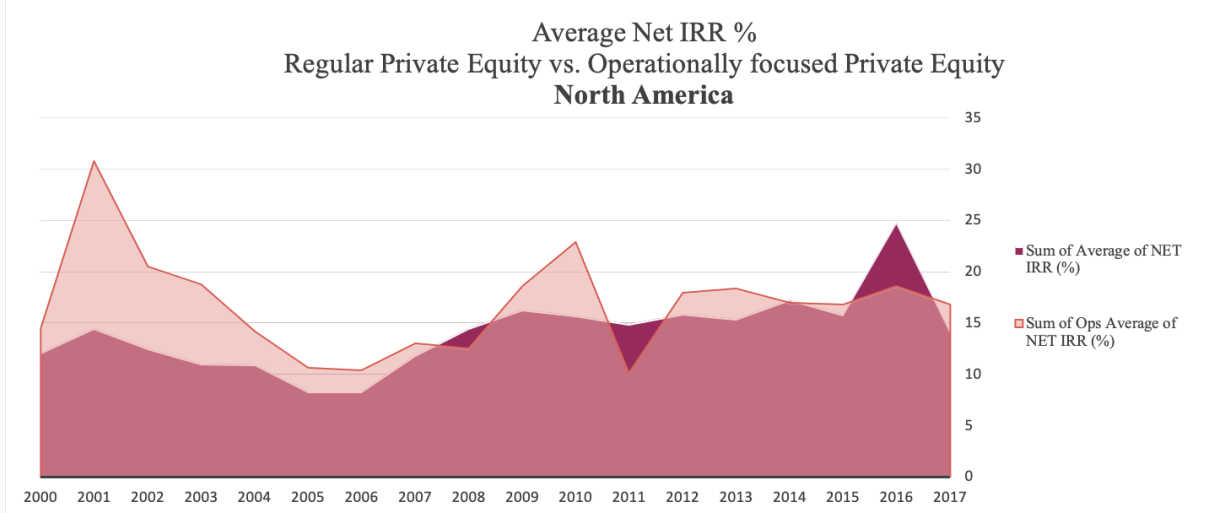
### Appendix A

#### Operational Improvement Measure Descriptions and Labelling

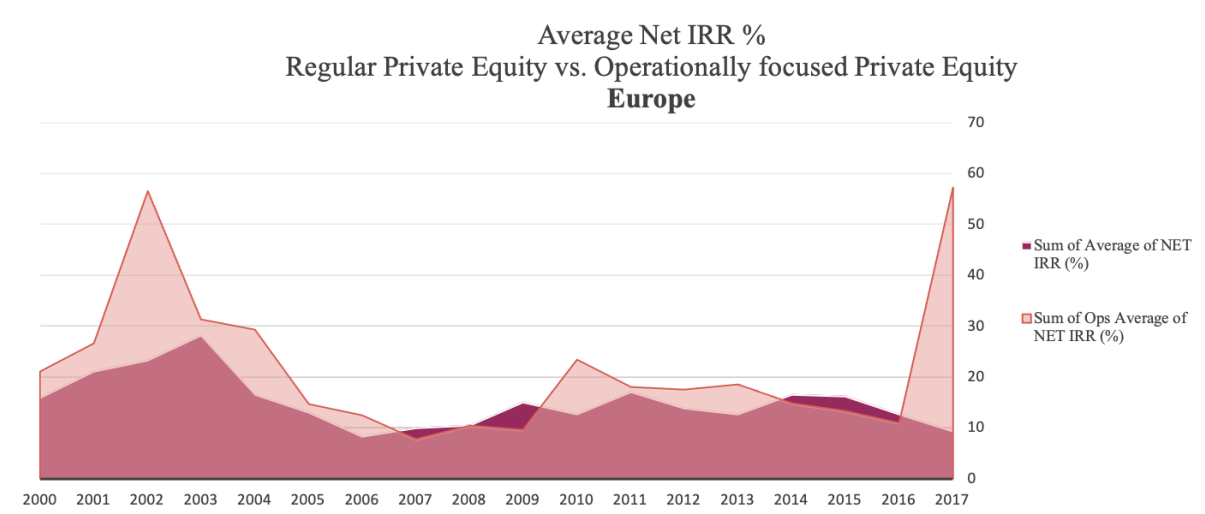
| Improvement Measures                       | Short Descriptions   | Revenue Growth vs. Cash Preserving   |
|--|--|--|
| Major Acquisition Integration              | Large scale acquisition and integration with portfolio company to acquire market share, talent, IP, infrastructure etc   | Revenue Growth   |
| Minor Acquisition Integration              | Smaller caliber acquisition typically in a more fragmented market and often part of a buy and build strategy   | Revenue Growth   |
| Factory closure/relocation                 | Freeing up capital via either heavily reducing fixed infrastructure or strategically relocating necessary infrastructure to reduce distribution distances                                      | Cash Preserving  |
| Change manufacturing process               | Large scale revamping of manufacturing process to drive down costs, modernize and automate more processes, strive for six sigma and retain manufacturing flexibility                           | Cash Preserving  |
| Lean Manufacturing                         | Trimming down a typically infrastructure heavy often outdated manufacturing process that reacts slow to changes in demand and innovation readiness   | Cash Preserving  |
| Waste reduction/right first time           | Improving the development, speed to market with products and reduce prototyping stages necessary to reduce wasted capital via material, time and manufacturing                                 | Cash Preserving  |
| Energy use reduction                       | Strategies and technologies to reduce general energy use consumption in development, processes, transportation, and manufacturing processes  | Cash Preserving  |
| Offshoring/Inshoring/Outsourcing           | Strategic relocation of select activities and business processes to either cheaper locations elsewhere or closer proximity for reduced distances and select skills                             | Cash Preserving  |
| SG&A overhead reduction                    | Freeing up capital by proactively reevaluating the composition of overhead costs attributed to Selling, General & Administrative functions   | Cash Preserving  |
| Supply chain optimisation                  | The collective optimisation of inventory, distribution, manufacturing and transportation to ultimately minimize operating expenses   | Cash Preserving  |
| Sales Force Effectiveness                  | Programs, processes, initiatives and strategies to improve sales results to directly drive revenue growth and boost EBITDA growth  | Revenue Growth   |
| Marketing Strategy                         | Revamping marketing strategies to target new customers/clients, retarget, generate or initiate recurring sales to drive EBITDA growth  | Revenue Growth   |
| Purchasing cost reduction                  | General strategic reduction in procurement and other purchasing costs such as via supplier bidding and reevaluating purchasing cost focus and supplier relationships                           | Cash Preserving  |
| Working capital optimisation               | Optimising the effective use of financial resources and stable cash flows to either reinvest or free up cash for increased liquidity   | *Revenue Growth in Normal Conditions<br>*Cash Preserving in Recession Conditions |
| Pricing                                    | Conscious pricing improvements that enable relatively rapid margin expansion   | Revenue Growth   |
| Channel strategy/optimisation              | Often in conjunction with marketing, the channel(s) in which customers/clients are reached and through which sales are made and revenue is driven  | Revenue Growth   |
| Customer first culture change              | Better customer experience drives more revenues thus, shift toward more customer centric culture improves sales, engagement and recurring revenues   | Revenue Growth   |
| Distribution/logistics optimisation        | Often technological, data, and modelling driven optimisation of distribution and logistics to cut costs and save time  | Cash Preserving  |
| IT System upgrade                          | Upgrading general IT infrastructure for business processes, data management, security, accounts management etc.  | Revenue Growth   |
| Property sale/opco-propco                  | Cash earning through property sale or division of operating company and property plus assets owning company allowing financing issues to remain separate and reap certain holding tax benefits | Revenue Growth   |
| Pensions, insurance, tax                   | Cash saving via strategic tax, pension and insurance planning and practices  | Cash Preserving  |
| Financial reporting and MIS                | Financial and Management Information Systems reports help keep oversight of the financial health of the portfolio company  | Cash Preserving  |
| Product line/SKU rationalisation/reduction | Reevaluating some or all product lines to potentially rationalize and reduce breadth to core lines that truly contribute most to current and future sales and growth                           | Cash Preserving  |



### Appendix B North American Fund Type Performance Comparison



### Appendix C European Fund Type Performance Comparison



## Appendix D

### Operational PE vs. Traditional PE Historical Performance Comparison Data

| Global Operational PE vs. Traditional PE Returns Comparison |                        |                            |                                     |
|---|------------------------|----------------------------|-------------------------------------|
|   | Average of NET IRR (%) | Ops Average of NET IRR (%) | Difference in PE Returns (% points) |
| 2000  | 13.67                  | 14.99                      | 1.32                                |
| 2001  | 17.93                  | 28.74                      | 10.81                               |
| 2002  | 18.00                  | 24.93                      | 6.94                                |
| 2003  | 18.94                  | 22.94                      | 4.00                                |
| 2004  | 14.65                  | 17.09                      | 2.45                                |
| 2005  | 10.39                  | 13.86                      | 3.47                                |
| 2006  | 8.58                   | 10.48                      | 1.89                                |
| 2007  | 11.13                  | 11.40                      | 0.27                                |
| 2008  | 13.04                  | 11.68                      | -1.36                               |
| 2009  | 14.41                  | 13.01                      | -1.40                               |
| 2010  | 14.25                  | 20.09                      | 5.85                                |
| 2011  | 14.61                  | 10.84                      | -3.77                               |
| 2012  | 17.01                  | 17.33                      | 0.32                                |
| 2013  | 13.99                  | 17.16                      | 3.18                                |
| 2014  | 16.35                  | 16.18                      | -0.17                               |
| 2015  | 15.15                  | 15.75                      | 0.59                                |
| 2016  | 20.42                  | 16.75                      | -3.67                               |
| 2017  | 11.72                  | 23.58                      | 11.86                               |
| <b>Average</b>  | <b>14.68</b>           | <b>17.05</b>               | <b>2.37</b>                         |

#### Years Outperformed

|             |    |
|-------------|----|
| Operational | 13 |
| Traditional | 5  |

| North American Comparison |                        |                            | Difference in PE Returns (% points) |
|---------------------------|------------------------|----------------------------|-------------------------------------|
|                           | Average of NET IRR (%) | Ops Average of NET IRR (%) |                                     |
| 2000                      | 12.14                  | 14.49                      | 2.36                                |
| 2001                      | 14.49                  | 30.75                      | 16.26                               |
| 2002                      | 12.50                  | 20.54                      | 8.04                                |
| 2003                      | 11.01                  | 18.74                      | 7.73                                |
| 2004                      | 10.95                  | 14.15                      | 3.20                                |
| 2005                      | 8.32                   | 10.67                      | 2.35                                |
| 2006                      | 8.34                   | 10.41                      | 2.06                                |
| 2007                      | 11.91                  | 13.04                      | 1.13                                |
| 2008                      | 14.49                  | 12.52                      | -1.96                               |
| 2009                      | 16.34                  | 18.63                      | 2.29                                |
| 2010                      | 15.75                  | 22.92                      | 7.17                                |
| 2011                      | 14.87                  | 10.11                      | -4.77                               |
| 2012                      | 15.91                  | 17.96                      | 2.05                                |
| 2013                      | 15.43                  | 18.38                      | 2.95                                |
| 2014                      | 17.30                  | 16.99                      | -0.31                               |
| 2015                      | 15.84                  | 16.81                      | 0.97                                |
| 2016                      | 24.75                  | 18.59                      | -6.16                               |
| 2017                      | 14.07                  | 16.83                      | 2.76                                |
| <b>Average</b>            | <b>14.13</b>           | <b>16.81</b>               | <b>2.67</b>                         |

#### Years Outperformed

|             |    |
|-------------|----|
| Operational | 14 |
| Traditional | 4  |

| European Comparison |                        |                            | Difference in PE Returns (% points) |
|---------------------|------------------------|----------------------------|-------------------------------------|
|                     | Average of NET IRR (%) | Ops Average of NET IRR (%) |                                     |
| 2000                | 15.95                  | 20.99                      | 5.04                                |
| 2001                | 21.20                  | 26.65                      | 5.45                                |
| 2002                | 23.45                  | 56.50                      | 33.05                               |
| 2003                | 28.35                  | 31.35                      | 3.00                                |
| 2004                | 16.76                  | 29.27                      | 12.50                               |
| 2005                | 13.15                  | 14.59                      | 1.44                                |
| 2006                | 8.36                   | 12.49                      | 4.13                                |
| 2007                | 10.14                  | 7.82                       | -2.32                               |
| 2008                | 10.61                  | 10.39                      | -0.22                               |
| 2009                | 15.17                  | 9.56                       | -5.61                               |
| 2010                | 12.76                  | 23.35                      | 10.59                               |
| 2011                | 17.25                  | 17.95                      | 0.70                                |
| 2012                | 14.02                  | 17.51                      | 3.50                                |
| 2013                | 12.89                  | 18.54                      | 5.65                                |
| 2014                | 16.65                  | 14.77                      | -1.88                               |
| 2015                | 16.32                  | 13.37                      | -2.95                               |
| 2016                | 12.77                  | 11.02                      | -1.75                               |
| 2017                | 9.41                   | 57.16                      | 47.75                               |
| <b>Average</b>      | <b>15.29</b>           | <b>21.85</b>               | <b>6.56</b>                         |

#### Years Outperformed

|             |    |
|-------------|----|
| Operational | 12 |
| Traditional | 6  |

## Appendix E

### Revenue Growth vs. Cash Preserving Improvement Measures in Differing Economic Conditions

#### Normal Economic Conditions

| Ranking (1-10) | Operational Improvement Measures | Revenue Generation vs Cash Preservation |
|----------------|----------------------------------|---|
| 1              | Sales Force Effectiveness        | Cash Preservation                       |
| 2              | Working capital optimisation     | Revenue Generation*                     |
| 3              | Pricing                          | Cash Preservation                       |
| 4              | Financial reporting and MIS      | Cash Preservation                       |
| 5              | IT System upgrade                | Cash Preservation                       |
| 6              | Purchasing cost reduction        | Cash Preservation                       |
| 7              | Channel strategy/optimisation    | Revenue Generation                      |
| 8              | SG&A overhead reduction          | Revenue Generation                      |
| 9              | Major Acquisition Integration    | Cash Preservation                       |
| 10             | Supply chain optimisation        | Revenue Generation                      |

#### Generation vs Preservation count in top 10

|              |   |
|--------------|---|
| Preservation | 4 |
| Generation   | 6 |

#### Top 5

|        |                     |
|--------|---------------------|
| Rank 1 | Revenue Generation  |
| Rank 2 | Revenue Generation* |
| Rank 3 | Revenue Generation  |
| Rank 4 | Cash Preservation   |
| Rank 5 | Revenue Generation  |

#### Recessionary Economic Conditions

| Ranking (1-10) | Operational Improvement Measures           | Revenue Generation vs Cash Preservation |
|----------------|--|---|
| 1              | SG&A overhead reduction                    | Cash Preservation                       |
| 2              | Working capital optimisation               | Cash Preservation*                      |
| 3              | Supply chain optimisation                  | Cash Preservation                       |
| 4              | Product line/SKU rationalisation/reduction | Cash Preservation                       |
| 5              | Purchasing cost reduction                  | Cash Preservation                       |
| 6              | Factory closure/relocation                 | Cash Preservation                       |
| 7              | Sales Force Effectiveness                  | Revenue Generation                      |
| 8              | Channel strategy/optimisation              | Revenue Generation                      |
| 9              | Financial reporting and MIS                | Cash Preservation                       |
| 10             | Major Acquisition Integration              | Revenue Generation                      |

#### Generation vs Preservation count in top 10

|              |   |
|--------------|---|
| Preservation | 7 |
| Generation   | 3 |

#### Top 5

|        |                    |
|--------|--------------------|
| Rank 1 | Cash Preservation  |
| Rank 2 | Cash Preservation* |
| Rank 3 | Cash Preservation  |
| Rank 4 | Cash Preservation  |
| Rank 5 | Cash Preservation  |

\* Argue that Working Capital Optimisation is a *Revenue Generating* strategy in normal economic conditions to free cash flow to fund future growth Whereas it is deemed a *Cash Preserving* strategy in times of economic downturn or recession in order to improve the liquidity buffer in a company

## Appendix F

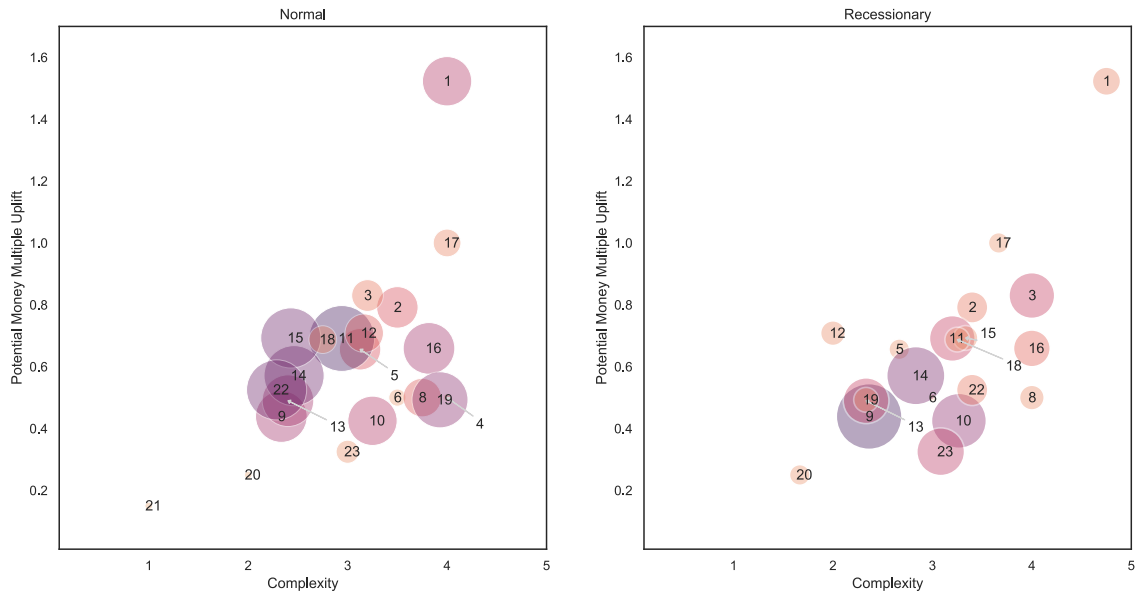
**Mean Values of Evaluation Metrics of Improvement Measures: Normal Economic Conditions**

|  | <b>Complexity</b> | <b>Delivery Risk</b> | <b>Senior Time Commitment</b> | <b>Publicity</b> | <b>Potential Money Multiple Uplift</b> |
|--|-------------------|----------------------|-------------------------------|------------------|--|
| Major Acquisition Integration              | 4.00              | 3.91                 | 4.64                          | 0.91             | 1.52                                   |
| Minor Acquisition Integration              | 3.50              | 3.00                 | 3.83                          | 2.33             | 0.79                                   |
| Factory Closure/Reduction                  | 3.20              | 4.20                 | 3.40                          | 1.40             | 0.83                                   |
| Change Manufacturing Process               | 4.00              | 1.00                 | 1.00                          | 0.00             | 0.50                                   |
| Lean Manufacturing                         | 3.13              | 2.63                 | 3.00                          | 1.25             | 0.66                                   |
| Waste Reduction/Right First Time           | 3.50              | 2.50                 | 3.50                          | 2.50             | 0.50                                   |
| Energy Use Reduction                       | -                 | -                    | -                             | -                | -                                      |
| Off-shoring/In-shoring/Outsourcing         | 3.75              | 3.75                 | 3.75                          | -2.50            | 0.50                                   |
| SG&A Overhead Reduction                    | 2.33              | 1.78                 | 2.56                          | -1.22            | 0.44                                   |
| Supply Chain Optimisation                  | 3.25              | 2.88                 | 2.75                          | 0.63             | 0.43                                   |
| Sales Force Effectiveness                  | 2.94              | 2.47                 | 3.18                          | 0.94             | 0.69                                   |
| Marketing Strategy                         | 3.17              | 2.67                 | 3.17                          | 2.50             | 0.71                                   |
| Purchasing Cost Reduction                  | 2.40              | 2.00                 | 2.30                          | -0.50            | 0.49                                   |
| Working Capital Optimisation               | 2.46              | 2.00                 | 2.62                          | -0.38            | 0.57                                   |
| Pricing                                    | 2.43              | 3.21                 | 2.86                          | -1.14            | 0.69                                   |
| Channel Strategy/Optimisation              | 3.82              | 3.50                 | 3.73                          | 0.91             | 0.66                                   |
| Customer First Culture Change              | 4.00              | 3.25                 | 4.50                          | 3.75             | 1.00                                   |
| Distribution/Logistics Optimisation        | 2.75              | 3.25                 | 2.00                          | 0.00             | 0.69                                   |
| IT Systems Upgrade                         | 3.93              | 3.86                 | 2.79                          | 0.93             | 0.49                                   |
| Property Sale/OPCO-PROPCO                  | 2.00              | 2.00                 | 3.00                          | 0.00             | 0.25                                   |
| Pensions, Insurance, Tax                   | 1.00              | 2.00                 | 3.00                          | -1.00            | 0.15                                   |
| Financial Reporting and MIS                | 2.29              | 1.69                 | 2.86                          | 0.93             | 0.53                                   |
| Product Line/SKU Rationalisation/Reduction | 3.00              | 3.00                 | 2.50                          | 0.00             | 0.33                                   |
| Mean                                       | 3.04              | 2.75                 | 3.04                          | 0.56             | 0.61                                   |
| Std Dev                                    | 0.78              | 0.83                 | 0.80                          | 1.44             | 0.28                                   |

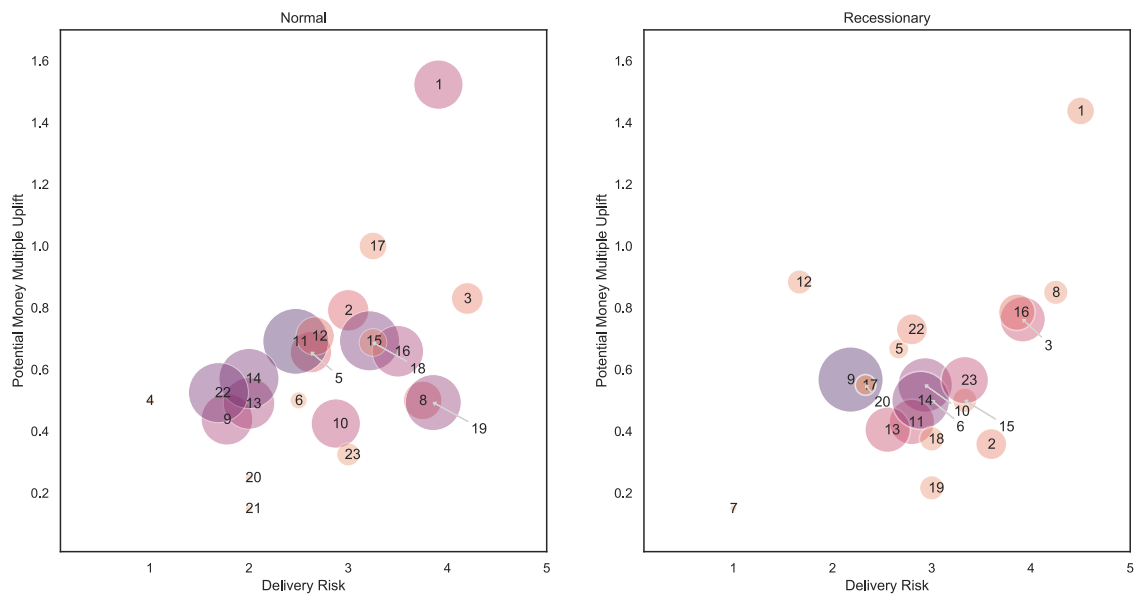
**Mean Values of Evaluation Metrics of Improvement Measures: Recessionary Conditions**

|  | <b>Complexity</b> | <b>Delivery Risk</b> | <b>Senior Time Commitment</b> | <b>Publicity</b> | <b>Potential Money Multiple Uplift</b> |
|--|-------------------|----------------------|-------------------------------|------------------|--|
| Major Acquisition Integration              | 4.75              | 4.50                 | 4.75                          | 1.25             | 1.44                                   |
| Minor Acquisition Integration              | 3.40              | 3.60                 | 3.60                          | 0.80             | 0.36                                   |
| Factory Closure/Reduction                  | 4.00              | 3.92                 | 4.08                          | -3.50            | 0.76                                   |
| Change Manufacturing Process               |                   |                      |                               |                  |  |
| Lean Manufacturing                         | 2.67              | 2.67                 | 3.00                          | 1.00             | 0.67                                   |
| Waste Reduction/Right First Time           | 3.00              | 3.00                 | 2.00                          | 0.00             | 0.50                                   |
| Energy Use Reduction                       | 2.00              | 1.00                 | 1.00                          | 3.00             | 0.15                                   |
| Off-shoring/In-shoring/Outsourcing         | 4.00              | 4.25                 | 3.75                          | -2.33            | 0.85                                   |
| SG&A Overhead Reduction                    | 2.36              | 2.18                 | 2.91                          | -1.59            | 0.57                                   |
| Supply Chain Optimisation                  | 3.27              | 2.93                 | 3.20                          | 0.20             | 0.55                                   |
| Sales Force Effectiveness                  | 3.20              | 2.80                 | 3.00                          | 1.63             | 0.43                                   |
| Marketing Strategy                         | 2.00              | 1.67                 | 3.67                          | 3.00             | 0.88                                   |
| Purchasing Cost Reduction                  | 2.33              | 2.56                 | 3.00                          | -0.44            | 0.41                                   |
| Working Capital Optimisation               | 2.83              | 2.89                 | 2.72                          | -0.33            | 0.50                                   |
| Pricing                                    | 3.33              | 3.33                 | 3.33                          | -2.00            | 0.50                                   |
| Channel Strategy/Optimisation              | 4.00              | 3.86                 | 4.14                          | 1.29             | 0.79                                   |
| Customer First Culture Change              | 3.67              | 2.33                 | 4.00                          | 2.33             | 0.55                                   |
| Distribution/Logistics Optimisation        | 3.25              | 3.00                 | 2.75                          | 0.25             | 0.38                                   |
| IT Systems Upgrade                         | 2.33              | 3.00                 | 2.33                          | 0.67             | 0.22                                   |
| Property Sale/OPCO-PROPCO                  | 1.67              | 2.33                 | 2.33                          | -1.00            | 0.55                                   |
| Pensions, Insurance, Tax                   |                   |                      |                               |                  |  |
| Financial Reporting and MIS                | 3.40              | 2.80                 | 4.00                          | 0.00             | 0.73                                   |
| Product Line/SKU Rationalisation/Reduction | 3.08              | 3.33                 | 3.17                          | -0.83            | 0.57                                   |
| Mean                                       | 3.07              | 2.95                 | 3.18                          | 0.16             | 0.59                                   |
| Std Dev                                    | 0.78              | 0.83                 | 0.85                          | 1.69             | 0.27                                   |

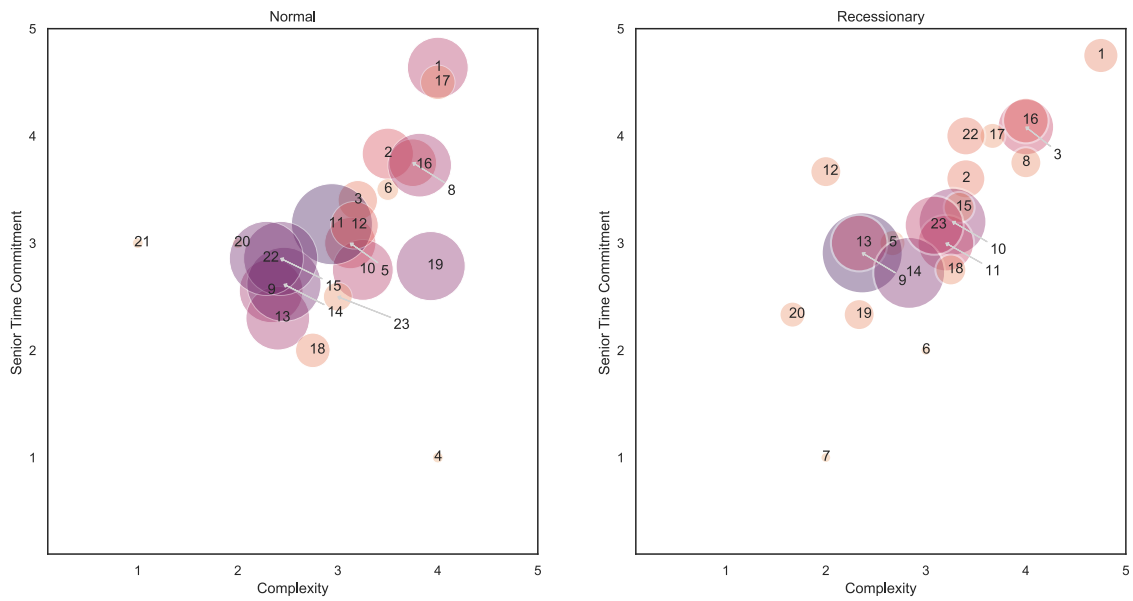
### Appendix G Cluster Analysis: *Potential Money Multiple Uplift to Complexity*



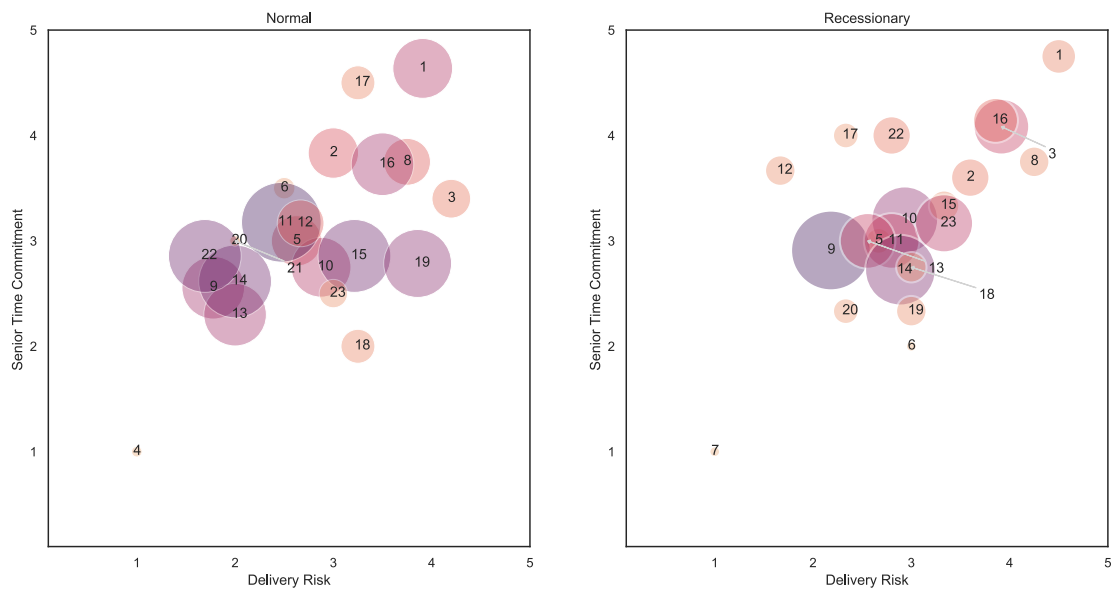
### Appendix H Cluster Analysis: *Potential Money Multiple Uplift to Delivery Risk*



### Appendix I Cluster Analysis: *Senior Time Commitment to Complexity*

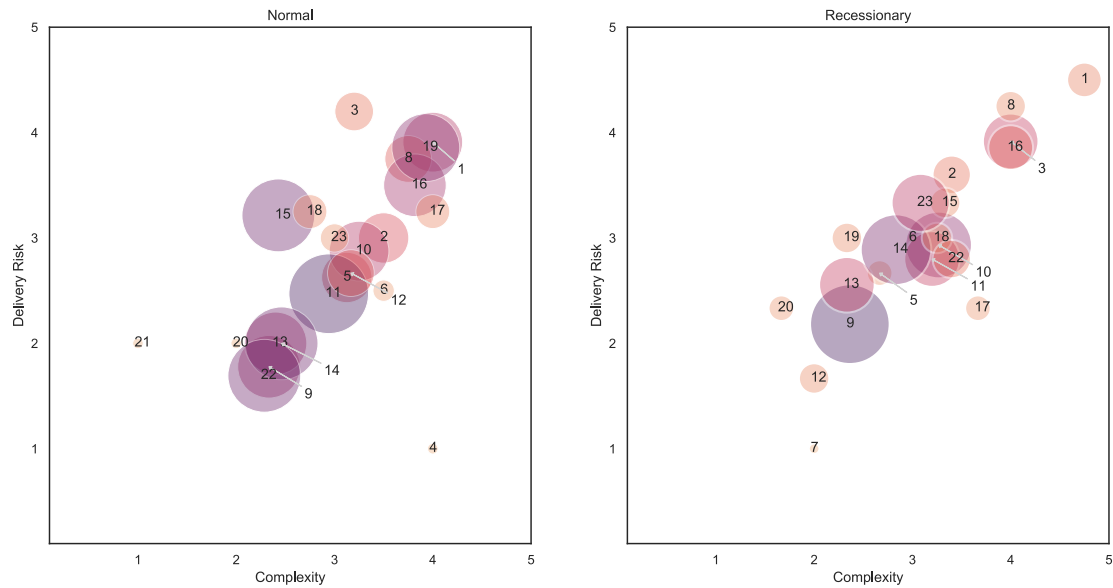


### Appendix J Cluster Analysis: *Senior Time Commitment to Delivery Risk*



## Appendix K

### Cluster Analysis: *Delivery Risk to Complexity*



## Appendix L

### Numbering of Operational Improvement Measures of Cluster Analysis Scatter Plots

|    |  |
|----|--|
| 1  | Major Acquisition Integration              |
| 2  | Minor Acquisition Integration              |
| 3  | Factory Closure/Relocation                 |
| 4  | Change Manufacturing Process               |
| 5  | Lean Manufacturing                         |
| 6  | Waste Reduction/right first time           |
| 7  | Energy Use Reduction                       |
| 8  | Offshoring/Inshoring/Outsourcing           |
| 9  | SG&A Overhead Reduction                    |
| 10 | Supply Chain Optimisation                  |
| 11 | Sales Force Effectiveness                  |
| 12 | Marketing Strategy                         |
| 13 | Purchasing Cost Reduction                  |
| 14 | Working Capital Optimisation               |
| 15 | Pricing                                    |
| 16 | Channel Strategy/Optimisation              |
| 17 | Customer First Culture Change              |
| 18 | Distribution/Logistics Optimisation        |
| 19 | IT System Upgrade                          |
| 20 | Property Sale/OPCO-PROPCO                  |
| 21 | Pensions, Insurance, Tax                   |
| 22 | Financial Reporting and MIS                |
| 23 | Product line/SKU Rationalisation/Reduction |

Appendix M  
 Surveying Data Results on Weighted Number of Mentions and Improvement Measure  
 Ranking in Differing Economic Conditions

**Weighting Comparison of Improvement Measures**

|  | <b>Normal Recession</b> |          |
|--|-------------------------|----------|
|  | % Weight                | % Weight |
| Sales Force Effectiveness                  | 50.00                   | 36.36    |
| Working Capital Optimisation               | 42.11                   | 57.58    |
| Pricing                                    | 42.11                   | 12.12    |
| Financial Reporting and MIS                | 42.11                   | 18.18    |
| IT Systems Upgrade                         | 36.84                   | 12.12    |
| SG&A Overhead Reduction                    | 31.58                   | 72.73    |
| Purchasing Cost Reduction                  | 31.58                   | 36.36    |
| Channel Strategy/Optimisation              | 31.58                   | 24.24    |
| Major Acquisition Integration              | 28.95                   | 15.15    |
| Supply Chain Optimisation                  | 28.95                   | 51.52    |
| Minor Acquisition Integration              | 21.05                   | 18.18    |
| Lean Manufacturing                         | 21.05                   | 9.09     |
| Off-shoring/In-shoring/Outsourcing         | 18.42                   | 12.12    |
| Marketing Strategy                         | 18.42                   | 12.12    |
| Factory Closure/Reduction                  | 13.16                   | 36.36    |
| Customer First Culture Change              | 10.53                   | 9.09     |
| Distribution/Logistics Optimisation        | 10.53                   | 12.12    |
| Product Line/SKU Rationalisation/Reduction | 7.89                    | 39.39    |
| Waste Reduction/Right First Time           | 5.26                    | 3.03     |
| Change Manufacturing Process               | 2.63                    | 0.00     |
| Property Sale/OPCO-PROPCO                  | 2.63                    | 9.09     |
| Pensions, Insurance, Tax                   | 2.63                    | 0.00     |
| Energy Use Reduction                       | 0.00                    | 3.03     |