

Change without search? Linking performance feedback on domestic vs. export goals, near vs. distant search, and new export market entries*

Jean Pierre Bolaños[†]

Master Thesis

MSc Research Master in Economics and Business
Faculty of Economics and Business, University of Groningen

31 August 2023

Abstract

Problemistic search argues that when companies face performance below aspirations, search for new alternatives is triggered, which ultimately drives organisational change. However, when studies test this assertion, they link performance below and above aspirations directly to observed organisational changes, omitting search as the cause for change. Yet, the process leading to change has to be proven, not assumed. To test how performance below and above aspirations triggers search and subsequent change, I hand-collected data on changes in 63930 export products and 37165 instances of export market presence from a sample of 244 Peruvian exporting firms between 2010 and 2022. I find that performance feedback faced in domestic vs. export goals yields different patterns of search for near vs. more distant export products. Once search is controlled for, performance feedback becomes less associated to change, measured as entries into new export markets. Emphasising that the search step is not trivial, I find that its effectiveness in driving change depends on the complexity of the landscape in which companies have to search.

*I am deeply indebted to Rian Drogendijk and Pasi Kuusela for their guidance and support as my supervisors. I also thank comments, advice, and questions from my colleagues and Dennis Veltrop during the LPR seminars, from Isabel Estrada and Floor Rink during the LPR paper, and from new ReMa colleagues during the September 2022 LPR conference. I also want to thank prof. Anna Minasyan, as the research master coordinator, and the Graduate School of Economics & Business (RUG) for a generous two-year scholarship. Professors Carel Huijgen, Yingjie Yuan, Jesus Mascareño, and Tammo Bijmolt provided valuable teaching and research assistant positions while working on the thesis, which helped formatively and financially. Prof. Oscar Malca G., at Universidad del Pacífico (Lima, Peru), helped with access to raw databases with the support from the Peruvian Ministry of Foreign Trade and Tourism and PromPerú. An immense thank you goes to the whole UMCG KIVA nurse team, MKA team, and prof. dr. Max Wijes for my speedy recovery. My heart lies with my family, for their unconditional support and love.

[†]s4637879

Contents

1	Introduction	1
2	Theoretical framework	7
2.1	Organisational learning from performance feedback	7
2.2	The relevance of search in problemistic search	12
2.3	Revisiting the internationalisation in response to performance feedback literature	16
2.4	Research hypotheses	25
2.4.1	Role of domestic and export performance feedback on export product search	25
2.4.2	Search in complex landscapes and change	27
3	Method	29
3.1	Sample	29
3.2	Measures	31
3.2.1	Entries to new export markets	31
3.2.2	Near and distant search	32
3.2.3	Complexity of the landscape	33
3.2.4	Performance feedback on domestic and export market goals	34
3.2.5	Control variables	36
3.3	Statistical approach	37
4	Results	40
5	Discussion	65
6	Conclusion	69

1 Introduction

Internationalisation—the international expansion of a company’s operations beyond its domestic market—is one of many alternatives that managers, executives, and owners can pursue for their companies’ strategic portfolio (Bouquet & Birkinshaw, 2011; Buckley & Casson, 1998). An extensive and vibrant debate has populated the international business field exploring whether and when does this endeavour provide a competitive advantage to companies (Abdi & Aulakh, 2018; Almodóvar & Rugman, 2014; Capar & Kotabe, 2003; Contractor et al., 2003, 2007; Freixanet & Rialp, 2022; Lu & Beamish, 2004; Papadopoulos & Martín, 2010; Thomas & Eden, 2004; Wiersema & Bowen, 2011)—yet without a conclusive answer (Contractor, 2007, 2012; Hennart, 2007, 2011; Hitt et al., 2006; Hult, 2011; Kirca et al., 2011; Pedersen & Tallman, 2023; Verbeke & Forootan, 2012).

In response, a relatively recent literature has “turned the tables” (Schmuck et al., 2022) and asked whether internationalisation is a strategic response to performance above and below company aspirations (Deng et al., 2022; Ref & Shapira, 2017; García-García et al., 2022). Anchored in the behavioural theory of the firm (Cyert & March, 1992; March & Simon, 1993), this literature has related feedback on company-wide performance measures, such as return on assets, Tobin’s Q, and total revenue, to changes in specific dimensions of a firm’s internationalisation, such as the number of (new) foreign subsidiaries, properties, (new) markets entered or attended, and international revenue ratios. As figure 1 displays from studies in this literature, there is large inconsistency when linking company-wide performance below and above aspirations to specific dimensions of a company’s internationalisation.

As this inconsistency can spillover to cast doubts on the core arguments found in the behavioural theory of the firm, I go “back to basics” (Surdu et al., 2021) on the theory that links performance relative to aspirations and change —known as “problemistic search” (Gavetti et al., 2012; Posen et al., 2018)—to study its consequences for internationalisation. I advance that studies linking problemistic search to specific strategic changes require including the relevant search processes that should yield them as well as the specific goals being monitored that, when offended, should trigger search in that specific strategic direction.

The critical role of adequately matching specific goals to specific search processes being triggered, and to specific organisational changes is present in *A Behavioral Theory of the Firm* (Cyert & March, 1992). In subsection 4.2.1. Cyert

and March report on how a fatal crane accident in a manufacturing firm disturbed the specific management-held goal of eliminating accidents in the plant. Underperformance in this goal post accident led to searching for solutions “near the problem”, which resulted in the, albeit incomplete, renewal of old cranes for new, safer ones. The same attention to detail in linking relevant and specific goals to specific changes is observed in part of the subsequent literature.

It is seen, for example, in theoretical predictions about the pursuit of innovation projects and portfolios (Keil et al., 2018) and team-level learning (Greve & Gaba, 2017). It is also present in early experimental evidence (Cyert et al., 1961; Lant, 1992) and in case studies on how change in routines stems from the performance of their own undertaking (Feldman, 2000; Rerup & Feldman, 2011). Most importantly, matching performance on specific goals to specific strategic changes is seen on empirical studies that link American football teams losing a match and the tactics they pursue (Profitós et al., 2022), AirBnB hosts occupancy rate goals and the changes they introduce to their hosting offering (Kostopoulos et al., 2023), airlines aeroplane safety goals and the acquisition and sale of aeroplane (Gaba & Greve, 2019), the difficult of simultaneously attaining safety, efficiency, and reliability goals by car manufacturers (Hu & Bettis, 2018), and the foundational work by Greve (1998) on radio audience performance below aspirations and changes in their format, among other studies¹. As Greve (2021a, p. 91) reflected about his 1998 study, the high level of detail in the data allowed an accurate (and foundational) test of the theory.

While these studies link specific goals to specific changes, another stream began linking performance feedback on company-wide goals to specific change outcomes. Initially, Greve (2003a) argued that deviations in company-wide performance goals relative to aspirations (using return on assets) would be linked to matching company-wide search behaviours (in research and development intensity) and to company-wide changes (shipbuilding innovation introductions in shipbuilding companies), all in line with the behavioural theory of the firm. While these and other studies kept goals, search, and change at the same company-wide level (Audia & Greve, 2006; Greve, 2008, 2003b), another stream conceived company-wide performance shortfalls as a “master-switch” that could trigger a wide range of specific strategic changes within organisations (Posen

¹Which include coach changes and German football teams performance (Moliterno et al., 2014), differences in scores in the Jeopardy! game and points risked (Boyle & Shapira, 2012), magazines sales and attention to specific goals (Blettner et al., 2015), and failure of specific innovations pursued and the introduction of completely new ones (Maslach, 2016)

et al., 2018). This literature has introduced novel mechanism about learning from performance feedback by linking company-wide performance to narrow strategic choices—such as acquisitions (Kuusela et al., 2017; Lee et al., 2023; Zhang & Greve, 2019), product introductions (Gaba & Joseph, 2013a; Joseph & Gaba, 2015), and entry into new foreign markets (Ref & Shapira, 2017; Ref et al., 2021). However, this stream raises one critical question (Greve, 2023): how can company-wide performance feedback point to a specific search direction to yield a specific strategic behaviour? This question is difficult to answer as, in these studies, search is not observed but implied. As Greve (2018, p. 93) reflects:

Second, profitability is defined as total revenue less total expenses, divided by total assets. It is an all-encompassing measure that is affected by every cost- or revenue-generating activity that occurs in the firm. Such a goal variable provides no guidance to the heuristic of directing myopic search in the neighbourhood of the problem, because it is a goal without a well-defined neighbourhood. This not only raises the question of how it affects behaviours decided at the lower levels, than the top management team, but also how top management decides to, say, make an acquisition, enter new markets, or choose from any of the actions they control.

As figure 1 demonstrates, the literature linking company-wide performance feedback and internationalisation is open to this exact criticism as it strives to link company-wide performance feedback—often via return on assets—to changes in specific dimensions of firm internationalisation, ignoring the search processes that should be triggered to drive the desired, specific change. Consequently, in this study I link performance feedback on specific goals pursued by internationalising firms to several search behaviours and test if this process leads to specific changes in firm internationalisation. Testing, instead of assuming, the process of learning from performance feedback was also advocated in March (2003), which pre-emptively warned about studies linking performance feedback directly to a desired organisational change outcome (Chang, 1996; Eggers & Suh, 2019; Hoang & Ener, 2015; Iyer et al., 2019; Keil et al., 2023; Kuusela et al., 2017; Lee et al., 2023). As March (2003, p. 2) stated:

These enthusiasms have often encouraged the too easy assumption that learning processes necessarily lead to organisational improvement. The usefulness of learning as an instrument of organisational intelligence has to be demonstrated, not assumed. Adaptive processes such as learning are not guaranteed to reach or sustain a global maximum on an outcome surface. In order for proposals for “learning organisations” to be more than vague wishes for improvement, learning must be defined in terms of some specific process and the conditions under which that process does or does not lead to improvement must be established.

Leveraging the context of exporting companies, I test the link between performance feedback, search, and change by asking: (A) how does performance feedback on domestic and export performance goals affect the near and distant search for new export products; and (B) how does near and distant search, together with the performance feedback that triggers it, affect subsequent entries into new export markets. In light of experimental and simulations-based evidence, I also ask if the effectiveness of near and distant search is conditioned by the complexity of the landscape in which companies search.

To answer these questions I hand-collected data on 63930 export products and 37165 instances of export markets presence in a random sample of 244 Peruvian exporting firms from 2010 to 2022. These firms are part of an intended sample of 789 exporting firms that collectively represent more than 70% of the total exports of the Peruvian economy. This sample overcomes limitations found in previous empirical studies (Ref & Shapira, 2017; Ref et al., 2021) as it allows the recursive calculation of yearly performance aspirations on multiple goals, as well as tracking detailed yearly changes in newly attended export markets. The sample also allows testing the role of near vs. distant search by observing new product introductions as done in previous literature (Eggers & Suh, 2019; Hoang & Ener, 2015; Keil et al., 2023), with the advantage of tracking search distance with the Harmonised System code of the exported products.

I find that shortfalls in export performance lead to an increase in near search, both by adding new related export products as well as by not abandoning products similar to the ones the company already exports. Export performance shortfalls do not encourage searching for more distant products, but they associate with abandoning more distant products to the ones already exported. This finding is in line with evidence from a small-scale longitudinal case study. Export performance above aspirations drives near and distant search, both in terms of new product introductions and in lower rates of their abandonment. Regarding performance feedback in the domestic market, it acts as a competing goal when it underperforms, lowering near search. However, as it exceeds aspirations, it spills over and contributes to searching for both near and distant export products.

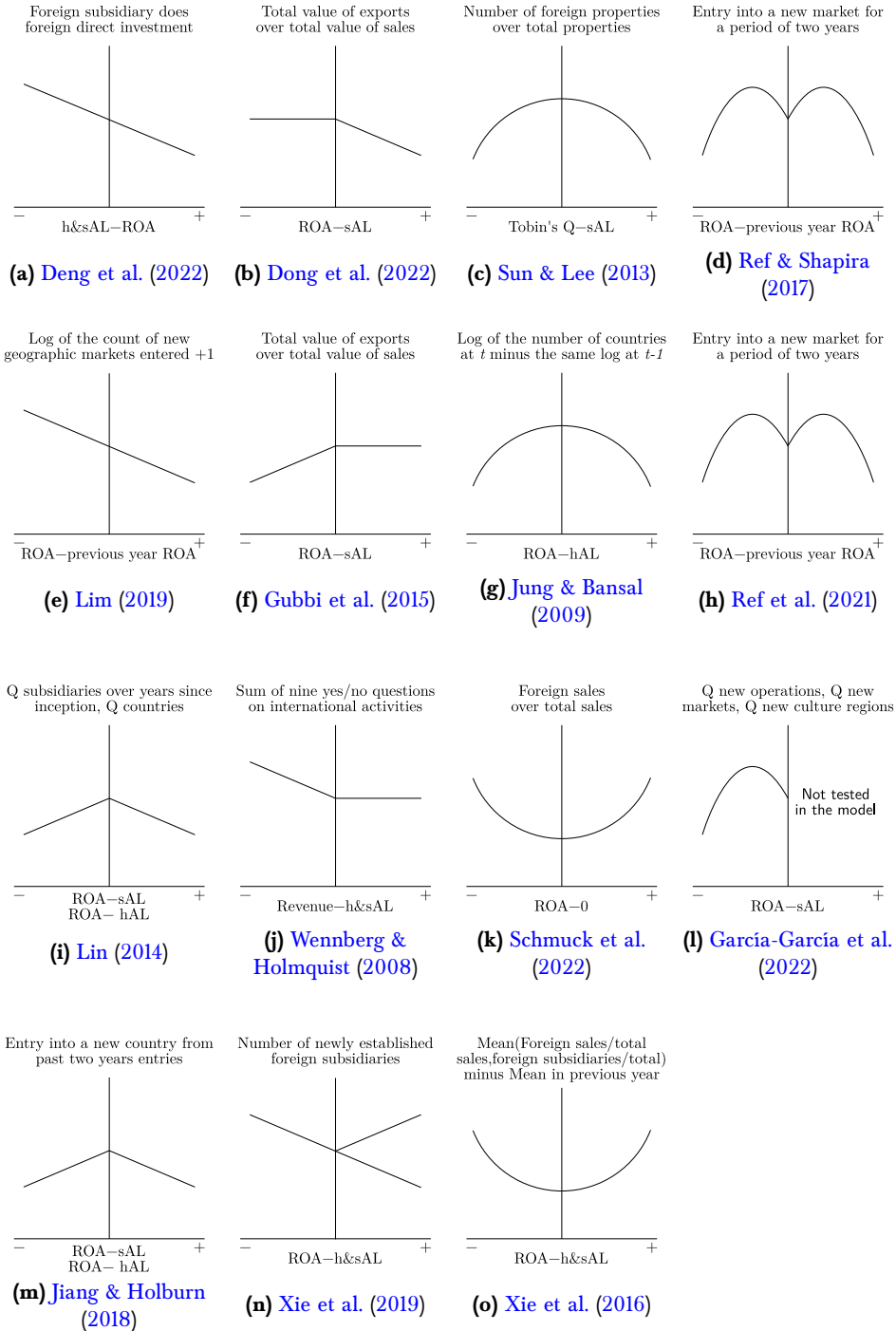
Regarding search, once I control for it, I find that performance feedback becomes less associated to new export markets entries. This supports the process linking performance feedback to change via search but also leaves room to ask which additional search processes might be triggered. Contrary to assumptions, the

link between search and change is neither trivial nor direct: its effectiveness depends on the complexity of its landscape. The more simple (unrelated) the product landscape, the more effective are near and distant search in driving new export market entries; the more complex (related) the product landscape, the less effective search becomes.

The study contributes to a new stream of studies in international business studying internationalisation from a behavioural and bounded rationality point of view (Aharoni et al., 2011; Poulis & Poulis, 2018; Surdu et al., 2021). Specifically, this study expands on the notion that all experiential knowledge gained from undertaken activities is beneficial for internationalisation by showing that when this experience is too related, it hampers exploration, which is a key driver for further internationalisation (Barkema & Drogendijk, 2007). Adopting a more behavioural approach to internationalisation decisions also contributes to the relevance of research in international business (Aharoni, 2013; Peng, 2004). The closer our models are to the actual conditions that international business managers face, the more relevant our theories and recommendations become (Poulis & Poulis, 2018).

This study also shows that the uniqueness of the international business field (Beugelsdijk, 2022) is useful to advance insights about the behavioural theory of the firm (Levinthal, 2020; Luo, 2020; Pedersen et al., 2020; Surdu et al., 2021). By leveraging the international business context, this study contributes to our understanding about learning from performance feedback. First, it shows that the links between performance relative to aspirations, search, and change are more nuanced than often assumed (Joseph & Gaba, 2015; Kuusela et al., 2017; Ref & Shapira, 2017). This finding motivates future studies to open the black box between performance feedback and change by considering which search processes are triggered and what is their effectiveness in driving organisational change (Greve, 2018; March, 2003). Second, it provides empirical evidence for the new literature on multiple goals pursuit and adaptation (Audia & Greve, 2021; Ethiraj & Levinthal, 2009; Levinthal & Rerup, 2021) and shows that horizontally differentiated goals hamper search when underperforming, but catalyse it when performing above aspirations. Lastly, this study addresses the inconsistency in the applied literature linking performance feedback to internationalisation by testing the omitted mediating role of search in driving change. Including search and the specific goals that trigger it can be adopted by future studies about specific dimensions of organisational change in response to performance feedback.

Figure 1: Internationalisation in response to performance feedback as reported in empirical studies to date (representative functional forms)



Note: “ROA” is return on assets, “AL” is aspiration level, “h” is historical, “s” is social, and “h&s” is a compound of historical and social. Not included here is [Tihanyi et al. \(2000\)](#) and [Fiegenbaum et al. \(1997\)](#), as they incidentally study internationalisation and ROA and fail to find a consistent relationship.

2 Theoretical framework

2.1 Organisational learning from performance feedback

All organisations have a purpose, that is, through their activities, they are designed to pursue and achieve a set of overarching goals (Barnard, 1938; Simon, 1945). Examples of these goals are overall company profitability (Audia & Greve, 2006; Joseph & Gaba, 2015; Kuusela et al., 2017), profitability across organisational units (Eggers & Suh, 2019; Gaba & Joseph, 2013b; Hu et al., 2021; Kacperczyk et al., 2015), operational safety (Gaba & Greve, 2019; Madsen, 2013), or clinical and operational effectiveness (Clark et al., 2018; Hu & Bettis, 2018; Keil et al., 2023; Mazzelli et al., 2019). While the goals being pursued can vary between organisations (Obloj & Sengul, 2020), their role in directing behaviour and change is highlighted in the behavioural theory of the firm (Gavetti et al., 2012; Audia & Greve, 2021). As is posited by the Carnegie tradition (Cyert & March, 1992; March & Simon, 1993; Simon, 1945), individuals within organisations are in charge of monitoring and attaining certain goals—such as CEOs monitoring return on assets or profit margins, a COO monitoring capacity utilisation or plant safety, and a marketing VP monitoring sales or consumer loyalty. Based on the primacy of goals, the discrepancies that arise between the aspirations formed around these goals and their actual performance determine how organisations learn, adapt, and change (Levinthal & March, 1993; Harrison & March, 1984; March, 1991; Levitt & March, 1995).

This process starts when performance in a given goal falls below the aspirations set for it. When this happens, the behavioural theory of the firm predicts that individuals within the organisation will engage in problemistic search (March & Simon, 1993; Cyert & March, 1992; Posen et al., 2018). This means that, as the offending goal becomes salient because of its underperformance, individuals will search for alternatives of solutions beginning in the neighbourhood of the problem and then further away from it (Cyert & March, 1992; Iyer et al., 2019). This process of search, however, is not guaranteed to always yield an optimal solution to the underperformance problem because, in practice, it is often not possible to know a priori (1) the full set of alternatives of solution that can be undertaken ($A = \{A_1, A_2, \dots, A_m\}$) and (2) the outcomes associated with the full set of alternatives ($\Pi = \{\Pi_1, \Pi_2, \dots, \Pi_m\}$) (Puranam et al., 2015) to pick the optimal one. On the contrary, in reality, individuals in organisations will search and find only a subset of the possible set of alternatives ($a = \{a_1, a_2, \dots, a_n\}$) and then have to consider their potential consequences

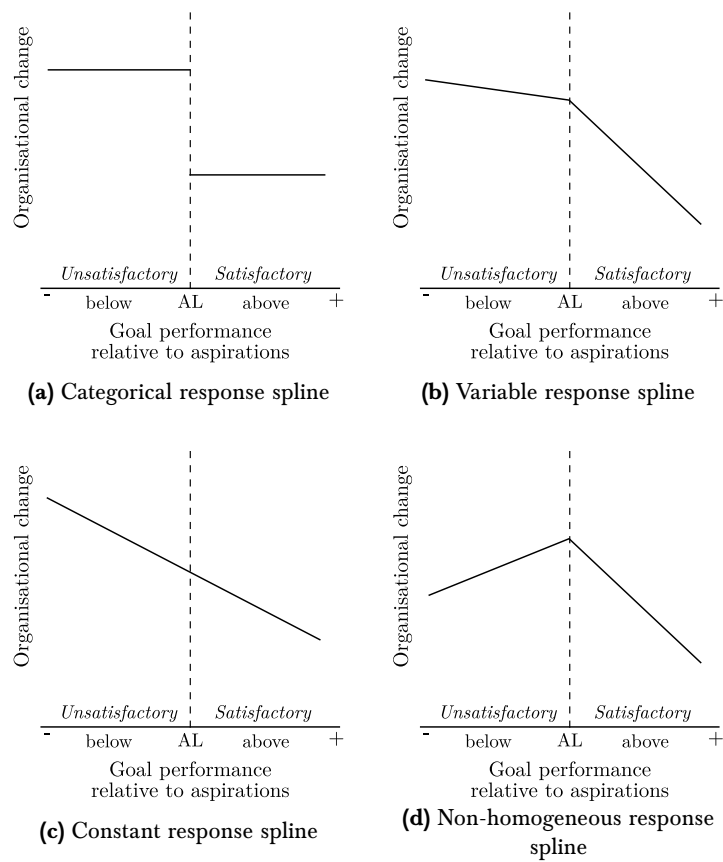
($\pi = \{\pi_1, \pi_2, \dots, \pi_k\}, m > n \geq k$). Having to search for a subset of alternatives and not knowing their potential outcomes differs from classic economic rationality and yields the satisfying—rather than optimising—decision-making behaviour of individuals under bounded rationality (Conlisk, 1996; Earl, 2012; Simon, 1979): underperformance triggers search, search finds new potential alternatives, and alternatives are sequentially undertaken until one yields a satisfactory outcomes that resolves the goal underperformance that triggered this process in the first place (Cyert & March, 1992).

Once the outcome is deemed satisfactory, individuals in organisations learn about the activities that led to this result and develop routines, standard operating procedures, and budgets to preserve them (Levitt & March, 1988; March & Simon, 1993). This concludes the process of problemistic search and describe how organisations learn from performance feedback and adapt and change as a consequence (Gavetti et al., 2012; Greve, 2020, 2021b).

Empirical research testing if organisations react to performance feedback as predicted by problemistic search has matched organisation-wide performance goals to organisation-wide measures of search and change (Greve, 1998, 2003b,a). In these studies, overall company profitability was seen as a relevant goal monitored by top executives, the search for new alternatives undertaken throughout the organisation was considered to converge in the company’s research and development expenditures, and change was observed in company-specific innovation introductions (Greve, 2003a). This same pattern of responses to performance feedback has been observed in subsequent studies focusing not on company-wide goals, search and change, but on specific goals and specific changes being introduced in special types of organisations. For instance, performance shortfalls in the scores of American football teams have been linked to the adoption of more risky game strategies (Profitós et al., 2022), underperformance in the occupancy rates to changes in their offerings (Kostopoulos et al., 2023), airlines aeroplane safety records shortfalls to their sale (Gaba & Greve, 2019), and radio audience shortfalls and changes in their format (Greve, 1998). Collectively, these studies show evidence of a “kinked-curve” that characterises the expected changes in response to performance below and above aspirations, as figure 2 displays.

In contrast to the past literature linking either company-wide or specific performance goals to corresponding company-wide or specific search and change, an additional stream of the literature views company-wide performance short-

Figure 2: “Kinked-curve” relationship: a distinct pattern of organisational change in reaction to performance feedback below vs. above aspirations on a certain goal



Source: Greve (2003b, p. 61)

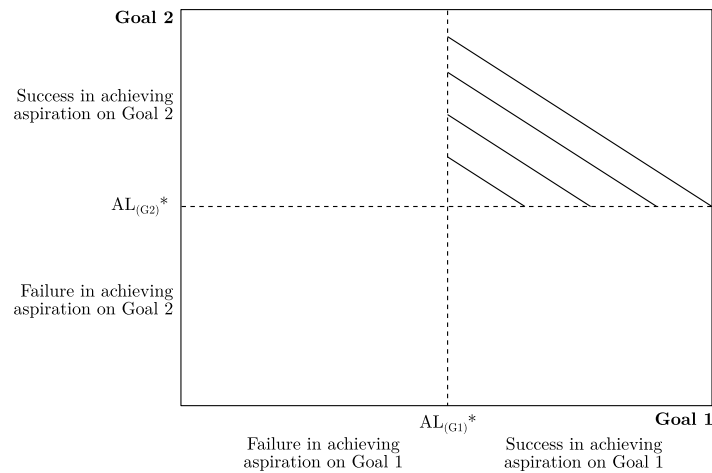
falls relative to aspirations as a “master-switch” that can trigger specific changes within organisations (Posen et al., 2018). This literature is now extensive (Greve, 2021a) and a recent meta-analysis on 113 studies (Kotiloglu et al., 2021) finds that several organisational changes increase as company-wide performance falls short of aspirations while they decrease as performance rises above aspirations.

Beyond showing evidence in favour of problemistic search, additional studies in this literature have also extended our understanding about this mechanism. For example, Baum et al. (2005) have shown that when the aspirations a company has for its performance do not align (for example, when performance is below the performance of competitors but above its own performance benchmark), the inconsistency leads a problemistic search that yields riskier changes. Joseph & Gaba (2015) have further advanced that reactions to underperformance become dampened when it is ambiguous to determine if performance is actually above or below aspirations. Furthermore, once performance is clearly classified as either above and below aspirations, Ref & Shapira (2017) show that deviances from aspirations trigger change up until a certain point after which they produce the opposite effect. Kuusela et al. (2017) have also advanced our understanding by showing that the direction of change resulting from this process is shaped by the resources that the company has at its disposal.

While the preceding literature provides evidence of problemistic search as advanced in the Carnegie tradition, it also presents two key shortcomings. While past studies have focused on reactions to a single performance goal, the first shortcoming is that organisations pursue, in reality, multiple goals at the same time (Audia & Greve, 2021; March & Simon, 1993). The pursuit of multiple goals significantly affects problemistic search as the exploration for suitable alternatives becomes increasingly difficult when multiple goals perform below aspirations (Bettis, 2017; Greve, 2023; Hu & Bettis, 2018). As was advanced initially by Simon (1945), when the performance in multiple goals becomes unsatisfactory, individuals within organisations will search for solutions that can simultaneously satisfy them and will only consider a trade-off in attaining them when all goals can be deemed as satisfied. This is represented in figure 3 as no trade-off is considered unless the alternatives under consideration can yield performance above aspirations for each goal pursued. In a recent study, Obloj & Sengul (2020) term this difficulty first posited by Herbert Simon as the “folk theorem” and they show evidence that the pursuit of an increasing number of goals creates difficulties in finding suitable alternatives, which subsequently affect performance in a negative manner. Recent computer simulations, theoretical studies, and applied work

have shown the inherent complexity of satisfying multiple goals simultaneously (Ethiraj & Levinthal, 2009; Hu & Bettis, 2018; Bettis, 2017), and advanced solutions such as their prioritisation (Gaba & Joseph, 2013a; Gaba & Greve, 2019), myopic attention, temporal delaying, or spatial distribution across the organisation (Audia & Greve, 2021; Ethiraj & Levinthal, 2009; Levinthal & Rerup, 2021). However, as Audia & Greve (2021) note, the conflict that arises in the pursuit of simultaneous goals in organisations can lead to delays in the search for new satisfactory alternatives and subsequent organisational change.

Figure 3: “Satisficing” behaviour when pursuing two simultaneous goals



Source: Levinthal & Rerup (2021, p. 530)

The second and final shortcoming in current literature on problemistic search is that it links performance shortfalls to observed organisational changes without testing whether search was triggered and whether search was the actual, immediate cause for change (Greve, 2018; March, 2003). As the name suggests, problemistic search describes that performance deviations from aspirations trigger search, which provide new alternatives for action that, when implemented, drive observed change (Argote et al., 2021). However, current studies on problemistic search commonly link performance shortfalls below aspirations to company-wide and specific strategic changes, assuming that search was the cause of the observed outcomes (Chang, 1996; Eggers & Suh, 2019; Hoang & Ener, 2015; Iyer et al., 2019; Keil et al., 2023; Kuusela et al., 2017; Lee et al., 2023). However, as March (2003) noted, the process by which organisations are seen as learning from their performance feedback—in which search for new and satisfactory solutions leads to changes and adaptation—has to be proven rather than assumed.

In a similar tone, Greve (2018) argues that search is a critical step to be tested, as its type and direction, once triggered by performance shortfalls, will determine the ultimate direction of organisational change. As is also noted in Greve (2018), the issue of omitting the role of search in driving change is also compounded by using company-wide performance shortfalls as a “master-switch” and by not considering other relevant goals pursued in the organisation. This is because it is unclear how company-wide underperformance can point to search towards a specific strategic direction while being (or not) in conflict with other goals and sub-goals also pursued in the organisation.

In conclusion, there is consistent evidence in favour of the problemistic search when studies link performance feedback to change. However, the purported mechanism of action, in which performance shortfalls trigger search, search that yields new alternatives to ultimately determine change has to be tested rather than assumed. Considering the gaps identified in the literature, the next steps involve (1) considering how the simultaneous pursuit of multiple goals affects problemistic search (Audia & Greve, 2021; Levinthal & Rerup, 2021) and (2) which search processes are actually being triggered to yield specific changes in organisations (Greve, 2018). The next section zooms in on the role of search in driving organisational change as the last step required to revisit the inconsistent literature linking performance shortfalls and changes in firms’ internationalisation.

2.2 The relevance of search in problemistic search

Search is a critical middle step in the problemistic search mechanism. As presented both in March & Simon (1993) and in Cyert & March (1992), observed performance below aspirations leads to change only because the search for new alternatives of action is triggered. This is because the new alternatives that were provided by the search process are then subsequently evaluated and preserved in the organisation as new routines (in the form of budgets, standard operating procedures, or activities). While research linking performance shortfalls relative to aspirations to change is now extensive (Greve, 2021a; Kotiloglu et al., 2021), research linking performance feedback to search—the first stage in problemistic search—is relatively smaller.

One side of the literature provides empirical tests for the link between performance feedback and search. This literature has linked performance shortfalls with search and selection processes for the entry and exit into near and more

distant industry segments (Chang, 1996), the search for more related vs. unrelated businesses to be acquired (Iyer et al., 2019), search for cost-focused vs. innovation-focused alternatives (Bromiley & Washburn, 2011), search for new products directed to new markets (Hoang & Ener, 2015), and near vs. distant search for new medical products with respect to the experience of the business (Keil et al., 2023). when these studies track the performance on a specific goals (product performance), search increases as performance fall below aspirations (Keil et al., 2023; Hoang & Ener, 2015). . However, when company-wide performance is used, some studies show that performance below aspirations increase search (Iyer et al., 2019; Hoang & Ener, 2015; Keil et al., 2023), or that it decreases (Bromiley & Washburn, 2011), or that it is not affected (Chang, 1996; Hoang & Ener, 2015). This inconsistency echoes the previous remarks found in Greve (2018) in which it is unclear how company-wide performance shortfalls can be linked to any specific search process.

On the experimental side of the literature, studies do not present the misalignment between overarching goals and specific search processes when linking performance feedback and search. For instance, Billinger et al. (2014) uses the alien game, an experimental task which participants need to find the combinations among 10 options that yield better payoffs, to show that the more participants underperform, they more intensely they search for satisfying solutions by trying more combinations. Caplin et al. (2011) also find evidence of this search process. In experiment two, they ask participants to solve arithmetic operations and then match the solution among several alternatives that also present the answer in terms of more arithmetic operations and find that subjects search for less alternatives the more they are able to satisfy their own performance aspirations. More recently, Billinger et al. (2021) also employed the alien game and found that search distance increases both as average performance feedback decreases and immediate feedback decreases. More importantly, these experimental studies also address an issue not covered in the previous empirical studies: search is not guaranteed to yield better performing solutions, and the difficulty of finding better ones depends on the complexity of the landscape in which solutions have to be searched for. Caplin et al. (2011) manipulates the difficulty of finding better performing solutions by increasing the length of the arithmetic operations to be performed and Billinger et al. (2014) and Billinger et al. (2021) manipulate the K-parameter in the NK models used in the experiments to adjust the complexity of the search landscape. All three studies find that complexity does not affect the

search effort (as it is triggered by the performance feedback) but it does affect how effective is search in yielding better performing alternatives.

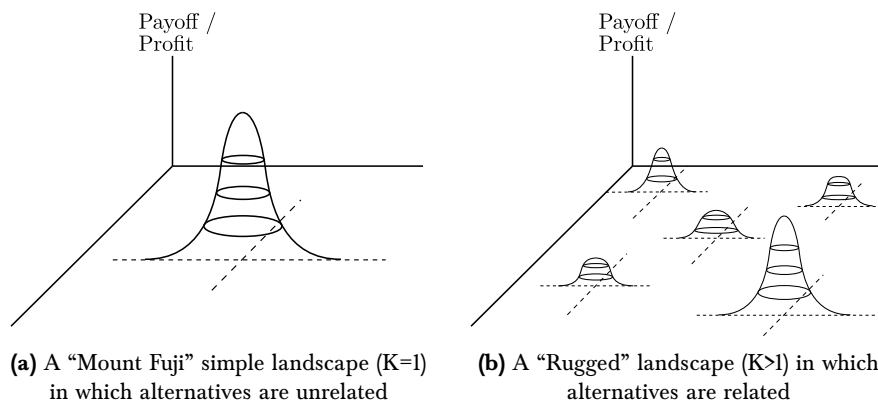
This last finding is also echoed in the computer simulations literature, which explores the complete link between performance feedback, search, and change (Baumann et al., 2019). Traditionally, this research stream builds on the idea that exploration is undertaken across “rugged landscapes” (Levinthal, 1997). These studies use the canonical NK model (Csaszar, 2018) in which agents (individuals, team, organisations) have a set of N alternatives (often around 10) which they can turn on or off (setting them at 1 or 0). Agents then “explore” the landscape by trying a given combination (for example $N = 0001100011$) and observe the payoff they obtain when using that specific combination (Baumann et al., 2019). The number of alternatives determines the number of unique combinations that can be explored; in this example, with $N=10$ alternatives, there are $2^{10} = 1024$ unique combinations that can be tried.

The K parameter in this model determines how difficult it is to search for the best combination by making $K - 1$ alternatives dependent on each other (Levinthal & Warglien, 1999). For example, if K equals 1, then search becomes easy, as the payoff of each of the N alternatives depends only on itself (the alternatives are unrelated), and any agent can turn each of them on and off to see if performance increases. This is similar to “hill-climbing” behaviour, in which strategies are incrementally changed until no increase in performance is observed (Levinthal, 1997). This simple landscape with unrelated alternatives is often represented as in panel 4a, in which it is possible to climb “Mount Fuji” by starting anywhere in the N -alternatives space and check which changes lead to improvements in performance.

However, as the payoff of alternatives become related to one another, the landscape becomes more rugged as is represented in panel 4b. The ruggedness in the landscape arises because the payoff of a given alternative now depends on one or more other alternatives ($k>1$). This also mimics a key aspect when searching for alternatives, which is that sometimes, certain pairs are better (or worse) when they are combined vs. when they are tried on their own. For example, Csaszar (2018) gives an example of this dependency when designing a computer: having a large screen is better than having a small one, but this benefits inverts if the power of the CPU of the computer is weak (because a large screen requires more CPU power, the benefit of the screen size alternative depends on the available CPU power, another alternative). Thus, as the alternatives become

more interrelated, the more difficult it is to find the optimal solution, and the more local optima arise in the landscape (Rivkin & Siggelkow, 2002; Siggelkow & Levinthal, 2005; Siggelkow & Rivkin, 2009; Rivkin & Siggelkow, 2007). As has been proven in computer science (Wright et al., 2000; Weinberger, 1996) and argued in the management discipline (Bettis, 2017; Rivkin, 2000), searching for the optimal solution in a rugged landscape (as soon as $K \geq 2$) is “hard,” it is an NP-complete problem—not only finding, but also trying to corroborate that one has indeed found the optimal solution takes a significantly large amount of time, which grows (non-polynomially) larger as the problem increases in size.

Figure 4: The representation of a simple vs. rugged landscape



Focusing on the role of search for organisations, the simulation studies in this field have consistently show that the complexity of the landscape in which search has been undertaken hampers its effectiveness (Baumann & Siggelkow, 2013; Csaszar & Levinthal, 2016; Podolny, 2018; Rivkin & Siggelkow, 2007; Siggelkow & Rivkin, 2006). As a solution, several studies have focused on studying which features of organisational design (e.g., departmentalisation, centralisation, TMT-line management level interactions, consensus/voting) can ease the difficulty faced in the search process (Albert & Siggelkow, 2022; Ethiraj & Levinthal, 2004a,b; Knudsen & Srikanth, 2014; Siggelkow & Rivkin, 2006, 2005, 2009). One feature found in this line of work is the role of simultaneous goals, the conflict they produce in finding simultaneously satisfactory alternatives, and the alleviation of their conflict when they are horizontally distributed across the organisation (Ethiraj & Levinthal, 2009; Hu & Bettis, 2018; Levinthal & Rerup, 2021). This literature thus reveals that searching for alternatives is not a trivial step in problemistic search given the complexity of this task as well as the (potentially) multiple goals that will trigger it.

This section has shown that the applied literature linking performance feedback to search presents inconsistencies when studying search in response to performance feedback while the experimental and computer simulations literature are consistent with each other and with predictions in the behavioural theory of the firm. The alignment between the latter two domains is associated to the use of specific performance goals (in experiments and simulations) which also trigger specific search processes. In both literatures there is also great emphasis in the role of search and how the complexity of the landscape reduces the effectiveness of searching for adequate alternatives. With these insights about the search process inherent in the problemistic search literature, the next section revisits the literature linking company-wide performance feedback to changes in firm internationalisation.

2.3 Revisiting the internationalisation in response to performance feedback literature

Studies on how the internationalisation of companies changes in response to performance feedback are relative recent in comparison to the ones studying the opposite relationship—how internationalisation affects firm performance (Schmuck et al., 2022). The literature linking internationalisation as a viable strategy to increase firm performance is seen as heterogeneous in terms of theoretical roots as it draws from resource-dependence theory, transaction costs economics, internalisation theory, and resource-based approaches (Hitt et al., 2006; Contractor, 2007; Hennart, 2007; Verbeke & Forootan, 2012). This literature however, has not produced a unique and consistent relationship between internationalisation and performance, as studies suggest positive, negative, U-, inverse U-, S-, J-, and M-shaped relationships between company internationalisation and firm performance (Abdi & Aulakh, 2018; Almodóvar & Rugman, 2014; Capar & Kotabe, 2003; Contractor et al., 2003, 2007; Freixanet & Rialp, 2022; Lu & Beamish, 2004; Papadopoulos & Martín, 2010; Thomas & Eden, 2004; Wiersema & Bowen, 2011). As Schmuck et al. (2022) framed it, the opposite literature studying internationalisation *as a consequence* of performance feedback turns the tables on this relationship and draws mainly from the behavioural theory of the firm as a foundation for its study.

Table 1 summarises most of the studies found in this nascent literature. While all of the studies cite the behavioural theory of the firm as their theoretical foundation, there is significant inconsistency in terms of the hypotheses that each study develops, the ancillary theories invoked, the specific measurement for per-

formance feedback, whether the role of search is considered, how internationalisation is actually measured, the adequacy of the statistical models employed, and the findings reported.

As figure 1 showcased in the introduction and the third column in table 1 shows with more precision, even if the studies in this field use the behavioural theory as foundation, their prediction on the relationship between performance feedback and internationalisation are inconsistent with one another. The lack of consistency increases when studies draw from ancillary theories, such as the resource-based view and prospect theory to argue for unique relationships. The literature on the behavioural theory of the firm presents studies integrating prospect theory (Profitós et al., 2022) and the resource-based view (Pitelis, 2007), and when zooming in on firm internationalisation (Steen & Liesch, 2007; Johanson & Vahlne, 1977; Vahlne & Johanson, 2013, 2017). However, certain aspects are not directly compatible with the problemistic search mechanism in the behavioural theory of the firm, such as why we observe risky change below aspirations against prospect theory (Wiseman & Gomez-Mejia, 1998) and how easy it is for firms to find valuable (satisfactory) strategies from their experience (Penrose, 1959; Cyert & March, 1992). In contrast to prospect theory and the Penrosean stream of the resource-based view, the behavioural theory of the firm places the purposeful and imperfect task of searching for new alternatives as a key middle step linking responses to underperformance and observed organisational changes.

Columns five to seven show two common themes. First, in 14 out of the 15 studies surveyed, authors linked a single goal, company-wide performance (measured as return on assets) to several specific dimensions of a firm's internationalisation. This practice engages with the shortcomings recently raised on the behavioural theory of the firm in which it is not clear how company-wide performance shortfalls (acting as a master-switch) can lead to any specific direction of change without conflicting with other goals pursued (Greve, 2018; March, 2003). The only study that connects a specific and relevant goal (specific subsidiary performance) to an specific change (subsidiary foreign direct investment) is (Deng et al., 2022). Their findings are in line with the conventional "kinked-curve" (Greve, 2003b) but do not consider the role of search. Another two factors contributing to the inconsistency in findings (column nine and ten) is that studies do not measure recursive performance (historical) aspirations in a consistent way and use inappropriate statistical models when having count or longitudinal data (e.g., taking the logarithm of count data to "convert" it to continuous (O'Hara & Kotze, 2010)).

Table 1: Summary of studies linking performance feedback and different dimensions of firm internationalisation

N	Study	Summary of hypotheses	Ancillary theories	Performance feedback measure	Problemistic search measure	Internationalisation measure	Statistical model note	Spline 1: Effect of performance under aspiration	Spline 2: Effect of performance over aspiration
1	Deng et al. (2022)	Subsidiary performance shortfalls increases subsidiary foreign direct investment	-	Subsidiary ROA minus its recursive historical aspiration	-	Subsidiary engaged in foreign direct investment	Panel data Probit model and Poisson model	Increases probability and frequency of subsidiary foreign direct investments	Reduces probability and frequency of subsidiary foreign direct investments
2	Dong et al. (2022)	Company performance shortfalls increase export intensity	-	Company ROA minus the average ROA of firms in the same 3-digit industry	-	Export intensity as the ratio of overseas total sales over total sales	Tobit regression with 1-year lagged regressors	No significant effect	Reduces company export intensity
3	García-García et al. (2022)	Company performance shortfalls increase, at a decreasing rate, internationalisation intensity, scope, and dispersion	Resource-based view	Company ROA minus recursive historical and social aspiration composite	-	Count of: new foreign operations, new foreign countries, and new cultural clusters entered	GEE-PA negative binomial model	Increases frequency of new foreign operations, countries, and cultural clusters at a decreasing rate	Not tested - omitted in the regression equation
4	Gubbi et al. (2015)	No formal hypotheses	-	Company ROA minus 4-digit industry median; Company ROA minus average of ROA in past 3 years	Propensity to export (dummy) and export sales to total sales ratio	-	Panel data random-effects Probit; Heckman selection model on an Arellano-Bond linear dynamic panel data model	No significant effect on export propensity for social and historical aspirations. Decreases export intensity for historical and social aspirations	No significant effect on export propensity for historical aspirations, and marginally increase propensity for social aspirations. No significant effect on export intensity for social and historical aspirations

Table 1 continued from previous page

N	Study	Summary of hypotheses	Ancillary theories	Performance feedback measure	Problemistic search measure	Internationalisation measure	Statistical model note	Spline 1: Effect of performance under aspiration	Spline 2: Effect of performance over aspiration
5	Jiang & Holburn (2018)	Company performance below and above aspirations reduce foreign market entry	-	Company ROA minus recursive historical aspiration, Company ROA minus 6-digit industry ROA average	-	First entry into a foreign country	Rare event Logit with 1-year lagged regressors	Reduces probability of first entry for social and historical aspirations	Reduces probability of first entry for social and historical aspirations
6	Jung & Bansal (2009)	Company performance below and above aspirations reduce changes in internationalisation	Prospect theory	Company ROA minus average ROA in past 3 years; Company ROA minus industry average ROA in past 3 years	-	Log of the number of foreign countries with subsidiaries minus the log of the same measure 1 year prior	Random-effects model with 1-year lagged regressors	Decreases internationalisation for historical and social aspirations.	Decreases internationalisation for historical aspiration. No effect for social aspiration
7	Lim (2019)	Company performance shortfalls increase new market entry	-	Company ROA minus company ROA in previous year (natural aspiration); Company ROA minus 4-digit ROA average social aspiration	-	Log of count of new geographic markets entered + 1	System GMM	Increases internationalisation measure for historical and social aspiration	Increases internationalisation measure for social aspiration; Reduces internationalisation measure for historical aspiration

Table 1 continued from previous page

N	Study	Summary of hypotheses	Ancillary theories	Performance feedback measure	Problemistic search measure	Internationalisation measure	Statistical model note	Spline 1: Effect of performance under aspiration	Spline 2: Effect of performance over aspiration
8	Lin (2014)	Company performance shortfalls increase the pace, scope, and rhythm of internationalisation	-	Company ROA minus average ROA in past 3 years; Company ROA minus industry average ROA	-	Pace as count of subsidiaries over number of years since first subsidiary established; scope as count of markets with subsidiaries; rhythm as kurtosis of first difference of number of subsidiaries over time	Fixed-effects linear model	Decreases pace. No effect on scope	Decreases pace. Social aspirations have no effect on scope while historical aspirations reduce it.
9	Ref et al. (2021)	Company performance below and above aspirations increase, at a decreasing rate, the probability of new foreign market entries	Resource-based view	Company ROA minus previous year ROA (natural aspiration)	-	Entry into a least a new foreign market (segment) in a given 3-year period	Pooled Probit model with lagged regressors	Increases the probability of entry at a decreasing rate	Increases the probability of entry at a decreasing rate
10	Ref & Shapira (2017)	Company performance below and above aspirations increase, at a decreasing rate, the probability of new foreign market entries	Resource-based view	Company ROA minus previous year ROA (natural aspiration)	-	Entry into a least a new foreign market (segment) in a given 3-year period	Pooled Probit model with lagged regressors	Increases the probability of entry at a decreasing rate	Increases the probability of entry at a decreasing rate

Table 1 continued from previous page

N	Study	Summary of hypotheses	Ancillary theories	Performance feedback measure	Problemistic search measure	Internationalisation measure	Statistical model note	Spline 1: Effect of performance under aspiration	Spline 2: Effect of performance over aspiration
11	Schmuck et al. (2022)	Company performance below and above aspirations increases internationalisation	Resource-based view and Prospect theory	Company ROA (no aspiration used)	-	Foreign sales to total sales	Fixed-effects linear model with lagged regressors	Increases foreign sales to total sales ratio	Increases foreign sales to total sales ratio
12	Sun & Lee (2013)	Company performance below and above aspirations decrease, at an increasing rate, internationalisation	-	Company ROA and Tobin's Q minus their respective 3-year average; Company and Tobin's Q minus respective industry average	-	Number of overseas properties over total properties owned	Random-effects model with 1-year lagged regressors	No significant effects for historical and social ROA. No effect for historical Tobin's Q. Social Tobin's Q reduces ratio of foreign over total properties	No significant effects for historical and social ROA. No effect for historical Tobin's Q. Social Tobin's Q reduces ratio of foreign over total properties

Table 1 continued from previous page

N	Study	Summary of hypotheses	Ancillary theories	Performance feedback measure	Problemistic search measure	Internationalisation measure	Statistical model note	Spline 1: Effect of performance under aspiration	Spline 2: Effect of performance over aspiration
13	Wennberg & Holmquist (2008)	Company performance shortfalls increase search, shortfalls increase internationalisation, and search increases internationalisation	-	Company Revenue minus composite of previous year revenue and industry average revenue	Self-reported: Answered Yes/No question "Have you searched for internationalization opportunities in the past twelve months?"	Follow-up from previous question and self-reported: sum of binary questions on 9 distinct international activities (importing, exporting, licensing provision, license acquisition, joint venture, sales office overseas, production subsidiary overseas, co-operation with domestic partner to expand overseas, co-operation with foreign partner to expand overseas)	Negative binomial: conditional random-, fixed-effects, and population-averaged model with 1-year lagged regressors	Reduces count of types of activities undertaken	No significant effect
14	Xie et al. (2016)	Company performance below and above aspirations increase, at an increasing rate, internationalisation	Resource-based view	Company ROA minus recursive historical and social aspiration composite	-	Average of two ratios: foreign sales over total sales and foreign subsidiaries over total subsidiaries	Feasible generalised least squares accounting for heteroskedasticity (but no autocorrelation)	Increases internationalisation, at increasing rates	Increases internationalisation, at increasing rates

Table 1 continued from previous page

N	Study	Summary of hypotheses	Ancillary theories	Performance feedback measure	Problemistic search measure	Internationalisation measure	Statistical model note	Spline 1: Effect of performance under aspiration	Spline 2: Effect of performance over aspiration
15	Xie et al. (2019)	Company performance below and above aspirations increase internationalisation	-	Company ROA minus ROA in previous year; Company ROA minus industry average of companies in the same region	-	Count of new foreign subsidiaries established in a year	Zero-inflated Poisson model	Increases count of new foreign subsidiaries for historical and social aspirations	Increases count of new foreign subsidiaries for social aspirations. Decreases count of new foreign subsidiaries for historical aspirations

Finally, while problemistic search states that search is triggered by performance shortfalls to find new alternatives that drive change, only two studies address this process. On one side, [Gubbi et al. \(2015\)](#) terms the conventional export intensity measure as an “international search behaviour” and fails to find consistent significant effects from company-wide performance on this measure. However, [Gubbi et al. \(2015\)](#) does not test the effect of this search behaviour on organisational change. On the other side, [Wennberg & Holmquist \(2008\)](#) uses self-reported survey data and tracks changes in search and change in response to company-wide performance feedback in small companies. The survey instrument used in this study (see page 452 in [Wennberg & Holmquist \(2008\)](#) and its excerpt in row 13 in table 1), shows that the measure for search and change are not qualitatively different with one another. Moreover, the findings in this study also trigger the same questioning on why company-wide underperformance would specifically trigger search and change in the international direction.

As the literature reviewed in this section shows, there is inconsistency in the findings relating company-wide performance goals to specific dimensions of firm internationalisation. Fourteen out of the 15 considered a company-wide performance goal as a valid trigger for internationalisation, 14 of them used return on assets as a measure, two considered the role of search, and only one strived to link performance shortfalls to search and change. None considered how multiple goals simultaneously pursued can be delay or enhance problemistic search, and whether search is hampered by the inherent complexity of finding adequate solutions to multiple goals.

The next section presents arguments to (1) link specific goals pursued by an organisation to specific search processes for internationalisation, (2) how the search process can be hampered or enhanced when they perform below or above aspirations, and (3) how the effectiveness of specific search process triggered to drive change is conditioned by the complexity of the landscape in which exploration takes place. The hypotheses are contextualised for exporting firms as previous studies have shown that their dual pursuit of domestic and export market goals have different consequences for their organisation and performance ([Salomon & Shaver, 2005](#)). Thus, they allow testing the relationship between specific goals (domestic vs. exports), relevant export search processes (search for near/similar vs. more distant/different new export products), and specific measures of change in their internationalisation (entry into new export markets).

2.4 Research hypotheses

2.4.1 Role of domestic and export performance feedback on export product search

According to research on organisational learning from performance feedback on a single goal, underperformance relative to an aspiration leads to search for alternatives related to solve the underperformance observed in that goal (Greve, 1998, 2003a). This is often referred as searching near the area of the problem (Cyert & March, 1992). However, when individuals in organisations pursue and try to satisfy multiple goals, underperformance in each goal will trigger multiple search processes in their respective task environment, which can produce difficulties in finding adequate solutions as the goals become more differentiated, that is, weakly correlated or independent (Hu & Bettis, 2018). This echoes (Simon, 1945)'s notion that “satisficing” multiple goals simultaneously leads to difficulties in finding adequate solutions, which is evidenced in empirical testing by Obloj & Sengul (2020) and Hu & Bettis (2018), and also in computer simulations in Ethiraj & Levinthal (2009). Consequently, as the performance in a given goal (among several ones) falls below its aspirations, it will drive search directed to address this shortfall. However, as underperformance is experienced in additional and similarly important goals, the search processes around any given goal will be negatively affected. This is because available resources are needed to conduct for each search process for each simultaneous goal that continues to fall short of aspirations, in addition to diverting attention towards them.

In the context of exporting firms, I observe two relevant and simultaneous goals being monitored, namely performance in the domestic market and performance in the export market (Salomon & Shaver, 2005). As exporting companies often begin their operations as entirely domestic-oriented firms (Bernard et al., 2007; Bilkey & Tesar, 1977), domestic performance is a salient initial goal that then competes with the performance of the export venture as the firm increases its international orientation (Gkypali et al., 2021; Love & Máñez, 2019; Salomon & Shaver, 2005).

In consequence, as exporting firms monitor both domestic and export performance goals, it can be expected that underperformance in the export market will trigger for the search of new alternatives to repair the performance shortfall and bring it to or above aspirations. As exporting firms engage with foreign markets primarily with their export products, we can expect that export below aspirations will trigger the search for new export products that are better suited

to export markets. However, if the exporting firm faces underperformance in the domestic market, we expect the opposite effect, as search processes to fix domestic performance shortfalls will compete for the resources needed to explore and develop new export market products. Moreover, because developing products that are unrelated to a firm's core expertise will require more time and resources, we expect that the search for more distant resources will be affected greatly by underperformance in the domestic market. I thus expect that,

H1a. As a company's domestic performance progressively falls below aspirations, its search for near and more distant export products will progressively decrease

H2a. As a company's export performance progressively falls below aspirations, its search for near and more distant export products will progressively increase

As is originally advanced in *Organizations* (March & Simon, 1993) and *A Behavioral Theory of the Firm* (Cyert & March, 1992), as performance in a given goal exceeds its aspirations, it signals that the alternatives that were undertaken to produce that result are satisfactory and should be maintained and repeated in the organisation in the form of routines, budgets, standard operating procedures, and similarly stable processes. Consequently, as performance becomes satisfactory and grows above aspirations, the search for solutions reduces and gives way to routine formation. As Cyert & March (1992) also noted, a consequence of performance above aspirations is the production of organisational slack—surplus of resources on top of what is required to maintain the normal operations of the organisation. These slack resources are used to balance conflict in interests among coalitions inside the organisation and, more critically, provide slack to coalitions to pursue their own goals and explore without entering into conflict with other areas (Cyert & March, 1992, Ch. 3). Consequently, as slack accumulates when goals are satisfied, it allows for the exploration of more risky or more distant alternatives (Baum et al., 2005; Iyer et al., 2019; Kuusela et al., 2017; Mazzelli et al., 2019).

We can expect that the domestic and export goals pursued by exporting firms will follow the general prediction in the behavioural theory of the firm. That is, as export performance increases above aspirations, it signals that current export products are satisfactory in yielding that result, thus reducing the need to search for similar export products to the ones already implemented (near search).

Furthermore, as performance continues to increase, slack begins to accumulate and thus triggers the search for potentially profitable but relatively new export products (distant search). The same dynamic can be expected when domestic performance increases above aspirations, as it will also conduce to the accumulation of slack and the promotion of new and more distant export products. Consequently,

H1b. As a company's domestic performance progressively rises above aspirations, its search for new near and more distant export products will progressively increase

H2b.1. As a company's export performance progressively rises above aspirations, its search for near export products will progressively decrease

H2b.2. As a company's export performance progressively rises above aspirations, its search for near export products will progressively increase

2.4.2 Search in complex landscapes and change

The previous hypotheses formulate how domestic and export performance goals will differently trigger near and distant search. As search is the only mediating variable linking performance feedback below and above aspirations and change in problemistic search (Cyert & March, 1992; March & Simon, 1993), variations in performance feedback should not be related to change once the role of search is accounted for. This is because, in problemistic search, the effect of performance feedback affects change only by triggering the search for new alternatives. However, as was previously reviewed, the role of search as a mediating variable is often omitted in studies linking performance feedback and change, and consequently, it is not possible to state that search is the only mechanism being triggered by performance feedback. As Greve (2018) and others argue (Ethiraj & Levinthal, 2009; Levinthal & Rerup, 2021), there are other potential reactions that can be triggered instead of search to trigger change, such as political bargaining, myopic attention to goals, and interpretation and sense-making. For this reason, if search is the only mechanism responsible for connecting performance feedback to change, then once the role of search on change is accounted for, the role of problemistic search on change should turn insignificant. Otherwise, it would provide evidence that other additional mechanisms are being triggered by performance feedback to also drive change.

For the case of the exporting firm, this would entail, first, that performance relative to aspirations for domestic and export markets goals trigger near and distant search for new export products that are used to cater to new markets. Second, once the role of search for near and distant export products, the direct role of performance feedback on entering new export markets should reduce and become insignificant. On the contrary, if performance feedback on these goals reduces but remains significant, it would signal that there are additional processes to be studied that still connect performance shortfalls in these goals to new export market entries. In consequence, I expect that,

H3. Once near and distant search are controlled for, performance feedbacks on domestic and export goals are not associated with entry into new export markets

Finally, the role of search on change has to be understood in light of the experimental and computer simulations studies in the literature. First, as [March \(2003\)](#) argues, search is never guaranteed to find optimal or improved solutions as exploration is always uncertain to yield adequate solutions. The literature using NK landscapes points to the same argument as soon as potential outcomes of alternatives become related to one another ([Baumann et al., 2019](#); [Rivkin, 2000](#); [Rivkin & Siggelkow, 2007](#); [Wright et al., 2000](#)). While the role of search on adequate change is uncertain, what is found both in experimental and computer simulation studies is that the complexity of the landscape in which solutions have to be discovered does matter for the success of the search task ([Baumann & Siggelkow, 2013](#); [Billinger et al., 2021, 2014](#); [Caplin et al., 2011](#); [Csaszar & Levinthal, 2016](#); [Podolny, 2018](#); [Siggelkow & Rivkin, 2006](#)). Consequently, when analysing the effectiveness of search processes undertaken by organisation for solution to problems, the role of the complexity of the actual landscape where alternatives lie must be considered, as increases in its complexity will make search more difficult—the more rugged the landscape, the more difficult to find better alternatives.

Given that the source of complexity resides in the relatedness of the alternatives being considered, the argument for exporting firms also builds on the relatedness of the type of export products used and searched for. All exporting companies engage international markets with a given export portfolio, which can be composed of tightly related or more distantly related products. An example of a tightly related export portfolio would be a company that exports fresh avocados, cubed and frozen avocado pieces, and stabilised avocado puree. Following the

rugged landscape metaphor, the source of their relatedness stems from correlation between their payoffs. For example, a specialised importer (e.g., a wholesale retailer) for this company might approach the company because of its specialised (related) product offering and any deviations from it might neither attractive nor interesting to the importer—either in new export products offered or when the company abandons one of the related exported products. Thus, when the export products of the firm are too related, searching for new suitable export products will be difficult because of the relatedness of the current export portfolio. This difficulty arising from relatedness connects to the idea of a complex search landscape.

On the other side, when the export portfolio of a company is composed of several product categories that are unrelated between them, then the way each category produces adequate payoffs are less related. For example, an export company with several products in different categories, such as frozen seafood, fresh and frozen produce, and cocoa will have different types of importers as these three example categories are qualitatively different. In this unrelated export portfolio, searching for new export products is easier, as any brand new export product will be in a different category, not conflicting with the preferences of past importers, in contrast to the previous related case. In consequence, leveraging the rugged landscape metaphor from the NK model, the more related the export products, the more complex it becomes to search for new export products, and the more unrelated the export categories, the easier search becomes. Based on this discussion, I expect the following:

H4a. The effectiveness of near and distant export product search on entry into new export markets increases as the complexity of the product landscape becomes simple (more unrelated)

H4b. The effectiveness of near and distant export product search on entry into new export markets decreases as the complexity of the product landscape becomes complex (more related)

3 Method

3.1 Sample

The sample consists of Peruvian manufacturing exporting firms with continuous export activity from 2010 to 2022 and with yearly export sales over USD

100000. The sampling frame was obtained from the official database INFO-TRADE from the Ministry of Foreign Trade and Tourism of the government of Peru, which is maintained by the Peruvian Promotion Commission for Trade and Tourism (PROMPERU). The company information in the INFOTRADE database is provided by the National Customs and Tax Administration (SUNAT), which is a member of the World Customs Organisation since 1970².

The international trade activity for the Peruvian economy represent a significant share of its overall economic output, as its trade openness index (value of international trade over gross domestic product) has increased from 35.54% in 2000 to 58.41% in 2022³. Moreover, after a period of military dictatorship in the 1970's and economic autarky in the late 1980's, the overall export activity in the country has continuously increased since Peru liberalised and opened to world trade in 1990, as figure 5 illustrates. The evolution of exports of the Peruvian economy, of the intended sample of 789 exporting firms, and of the actual random subsample of 244 exporting firms used follow the same development path across years (correlation between export value of intended sample vs. total Peruvian exports: $\rho = 0.98$; correlation between export value of actual subsample vs. total Peruvian exports: $\rho = 0.91$).

A distinctive feature of the INFOTRADE database is that it is built by SUNAT using detailed data from every single customs declaration entry filed by all exporting companies daily. This means that the database is built with exact information about the value and quantity of each movement of exported product, using the standardised Harmonised System codes to classify each product, the exporting company name, the final importer company name, and country of the final, among other information. This level of detail allows the analysis of changes in export products across years and whether the changes are in terms of new similar products or more distant and different ones. This is done by using the standardised Harmonised System product codes, observing whether the export declarations include brand new export markets, and aggregating the total value of the company's exports as reported to the Customs and Tax Administration.

After hand-collecting information about the export products and export markets for companies in the INFOTRADE database, I determined that 789 continuous

²See the list of 185 country members in <https://www.wcoomd.org/-/media/wco/public/global/pdf/about-us/wco-members/list-of-members-with-membership-date.pdf?db=web> (accessed 10 August 2023).

³See Trade as a percentage of GDP in the World Bank databank in <https://databank.worldbank.org/source/world-development-indicators> (accessed 10 August 2023).

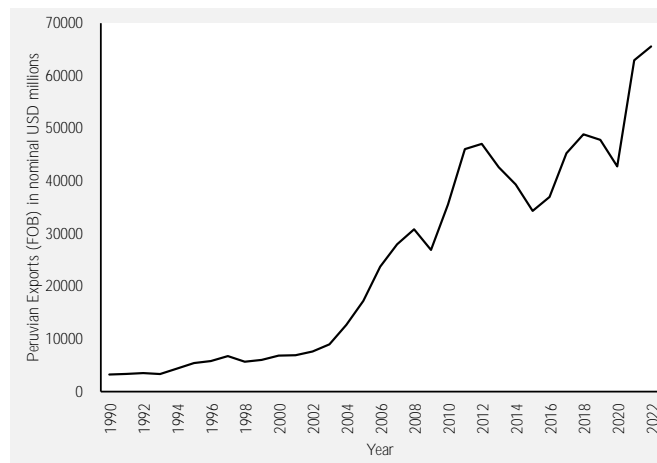
exporting companies that export more than USD 100000 each year represent more than 70% of the total exports of the Peruvian Economy. Initially, this would have been the sample for this study. However, due to time and resource constraints, only a subsample of 244 exporting companies was finally collected for this study. Regardless, this meant that a total of 63930 export products and 37165 instances of export market presence were hand-collected, organised, and analysed to determine specific changes in the total value of exports, new export product introductions, and new export market entries between 2010 and 2022. This analysis yields 3162 firm-year observations, which is on par with the number of firms and observations used in the past literature surveyed in table 1.

3.2 Measures

3.2.1 Entries to new export markets

Following Ref et al. (2021) and Ref & Shapira (2017), I measure the count of entries into new export markets by tracking the complete list of export markets attended in the previous three years and then observing how many new markets are present in the current year in comparison to the three-year list. This measure is more precise than the studies in Ref et al. (2021), Ref & Shapira (2017), and Lim (2019) as I can track specific changes in terms of import markets (countries) rather than geographic segments. This is evident as in these studies, the

Figure 5: Evolution of Peruvian total exports (FOB) in nominal USD millions, 1990–2022



Note: Own elaboration. Data from Central Reserve Bank of Peru and International Trade Centre

number of changes is a relatively rare event as changes in broad geographical segments are aggregates of changes in how any given company decides to group its attended markets. In contrast, this is not a problem in the current sample and only a small number of firms show no country changes across time. This study also reduces the potential of errors in coding changes in export markets attended as past studies track changes by hand (Ref et al., 2021; Ref & Shapira, 2017) while a computer algorithm (a matrix formula) is used in this study.

3.2.2 Near and distant search

Following Maslach (2016), Keil et al. (2023), Hoang & Ener (2015), I use changes in the products used by companies as a measure of the search they undertake for suitable alternatives to engage with (export) markets. I also exploit the uniqueness of the database and the international trade context and use the Harmonised System codes that characterise any given product exported across the world to identify whether the changes in export products used related to changes that are near or more distant. The Harmonised Systems allows this identification as it is a standardised 6-digit code that identifies products in chapters (first 2 digits), headings (next 2-digits) and sub-headings (final 2-digits). Customs and tax administrations have the same six digit codes so that exported (imported) products are properly taxed when they are exported (imported) without the need of translations between languages. Because this code is updated every four to five years, I used the United Nations Statistics Division⁴ conversion tables to translate the codes used between 2010 and 2022 (Harmonised System versions 2007, 2012, 2017, 2022) to 2017 Harmonised System codes. This step is critical as it avoid spurious product changes that are attributed to changes in the coding system rather than actual changes made by the exporting firm.

To maintain consistency with the practices in the reviewed experimental (Billinger et al., 2014, 2021) and computer simulation studies (Levinthal & Warglien, 1999; Albert & Siggelkow, 2022; Ethiraj & Levinthal, 2004a,b; Knudsen & Srikanth, 2014), I use the Hamming Distance between the export portfolio of a company in a given year against its portfolio in the past year as a measure of search. Near search is measured as the Hamming Distance in the subheading-level codes used by the company between the present year and the previous one. For example, if a company has exported fresh non-decaffeinated coffee beans (code 090111) in the previous year, and in the present year it exports them again in addition to a decaffeinated variety (code 090112), then the hamming distance is 1 unit,

⁴See <https://unstats.un.org/unsd/classifications/Econ> (accessed 15 April 2023)

and it counts as search for a new export product. Because the change in the Harmonised System occurs at the subheading level, it counts as a change in related product (from using 090111 to using 090111 and 090112), and search is considered as local or near. The opposite example, where the company exported codes 090111 and 090112 in the previous year and now only exports 090111 in the present year counts also as near search, it also yields a Hamming Distance of 1, but qualitatively it counts as abandoning (rather than introducing) a new product. Hamming distances for distant search are measured in the same way while tracking changes at the chapter (first two digits) level, for example when exporting edible fruits (08 chapter code) and moving to fish and crustaceans (chapter 03).

Using the Hamming Distance for changes at the chapter level and subheading level I am able to track four specific search processes that aggregate for near and distant search. Specifically I measure the Hamming distance for near search keeping track of new and similar product added and abandoned. The Hamming distance for distant search is measured as new and more different products added and abandoned. I use the disaggregate measures (near product additions and subtractions, and distant product additions and subtractions) when assessing the types of search processes being triggered by domestic and export market performance above and below aspirations (Greve, 2018), while I aggregate near (addition and subtractions) vs. distant (addition and subtractions) search measures to be consistent with the experimental and simulations literature.

3.2.3 Complexity of the landscape

The unit of measure of complexity is operationalised with a derivative of the Shannon Entropy index (Palepu, 1985; Jacquemin & Berry, 1979). The Shannon Entropy index is a direct unit of measure of the complexity of any given information representing an aspect of reality (Shannon, 1948). According to this index, the measure of the complexity of any given information can be measured by assessing the amount of bits (one bit can be either 1 or 0) it takes to encode the information, which translate in mathematical terms to taking the logarithm of the size of the information in base 2. To account for multiple aspects of a given piece of information, this formula is expanded to account for the probability (or how relevant) any given piece of information is, giving rise to the common formula

$$\sum p(x_i) \log_2\left(\frac{1}{p(x_i)}\right)$$

More complex information requires significantly more bits, and thus will lead to an increase value in the index. As was extended by [Jacquemin & Berry \(1979\)](#) and [Palepu \(1985\)](#), it is possible to extend this formula to the current portfolio of products a given company has to determine its complexity in terms of related and unrelated products marketed or segments attended.

Following their formulas, I track the extent of the complexity in the related export products of a given company by calculating

$$DR_j = \sum_{i \in j} P_i^j \ln(1/P_i^j)$$

where j is a given 4-digit heading level, i are the specific export products at the 6-digit subheading level within that j heading, and P is the share of the given product i in the category j . This will lead to j related diversification measures, which are then averaged based on their overall relative share in the total export portfolio, as

$$DR = \sum_{j=1}^M DR_j P^j$$

where M is the total number of subheadings at the 4 digit level used. Finally, the extent of the complexity in unrelated export products is measured as

$$DU = \sum_{h=1}^N P^h \ln(1/P^h)$$

where h are the 2-digit harmonised system chapters used by the company and N is the total number of chapters.

3.2.4 Performance feedback on domestic and export market goals

Before undertaking this study, I conducted a case study⁵ involving eight export managers in small and large Peruvian export companies in different industries. The case studies revealed that internationalisation in these companies aligned with a “satisficing” model of firm decision-making akin to hill-climbing. When exporting companies underperformed in their sales (a key goal being actively

⁵It was part of my licentiate title thesis which studied the internationalisation process of exporting firms from a behavioural theory of the firm point of view with computer simulations, statistical evidence, and a case study. See <https://repositorio.up.edu.pe/handle/11354/3109> (permanent link).

monitored), they engaged in finding more clients, tracing blame across organisational units (e.g., the quality of the products was not adequate due to operational error, or climate) and asking for new products wanted. As exports rose above their aspirations, they engaged in capital expenditures to explore new export products that, while uncertain at the moment, were expected to yield more sales in new, previously untapped export markets. This case study also highlighted that for exporting companies, actual performance representing monetary values, such as sales, net income, or earnings before interest, taxes, and depreciation and amortisations (EBITDA), were more useful and actively tracked than—for example—return on assets. This finding is also found empirically by [Bromiley & Harris \(2014\)](#), in which they report that net income measures perform better in performance feedback models than return on assets and other financial measures. While monetary measures have shortcomings when comparing their effect across companies, as accountancy practices vary, they are closer to the actual and meaningful goals executives track. A second wave, case study conducted in June 2023 on the largest exporting firm also present in the initial case study showed that after this company had experienced an unexpected shortfall of 50% in its EBITDA, a measure quoted by analysts, executives, and the CEO, the company showed radical changes, which materialised in the closure of the business unit in charge of new export product exploration across three continents (Europe, America, and Asia).

Consequently, I measure performance in the domestic and export market using the total sales reported in each of these two areas for a given export company. The total value of exports for a given year is obtained from INFOTRADE while the domestic value of sales is approximated by subtracting total company export from the total sales reported by the company to SUNAT (as collected by the PeruTop10000 Peruvian public and private companies database). This last step introduces imprecision into the domestic performance measure as for some companies, there is missing information. However, omitting domestic performance altogether would omit a relevant goal that is also considered by managers and that would lead to omitted variable bias, as domestic performance is related to export performance ([Salomon & Shaver, 2005](#)) and to search and change as evidenced in the performance feedback literature.

Aspirations for domestic and export performance goals are produced following the standardised approach suggested by [Greve \(2003b\)](#), which involves retrieving aspirations recursively with an α parameter that determines how quick or slow aspirations update relative to new information on current performance. Explic-

itly, the formula is:

$$A_{i,t} = \alpha \text{Perf}_{i,t-1} + (1 - \alpha)A_{i,t-1}$$

An empirical investigation on the current database showed that $\alpha = 0.5$ for both domestic and export performance aspirations yields models with the lowest AIC and BIC values for the models employed. Social aspirations relative to domestic and export market performance are not considered in this study as [Bromiley & Harris \(2014\)](#) also show that considering either social or historical aspirations separately yields better results than combining them. The case studies also revealed that social comparisons are relevant in export companies, however, the comparisons are based on company ties and geographic proximity in terms of production plants and crop fields, where technical skills can be compared and vicarious learning can take place ([Denrell & March, 2001](#)).

Performance relative to aspirations in domestic and export market goals is consequently measured as the *ratio* between current domestic or export performance and the aspirations set for each of them:

$$\text{Performance relative to aspirations}_{i,t} = \frac{\text{Perf}_{i,t}}{A_{i,t}}$$

which is related to the original formulation of the comparison between actual performance and aspirations in [Cyert & March \(1992\)](#) and [March & Simon \(1993\)](#) and also aligns with the comments from the case studies, in which interviewees reported shortfalls in terms of percent changes or increases in relation to what was expected. This decision also means that the use of splines to study the effect of performance below and above aspirations is now anchored at 1 instead of 0.

3.2.5 Control variables

Due to the limitation in the PeruTop10000 secondary database used to gather general financial information about the exporting companies, most of the control variables stem from the official and complete INFOTRADE database. The extent of the internationalisation of a firm is expected to be correlated to its expertise in finding new export products, to its domestic and foreign market performance, as well as to the subsequent entry into new export markets. For this reason this critical confounder is controlled by calculating the inverse of the normalised Herfindahl index of the export value of the markets attended, which is considered a measure of breadth ([Contractor et al., 2003](#); [Kirca et al.,](#)

2011; Marshall et al., 2020; Thomas & Eden, 2004). A more direct and recent measure of firm internationalisation is operationalised using the RIMS (ratio of international market shares) indicator as proposed in Marshall et al. (2020). The count of export markets and the traditional export intensity measure are also used when assessing the effect of performance feedback on search as they are considered measures of scope and depth respectively (Almodóvar & Rugman, 2014; Contractor et al., 2003). The logarithm of the value of total export is used as an exposure control variable when considering effects on search and change. Given the extensive literature on the role of distance on firm exports evidenced in international trade gravity models (Bernard et al., 2007), I also include the weighted average distance between Peru and the trading patterns that each company has. Due to the mentioned limitation of the PeruTop10000 database on basic financial information, there is potential for endogeneity stemming from omitted variable bias. This is partially addressed with the use of (conditional) fixed effects specifications, which at least addressed fixed firm-specific heterogeneity.

3.3 Statistical approach

Given that the number of entries into new export markets in a given year and the Hamming Distance measures for the change variables are count measures, I use a conditional fixed-effects Poisson model to test the research hypotheses. I also inspect for overdispersion, however, as Verbeek (2008) and Cameron & Trivedi (2005) note, overdispersion does not lead to inconsistent coefficients but only to incorrect standard errors, which can be addressed by employing heteroskedasticity and autocorrelation-robust standard errors. Another potential solution not implemented in this study due to space limitations is the conditional fixed effects negative binomial model as it explicitly accommodates for overdispersion.

The Poisson models to predict near and distant search for new export products have the following specification:

$$\begin{aligned}
E[\text{HamDist}_{it}|\alpha_i, \mathbf{x}_{it}] = & \alpha_i \exp(\gamma_1 \text{DomesticPerfBelowAspi}_{it} + \gamma_2 \text{DomesticPerfBelowAspi}_{it}^2 \\
& + \gamma_3 \text{DomesticPerfAboveAspi}_{it} + \gamma_4 \text{DomesticPerfAboveAspi}_{it}^2 \\
& + \gamma_5 \text{ExportPerfBelowAspi}_{it} + \gamma_6 \text{ExportPerfBelowAspi}_{it}^2 \\
& + \gamma_7 \text{ExportPerfAboveAspi}_{it} + \gamma_8 \text{ExportPerfAboveAspi}_{it}^2 \\
& + b_1 \text{RIMS}_{it} + b_2 \text{nMarkets}_{it} + b_3 \text{invHerfMarkets}_{it} + \\
& + b_4 \text{totalWeightedDistance}_{it} + b_5 \log(\text{totalExports}_{it}) \\
& + b_6 \text{exportToSales}_{it})
\end{aligned} \tag{1}$$

HamDist represent four type of search: near search by adding related export products, near search by abandoning related export products, distant search by adding unrelated export products, and distant search by dropping unrelated export products. Quadratic effects for the performance feedback variables are considered following [García-García et al. \(2022\)](#), [Ref et al. \(2021\)](#), and [Ref & Shapira \(2017\)](#). The effect of the complexity of the landscape is not considered in this equation as it has been shown be independent of search effort ([Billinger et al., 2014](#); [Caplin et al., 2011](#)) and it would introduce a simultaneity problem as it also uses new product introductions in its calculation.

The Poisson model to estimate the effect of domestic vs. export performance feedback, near vs. distant search, and the complexity of the landscape on entries into new export markets is as follows:

$$\begin{aligned}
E[\text{newEntries}_{it}|\alpha_i, \mathbf{x}_{it}] = & \alpha_i \exp(\gamma_1 \text{DomesticPerfBelowAspi}_{it} + \gamma_2 \text{DomesticPerfBelowAspi}_{it}^2 \\
& + \gamma_3 \text{DomesticPerfAboveAspi}_{i,t-1} + \gamma_4 \text{DomesticPerfAboveAspi}_{i,t-1}^2 \\
& + \gamma_5 \text{ExportPerfBelowAspi}_{i,t-1} + \gamma_6 \text{ExportPerfBelowAspi}_{i,t-1}^2 \\
& + \gamma_7 \text{ExportPerfAboveAspi}_{i,t-1} + \gamma_8 \text{ExportPerfAboveAspi}_{i,t-1}^2 \\
& + \theta_1 \text{unrelatDiv}_{i,t-1} + \theta_2 \text{relatDiv}_{i,t-1} \\
& + \theta_3 \text{nearHamDist}_{i,t-1} + \theta_4 \text{farHamDist}_{i,t-1} \\
& + \theta_5 \text{nearHamDist}_{i,t-1} \times \text{relatDiv}_{i,t-1} \\
& + \theta_6 \text{nearHamDist}_{i,t-1} \times \text{unrelatDiv}_{i,t-1} \\
& + \theta_7 \text{farHamDist}_{i,t-1} \times \text{relatDiv}_{i,t-1} \\
& + \theta_8 \text{farHamDist}_{i,t-1} \times \text{unrelatDiv}_{i,t-1} \\
& + b_1 \text{RIMS}_{i,t-1} + b_2 \text{nMarkets}_{i,t-1} + b_3 \text{invHerfMarkets}_{i,t-1} + \\
& + b_4 \text{totalWeightedDistance}_{i,t-1} + b_5 \log(\text{totalExports}_{i,t-1}) \\
& + b_6 \text{exportToSales}_{i,t-1}) \tag{2}
\end{aligned}$$

In this second equation, nearHamDist is the total Hamming Distance of near search (near export product additions and abandonments) and farHamDist is the total Hamming Distance for distant search (distant export product additions and abandonments). unrelatDiv and relatDiv are the unrelated and related diversification complexity measures from [Palepu \(1985\)](#). As is evidenced in the last equation, regressors are lagged by one period with respect to entry into new export markets as this variable simultaneously affects performance for export market goals, the export portfolio of products used, and the measures relating to the degree of internationalisation. In this specific case of simultaneity, lagging the regressors by one period is a valid strategy to address simultaneity ([Bellemare et al., 2017](#); [Reed, 2015](#)).

A final note on testing hypothesis 3. Testing a mediation effect—as is intended in this study, in which search mediates the relationship between performance feedback and change—is more challenging in non-linear models (Poisson and negative binomial models) than in the linear (OLS) case ([Cheng et al., 2018](#); [Coxe & MacKinnon, 2010](#); [Geldhof et al., 2018](#)). A formal test for mediation with non-linear models requires a more sophisticated approach ([Cheng et al., 2018](#); [Geldhof et al., 2018](#)) than the basic approach followed in this study in

which changes in the significance of the coefficients are observed ([Bullock et al., 2010](#); [Judd & Kenny, 1981](#); [MacKinnon & Pirlott, 2015](#))

4 Results

Univariate statistics are presented in tables 2 and 4 and Pearson correlations are presented in tables 3 and 5 for the variables used to estimate equations 1 and 2, respectively. Tables 6 and 7 show the results for the equations predicting near vs. distant search respectively. Table 8 shows the results for the equation predicting entries into new export markets considering the role of search and performance feedback. Given that all of the key independent variable involve non-linear effects, the significance of the coefficients is assessed with the aid of Johnson-Neyman confidence bands, which determine the regions of statistical significance. This approach to testing the quadratic effects is also observed in [Ref et al. \(2021\)](#) and [Ref & Shapira \(2017\)](#), which also assess the effect of performance feedback and its square on change. Before proceeding to test the research hypothesis, I note that the observations used in each of the models vary slightly as the conditional fixed effects Poisson model disregards observations with constant zeroes in the dependent variable within each cluster.

Table 2: Univariate statistics for variables in model predicting near and distant search

Variable	Unit	Mean	SD	Min	p^{10}	p^{25}	p^{50}	p^{75}	p^{90}	Max	Skew.	Kurt.	
<i>Near search</i>													
1	Near search by product addition	Count	2.18	5.36	0	0	0	2	5	71	5.70	46.70	
2	Near search by product abandonment	Count	2.25	5.77	0	0	0	2	5	72	5.87	49.08	
<i>Distant search</i>													
3	Distant search by product addition	Count	1.78	5.89	0	0	0	1	2	5	204	25.22	839.58
4	Distant search by product abandonment	Count	1.90	5.52	0	0	0	1	2	5	174	19.82	576.34
<i>Domestic goals feedback</i>													
5	Domestic performance below aspiration	Continuous	0.82	0.30	0	0.27	0.79	0.99	1	1	1	-1.83	5.10
6	Domestic performance above aspiration	Continuous	1.52	4.89	1	1	1	1	1.21	1.56	152.86	23.78	657.27
<i>Export goals feedback</i>													
7	Export performance below aspiration	Continuous	0.88	0.19	0.02	0.61	0.81	1	1	1	1	-1.84	5.98
8	Export performance above aspiration	Continuous	1.21	0.38	1	1	1	1.03	1.28	1.59	5.00	3.79	24.62
<i>Controls</i>													
9	Ratio of International Market Shares	Percent points	5.76	10.62	0	0.02	0.10	0.65	6.26	19.23	93.99	2.79	12.35
10	Number of export markets attended	Count	11.38	9.68	1	3	4	9	15	25	64	1.78	6.85
11	Inverse of normalised Herfindahl index of export markets	Percent points	56.80	24.84	0	16.90	41.20	63.20	76.70	84.30	93.90	-0.75	2.60
12	Value-weighted distance to export markets	Kilometres	5566.99	3871.00	68.63	1573.04	2254.99	4526.09	8114.82	10659.17	18514.88	0.94	3.30
13	log(Value of total exports in USD millions)	continuous	1.78	1.65	-2.09	-0.27	0.65	1.63	2.83	3.97	7.69	0.46	3.16
14	Ratio of exports to total sales	Percent points	29.20	33.15	0.01	1.16	3.68	12.82	46.00	93.52	100	1.09	2.75

Firms: 197. Firm-year observations: 1673. Note: Value-weighted distance presents in few cases short distances as export firms declare that they export to free economic zones located at the country borders. The Ratio of International Market Shares takes the value of zero when a company exports to only a single country, which indicates that the company is not globalised, as the index intends to identify.

Table 3: Pearson correlations for variables in the models predicting near and distant search

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Near search by product addition	1.00													
2 Near search by product abandonment	0.69	1.00												
3 Distant search by product addition	0.16	0.08	1.00											
4 Distant search by product abandonment	0.12	0.19	0.03	1.00										
5 Domestic performance below aspiration	0.03	0.03	0.05	0.05	1.00									
6 Domestic performance above aspiration	0.00	-0.01	0.12	0.01	0.06	1.00								
7 Export performance below aspiration	-0.01	-0.11	-0.05	-0.14	-0.10	-0.01	1.00							
8 Export performance above aspiration	0.07	0.05	0.03	-0.04	-0.04	-0.03	0.34	1.00						
9 Ratio of International Market Shares	-0.03	-0.04	-0.04	-0.05	-0.16	0.00	0.09	-0.03	1.00					
10 Number of export markets attended	0.10	0.08	0.04	0.08	-0.21	0.02	0.17	-0.06	0.38	1.00				
11 Inverse of normalised Herfindahl index of export markets	0.12	0.10	0.06	0.03	-0.05	-0.02	0.09	-0.04	0.39	0.59	1.00			
12 Value-weighted distance to export markets	-0.09	-0.09	-0.10	-0.11	-0.16	-0.01	0.06	0.02	0.35	0.17	0.02	1.00		
13 log(Value of total exports in USD millions)	0.06	0.03	0.04	0.02	-0.26	0.06	0.27	0.05	0.18	0.54	0.19	0.25	1.00	
14 Ratio of exports to total sales	-0.10	-0.09	-0.04	-0.05	-0.69	0.09	0.19	0.01	0.25	0.44	0.09	0.30	0.60	1.00

Firms: 197. Firm-year observations: 1673. $|\rho| \geq 0.048$ are significant at the 0.05 percent level.

Table 4: Univariate statistics for variables in model predicting entries into new export markets in the following year

Variable	Unit	Mean	SD	Min	p^{10}	p^{25}	p^{50}	p^{75}	p^{90}	Max	Skew.	Kurt.
<i>Dependent variable at current year</i>												
1 New export market entries vs. past 3 years	Count	1.38	1.73	0	0	0	1	2	3	18	2.66	16.62
<i>Independent variables lagged by one year</i>												
<i>Domestic goals feedback</i>												
2 Domestic performance below aspiration	Continuous	0.81	0.30	0	0.26	0.77	0.97	1	1	1	-1.77	4.91
3 Domestic performance above aspiration	Continuous	1.50	5.13	1	1	1	1	1.16	1.48	152.86	23.23	614.63
<i>Export goals feedback</i>												
4 Export performance below aspiration	Continuous	0.88	0.19	0.02	0.60	0.80	1	1	1	1	-1.76	5.64
5 Export performance above aspiration	Continuous	1.20	0.38	1	1	1	1.02	1.24	1.58	5.00	3.98	26.03
<i>Complexity of the landscape</i>												
6 Unrelated diversification (Landscape simplicity)	Continuous	0.42	0.46	0	0	0.00	0.28	0.69	1.08	2.24	1.11	3.84
7 Related diversification (Landscape complexity)	Continuous	0.40	0.63	0	0	0	0.23	0.51	1.07	4.88	3.03	15.04
<i>Near and distant search</i>												
8 Distant search - total Hamming Distance	Count	3.77	8.61	0	0	0	2	5	9	204	14.72	309.72
9 Near search - total Hamming Distance	Count	4.40	10.31	0	0	0	1	4	10	100	4.85	30.68
<i>Controls</i>												
10 Inverse of normalised Herfindahl index of export markets	Percent points	56.95	24.73	0	17.10	41.90	63.30	76.80	84.30	93.90	-0.76	2.63
11 Ratio of International Market Shares	Percent points	5.78	10.63	0	0.02	0.10	0.64	6.43	19.20	93.99	2.81	12.64
12 Value-weighted distance to export markets	Kilometres	5587.89	3885.48	68.63	1572.55	2257.32	4557.20	8118.01	10721.80	18366.45	0.93	3.28
13 log(Value of total exports in USD millions)	continuous	1.76	1.65	-2.09	-0.29	0.63	1.60	2.81	3.97	7.69	0.46	3.15

Firms: 190, Firm-year observations: 1478. Note: Value-weighted distance presents in few cases short distances as export firms declare that they export to free economic zones located at the country borders. The Ratio of International Market Shares takes the value of zero when a company exports to only a single country, which indicates that the company is not globalised, as the index intends to identify.

Table 5: Pearson correlations for variables in the models predicting entries into new export markets

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 New export market entries vs. past 3 years	1.00													
2 Domestic performance below aspiration	-0.13	1.00												
3 Domestic performance above aspiration	-0.02	0.06	1.00											
4 Export performance below aspiration	0.07	-0.10	-0.01	1.00										
5 Export performance above aspiration	-0.02	-0.03	-0.02	0.33	1.00									
6 Unrelated diversification (Landscape simplicity)	0.06	0.03	0.01	-0.06	-0.08	1.00								
7 Related diversification (Landscape complexity)	0.07	0.05	0.03	-0.05	-0.02	0.48	1.00							
8 Distant search - total Hamming Distance	0.02	0.07	0.10	-0.13	0.00	0.19	0.33	1.00						
9 Near search - total Hamming Distance	0.06	0.03	-0.01	-0.07	0.06	0.32	0.70	0.20	1.00					
10 Inverse of normalised Herfindahl index of export markets	0.20	-0.06	-0.02	0.08	-0.07	0.33	0.23	0.06	0.12	1.00				
11 Ratio of International Market Shares	0.21	-0.14	-0.01	0.09	-0.03	0.07	-0.03	-0.06	-0.04	0.38	1.00			
12 Value-weighted distance to export markets	0.17	-0.17	-0.02	0.05	0.03	-0.17	-0.17	-0.15	-0.10	0.02	0.35	1.00		
13 log(Value of total exports in USD millions)	0.26	-0.26	0.06	0.26	0.03	0.02	0.13	0.04	0.05	0.19	0.18	0.24	1.00	

Firms: 190, Firm-year observations: 1478. $|\rho| \geq 0.051$ are significant at the 0.05 percent level.

Table 6: Conditional fixed-effects Poisson models predicting distinct near search processes in response to performance feedback on domestic and export market goals

	Near search - addition						Near search - abandonment					
	Linear effects			Quadratic effects			Linear effects			Quadratic effects		
	Coef.	Rob. SE	Sig.	Coef.	Rob. SE	Sig.	Coef.	Rob. SE	Sig.	Coef.	Rob. SE	Sig.
<i>Domestic goals</i>												
Domestic performance below aspiration	-0.534	0.212	0.01	-1.723	0.673	0.01	-0.371	0.212	0.08	0.238	0.616	0.70
(Domestic performance below aspiration) ²				0.905	0.522	0.08				-0.485	0.485	0.32
Domestic performance above aspiration	0.007	0.003	0.02	0.028	0.011	0.01	0.002	0.002	0.30	0.006	0.013	0.62
(Domestic performance above aspiration) ²				0.000	0.000	0.07				0.000	0.000	0.68
<i>Export goals</i>												
Export performance below aspiration	0.330	0.191	0.09	3.992	1.452	0.01	-1.155	0.218	0.00	-3.950	0.962	0.00
(Export performance below aspiration) ²				-2.608	0.993	0.01				1.988	0.652	0.00
Export performance above aspiration	0.021	0.121	0.86	0.634	0.273	0.02	0.013	0.129	0.92	-0.163	0.406	0.69
(Export performance above aspiration) ²				-0.116	0.058	0.05				0.024	0.092	0.80
<i>Controls</i>												
Ratio of International Market Shares	0.010	0.006	0.09	0.009	0.006	0.18	0.003	0.004	0.45	0.003	0.004	0.38
Number of export markets attended	0.026	0.012	0.03	0.030	0.011	0.01	0.012	0.010	0.21	0.007	0.010	0.49
Inverse of normalised Herfindahl index of export markets	-0.003	0.003	0.39	-0.002	0.003	0.51	-0.001	0.003	0.83	0.000	0.003	1.00
Value-weighted distance to export markets	0.000	0.000	0.35	0.000	0.000	0.39	0.000	0.000	0.69	0.000	0.000	0.88
log(Value of total exports in USD millions)	0.267	0.125	0.03	0.157	0.095	0.10	0.281	0.088	0.00	0.381	0.064	0.00
Ratio of exports to total sales	-0.014	0.004	0.00	-0.015	0.004	0.00	-0.001	0.005	0.88	-0.001	0.005	0.92
Year fixed effects		Yes			Yes			Yes			Yes	
Firms		158			158			158			158	
Obs.		1395			1395			1393			1393	

Table 7: Conditional fixed-effects Poisson models predicting distinct near search processes in response to performance feedback on domestic and export market goals

	Distant search – addition						Distant search – abandonment					
	Linear effects			Quadratic effects			Linear effects			Quadratic effects		
	Coef.	Rob. SE	Sig.	Coef.	Rob. SE	Sig.	Coef.	Rob. SE	Sig.	Coef.	Rob. SE	Sig.
<i>Domestic goals</i>												
Domestic performance below aspiration	0.718	0.431	0.10	-0.592	0.698	0.40	0.719	0.302	0.02	0.394	0.844	0.64
(Domestic performance below aspiration) ²				0.549	0.628	0.38				0.333	0.715	0.64
Domestic performance above aspiration	0.023	0.045	0.62	0.147	0.035	0.00	-0.004	0.010	0.70	-0.054	0.032	0.10
(Domestic performance above aspiration) ²				-0.001	0.000	0.00				0.000	0.000	0.07
<i>Export goals</i>												
Export performance below aspiration	-0.322	0.803	0.69	0.535	1.392	0.70	-0.838	0.321	0.01	-5.920	2.623	0.02
(Export performance below aspiration) ²				0.201	0.928	0.83				3.463	1.724	0.05
Export performance above aspiration	0.195	0.082	0.02	-0.392	0.314	0.21	0.064	0.151	0.67	-0.210	0.503	0.68
(Export performance above aspiration) ²				0.117	0.052	0.03				0.018	0.117	0.88
<i>Controls</i>												
Ratio of International Market Shares	0.002	0.007	0.81	0.004	0.007	0.59	0.003	0.005	0.49	0.002	0.005	0.63
Number of export markets attended	-0.019	0.013	0.14	-0.011	0.011	0.32	0.023	0.013	0.07	0.009	0.014	0.50
Inverse of normalised Herfindahl index of export markets	0.019	0.007	0.00	0.012	0.004	0.01	-0.004	0.004	0.33	-0.002	0.004	0.57
Value-weighted distance to export markets	0.000	0.000	0.58	0.000	0.000	0.42	0.000	0.000	0.68	0.000	0.000	0.81
log(Value of total exports in USD millions)	0.322	0.241	0.18	0.048	0.126	0.71	-0.163	0.102	0.11	0.14318	0.208834	0.493
Ratio of exports to total sales	-0.010	0.005	0.03	-0.010	0.005	0.07	0.001	0.008	0.94	0.001604	0.007511	0.831
Year fixed effects		Yes			Yes			Yes			Yes	
Firms		167			167			166			166	
Obs.		1461			1461			1452			1452	

Table 8: Conditional fixed-effects Poisson model predicting number of entries to new export markets in response to near vs. distant search, the complexity of the landscape, and performance feedback on domestic and export market goals

All regressors lagged ($t - 1$)	Entries into new export markets vs. past 3 years								
	Goal effects			Search effects			Search \times Complexity		
	Coef.	Rob. SE	Sig.	Coef.	Rob. SE	Sig.	Coef.	Rob. SE	Sig.
<i>Domestic goals</i>									
Domestic performance below aspiration	0.150	0.581	0.80	0.131	0.594	0.83	0.160	0.594	0.79
(Domestic performance below aspiration) ²	-0.178	0.462	0.70	-0.147	0.471	0.75	-0.175	0.470	0.71
Domestic performance above aspiration	-0.002	0.028	0.94	0.001	0.028	0.96	0.003	0.028	0.91
(Domestic performance above aspiration) ²	-0.000	0.000	1.00	0.000	0.000	0.89	0.000	0.000	0.84
<i>Export goals</i>									
Export performance below aspiration	3.055	1.559	0.05	2.772	1.576	0.08	2.802	1.590	0.08
(Export performance below aspiration) ²	-2.152	1.031	0.04	-1.973	1.039	0.06	-1.949	1.051	0.06
Export performance above aspiration	1.472	0.612	0.02	1.435	0.628	0.02	1.436	0.659	0.03
(Export performance above aspiration) ²	-0.384	0.185	0.04	-0.381	0.190	0.05	-0.387	0.200	0.05
<i>Landscape complexity</i>									
Unrelated diversification (Landscape simplicity)				0.192	0.196	0.33	-0.119	0.209	0.57
Related diversification (Landscape complexity)				0.099	0.105	0.35	0.201	0.114	0.08
<i>Near vs. distant search</i>									
Distant search - total Hamming Distance				-0.010	0.005	0.07	-0.016	0.009	0.07
Near search - total Hamming Distance				0.013	0.008	0.10	-0.002	0.013	0.88
<i>Near vs. distant search \times landscape complexity</i>									
<i>Distant search in simple vs. complex landscapes</i>									
Distant search \times Unrelated diversification (Landscape simplicity)							0.020	0.013	0.12
Distant search \times Related diversification (Landscape complexity)							-0.007	0.005	0.13
<i>Near search in simple vs. complex landscapes</i>									
Near search \times Unrelated diversification (Landscape simplicity)							0.026	0.008	0.00
Near search \times Related diversification (Landscape complexity)							-0.002	0.005	0.77
<i>Controls and year fixed-effects (none is sig. except year=2021)</i>									
Firms		Yes			Yes			Yes	
Obs.		186			186			186	
		1448			1448			1448	

Hypothesis 1a focuses on the effect of domestic performance shortfalls on near and distant search. Table 6 shows the effect of this variable on near search while 7 shows its effect on distant search. Table 9 summarises the marginal effect of domestic performance shortfalls on the four processes of search (near and distant search, adding and abandoning products) as domestic performance continues to fall below aspirations. Figure 6 illustrates the results from table 9 and showcases the regions of statistical significance. As panel 6a reveals, as domestic performance falls below aspirations it reduces near search in terms of new product introductions that are similar to the ones exported by the firm. Table 9 shows with more precision that the negative effect of domestic performance shortfalls on near search by adding new and similar products becomes significant after the domestic market shortfalls by 30% relative to aspirations. We observe the same effect for search by dropping similar export products, as panel 6b shows in figure 6. While marginally significant below the 10% level, it shows that as domestic performance falls below aspirations, firms reduce the number of export products abandoned that are similar to the ones already exported. As Table 9 shows with more precision, this effect becomes not significant when domestic performance shortfalls aspirations by 40% or more.

Panel 6a in figure 9 illustrates the effect of domestic performance shortfalls on more distant search by adding more distantly related export products. As none of the confidence intervals exclude zero, this indicates that domestic performance shortfalls do not drive the search for more distant export products. While they do not drive distant search by adding new products, they do drive their abandonment, as is observed in panel 6d and with more precision in table 9. While marginally significant below the 10% level, the latter table shows that as domestic performance begins to fall short of aspirations, it encourages the abandonment of more distant and unrelated export products. This marginally significant effect is observed as soon as domestic performance falls short of aspirations by 10% up until 60%, after which it becomes non-significant.

This analysis shows that domestic performance shortfalls hamper near search by reducing the number of new introductions of related products but not for distant search in terms of new introductions of more distantly related export products. Domestic performance shortfalls also discourage near search by preventing the abandonment of similar (near) export products but encourage turnover of more distant export products. Together, this evidence suggests that domestic performance shortfalls inhibit near and distant search by discouraging related product introductions and encouraging the abandonment of more distant export

products. This gives partial support for hypothesis 1a and a more nuance understanding on search in reaction to domestic performance relative to aspirations.

Hypothesis 1b focuses on near and distant search as domestic performance rise progressively above its aspirations. It predicts that as performance in this goal rises, it will facilitate search for new export products, both closely related as well as more distant ones. Table 10 shows the extent of this effect, as well as its statistical significance, for near and distant search measures as domestic performance continues to rise above aspirations. Graph 7 also shows the regions of significance for these effects.

As panel 7a in figure 7 shows, the effect of domestic performance above aspirations on near search by adding new and similar export products is positive and statistically significant. This positive effect is also observed when considering distant search in terms of introducing new and more unrelated export products, as is evidenced in panel 7c. Table 10 shows that in both cases, the effects are positive and statistically significant at or around the 1% level. Regarding near search by abandoning similar products, I observe that performance increases above aspirations do not affect it in statistical terms (see panel 7b), however, it marginally inhibits abandoning more distant and unrelated export products, as is evidenced in panel 7d and in table 10.

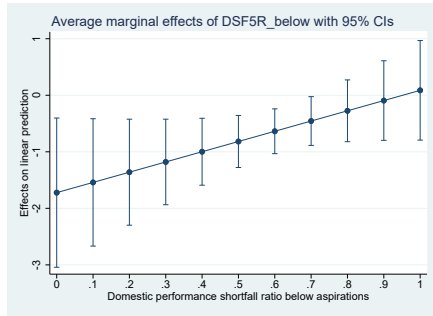
Taken together, the previous findings indicate that domestic performance above aspirations can drive the search for export products despite being a horizontally differentiated goal. Specifically, the previous evidence shows that as domestic performance rises above aspirations, it drives more near and distant search by encouraging the addition of new and similar export products and, more strongly, the addition of more distantly related ones. Considering the marginally significant effect on near and distant search by abandoning export products, I find partial support for hypothesis 1b.

Table 9: Effect of domestic performance below aspirations on near and distant search as performance progressively falls below aspirations

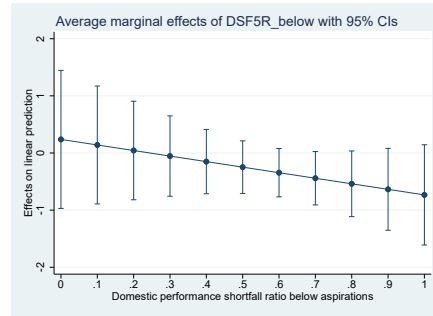
Domestic perf. below aspirations	Near search - product addition			Near search - product abandonment		
	Coef.	Rob. SE	Sig.	Coef.	Rob. SE	Sig.
1 (Max)	0.087	0.449	0.85	-0.733	0.448	0.10
0.9	-0.094	0.359	0.79	-0.636	0.366	0.08
0.8 (Mean)	-0.275	0.279	0.32	-0.539	0.293	0.07
0.7	-0.456	0.220	0.04	-0.442	0.238	0.06
0.6	-0.637	0.202	0.00	-0.345	0.216	0.11
0.5	-0.818	0.235	0.00	-0.248	0.235	0.29
0.4	-0.999	0.302	0.00	-0.151	0.287	0.60
0.3	-1.180	0.386	0.00	-0.053	0.359	0.88
0.2	-1.361	0.478	0.00	0.044	0.440	0.92
0.1	-1.542	0.575	0.01	0.141	0.527	0.79
0 (Min)	-1.723	0.673	0.01	0.238	0.616	0.70

Domestic perf. below aspirations	Distant search - product addition			Distant search - product abandonment		
	Coef.	Rob. SE	Sig.	Coef.	Rob. SE	Sig.
1 (Max)	0.507	0.659	0.44	1.060	0.697	0.13
0.9	0.397	0.546	0.47	0.994	0.570	0.08
0.8 (Mean)	0.287	0.439	0.51	0.927	0.452	0.04
0.7	0.177	0.346	0.61	0.860	0.354	0.02
0.6	0.067	0.279	0.81	0.794	0.294	0.01
0.5	-0.042	0.259	0.87	0.727	0.298	0.02
0.4	-0.152	0.297	0.61	0.660	0.363	0.07
0.3 (p ¹⁰)	-0.262	0.375	0.49	0.594	0.464	0.20
0.2	-0.372	0.474	0.43	0.527	0.583	0.37
0.1	-0.482	0.584	0.41	0.460	0.711	0.52
0 (Min)	-0.592	0.698	0.40	0.394	0.844	0.64

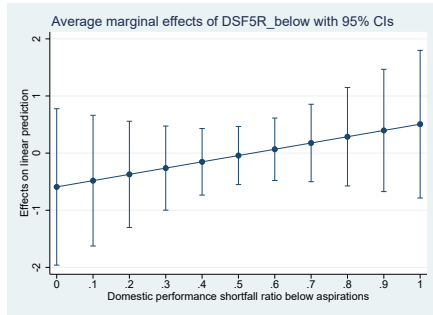
Figure 6: Confidence intervals for the effect of domestic performance below aspirations on near and distant search as performance progressively falls below aspirations



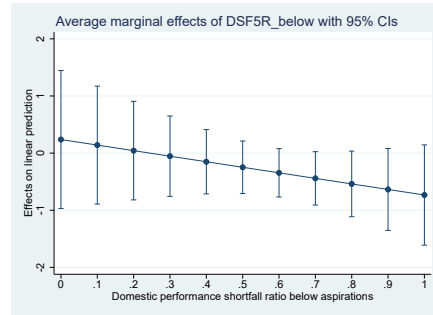
(a) Effect on near search by adding products



(b) Effect on near search by abandoning products



(c) Effect on distant search by adding products



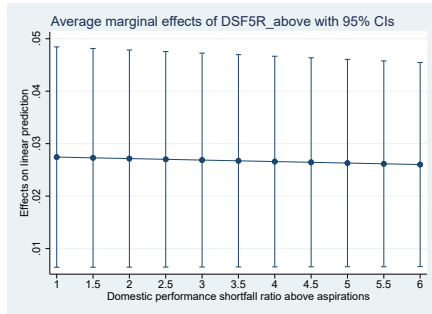
(d) Effect on distant search by abandoning products

Table 10: Effect of domestic performance above aspirations on near and distant search as performance progressively rises above aspirations

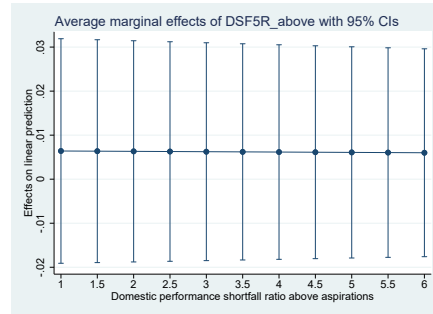
Domestic perf. above aspirations	Near search - product addition			Near search - product abandonment		
	Coef.	Rob. SE	Sig.	Coef.	Rob. SE	Sig.
1 (Min)	0.027	0.011	0.01	0.006	0.013	0.62
1.5 (Mean)	0.027	0.011	0.01	0.006	0.013	0.62
2	0.027	0.011	0.01	0.006	0.013	0.62
2.5	0.027	0.010	0.01	0.006	0.013	0.62
3	0.027	0.010	0.01	0.006	0.013	0.62
3.5	0.027	0.010	0.01	0.006	0.013	0.62
4	0.027	0.010	0.01	0.006	0.012	0.62
4.5	0.026	0.010	0.01	0.006	0.012	0.62
5	0.026	0.010	0.01	0.006	0.012	0.62
5.5	0.026	0.010	0.01	0.006	0.012	0.62
6 (p ⁹⁵)	0.026	0.010	0.01	0.006	0.012	0.62

Domestic perf. above aspirations	Distant search - product addition			Distant search - product abandonment		
	Coef.	Rob. SE	Sig.	Coef.	Rob. SE	Sig.
1 (Min)	0.145	0.034	0.00	-0.053	0.032	0.10
1.5 (Mean)	0.144	0.034	0.00	-0.053	0.032	0.10
2	0.143	0.034	0.00	-0.052	0.032	0.10
2.5	0.142	0.034	0.00	-0.052	0.031	0.10
3	0.141	0.033	0.00	-0.052	0.031	0.10
3.5	0.140	0.033	0.00	-0.051	0.031	0.10
4	0.139	0.033	0.00	-0.051	0.031	0.10
4.5	0.138	0.033	0.00	-0.051	0.031	0.10
5	0.137	0.033	0.00	-0.050	0.030	0.10
5.5	0.136	0.032	0.00	-0.050	0.030	0.10
6 (p ⁹⁵)	0.135	0.032	0.00	-0.049	0.030	0.10

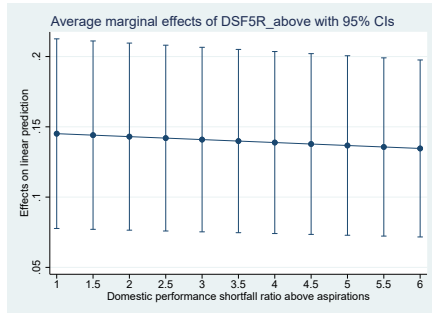
Figure 7: Confidence intervals for the effect of domestic performance above aspirations on near and distant search as performance progressively rises above aspirations



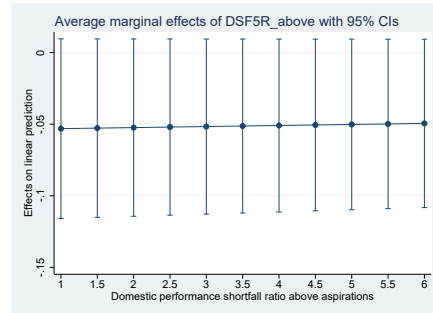
(a) Effect on near search by adding products



(b) Effect on near search by abandoning products



(c) Effect on distant search by adding products



(d) Effect on distant search by abandoning products

Hypothesis 2a argues that as a company's export performance falls below aspirations, it will progressively increase its near and distant export product search, in line with problemistic search expectations. Table 11 showcases the effects of export performance shortfalls on near and distant search measures and figure 8 illustrates the effects and their confidence intervals.

As panel 8a in figure 8 clearly shows, when export performance is at or shortfalls near to aspirations—10% below aspirations—search in terms of new and similar export product introductions are discouraged. Moreover, and more importantly, as it continues to shortfall, it shifts from discouraging to driving near search by introducing new and similar export products across the whole range and in statistically significant terms (see table 11). Panel 8c shows that this effect is not present for distant search in statistically significant terms. Panels 8b and 8d in figure 8 show congruently that as export performance falls short of aspirations, it also inhibits the abandonment of both near and more distantly related export products as performance continues to fall short of aspirations.

The previous evidence gives partial support for hypotheses 2a as it indicates that export performance shortfalls increase near search (by adding new export products that are similar to the ones already exported) but does not increase search for more distantly related export products. Moreover, underperformance in this goal discourages product turnover by reducing the number of export products abandoned, both for near and more distantly related ones.

Hypotheses 2b.1 and 2b.2 make predictions in opposite directions in terms of the effect of export performance above aspirations and near and distant search. On one side, as export performance goals are attained, this triggers the formation of routines with current export products used, thus reducing near search. As slack accumulates, performance above aspirations will also drive distant export product search. Consequently, export performance above aspirations will reduce near search (H2b.1) and increase distant search (H2b.2). Table 12 shows the effects of export performance above aspirations on both near and distant search and figure 9 illustrates these effects and their confidence intervals.

Panel 9a in figure 9 shows that as export performance continues to increase above aspirations, its effect on driving search for new and similar export products dissipates. Table 12 displays with more precision that when export performance rise by more than 80% of its respective aspiration, it stops driving additional near search (in statistical terms) for the rest of the range of the predictor. While near search stops, distant search is simultaneously triggered. As is

shown in panel 9c, export performance above aspirations drives the more distant search for new export products that are unrelated to the current export portfolio. Table 12 shows with more precision that distant search is triggered when export performance surpasses its aspirations 1.6 times, and continues to drive distant search for the rest of the variable's range. Finally, panels 9b and 9d show that export performance above aspirations does not drive the abandonment of near and distantly related export products.

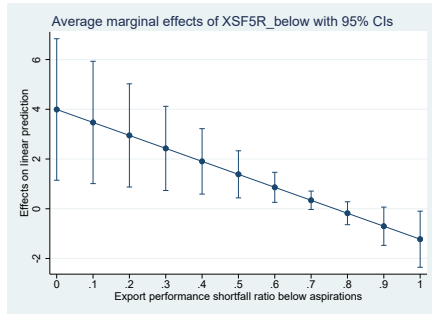
These findings partially support hypotheses 2b.1 and 2b.2. On one side, I find support for hypothesis 2b.1 as I observe that as export performance rises above aspirations, it drives near export product search at decreasing rates until it becomes statistically insignificant when we consider export product introductions. However, this effect is not present when considering export product abandonments related to near export product search. On the other, I find support for hypothesis 2b.2 as I also find that as export performance rises well above its aspirations, it progressively drives the search for distant export products. Nevertheless, this effect is not observed for distant export product abandonments.

Table 11: Effect of export performance below aspirations on near and distant search as performance progressively falls below aspirations

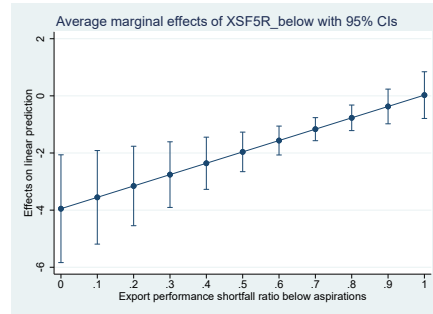
Export perf. below aspirations	Near search - product addition			Near search - product abandonment		
	Coef.	Rob. SE	Sig.	Coef.	Rob. SE	Sig.
1 (Max)	-1.225	0.576	0.03	0.027	0.417	0.95
0.9 (Mean)	-0.703	0.392	0.07	-0.371	0.310	0.23
0.8 (p ²⁵)	-0.181	0.235	0.44	-0.769	0.228	0.00
0.7	0.340	0.189	0.07	-1.166	0.206	0.00
0.6 (p ¹⁰)	0.862	0.308	0.01	-1.564	0.258	0.00
0.5	1.384	0.483	0.00	-1.962	0.353	0.00
0.4	1.905	0.671	0.01	-2.359	0.466	0.00
0.3	2.427	0.864	0.01	-2.757	0.586	0.00
0.2	2.949	1.059	0.01	-3.155	0.710	0.00
0.1	3.470	1.255	0.01	-3.552	0.835	0.00
0 (Min)	3.992	1.452	0.01	-3.950	0.962	0.00

Export perf. below aspirations	Distant search - product addition			Distant search - product abandonment		
	Coef.	Rob. SE	Sig.	Coef.	Rob. SE	Sig.
1 (Max)	0.938	0.705	0.18	1.006	0.935	0.28
0.9 (Mean)	0.897	0.575	0.12	0.313	0.636	0.62
0.8 (p ²⁵)	0.857	0.483	0.08	-0.379	0.416	0.36
0.7	0.817	0.453	0.07	-1.072	0.424	0.01
0.6 (p ¹⁰)	0.776	0.496	0.12	-1.764	0.651	0.01
0.5	0.736	0.596	0.22	-2.457	0.951	0.01
0.4	0.696	0.731	0.34	-3.150	1.275	0.01
0.3	0.656	0.884	0.46	-3.842	1.607	0.02
0.2	0.615	1.048	0.56	-4.535	1.944	0.02
0.1	0.575	1.218	0.64	-5.227	2.283	0.02
0 (Min)	0.535	1.392	0.70	-5.920	2.623	0.02

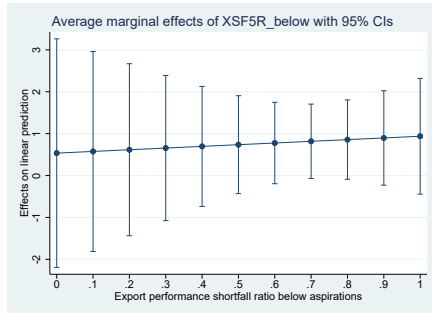
Figure 8: Confidence intervals for the effect of export performance below aspirations on near and distant search as performance progressively falls below aspirations



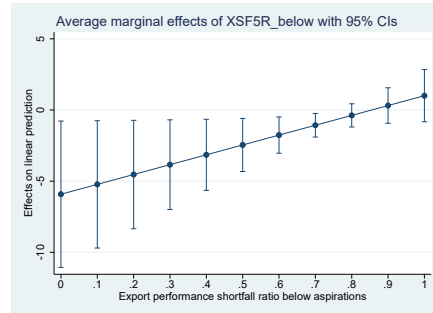
(a) Effect on near search by adding products



(b) Effect on near search by abandoning products



(c) Effect on distant search by adding products



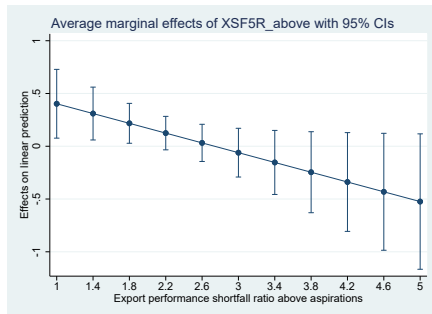
(d) Effect on distant search by abandoning products

Table 12: Effect of export performance above aspirations on near and distant search as performance progressively rises above aspirations

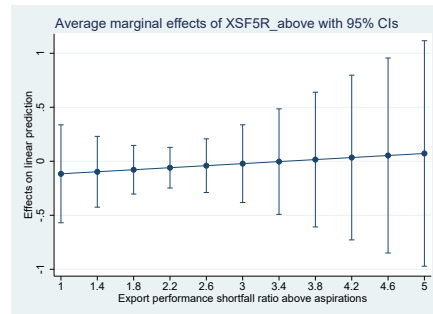
Export perf. above aspirations	Near search - product addition			Near search - product abandonment		
	Coef.	Rob. SE	Sig.	Coef.	Rob. SE	Sig.
1 (Min)	0.403	0.166	0.02	-0.116	0.231	0.62
1.4	0.310	0.128	0.02	-0.097	0.167	0.56
1.8	0.217	0.096	0.02	-0.078	0.115	0.50
2.2	0.125	0.081	0.12	-0.060	0.096	0.54
2.6	0.032	0.090	0.72	-0.041	0.127	0.75
3	-0.061	0.118	0.61	-0.022	0.184	0.91
3.4	-0.153	0.155	0.32	-0.003	0.249	0.99
3.8	-0.246	0.196	0.21	0.016	0.318	0.96
4.2	-0.339	0.239	0.16	0.035	0.389	0.93
4.6	-0.431	0.283	0.13	0.053	0.461	0.91
5 (Max)	-0.524	0.327	0.11	0.072	0.533	0.89

Export perf. above aspirations	Distant search - product addition			Distant search - product abandonment		
	Coef.	Rob. SE	Sig.	Coef.	Rob. SE	Sig.
1 (Min)	-0.158	0.211	0.46	-0.175	0.289	0.55
1.4	-0.064	0.171	0.71	-0.160	0.215	0.46
1.8	0.029	0.131	0.82	-0.146	0.162	0.37
2.2	0.123	0.093	0.19	-0.132	0.154	0.39
2.6	0.216	0.060	0.00	-0.118	0.196	0.55
3	0.310	0.045	0.00	-0.103	0.266	0.70
3.4	0.403	0.063	0.00	-0.089	0.347	0.80
3.8	0.496	0.097	0.00	-0.075	0.433	0.86
4.2	0.590	0.135	0.00	-0.061	0.522	0.91
4.6	0.683	0.175	0.00	-0.047	0.612	0.94
5 (Max)	0.777	0.215	0.00	-0.032	0.702	0.96

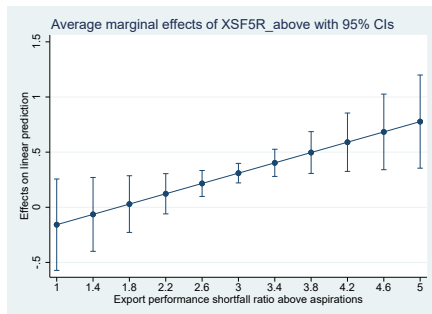
Figure 9: Confidence intervals for the effect of export performance above aspirations on near and distant search as performance progressively rises above aspirations



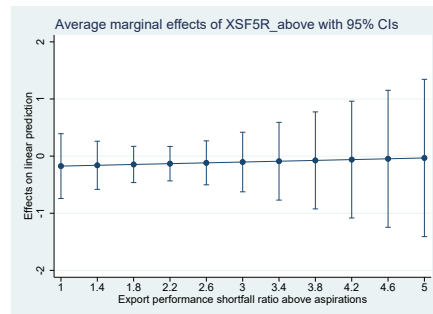
(a) Effect on near search by adding products



(b) Effect on near search by abandoning products



(c) Effect on distant search by adding products



(d) Effect on distant search by abandoning products

Hypothesis 3 argues that once the role of search is controlled for when predicting change, the effect of performance feedback should vanish. In this study, it is expected that once the search for near and more distant export product search are controlled for, domestic and export performance relative to aspirations should not be related to entries into new export markets. As table 8 shows, domestic performance relative to aspirations does not affect new export market entries whether or not search is controlled for. However, export performance relative to aspirations does. As is shown in the upper left part of table 13 and also in panel 10a in figure 10, as export performance begins to drift below aspirations, it significantly discourages new export market entries (up to 10% below aspirations) and only after it shortfalls well below aspirations (below 90% of aspirations), they trigger more entries into new export markets. Moreover, as export performance rises above its aspirations, it significantly drives more entries into new export markets (up to around 60% above aspirations), as is also shown in the upper right section of table 13 and panel 10b.

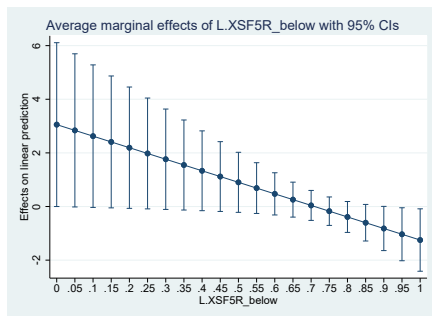
Once search and the landscape in which search has to be undertaken are controlled for (the right-most column in table 8 which estimates equation 2), the regions of significance and magnitude of the effects of export performance feedback reduce. As is observed in the lower left part of table 13 and panel 10c, export performance below aspirations does not affect new export market entries in statistical terms at the 5% level. Moreover, once search is controlled for, export performance above aspirations increases new export market entries to a lesser extent. In addition, this effect is now only significant for export performance up to 45% above aspirations (see panel 10d and lower right section of table 13).

Consequently, I find evidence that partially supports hypothesis 3. On one side, there is evidence that, once search is controlled for, export performance shortfalls do not affect new export market entries. On the other side, export performance above aspirations continue to have a positive effect on new export market entries, albeit in a lower magnitude and with a narrower region of significance.

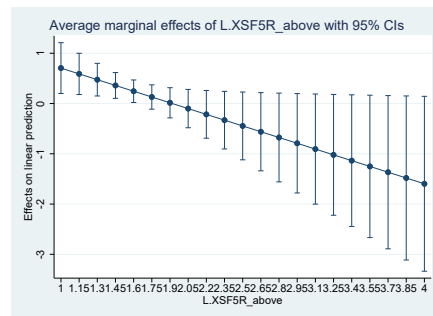
Table 13: Effect of export performance relative to aspirations before and after controlling for the role of search and landscape complexity

Search is not controlled for							
Export perf. below aspirations				Export perf. above aspirations			
At	Coef.	Rob. SE	Sig.	At	Coef.	Rob. SE	Sig.
1.00	-1.250	0.594	0.04	1.00	0.705	0.258	0.01
0.95	-1.035	0.504	0.04	1.15	0.590	0.209	0.01
0.90	-0.820	0.421	0.05	1.30	0.475	0.166	0.00
0.85	-0.604	0.348	0.08	1.45	0.360	0.131	0.01
0.80	-0.389	0.294	0.19	1.60	0.245	0.114	0.03
0.75	-0.174	0.271	0.52	1.75	0.130	0.123	0.29
0.70	0.041	0.285	0.89	1.90	0.014	0.153	0.93
0.65	0.257	0.333	0.44	2.05	-0.101	0.195	0.61
0.60	0.472	0.402	0.24	2.20	-0.216	0.242	0.37
0.55	0.687	0.483	0.16	2.35	-0.331	0.292	0.26
0.50	0.902	0.571	0.11	2.50	-0.446	0.344	0.20
0.45	1.118	0.664	0.09	2.65	-0.561	0.397	0.16
0.40	1.333	0.759	0.08	2.80	-0.676	0.450	0.13
0.35	1.548	0.857	0.07	2.95	-0.791	0.504	0.12
0.30	1.763	0.955	0.07	3.10	-0.906	0.559	0.11
0.25	1.978	1.054	0.06	3.25	-1.021	0.613	0.10
0.20	2.194	1.154	0.06	3.40	-1.136	0.668	0.09
0.15	2.409	1.255	0.06	3.55	-1.251	0.723	0.08
0.10	2.624	1.356	0.05	3.70	-1.366	0.778	0.08
0.05	2.839	1.457	0.05	3.85	-1.481	0.833	0.08
0.00	3.055	1.559	0.05	4.00	-1.596	0.888	0.07
Search is controlled for							
Export perf. below aspirations				Export perf. above aspirations			
At	Coef.	Rob. SE	Sig.	At	Coef.	Rob. SE	Sig.
1.00	-1.095	0.593	0.07	1.00	0.637	0.273	0.02
0.95	-0.911	0.504	0.07	1.15	0.524	0.221	0.02
0.90	-0.728	0.422	0.09	1.30	0.411	0.174	0.02
0.85	-0.544	0.353	0.12	1.45	0.297	0.137	0.03
0.80	-0.361	0.304	0.24	1.60	0.184	0.119	0.12
0.75	-0.177	0.286	0.54	1.75	0.071	0.129	0.58
0.70	0.006	0.305	0.98	1.90	-0.042	0.161	0.79
0.65	0.189	0.355	0.59	2.05	-0.155	0.206	0.45
0.60	0.373	0.425	0.38	2.20	-0.268	0.257	0.30
0.55	0.556	0.507	0.27	2.35	-0.382	0.310	0.22
0.50	0.740	0.596	0.21	2.50	-0.495	0.366	0.18
0.45	0.923	0.689	0.18	2.65	-0.608	0.422	0.15
0.40	1.107	0.785	0.16	2.80	-0.721	0.479	0.13
0.35	1.290	0.883	0.14	2.95	-0.834	0.537	0.12
0.30	1.473	0.982	0.13	3.10	-0.947	0.594	0.11
0.25	1.657	1.082	0.13	3.25	-1.060	0.652	0.10
0.20	1.840	1.182	0.12	3.40	-1.174	0.711	0.10
0.15	2.024	1.284	0.12	3.55	-1.287	0.769	0.09
0.10	2.207	1.385	0.11	3.70	-1.400	0.828	0.09
0.05	2.391	1.487	0.11	3.85	-1.513	0.886	0.09
0.00	2.574	1.590	0.11	4.00	-1.626	0.945	0.09

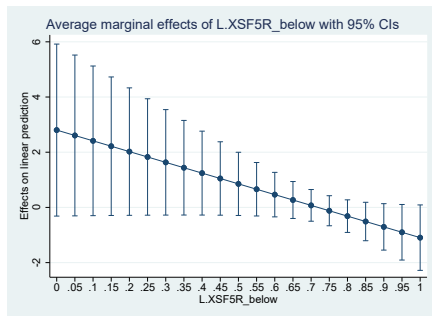
Figure 10: Confidence intervals for the effect of export performance relative to aspirations on entries to new export markets before and after controlling for the role of search and landscape complexity



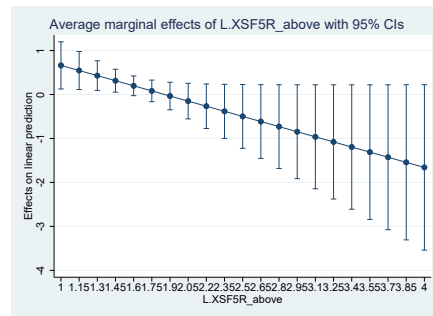
(a) Search not controlled: Export perf. below aspirations



(b) Search not controlled: Export perf. above aspirations



(c) Search is controlled: Export perf. below aspirations



(d) Search is controlled: Export perf. above aspirations

Finally, hypotheses 4a and 4b predict that the effectiveness of near and distant search on increasing the number of entries to new export markets is determined by the complexity of the landscape in which search has to be undertaken. Specifically, hypothesis 4a predicts that near and distant search become more effective in driving the entry into new export markets when the export product landscape becomes more simple and unrelated. Complementing hypothesis 4a, hypothesis 4b predicts that near and distant search is less effective in driving the entry into new export markets as the export product landscape become more complex and related.

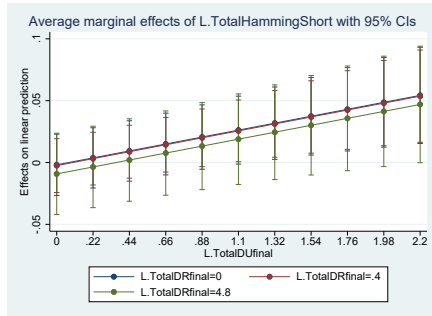
Assessing the effect of near and distant search on new export market entries involves observing both the degree of simplicity (unrelated diversification) and complexity (related diversification) due to the interactions specified in equation 2. Panel 11a in figure 11 shows the extent to which near search drives new export market entries (y axis) as the landscape becomes increasingly simple (x axis) at different levels of related diversification (blue = minimum, red = mean, green = maximum). In line with hypothesis 4a, the graph shows that the effectiveness of near search increases as the landscape becomes more simple (positive slope), its effect becomes positive and significant when the simplicity of the landscape surpasses 1.1, and increases in the complexity of the landscape dampen the benefit of simple landscapes (green line is positive but never significant). Panel 11c displays that the effectiveness of distant search increases the more simple the landscape becomes, in line with hypothesis 4a, but this effect is not significant.

Parallel to the previous findings, panel 11b in figure 11 shows that the effectiveness of near search decreases the more complex (related) the export product landscape (red and blue lines) and that this effect only returns to being positive and statistically significant when the landscape becomes simple (green line). Finally, panel 11d shows that the effectiveness of distant search in driving new export market entries decreases and becomes negative the more complex the landscape (red and blue lines) and that this detrimental effect is turned insignificant when the landscape becomes simple (green line).

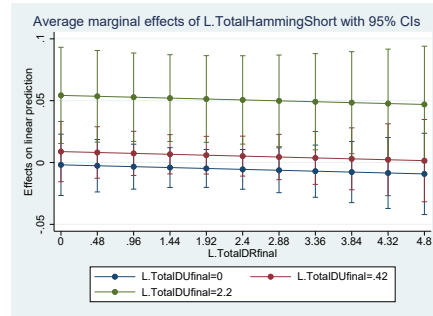
Consequently, I find partial support for hypothesis 4a, as I find that it increases the effectiveness of near search as the landscape becomes increasingly simple. However, I do not find this effect when considering distant search. I also find partial support for hypothesis 4b as the relatedness of the landscape reduces the effectiveness of distant search in driving new export market entries, turning

the effect negative. However, I fail to find this effect when considering the effectiveness of near search as the landscape becomes increasingly complex.

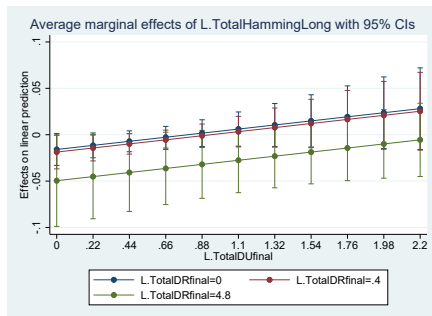
Figure 11: Confidence intervals for the effect of near and distant search on entries to new export markets as the landscape becomes increasingly simple vs. complex



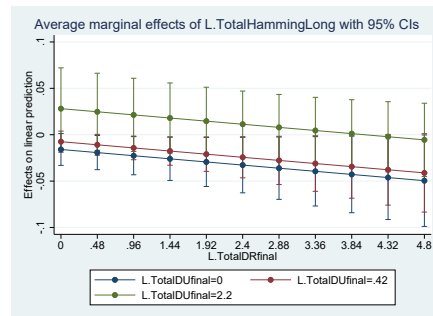
(a) Effect of near search as landscape becomes simple



(b) Effect of near search as landscape becomes complex



(c) Effect of distant search as landscape becomes simple



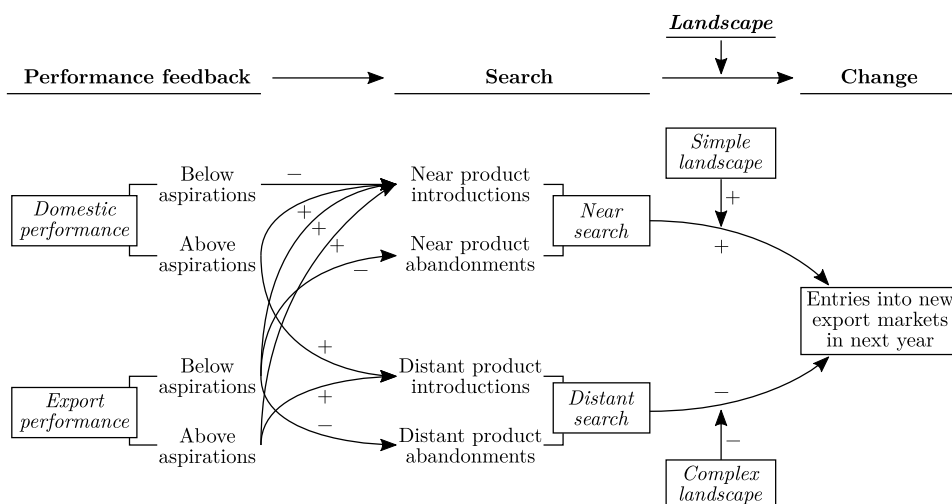
(d) Effect of distant search as landscape becomes complex

5 Discussion

The hypotheses set in this study aimed at describing the link between performance feedback, search, and change by explicitly considering the mediating role that search plays to ultimately drive change (Greve, 2018; March, 2003). Addressing this goal, the study also explored the role that simultaneously pursued goals can have in driving or hampering search in response to performance shortfalls or overshoots (Audia & Greve, 2021; Levinthal & Rerup, 2021). Moreover, mirroring previous evidence from experimental (Billinger et al., 2014, 2021; Caplin et al., 2011) and computer simulation studies (Baumann & Siggelkow, 2013; Csaszar & Levinthal, 2016; Podolny, 2018; Rivkin & Siggelkow, 2007; Siggelkow & Rivkin, 2006) it considered how search becomes more difficult as the complexity of the landscape increases. The process linking performance feedback to change via search is finally used to address the inconsistency in the literature linking company-wide performance feedback to specific dimension of firm internationalisation (see figure 1 and table 1).

Graph 12 helps organise the significant findings in this study relating domestic vs. export performance feedback, near vs. distant search, and entries into new export markets. While the hypotheses under study received partial support, graph 12 also helps to visualise the nuanced way in which performance in specific goals triggers specific search processes to drive change in exporting firms.

Figure 12: Summary of significant findings linking performance feedback on multiple goals, search, and change in exporting firms



The first finding to highlight is that domestic performance below and above aspirations has a double-edged role for near and distant search. In line with previous empirical and computer simulations (Ethiraj & Levinthal, 2009; Hu & Bettis, 2018), the domestic performance goal acts as a competing and horizontally differentiated goal relative to export performance goals. First, it hampers near export product search by reducing the introduction of new and related export products. However, once this competing goals performs above aspirations and continues to rise above them, it contributes to distant search, by increasing the number of new and more distantly related export products. This findings aligns with the expectations presented in Audia & Greve (2021), in which horizontally differentiated goals are expected to delay search. This finding extends this expectation by showing that competing, horizontally differentiated goals can also contribute towards search in the area of the problem of the other competing goals once the initial goals begin and continue to perform above aspirations.

The second finding is related to export performance goals. As is summarised in figure 12, export performance below and above aspirations has an effect on search closely aligned with the original predictions found in *A Behavioral Theory of the Firm* (Cyert & March, 1992) and *Organizations* (March & Simon, 1993). On one side of the spline, export performance below aspirations is found to drive near search by increasing the number of new and related export products introduced. On the other side, export performance above aspirations is found to lead to less near search and to more distant search, also in terms of new more distantly related export product introduced. This pattern of response to performance feedback on a closely related goal-search dyad resembles the mechanism of routine formation and new alternatives generation in Cyert & March (1992). In their theory, organisations begin to search for new alternatives when performance falls short of aspirations, then new alternatives are undertaken, and when the resulting performance from their adoption satisfies aspirations, search is stopped and the alternatives are established and repeated in the organisation by forming routines around them. Moreover, only when performance continues to perform above aspirations, it produces slack resources, which allow for further explorations.

The third finding is related to the omission of search in previous studies relating performance feedback and specific dimensions of organisational change. Search is a crucial middle step in learning and adapting in response to performance feedback (Argote et al., 2021; Cyert & March, 1992; Greve, 2018; March, 2003; March & Simon, 1993). As is observed in table 13 and figure 10, once search is

purposefully controlled for, the effect of export performance below aspirations turn insignificant in statistical terms for the whole range of the variable. Moreover, the effect of export performance above aspirations reduces in magnitude and its region of statistical significance is also reduced. This provides partial evidence that search is a critical mediator in the process of learning from performance feedback and problemistic search. However, as an initial step in opening the black box linking performance feedback to change, this finding argues for the exploration of additional search processes that could also be triggered by performance fluctuations relative to aspirations. These additional processes can include political bargaining between coalitions for the direction of subsequent search (and change) (Greve, 2018), the interpretation and sense-making of these fluctuations in triggering search (Levinthal & Rerup, 2021), and conditions that can hamper the need for search, such as self-enhancing behaviour (Levinthal & Rerup, 2021) and the nested character of sub-goals (Ethiraj & Levinthal, 2009). Moreover, considering search also allows questions related to the effectiveness of different search strategies and the conditions that can make a given strategy more prominent, a topic that is present in experiments (Billinger et al., 2014, 2021; Caplin et al., 2011) and computer simulation studies (Baumann & Siggelkow, 2013; Siggelkow & Rivkin, 2005).

The study also provides evidence that the role of search is more nuance than is often assumed in studies linking performance feedback directly to organisational change (Lee et al., 2023; Ref & Shapira, 2017; Zhang & Greve, 2019). As was described in the literature review section, experimental and computer simulation studies have shown that search is not ensured to yield the most efficient solutions, and that the complexity of the landscape in which search is undertaken critically determines its effectiveness. The study consequently finds evidence that complexity plays a crucial role on search as it conditions its effectiveness in leading to new export market entries. Specifically, the results show that the effectiveness of near search in increasing the number of new export markets entered is increased when the complexity of the landscape becomes more simple, that is, as the alternatives employed (the export products) become more unrelated. Conversely, the more complex (interrelated) the landscape, the lower its effectiveness. The effect of distant search worsens as the complexity of the landscape increases. These results resemble expected effect from the ruggedness of the landscape as predicted in simulation studies (Csaszar, 2018; Levinthal, 1997; Levinthal & Warglien, 1999). As the complexity of the landscape increases, more local hills (of high performance) and deep valleys (of low performance) appear

in the landscape, and searching locally (near) leads to small improvements while more distant search can lead to falling into valleys of inadequate alternatives that ultimately hamper performance.

Collectively, the results show that there are empirical links between multiple goals pursued, different search processes triggered, and changes in specific dimensions of organisations. This stands in contrast to the 15 studies reviewed in table 1 which link company-wide performance feedback to changes in specific dimensions of firm internationalisation. As the preliminary mediation analysis shows, once search is accounted for, the effect for company-wide performance shortfalls on internationalisation changes predicted in Ref et al. (2021), Ref & Shapira (2017), and García-García et al. (2022) vanishes into non-significance once search is accounted for. This finding was driven by going back to the foundations of the behavioural theory of the firm (Cyert & March, 1992; March & Simon, 1993) and linking specific and relevant goals being monitored by individuals within the firm to specific search processes being triggered to the focal dimension of organisational change under study. This attention to linking specific (and potentially competing) goals to search processes and change outcomes resonates with current directions to expand the behavioural theory of the firm (Audia & Greve, 2021; Greve, 2018; March, 2003) and can alleviate the occurrence of inconsistent findings, as was presented in figure 1.

Finally, as was argued by Beugelsdijk (2022), the most salient characteristic of the international business field is its spatial component. For example, firms have to expand overseas, decide on critical goals across locations, monitor performance goals in multiple countries, decide on different organisational design characteristics adjusted to different contexts, and deal with other idiosyncrasies that might invalidate transferring lessons in one context to another. This spatial component makes the bounded rationality of the decision makers involved in international business salient (Aharoni et al., 2011; Poulis & Poulis, 2018; Madsen, 2005), as a consequence, positions international business in an advantageous position to contribute to expanding the behavioural theory of the firm Surdu et al. (2021).

The findings presented in this study should also be interpreted considering their limitations. The first and most important one is that the results drawn stem from a representative subsample of a larger intended sample of Peruvian exporting firms. Due to the difficulty and time consuming nature of hand-collecting data about these firms, this study only considered a random subsample of the firms. For space and time purposes, the study does not include robustness tests

with alternative estimation models, such as negative binomial models, and with estimation techniques that can address the endogeneity of the regressors with, for example, the system Generalised Method of Moments estimator for non-linear (Poisson) models (Li et al., 2021; Windmeijer, 2008). Moreover, shortcomings in the private company database (PeruTop10000) preclude including basic financial information that is correlated both with the dependent variable and with the performance feedback and search measures (e.g., leverage ratio, an overall measure of slack resources). Given that public and private Peruvian companies report their income statement and balance sheet information to the Peruvian tax authorities in a standardised format, next steps would include to secure access to the anonymised data for research purposes.

6 Conclusion

This study had the goal of linking performance feedback on multiple goals to near vs. more distant search and, ultimately, to change. Leveraging the context of exporting firms, I tested how performance feedback on domestic vs. export market goals directed near vs. more distant export products search, and how these two factors contributed to new export market entries. While I find partial support for the research hypotheses presented, the overall results suggest that performance feedback in domestic and export market goals drive near vs. distant search in distinct ways. Moreover, I also find that search is not a trivial step to omit when studying the effect of performance feedback on change. Specifically, I find that the complexity of the landscape in which exploration takes place is a critical moderator for the effectiveness of near and distant export product search in driving new entries to export markets. These results highlight that tracking specific strategic changes in organisations should be matched with the specific search processes that should yield them, and with the specific (and potentially conflicting) goals being monitored that trigger search when they vary relative to their aspirations. Taken together, the multiplicity of goals pursued by internationalising firms and the difficulty of searching for suitable alternatives in complex landscapes are presented as a source for the substantive inconsistency in the literature linking company-wide performance feedback to specific dimensions of firm internationalisation.

References

- Abdi, M. & Aulakh, P. S. (2018). Internationalization and performance: Degree, duration, and scale of operations. *Journal of International Business Studies*, 49, 832–857.
- Aharoni, Y. (2013). The road to relevance. In T. M. Devinney, T. Pedersen, & L. Tihanyi (Eds.), *Advances in International Management (vol. 26): Philosophy of Science and Meta-Knowledge in International Business and Management* (pp. 127–169). Bingley: Emerald Publishing.
- Aharoni, Y., Tihanyi, L., & Connelly, B. L. (2011). Managerial decision-making in international business: A forty-five-year retrospective. *Journal of World Business*, 46(2), 135–142.
- Albert, D. & Siggelkow, N. (2022). Architectural search and innovation. *Organization Science*, 33(1), 275–292.
- Almodóvar, P. & Rugman, A. M. (2014). The M curve and the performance of Spanish international new ventures. *British Journal of Management*, 25, S6–S23.
- Argote, L., Lee, S., & Park, J. (2021). Organizational learning processes and outcomes: Major findings and future research directions. *Management Science*, 67(9), 5399–5429.
- Audia, P. G. & Greve, H. R. (2006). Less likely to fail: Low performance, firm size, and factory expansion in the shipbuilding industry. *Management Science*, 52(1), 83–94.
- Audia, P. G. & Greve, H. R. (2021). *Organizational learning from performance feedback: A behavioral perspective on multiple goals: A multiple goals perspective*. Cambridge: Cambridge University Press.
- Barkema, H. G. & Drogendijk, R. (2007). Internationalising in small, incremental or larger steps? *Journal of International Business Studies*, 38, 1132–1148.
- Barnard, C. I. (1938). *The Functions of the Executive*. Cambridge: Harvard University Press, 30th anniversary, 1968 reprint edition.
- Baum, J. A., Rowley, T. J., Shipilov, A. V., & Chuang, Y.-T. (2005). Dancing with strangers: Aspiration performance and the search for underwriting syndicate partners. *Administrative Science Quarterly*, 50(4), 536–575.
- Baumann, O., Schmidt, J., & Stieglitz, N. (2019). Effective search in rugged performance landscapes: A review and outlook. *Journal of Management*, 45(1), 285–318.

- Baumann, O. & Siggelkow, N. (2013). Dealing with complexity: Integrated vs. chunky search processes. *Organization Science*, 24(1), 116–132.
- Bellemare, M. F., Masaki, T., & Pepinsky, T. B. (2017). Lagged explanatory variables and the estimation of causal effect. *The Journal of Politics*, 79(3), 949–963.
- Bernard, A. B., Jensen, J. B., Redding, S. J., & Schott, P. K. (2007). Firms in international trade. *Journal of Economic perspectives*, 21(3), 105–130.
- Bettis, R. A. (2017). Organizationally intractable decision problems and the intellectual virtues of heuristics. *Journal of Management*, 43(8), 2620–2637.
- Beugelsdijk, S. (2022). Capitalizing on the uniqueness of international business: Towards a theory of place, space, and organization. *Journal of International Business Studies*, 53(9), 2050–2067.
- Bilkey, W. J. & Tesar, G. (1977). The export behavior of smaller-sized Wisconsin manufacturing firms. *Journal of International Business Studies*, 8(1), 93–98.
- Billinger, S., Srikanth, K., Stieglitz, N., & Schumacher, T. R. (2021). Exploration and exploitation in complex search tasks: How feedback influences whether and where human agents search. *Strategic Management Journal*, 42(2), 361–385.
- Billinger, S., Stieglitz, N., & Schumacher, T. R. (2014). Search on rugged landscapes: An experimental study. *Organization Science*, 25(1), 93–108.
- Blettner, D. P., He, Z.-L., Hu, S., & Bettis, R. A. (2015). Adaptive aspirations and performance heterogeneity: Attention allocation among multiple reference points. *Strategic Management Journal*, 36(7), 987–1005.
- Bouquet, C. & Birkinshaw, J. (2011). How global strategies emerge: An attention perspective. *Global Strategy Journal*, 1(3-4), 243–262.
- Boyle, E. & Shapira, Z. (2012). The liability of leading: Battling aspiration and survival goals in the jeopardy! tournament of champions. *Organization Science*, 23(4), 1100–1113.
- Bromiley, P. & Harris, J. D. (2014). A comparison of alternative measures of organizational aspirations. *Strategic Management Journal*, 35(3), 338–357.
- Bromiley, P. & Washburn, M. (2011). Cost reduction vs innovative search in r&d. *Journal of Strategy and Management*, 4(3), 196–214.
- Buckley, P. J. & Casson, M. C. (1998). Analyzing foreign market entry strategies: Extending the internalization approach. *Journal of international business studies*, 29, 539–561.

- Bullock, J. G., Green, D. P., & Ha, S. E. (2010). Yes, but whats the mechanism?(dont expect an easy answer). *Journal of Personality and Social Psychology*, 98(4), 550.
- Cameron, A. C. & Trivedi, P. K. (2005). *Microeconometrics: methods and applications*. Cambridge university press.
- Capar, N. & Kotabe, M. (2003). The relationship between international diversification and performance in service firms. *Journal of International Business Studies*, 34, 345-355.
- Caplin, A., Dean, M., & Martin, D. (2011). Search and satisficing. *American Economic Review*, 101(7), 2899-2922.
- Chang, S.J. (1996). An evolutionary perspective on diversification and corporate restructuring: entry, exit, and economic performance during 1981-89. *Strategic Management Journal*, 17(8), 587-611.
- Cheng, J., Cheng, N. F., Guo, Z., Gregorich, S., Ismail, A. I., & Gansky, S. A. (2018). Mediation analysis for count and zero-inflated count data. *Statistical Methods in Medical Research*, 27(9), 2756-2774.
- Clark, J. R., Kuppuswamy, V., & Staats, B. R. (2018). Goal relatedness and learning: Evidence from hospitals. *Organization Science*, 29(1), 100-117.
- Conlisk, J. (1996). Why bounded rationality? *Journal of Economic Literature*, 34(2), 669-700.
- Contractor, F. J. (2007). Is international business good for companies? The evolutionary or multi-stage theory of internationalization vs. the transaction cost perspective. *Management International Review*, 47, 453-475.
- Contractor, F. J. (2012). Why do multinational firms exist? A theory note about the effect of multinational expansion on performance and recent methodological critiques. *Global Strategy Journal*, 2(4), 318-331.
- Contractor, F. J., Kumar, V., & Kundu, S. K. (2007). Nature of the relationship between international expansion and performance: The case of emerging market firms. *Journal of World Business*, 42(4), 401-417.
- Contractor, F. J., Kundu, S. K., & Hsu, C.-C. (2003). A three-stage theory of international expansion: The link between multinationality and performance in the service sector. *Journal of International Business Studies*, 34, 5-18.
- Coxe, S. & MacKinnon, D. P. (2010). Mediation for count outcomes: Equivalence of the mediated effect. *Multivariate Behavioral Research*, 45, 1022.

- Csaszar, F. A. (2018). A note on how nk landscapes work. *Journal of Organization Design*, 7(1), 15.
- Csaszar, F. A. & Levinthal, D. A. (2016). Mental representation and the discovery of new strategies. *Strategic Management Journal*, 37(10), 2031–2049.
- Cyert, R. M. & March, J. G. (1992). *A Behavioral Theory of the Firm*. Oxford: Blackwell Business, 2nd edition.
- Cyert, R. M., March, J. G., & Starbuck, W. H. (1961). Two experiments on bias and conflict in organizational estimation. *Management Science*, 7(3), 254–264.
- Deng, Z., Li, T., & Liesch, P. W. (2022). Performance shortfalls and outward foreign direct investment by MNE subsidiaries: Evidence from China. *International Business Review*, 31(3), 101952.
- Denrell, J. & March, J. G. (2001). Adaptation as information restriction: The Hot Stove Effect. *Organization Science*, 12(5), 523–538.
- Dong, M., Wang, L., Yang, D., & Zhou, K. Z. (2022). Performance feedback and export intensity of Chinese private firms: Moderating roles of institution-related factors. *International Business Review*, 31(3), 101948.
- Earl, P. E. (2012). Behavioural theory. In M. Dietrich & J. Krafft (Eds.), *Handbook on the Economics and Theory of the Firm* (pp. 96–101). Cheltenham: Edward Elgar.
- Eggers, J. & Suh, J.-H. (2019). Experience and behavior: How negative feedback in new versus experienced domains affects firm action and subsequent performance. *Academy of Management Journal*, 62(2), 309–334.
- Ethiraj, S. K. & Levinthal, D. (2004a). Bounded rationality and the search for organizational architecture: An evolutionary perspective on the design of organizations and their evolvability. *Administrative Science Quarterly*, 49(3), 404–437.
- Ethiraj, S. K. & Levinthal, D. (2004b). Modularity and innovation in complex systems. *Management Science*, 50(2), 159–173.
- Ethiraj, S. K. & Levinthal, D. (2009). Hoping for a to z while rewarding only a: Complex organizations and multiple goals. *Organization Science*, 20(1), 4–21.
- Feldman, M. S. (2000). Organizational routines as a source of continuous change. *Organization Science*, 11(6), 611–629.

- Fiengenbaum, A., Shaver, J. M., & Yeung, B. (1997). Which firms expand to the middle east: The experience of us multinationals. *Strategic Management Journal*, 18(2), 141-148.
- Freixanet, J. & Rialp, J. (2022). Disentangling the relationship between internationalization, incremental and radical innovation, and firm performance. *Global Strategy Journal*, 12(1), 57-81.
- Gaba, V. & Greve, H. R. (2019). Safe or profitable? The pursuit of conflicting goals. *Organization Science*, 30(4), 647-667.
- Gaba, V. & Joseph, J. (2013a). Corporate structure and performance feedback: Aspirations and adaptation in m-form firms. *Organization Science*, 24(4), 1102-1119.
- Gaba, V. & Joseph, J. (2013b). Corporate structure and performance feedback: Aspirations and adaptation in m-form firms. *Organization Science*, 24(4), 1102-1119.
- García-García, R., García-Canal, E., & Guillén, M. F. (2022). Walking on thin ice: Ceos' internationalization decisions in underperforming firms. *Long Range Planning*, 55(5), 102243.
- Gavetti, G., Greve, H. R., Levinthal, D. A., & Ocasio, W. (2012). The behavioral theory of the firm: Assessments and prospects. *Academy of Management Annals*, 6(1), 1-40.
- Geldhof, G. J., Anthony, K. P., Selig, J. P., & Mendez-Luck, C. A. (2018). Accommodating binary and count variables in mediation: A case for conditional indirect effects. *International Journal of Behavioral Development*, 42(2), 300-308.
- Gkypali, A., Love, J. H., & Roper, S. (2021). Export status and sme productivity: Learning-to-export versus learning-by-exporting. *Journal of Business Research*, 128, 486-498.
- Greve, H. (2003a). A behavioral theory of r&d expenditures and innovations: evidence from shipbuilding. *Academy of Management Journal*, 46(6), 685-702.
- Greve, H. R. (1998). Performance, aspirations, and risky organizational change. *Administrative Science Quarterly*, 43(1), 58-86.
- Greve, H. R. (2003b). *Organizational Learning from Performance Feedback: A Behavioral Perspective on Innovation and Change*. Cambridge: Cambridge University Press, 1st edition.

- Greve, H. R. (2008). A behavioral theory of firm growth: Sequential attention to size and performance goals. *Academy of Management Journal*, 51(3), 476–494.
- Greve, H. R. (2018). Where to search? In *Advanced in Strategic Management: Behavioral Strategy in Perspective*, volume 39 (pp. 91–100). Emerald Publishing Limited.
- Greve, H. R. (2020). Learning theory: The pandemic research challenge. *Journal of Management Studies*, 57(8), 1759–1762.
- Greve, H. R. (2021a). From one empirical study to 150. In X.-P. Chen & H. K. Steensma (Eds.), *A Journey toward Influential Scholarship: Insights from Leading Management Scholars* (pp. 90–105). Oxford University Press.
- Greve, H. R. (2021b). The organizational view of strategic management. In I. M. Duhaime, M. A. Hitt, & M. A. Lyles (Eds.), *Strategic Management: State of the Field and its Future* (pp. 43–59). Oxford University Press.
- Greve, H. R. (2023). Structuring the situation: Organizational goals trigger and direct decision-making. *Frontiers in Psychology*, 14, 1140408.
- Greve, H. R. & Gaba, V. (2017). Performance feedback in organizations and groups: Common themes. In L. Argote & J. H. Levine (Eds.), *The Oxford Handbook of Group and Organizational Learning* (pp. 315–336). Oxford University Press.
- Gubbi, S. R., Aulakh, P. S., & Ray, S. (2015). International search behavior of business group affiliated firms: Scope of institutional changes and intragroup heterogeneity. *Organization Science*, 26(5), 1485–1501.
- Harrison, J. R. & March, J. G. (1984). Decision making and postdecision surprises. *Administrative Science Quarterly*, 29(1), 26–42.
- Hennart, J.-F. (2007). The theoretical rationale for a multinationality-performance relationship. *Management International Review*, 47, 423–452.
- Hennart, J.-F. (2011). A theoretical assessment of the empirical literature on the impact of multinationality on performance. *Global Strategy Journal*, 1(1-2), 135–151.
- Hitt, M. A., Tihanyi, L., Miller, T., & Connelly, B. (2006). International diversification: Antecedents, outcomes, and moderators. *Journal of Management*, 32(6), 831–867.
- Hoang, H. & Ener, H. (2015). Unpacking experience effects in developing novel products for new markets. *Strategic Organization*, 13(4), 261–283.

- Hu, S. & Bettis, R. A. (2018). Multiple organization goals with feedback from shared technological task environments. *Organization Science*, 29(5), 873–889.
- Hu, S., Gentry, R. J., Quigley, T. J., & Boivie, S. (2021). Who's in the driver's seat? exploring firm-level vs. ceo-level effects on problemistic search. *Journal of Management*, ahead-of-print(ahead-of-print), 1–26. <https://doi.org/10.1177/01492063211063823>.
- Hult, G. T. M. (2011). A strategic focus on multinationality and firm performance. *Global Strategy Journal*, 1(1-2), 171–174.
- Iyer, D. N., Baù, M., Chirico, F., Patel, P. C., & Brush, T. H. (2019). The triggers of local and distant search: Relative magnitude and persistence in explaining acquisition relatedness. *Long Range Planning*, 52(5), 101825.
- Jacquemin, A. P. & Berry, C. H. (1979). Entropy measure of diversification and corporate growth. *Journal of Industrial Economics*, 27(4), 359–369.
- Jiang, G. F. & Holburn, G. L. (2018). Organizational performance feedback effects and international expansion. *Journal of Business Research*, 90, 48–58.
- Johanson, J. & Vahlne, J.-E. (1977). The internationalization process of the firm—a model of knowledge development and increasing foreign market commitment. *Journal of International Business Studies*, 8(1), 23–32.
- Joseph, J. & Gaba, V. (2015). The fog of feedback: Ambiguity and firm responses to multiple aspiration levels. *Strategic Management Journal*, 36(13), 1960–1978.
- Judd, C. M. & Kenny, D. A. (1981). Process analysis: Estimating mediation in treatment evaluations. *Evaluation Review*, 5(5), 602–619.
- Jung, J. C. & Bansal, P. (2009). How firm performance affects internationalization. *Management International Review*, 49, 709–732.
- Kacperczyk, A., Beckman, C. M., & Moliterno, T. P. (2015). Disentangling risk and change: Internal and external social comparison in the mutual fund industry. *Administrative Science Quarterly*, 60(2), 228–262.
- Keil, T., Kuusela, P., & Stieglitz, N. (2018). Exploration and negative feedback-behavioral learning, escalation of commitment, and organizational design. In *Organization Design*, volume 40 (pp. 147–176). Emerald Publishing Limited.
- Keil, T., Syrigos, E., Kostopoulos, K. C., D. Meissner, F., & G. Audia, P. (2023). (In)consistent performance feedback and the locus of search. *Journal of Management*, (pp. 01492063231185519).

- Kirca, A. H., Hult, G. T. M., Roth, K., Cavusgil, S. T., Perry, M. Z., Akdeniz, M. B., Deligonul, S. Z., Mena, J. A., Pollitte, W. A., Hoppner, J. J., et al. (2011). Firm-specific assets, multinationality, and financial performance: A meta-analytic review and theoretical integration. *Academy of Management Journal*, 54(1), 47–72.
- Knudsen, T. & Srikanth, K. (2014). Coordinated exploration: Organizing joint search by multiple specialists to overcome mutual confusion and joint myopia. *Administrative Science Quarterly*, 59(3), 409–441.
- Kostopoulos, K., Syrigos, E., & Kuusela, P. (2023). Responding to inconsistent performance feedback on multiple goals: the contingency role of decision maker's status in introducing changes. *Long Range Planning*, 56(1), 102269.
- Kotiloglu, S., Chen, Y., & Lechler, T. (2021). Organizational responses to performance feedback: A meta-analytic review. *Strategic Organization*, 19(2), 285–311.
- Kuusela, P., Keil, T., & Maula, M. (2017). Driven by aspirations, but in what direction? Performance shortfalls, slack resources, and resource-consuming vs. resource-freeing organizational change. *Strategic Management Journal*, 38(5), 1101–1120.
- Lant, T. K. (1992). Aspiration level adaptation: An empirical exploration. *Management Science*, 38(5), 623–644.
- Lee, J., Lee, J. M., & Kim, J.-Y. (2023). The role of attribution in learning from performance feedback: Behavioral perspective on the choice between alliances and acquisitions. *Academy of Management Journal*, 66(2), 578–603.
- Levinthal, D. A. (1997). Adaptation on rugged landscapes. *Management Science*, 43(7), 934–950.
- Levinthal, D. A. (2020). Learning in context: Grateful reflections on reflections. *Journal of International Business Studies*, 51, 1529–1531.
- Levinthal, D. A. & March, J. G. (1993). The myopia of learning. *Strategic Management Journal*, 14(S2), 95–112.
- Levinthal, D. A. & Rerup, C. (2021). The plural of goal: Learning in a world of ambiguity. *Organization Science*, 32(3), 527–543.
- Levinthal, D. A. & Warglien, M. (1999). Landscape design: Designing for local action in complex worlds. *Organization Science*, 10(3), 342–357.
- Levitt, B. & March, J. G. (1988). Organizational learning. *Annual Review of Sociology*, 14, 319–340.

- Levitt, B. & March, J. G. (1995). Chester I. Barnard and the intelligence of learning. In O. E. Williamson (Ed.), *Organization Theory: From Chester Barnard to the Present and Beyond* (pp. 11–37). Oxford: Oxford University Press.
- Li, J., Ding, H., Hu, Y., & Wan, G. (2021). Dealing with dynamic endogeneity in international business research. *Journal of International Business Studies*, 52, 339–362.
- Lim, E. (2019). Attainment discrepancy and new geographic market entry: The moderating roles of vertical pay disparity and horizontal pay dispersion. *Journal of Management Studies*, 56(8), 1605–1629.
- Lin, W.-T. (2014). How do managers decide on internationalization processes? The role of organizational slack and performance feedback. *Journal of World Business*, 49(3), 396–408.
- Love, J. H. & Máñez, J. A. (2019). Persistence in exporting: Cumulative and punctuated learning effects. *International Business Review*, 28(1), 74–89.
- Lu, J. W. & Beamish, P. W. (2004). International diversification and firm performance: The S-curve hypothesis. *Academy of Management Journal*, 47(4), 598–609.
- Luo, Y. (2020). Adaptive learning in international business. *Journal of International Business Studies*, 51, 1547–1567.
- MacKinnon, D. P. & Pirlott, A. G. (2015). Statistical approaches for enhancing causal interpretation of the m to y relation in mediation analysis. *Personality and Social Psychology Review*, 19(1), 30–43.
- Madsen, P. M. (2013). Perils and profits: A reexamination of the link between profitability and safety in us aviation. *Journal of Management*, 39(3), 763–791.
- Madsen, T. K. (2005). Internationalization research: The impact of the Carnegie School. *Scandinavian Journal of Management*, 21(4), 373–384.
- March, J. & Simon, H. (1993). *Organizations*. Oxford: Blackwell Business, 2nd edition.
- March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2(1), 71–87.
- March, J. G. (2003). Understanding organisational adaptation. *Society and Economy*, 25(1), 1–10.

- Marshall, V. B., Brouthers, L. E., & Keig, D. L. (2020). Rims: A new approach to measuring firm internationalization. *Journal of International Business Studies*, 51(7), 1133–1141.
- Maslach, D. (2016). Change and persistence with failed technological innovation. *Strategic Management Journal*, 37(4), 714–723.
- Mazzelli, A., Nason, R. S., De Massis, A., & Kotlar, J. (2019). Causality rules: Performance feedback on hierarchically related goals and capital investment variability. *Journal of Management Studies*, 56(8), 1630–1654.
- Moliterno, T. P., Beck, N., Beckman, C. M., & Meyer, M. (2014). Knowing your place: Social performance feedback in good times and bad times. *Organization Science*, 25(6), 1684–1702.
- Obloj, T. & Sengul, M. (2020). What do multiple objectives really mean for performance? empirical evidence from the french manufacturing sector. *Strategic Management Journal*, 41(13), 2518–2547.
- O’Hara, R. B. & Kotze, D. J. (2010). Do not log-transform count data. *Methods in Ecology and Evolution*, 1(2), 118–122.
- Palepu, K. (1985). Diversification strategy, profit performance and the entropy measure. *Strategic Management Journal*, 6(3), 239–255.
- Papadopoulos, N. & Martín, O. M. (2010). Toward a model of the relationship between internationalization and export performance. *International Business Review*, 19(4), 388–406.
- Pedersen, T., Larsen, M. M., & Dasi, Å. (2020). Searching locally and globally: Applying daniel levinthals scholarship to international business. *Journal of International Business Studies*, 51, 1532–1546.
- Pedersen, T. & Tallman, S. (2023). Global strategy collections: Multinationality and performance. *Global Strategy Journal*, 13(2), 517–531.
- Peng, M. W. (2004). Identifying the big question in international business research. *Journal of International Business Studies*, 35(2), 99–108.
- Penrose, E. T. (1959). *The Theory of the Growth of the Firm*. Oxford: Oxford University Press, 4th edition. 2013 reprint.
- Pitelis, C. N. (2007). A behavioral resource-based view of the firm: The synergy of cyert and march (1963) and penrose (1959). *Organization Science*, 18(3), 478–490.

- Podolny, J. M. (2018). An exploration of discerning search. *Strategy Science*, 3(1), 295–305.
- Posen, H. E., Keil, T., Kim, S., & Meissner, F. D. (2018). Renewing research on problemistic search—a review and research agenda. *Academy of Management Annals*, 12(1), 208–251.
- Poulis, K. & Poulis, E. (2018). International business as disciplinary tautology: An ontological perspective. *Academy of Management Perspectives*, 32(4), 517–531.
- Profitós, X. S. i., Keil, T., & Kuusela, P. (2022). The two blades of the scissors: Performance feedback and intrinsic attributes in organizational risk taking. *Administrative Science Quarterly*, 67(4), 1012–1048. <https://doi.org/10.1177/00018392221117996>.
- Puranam, P., Stieglitz, N., Osman, M., & Pillutla, M. M. (2015). Modelling bounded rationality in organizations: Progress and prospects. *Academy of Management Annals*, 9(1), 337–392.
- Reed, W. R. (2015). On the practice of lagging variables to avoid simultaneity. *Oxford Bulletin of Economics and Statistics*, 77(6), 897–905.
- Ref, O., Feldman, N. E., Iyer, D. N., & Shapira, Z. (2021). Entry into new foreign markets: Performance feedback and opportunity costs. *Journal of World Business*, 56(6), 101258.
- Ref, O. & Shapira, Z. (2017). Entering new markets: The effect of performance feedback near aspiration and well below and above it. *Strategic Management Journal*, 38(7), 1416–1434.
- Rerup, C. & Feldman, M. S. (2011). Routines as a source of change in organizational schemata: The role of trial-and-error learning. *Academy of Management Journal*, 54(3), 577–610.
- Rivkin, J. W. (2000). Imitation of complex strategies. *Management Science*, 46(6), 824–844.
- Rivkin, J. W. & Siggelkow, N. (2002). Organizational sticking points on nk landscapes. *Complexity*, 7(5), 31–43.
- Rivkin, J. W. & Siggelkow, N. (2007). Patterned interactions in complex systems: Implications for exploration. *Management Science*, 53(7), 1068–1085.
- Salomon, R. & Shaver, J. M. (2005). Export and domestic sales: Their interrelationship and determinants. *Strategic Management Journal*, 26(9), 855–871.

- Schmuck, A., Lagerström, K., & Sallis, J. (2022). Turning the tables: the relationship between performance and multinationality. *Management International Review*, 62(1), 3–26.
- Shannon, C. E. (1948). A mathematical theory of communication. *The Bell System Technical Journal*, 27(3), 379–423.
- Siggelkow, N. & Levinthal, D. A. (2005). Escaping real (non-benign) competency traps: Linking the dynamics of organizational structure to the dynamics of search. *Strategic Organization*, 3(1), 85–115.
- Siggelkow, N. & Rivkin, J. W. (2005). Speed and search: Designing organizations for turbulence and complexity. *Organization Science*, 16(2), 101–122.
- Siggelkow, N. & Rivkin, J. W. (2006). When exploration backfires: Unintended consequences of multilevel organizational search. *Academy of Management Journal*, 49(4), 779–795.
- Siggelkow, N. & Rivkin, J. W. (2009). Hiding the evidence of valid theories: How coupled search processes obscure performance differences among organizations. *Administrative Science Quarterly*, 54(4), 602–634.
- Simon, H. A. (1945). *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organizations*. New York: The Free Press, 4th edition.
- Simon, H. A. (1979). Rational decision making in business organizations. *American Economic Review*, 69(4), 493–513. Reprinted on Simon, H. A. (1982) Models of Bounded Rationality – Volume 2: Behavioral Economics and Business Organization.
- Steen, J. T. & Liesch, P. W. (2007). A note on Penrosean growth, resource bundles and the Uppsala model of internationalisation. *Management International Review*, 47(2), 193–206.
- Sun, K.-A. & Lee, S. (2013). Determinants of degree of internationalization for US restaurant firms. *International Journal of Hospitality Management*, 33, 465–474.
- Surdu, I., Greve, H. R., & Benito, G. R. (2021). Back to basics: Behavioral theory and internationalization. *Journal of International Business Studies*, 52(6), 1047–1068.
- Thomas, D. E. & Eden, L. (2004). What is the shape of the multinationality-performance relationship? *Multinational Business Review*, 12(1), 89–110.
- Tihanyi, L., Ellstrand, A. E., Daily, C. M., & Dalton, D. R. (2000). Composition of the top management team and firm international diversification. *Journal of Management*, 26(6), 1157–1177.

- Vahlne, J.-E. & Johanson, J. (2013). The Uppsala model on evolution of the multinational business enterprise – from internationalization to coordination of networks. *International Marketing Review*, 30(3), 189–210.
- Vahlne, J.-E. & Johanson, J. (2017). From internationalization to evolution: The Uppsala model at 40 years. *Journal of International Business Studies*, 48(9), 1087–1102.
- Verbeek, M. (2008). *A guide to modern econometrics*. John Wiley & Sons.
- Verbeke, A. & Forootan, M. Z. (2012). How good are multinationality–performance (M-P) empirical studies? *Global Strategy Journal*, 2(4), 332–344.
- Weinberger, E. D. (1996). *NP Completeness of Kauffman's N-K Model, A Tuneable Rugged Fitness Landscape*. Working Papers 1996-02-003, Santa Fe Institute.
- Wennberg, K. & Holmquist, C. (2008). Problemistic search and international entrepreneurship. *European Management Journal*, 26(6), 441–454.
- Wiersema, M. F. & Bowen, H. P. (2011). The relationship between international diversification and firm performance: Why it remains a puzzle. *Global Strategy Journal*, 1(1-2), 152–170.
- Windmeijer, F. (2008). *GMM for Panel Data Count Models*, (pp. 603–624). Springer Berlin Heidelberg: Berlin, Heidelberg.
- Wiseman, R. M. & Gomez-Mejia, L. R. (1998). A behavioral agency model of managerial risk taking. *Academy of management Review*, 23(1), 133–153.
- Wright, A., Thompson, R., & Zhang, J. (2000). The computational complexity of N-K fitness functions. *IEEE Transactions on Evolutionary Computation*, 4(4), 373–379.
- Xie, E., Huang, Y., Peng, M. W., & Zhuang, G. (2016). Resources, aspirations, and emerging multinationals. *Journal of Leadership & Organizational Studies*, 23(2), 144–161.
- Xie, E., Huang, Y., Stevens, C. E., & Lebedev, S. (2019). Performance feedback and outward foreign direct investment by emerging economy firms. *Journal of World Business*, 54(6), 101014.
- Zhang, C. M. & Greve, H. R. (2019). Dominant coalitions directing acquisitions: Different decision makers, different decisions. *Academy of Management Journal*, 62(1), 44–65.