Internationalization and digitalization: Their differing role on grocer and non-grocer retailer performance

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Abstract

This study investigates the interplay between two critical phenomena in retailing, i.e., internationalization and digitalization, while accounting for retail sector differences. On one hand, internationalization allows retailers to access a wider range of markets, and on the other, digital channel expansion enhances customer reach and convenience within international markets. More specifically, we examine the relationship between retailer internationalization and performance (I-P relationship), and how this relationship is contingent upon the idiosyncrasies of retail sectors (i.e., grocery vs. non-grocery), digitalization, and their combined effects. Building on the liability of foreignness perspective, we first argue that the I-P relationship is U-shaped, because internationalizing retailers initially incur greater costs in their international expansion owing to their unfamiliarity with foreign markets, but as their foreign presence increases, they benefit from greater market power, experience, and scale economies. Then, we contend that as grocers suffer from higher levels of liability of foreignness due to increased requirements for host country embeddedness, non-grocers benefit more from internationalization with any gains and losses further amplified by digitalization. Hypotheses are tested against a panel of the 234 largest international retailers in the world over a 21-year period (1997–2017) and findings support the conjectures.

Introduction

Internationalization seems to be a sensible growth strategy for retailers with the top 250 global retailers generating 23.4% of their revenues from foreign operations while recent retailer sales growth is largely driven by digital channel expansion (Deloitte 2023). On one hand, the benefits of international growth on retailer performance are broadly addressed in the literature (Shi et al. 2018; Trigeorgis, Baldi, and Katsikeas 2021; Gielens and Dekimpe 2001). On the other hand, digital channel expansion is associated with im-

proved retailer financial performance (Sohl, Vroom, and McCann 2020) and is complementary with retailer internationalization (Batsakis, Konara, and Theoharakis 2022).

However, international expansion of retailers is fraught with challenges and includes well-publicized failures of grocery retailers (Shi et al. 2018). For example, Tesco, the UK's top retailer, is known to have failed in their attempt to enter the US market accumulating within five years of operations a loss of $1.6 billion (The Wall Street Journal 2012), while Walmart, the top US retailer, did not manage to achieve their ambitions in the UK (Financial Times 2020) and had to exit the German market at a loss of $1 billion (The Guardian 2006). While Cortsjens and Lal (2012) highlight the challenge of grocery retailers to cross borders, they also do recognize their need to enter global markets in order to achieve

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greater economies of scale and scope. While extant research has made valuable contributions, it has not sufficiently examined the heterogeneity between retail sectors (i.e., grocers vs. non-grocers) when studying the implications of retailer internationalization on performance (Burt, Johansson, and Dawson 2017), despite considerable differences. For instance, grocery retailers operate on average in approximately five countries, while apparel and accessory retailers operate in fourteen (Burt et al. 2017). Further, digital channel expansion is blamed for reduced grocery retailer profits (Forbes 2020) and a larger assortment of perishable products online is not advised for grocery retailers (Ratchford, Soysal, and Zentner 2023). On the contrary, the popularity of online retailers such as Amazon, has created new consumer expectations for serving the needs of the 'long tail' consumer through more expanded digital channels (Dekimpe et al. 2011). Yet, the literature has not assessed whether the exploitation of digital channels has a differential influence on the I-P relationship for grocers and non-grocers who face different constraints.

We address these neglected areas by examining how the I-P relationship of retail firms differs between retail sectors (i.e., grocers and non-grocers) and digitalization, as well as how digitalization has a differential effect on the I-P relationship depending on the retail sector. Given the increased importance of digital channels in retail and the need of retailers to achieve international growth, we examine the following research questions: (i) how does the impact of internationalization on retailer corporate performance differ between non-grocery and grocery retailers? (ii) how does digitalization moderate the relationship between internationalization and retailer corporate performance? (iii) how does digitalization moderate the relationship between internationalization and retailer corporate performance for non-grocery and grocery retailers? We examine our research questions by drawing on the liability of foreignness perspective, i.e., the additional tacit and social costs that firms incur when conducting business abroad (Hymer 1976; Zaheer 1995) which we expect to differ between grocery and non-grocery retailers.

Specifically, we propose that the relationship between internationalization and retailer corporate performance is U-shaped, since retailers incur greater costs in entering unfamiliar foreign markets, before benefitting from greater market power, experience, scale economies, and reduced risks. We further hypothesize that the U-shaped I-P relationship will be steeper for non-grocery retailers and flatter for grocery retailers, as the former typically need to initially develop a global brand and seek faster internationalization, while the latter incur higher costs due to their increased levels of liability of foreignness in each new market entry. In addition, we hypothesize that the U-shaped I-P relationship will be steeper for retailers who demonstrate high levels of digitalization, since digital channels can add complementary value to retailers' physical channels in the internationalization process. With non-grocers operating under a relatively less complex supply chain system (Tsiros and Heilman 2005), we finally hypothesize that digitalization will in general steepen the U-shaped I-P relationship, but more so for non-grocers who can more

quickly scale through digitalization (Sheth 2020). This is due to initially incurring higher costs from digitalization which eventually delivers more benefits to non-grocers when they further scale internationally. We test our hypotheses based on a sample of the world's largest international retailers from 1997 to 2017.

We contribute to retail scholarship in three ways. First, our work advances extant retailing research by examining the interplay between two critical phenomena, i.e., internationalization and digitalization. Second, we recognize that the I-P relationship depends on the underlying heterogeneity between retail sectors and demonstrate the distinct nature of grocery vs. non-grocery retailers. Third, we also contribute to the retail literature by examining the effect of digitalization on the I-P relationship in general and while considering the differences between grocers and non-grocers.

Theory and hypotheses development

The internationalization-performance relationship in the retail sector

Retail firms typically pursue horizontal international expansion, i.e., market-seeking foreign expansion within their existing business (Moatti et al. 2015) and thus seek to identify promising foreign markets, accurately assess local customer demand, and effectively leverage their firms' capabilities abroad (Cao and Li 2018; Mohr, Batsakis, and Stone 2018; Morgan, Katsikeas, and Appiah-Adu 1998). Most commonly, retailers (e.g., Walmart, Inditex (Zara), IKEA) transfer their business model (Gielens and Dekimpe 2001; Grewal and Dharwadkar 2002) across a wide range of dissimilar markets (Dawson 1994; Swoboda and Elsner 2013). However, retail firms face significant challenges when entering foreign markets that are rooted in the firms' liability of foreignness (Shi et al. 2018). Specifically, liability of foreignness leads to a competitive disadvantage for foreign firms, which need to compensate in order to remain competitive abroad (Nachum 2003; Wu and Salomon 2016). Liability of foreignness arises from three sources that include a firm's unfamiliarity with different aspects of the foreign environment (*unfamiliarity hazards*), a lack of interorganizational networks in the host country (*relational hazards*), and unfavorable treatment by local stakeholders, such as local customers (*discrimination hazards*) (Eden and Miller 2004; Zaheer and Mosakowski 1997).

The liability of foreignness at early stages of retail internationalization

First, as retailers begin to expand abroad, they will suffer from *unfamiliarity hazards*, since they are unable to accurately assess local market demand and cannot correctly adapt their strategy to each local market, also pertaining to rapid changes in consumer preferences (Cao, Navare, and Jin 2018; Petersen and Pedersen 2002; Spyropoulou et al. 2018). Adaptation is particularly important in the retail sector, as market

dynamics are more heterogeneous compared to many other industries even within the same country (Reinartz et al. 2011). For instance, Walmart encountered great difficulties when they entered the German market, while Home Depot and J.C. Penney were largely unsuccessful in their entry in Chile, due to their unfamiliarity with local consumer preferences, inefficiency in responding to institutional pressures from suppliers and competitors, and their limited ability to adjust their standardized marketing strategy (Pioch et al. 2009; Bianchi and Ostale 2006). Unfamiliarity hazards prevent retailers from both, recognizing that their globalization approach is not suited and developing localization strategies that are better suited.

Second, foreign firms face *relational hazards* due to their lack of embeddedness in local interfirm networks, comprising supplier and partners (Gaur and Lu 2007; Katsikeas, Skarmeas, and Bello 2009; Ring and Van de Ven 1992). As retailers continue to grow abroad, their relational hazards become more pronounced as their stores are increasingly more spread out across a new host country or multiple host countries. Consequently, retailers are unable to gain access to their customers, locations, and trends, whereby missing out on promising market opportunities (Chari and Madhav Raghavan 2012). For example, despite the successful entry of Carrefour into the Chinese market, store image attributes such as service attitude to staff and reputation have been indicated as problematic due to their lack of relationships and trust with local stakeholders (Chang and Luan 2010).

Third, retailers' foreign subsidiaries can be subject to *discrimination hazards* and may be treated unfavorably by local stakeholders, which is particularly critical in the retail sector (Denk, Kaufmann, and Roesch 2012), as consumer ethnocentricity in the host country can hamper the sales efforts of foreign firms (Balabanis et al. 2001; Denk, Kaufmann, and Roesch 2012; Swoboda, Puchert, and Morschett 2016). Even some of the most successful retail firms, such as Walmart in the US and John Lewis in the UK, have turned to ethnocentrism as a strategy to appeal to ethnocentric consumers and protect their home market from international competitors (Siamagka and Balabanis 2015). Since retailers typically expand abroad horizontally by establishing and growing new store locations, their unfamiliarity, relational, and discrimination hazards grow with the volume of international activities and are to a lesser extent affected by the number of countries involved.

Overcoming the liability of foreignness at later stages of retail internationalization

Prior to establishing its first international store, retailers are completely unfamiliar with foreign markets, have no networks abroad, and are largely unknown to foreign customers. Thus, the retailer faces the full extent of liability of foreignness which reduces with increased levels of international sales. First, retailers can accumulate knowledge and experience through operating abroad (Assaf et al. 2012; Nath, Kirca, and Kim 2021) and consequently become more famil-

iar with the foreign environment, building their international network relationships and creating awareness among foreign customers. In particular, retailers who gain near-market cultural and economic experience are able to accelerate their entry timing in new markets (Mitra and Golder 2002). Retailers may also leverage their host market knowledge and experience and implement innovative solutions to address local customer needs and launch new products (Cao 2014; Cao, Navare, and Jin 2018; Geleilate et al. 2016). For instance, IKEA took inspiration from their foreign store in Hamburg-Altona, Germany, to introduce a new 'inner-city' store format in their home market and other foreign markets (Hultman et al. 2017). The need to draw on their own global experiences and near-market cultural and economic knowledge in an attempt to lower levels of *unfamiliarity hazards*, is even more pronounced when retailers enter emerging markets, as they need to compensate for the risk and uncertainty of internationalizing in markets that have only recently opened their borders (Gielens and Dekimpe 2007).

Second, as retailers build local and regional relationships, they overcome *relationship hazards* and improve their operating efficiency by taking advantage of scale economies and sourcing cheaper inputs by rationalizing their global value chain (Connelly, Ketchen, and Hult 2013; Contractor 2012). Scale economies are paramount for retail firms, since internationalization typically occurs horizontally, so that retail firms need to duplicate much of their operations abroad. IKEA is an example of a firm that has duplicated its retail store format abroad and, in doing so, exploited scale economies to lower its costs (Jonsson and Foss 2011).

Third, retailers have traditionally been very effective in exploiting their market power by establishing many retail stores in a large number of key locations (Hendriks 2020) as reflected by their global store size, whereby helping consumers reduce transportation costs (Gauri et al. 2021). Overall, the development of a strong market presence and development of global retail brands enhances market power and reduces *discrimination hazards*. Further, highly internationalized retail firms can leverage their bargaining power over suppliers, since they can make greater bulk purchases (Moatti et al. 2015). For example, Walmart's increasing internationalization, allowed the retailer to substantially benefit from leveraging bargaining power over its suppliers through greater purchasing volumes (Halepete, Iyer, and Park 2008).

In summary, when retailers establish and grow their initial presence abroad, costs stemming from the liability of foreignness outweigh any internationalization benefits. However, as retailers continue to expand internationally, the benefits stemming from their market knowledge, experience and increased bargaining power enable them to achieve scale economies and surpass liability of foreignness costs. We therefore propose that:

Hypothesis 1. *(H1): The internationalization-performance (I–P) relationship for retailers has a U-shape with a negative slope at low levels of internationalization and a positive slope at high levels of internationalization.*

Retailer type and the I–P relationship

Burt et al. (2017) highlight that internationalization in the retail industry is not homogeneous. They view grocery retailing as a low margin/high volume sector which is distinct from other retail sectors as it requires higher levels of social embeddedness due to differences in host market consumer and brand values, local food consumption cultures, supply structures and regulations. This indicates that grocery retailers face higher levels of *relational hazards* when internationalizing vs non-grocery retailers as they need to more deeply relate to local consumer tastes, supply chains and legal requirements. At the same time, non-grocery retailers face their own internationalization constraints. While they do not need to be as socially embedded in local markets as grocery retailers (i.e., their *relational hazards* are lower), they incur significant costs for building and supporting a global brand (Özsomer and Altaras 2008) which they later leverage to more efficiently scale their internationalization. While developing a global brand may initially be costly, non-grocers invest in them with the aim of lowering their *discrimination hazards* in the long run. This is not as easily achieved by grocery retailers who enter new international markets more slowly due to the higher *relational hazards* they face with each market entry as they may also grow by acquisition without leveraging their global brand (e.g., Walmart's entry in the UK with ASDA). We therefore examine below in more detail the underlying mechanisms for grocery and non-grocery retailers that would differentially affect the I-P relationship.

Non-grocery retailers, such as fashion retailers, follow a more standardized approach to internationalization as compared to grocery retailers. They seek to scale globally and eventually overcome their *discrimination hazards* through standardizing their brands and growing their corporate reputation across markets (Swoboda, Elsner, and Morschett 2014). They tend to do so by exploiting their branded store formula in a number of host markets where consumers have similar tastes and lifestyles to the retailer's standardized offering (Moore, Fernie, and Burt 2000). However, developing and communicating a renowned global brand is a highly capital-intensive and resource-committing process (Özsomer and Altaras 2008). Further, non-grocery retailers are typically characterized by a fast and widespread international expansion (Burt et al. 2008), which may be initiated only a few years after their inception leading to higher *unfamiliarity hazards*. Such a strategy adds costs and complexity in the internationalization process owing to time compression diseconomies, i.e., rapid expansion in many different countries within a short period of time is more costly (Mohr and Batsakis 2017).

On the other hand, internationalizing grocery retailers do not rely on brand standardization, but adapt their own offering to a few culturally proximate markets (Burt et al. 2008; Treadgold 1988), thus initially incurring reduced *unfamiliarity hazards*, also limiting liability of foreignness costs. Further, unlike non-grocery retailers, grocery retailers expand abroad typically in a few markets and only after they have established a strong presence and experience market saturation in their home country (Alexander 1990). For example, the British grocery retailer, Tesco, internationalized for the first time 74 years after its inception (France in 1993), and the Belgian Delhaize, 107 years after its inception (US in 1974). Accordingly, one can argue that in the initial phase of their internationalization, grocery retailers are likely to incur relatively lower financial distress as compared to non-grocery retailers as they enjoy a more stable financial position and market presence in their home markets. On the contrary, non-grocery retailers with their global brand building focus aimed at ultimately reducing *discrimination hazards* in conjunction with the *unfamiliarity hazards* from an early and rapid expansion to far-flung markets may suffer from a relatively more costly initial internationalization phase. Therefore, at low to moderate levels of internationalization we posit that non-grocery retailers will be more significantly impacted financially when compared to their grocery counterparts.

At moderate to high levels of internationalization, non-grocery retailers will reap the benefits of establishing a global brand overcoming *discrimination hazards* and in conjunction with the increasing economies of scale they will enjoy a more efficient and rapid internationalization (Colla 2004; Swoboda, Elsner, and Morschett 2014). Further, international grocery retailers, address their need to be more embedded in each host country through a multidomestic strategy. Even at high levels of internationalization, grocery retailers have to re-embed into the new local market in order to overcome the associated high *relational hazards* they suffer with each new market entry while being insufficiently differentiated from local competitors (Colla 2003). For example, when Walmart entered Germany by initially acquiring a small local retailer, they were treated as a small retailer indicating their challenge to overcome *relational hazards* despite their size (Palmer 2005). They eventually exited the market as they were unable to gain the scale they desired (The New York Times 2006). Further, while internationalizing non-grocery retailers benefit from a more replicable store format, this is more challenging for grocery retailers whose supply chains are often more complex, with perishable goods requiring specific handling and storage conditions. Specifically, grocery retailers introduce more assortment and pricing modifications not only due to differing local tastes, but also due to host country supply chain specificities and regulations (Goldman 2001); these are *relationship and unfamiliarity hazards* that non-grocers do not experience at the same level. For example, Tesco's twelfth international market entry, was in the US where it followed a different retail food concept. This new format, required that they establish a costly and complex distribution infrastructure which led to Tesco's US failure (The Medium 2019). This indicates that at higher levels of internationalization, grocers may still face *unfamiliarity hazards* that may stem from experimenting with new unfamiliar store formats in yet unfamiliar markets.

In conclusion, at the early phase of internationalization, we expect that non-grocery retailers are likely to experience a steeper decline in their financial performance, owing to their relatively higher levels of *unfamiliarity* and *discrimination hazards* from entering widely dissimilar markets within

a short period of time while investing in developing a global brand. These costs will give way to greater benefits at a later phase of internationalization, when non-grocery retailers will have achieved a global standardized brand which can be more widely scaled suggesting a steeper increase in performance. Conversely, in their initial phase of international expansion grocery retailers' will experience less of a financial impact as they are already quite established in their domestic market and also internationalize in proximate markets facing lower *unfamiliarity hazards*. Yet they will not be able to fully reap the benefits of wide internationalization due to the continuous requirement for local embeddedness which creates *relational hazards* that repeat afresh with each new market entry. Such *relational hazard* costs may impede the ability of grocery retailers to scale more extensively, thus leading to relatively lower performance at high levels of internationalization. We therefore postulate that:

H2. *The U-shape of the internationalization-performance (I–P) relationship is relatively steeper for non-grocery retailers (i.e., flatter for grocery retailers).*

Digitalization and the I–P relationship

The introduction of digital channels has shifted power to e-retailers who have changed the way we purchase (Steenkamp 2020). For example, online retailers such as Amazon, have raised the debate about changing consumer expectations for digitalizing channels by serving the needs of the 'long tail' consumer (Dekimpe et al. 2011). Long tail theory posits that digital sales present more variety than physical store sales (Ratchford, Soysal, and Zentner 2023) with higher demand for niche products and reduced demand for popular products (Brynjolfsson, Hu, and Simester 2011). Overall, digital channels have proven to be complementary to physical channels and provide the necessary touchpoints in the new omnichannel reality (Verhoef, Kannan, and Inman 2015; Grewal et al. 2021). Yet, such complementarities will come at a cost, as retailers are expected to encounter relatively more losses and pressures at low to moderate levels of internationalization before they start experiencing substantial gains at moderate to high levels of internationalization.

At low to moderate levels of internationalization, digital channel expansion is likely to increase coordination and administrative costs leading to growth bottlenecks (Tolstoy, Jonsson, and Sharma 2016). Embracing digital channels requires that retailers simultaneously expand their capabilities in two areas and, thus, invest a greater amount of resources and attention compared to retailers that only offer physical retail channels. However, establishing and maintaining two retail channels requires distinct and different skills in terms of managing customers on different channels (Hult et al. 2019). This can be extremely costly for retailers at the early stage of internationalization where they lack international experience. Such an effect is further magnified by the *unfamiliarity hazards* a retailer might be experiencing in terms of how to digitally serve its new international customers. Furthermore,

at the early stage of internationalization, retailers suffer from *relational hazards*, as they do not have access to stakeholders (e.g., supply chain partners) that can help them successfully establish an effective omnichannel sales presence. Yet, these relationships are particularly important in helping retailers navigate through the more complex omnichannel environment (Ailawadi and Farris 2017).

At moderate to high levels of internationalization, retailers have the opportunity to leverage their digitalization investment and enjoy operational efficiencies with reduced need to operate new physical stores (Luo, Zhao, and Du 2005). As retailers accumulate experience from operating digital channels, they become more familiar in digitally serving new international markets and establishing stronger relationships with their global customers, thus alleviating the effect of *unfamiliarity and relational hazards*. For instance, physical stores can increase awareness and legitimacy that help drive digital sales (Bell, Gallino, and Moreno 2014). Customers may also shop online, but return their goods to physical stores, whereby avoiding shipping costs, shortening lead times, and increasing customer retention (Mahar et al. 2014). In the same vein, the immediate access of digital channels can facilitate the development of global brands (Steenkamp 2020) reducing the potential *discrimination hazards* from local consumers. At moderate to high levels of internationalization, retailers also benefit from greater scale economies, since cross-channel integration stimulates sales growth (Cao and Li 2015). As such, employing this strategy can help firms increase their revenue to a disproportionally greater extent compared to a single channel strategy (Herhausen et al. 2015). We therefore postulate that:

H3. *The U-shape of the internationalization-performance (I–P) relationship is steeper with higher levels of digitalization.*

The moderating role of digitalization on retailer type and The I–P relationship

However, the long tail theory or the benefits of digital channels do not manifest in the same manner across all retailers. For example, grocery retailers are advised to limit the digitalization of perishable products (Ratchford, Soysal, and Zentner 2023) as consumers follow a sorting behavior between online and offline channels due to the sensory examination requirements of perishable goods. Overall, Campo and Breugelmans (2015, p.64) suggest that online grocery shopping differs significantly from other retail categories "as the same products are purchased repeatedly, purchase involvement tends to be low, and consumers are not prepared to spend much time and effort to search for the 'best' product". They therefore support the argument that findings from online durable product purchases are not transferable to grocery shopping. Based on this distinction, we expect a differential effect of digitalization on how each retailer type impacts the I-P relationship.

We expect that at low to moderate internationalization, digitalization costs will become particularly more pronounced

and costly for non-grocery as compared to grocery retailers, as the former suffer from *unfamiliarity hazards* as they tend to expand internationally earlier and more rapidly in culturally diverse countries (Burt et al. 2008). Digitalization in the initial stage of internationalization would also come at a cost for grocery retailers due to the perishability of some of their products and the *relational hazards* that arise by dealing with a larger number of local suppliers (Mantrala et al. 2009). Yet, grocers are potentially less vulnerable financially than non-grocers as they internationalize more cautiously and to more similar markets (i.e., suffer from reduced *unfamiliarity hazards*) after reaching saturation in their local markets (Alexander 1990). We therefore posit that digitalization will increase the liability of foreignness more for non-grocers than grocers at their embryonic stage of internationalization.

The non-perishability of non-grocery goods (e.g., apparel, shoes, electronics, jewelry, etc.), means that they can be kept in warehouses over extensive periods of time which is not the case for perishable grocery goods (Tsiros and Heilman 2005). These non-grocery goods are frequently not sourced from a wide range of local suppliers *reducing relationship hazards* and thus facilitating channel digitalization. On one hand, online grocery shopping is described as low involvement with a very high level of repetition between purchases and less of a desire to search online, thus rendering extensive digitalization less beneficial (Campo and Breugelmans 2015). On the other hand, non-grocery categories may range from hedonic (e.g., fashion), where enjoyment might be drawn from searching an extensive digital channel, or even high involvement durables, where digital channels would ensure that an appropriate choice is made. At the later stages of internationalization, non-grocery retailers would tend to enjoy global brand recognition and thus lower *discrimination hazards*. More specifically digital channels further enhance the scaling of global brands in an environment where co-creation with customers across the world may take place (Steenkamp 2020) and complementary digital means, such as social media and mobile apps, can be more effectively utilized (Grewal et al. 2021). In conclusion, we expect that at moderate to high levels of internationalization, non-grocery retailers will benefit more from digitalization in their internationalization process. Therefore, we suggest that:

H4. *Digitalization will strengthen the moderating influence of non-grocery retailers vs. grocery retailers on the internationalization-performance (I–P) relationship.*

Fig. 1 presents the conceptual model of the study.

Data and methods

Overview of data

To test the hypotheses, we collect data from the Edge by Ascential, the world's leading retail subscription database. Further, we merged the retail-specific information with firm-level data on listed, and major unlisted/delisted, companies, from Bureau van Dijk's OSIRIS database. The examined period is between 1997 – 2017. We focus our attention to international retailers only, we excluded retail firms which have shown only domestic activity, i.e., they have reported no foreign sales activity during the examined period. Our sample's firms generate 17.5 percent of their income from international sales, report USD 11 billion of total assets on average, and originate from 40 different home countries. Out of the 234 retail firms which are included in our sample, the majority of them originate from the USA (36.7 percent), Japan (12.4 percent), and the UK (10.7 percent). 51 percent of our sampled firms report grocery retail as their core activity. Our sampled firms operate across 7 host countries on average. However, non-grocery retailers operate in comparatively more markets on average (approximately 11 host countries) than their grocery counterparts (approximately 4 host countries). Our final dataset consists of 2541 firm/year observations of 234 retail MNEs, that is 10.9 firm/year observations per retailer on average. The analysis is performed at the aggregate/corporate retailer level, that is we assess the characteristics of retailers at the MNE level than at the subsidiary (host country) level.

Dependent variable

Firm performance. The dependent variable, *firm performance*, is measured as the ratio of net income to total assets, i.e., return on assets (ROA). This performance measure is a widely used measure in the I-P literature (e.g., Berry and Kaul 2016; Contractor, Kundu, and Hsu 2003; Lu and Beamish 2004) and is particularly suitable as it measures performance in relation to the resources a retailer deploys in achieving its goals (Katsikeas et al. 2016). Indeed, recent research studying the performance determinants of retail firms has used ROA as a proxy for measuring retailer performance (e.g., Nath et al. 2019; Wang et al. 2020). Since our study examines the performance of retailers at the corporate level (i.e., MNE-level) in relation to their strategic actions (i.e., internationalization, retailer sector, and digital product assortment) we consider that ROA is an appropriate measure to test these firm-specific strategies of retailers. Further, ROA can capture both the physical (e.g., warehousing and logistics) and digital (e.g., software) investments needed for supporting digital channels since they are recognized as assets by international accounting standards.[1] The data are obtained from Bureau van Dijk's Osiris database. The average ROA of the firms in the sample is 7.6 percent.

Independent variable

Internationalization. To measure the main independent variable, *internationalization*, we use Jacquemin and Berry's (1979) entropy measure of diversification which is calculated as: $\sum P_i \ln(1/P_i)$, where P_i is the percentage of sales in country i; and $\ln(1/P_i)$ is the particular weight of each country. The entropy measure has been extensively used in

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[1] https://www.ifrs.org/issued-standards/list-of-standards/ias-38-intangible-assets/.
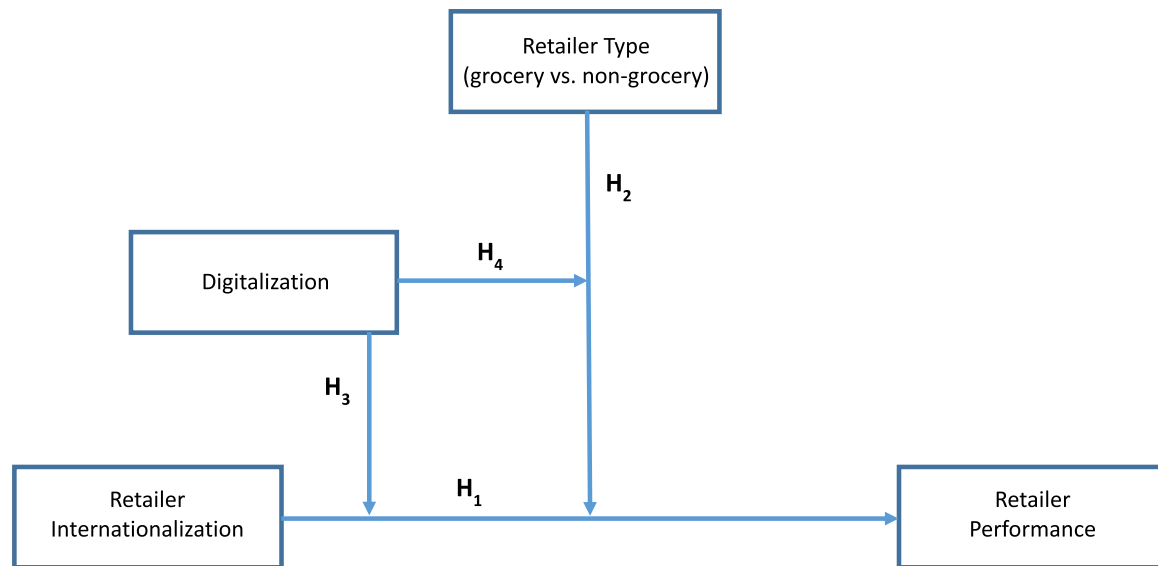
Fig. 1. Conceptual model.

extant research for assessing the level of firm internationalization (e.g., Chang and Wang, 2007; Hitt, Hoskisson, and Kim, 1997) and particularly benefits from accounting for the heterogeneity of a firm's international activity as it captures international sales based on the weight of each country. This is a more accurate metric of internationalization, as compared to, for example, the standard metric of foreign sales to total sales, which is a relatively obscure measure. We collect data on the variable from the Edge by Ascential database. The average value of the entropy measure of Internationalization in the sample is 0.43.

Moderating variables

Grocery retailers. The first moderating variable measures the core activity of the retailer, that is whether the main activity is related to grocery or non-grocery retailing. Retail firms with a primary focus on grocery retailing take the value '1' and retail firms with a primary focus on non-grocery retailing (e.g., clothing and footwear; electricals and office; food service; health and beauty; home, garden, and auto; leisure and entertainment; other) take the value '0'. 51 percent of the firm/year observations in the sample concern grocery retailers, thus indicating a balanced sample overall.

Digitalization. To measure our second moderating variable we once again draw on Jacquemin and Berry's (1979) entropy measure of diversification which is calculated as: $\sum D_p \ln(1/D_p)$, where D_p is the percentage of digital sales of product category p; and $\ln(1/D_p)$ is the particular weight of each product category. The product categories used for the calculation of the entropy measure are a fixed set of categories provided by Edge by Ascential (i.e., grocery; clothing and footwear; electricals and office; food service; health and beauty; home, garden, auto; leisure and entertainment; other). This measure reflects the digital exposure of a retailer in relation to its sales per product category thus allowing us to

assess the degree of heterogeneity of digital sales based on the weight of each product category.

It should be noted that grocers and non-grocers are characterized by substantially different characteristics when it comes to assessing the degree of their exposure to both internationalization and digitalization. As far as internationalization is concerned, the average score for grocers is 0.29 and for non-grocers 0.59. Further, a simple analysis of the ratio between foreign sales and total sales also signifies the important differences between the two groups, as grocers generate 13.83 percent of their income from international sales, while for non-grocers the average score is 21.83 percent. Fig. 2 portrays the average annual internationalization between grocery and non-grocery retailers for the period between 1997 and 2017. From the figure it can be observed that there is a clear upswing in international activity for non-grocery retailers and a much weaker increase for grocery retailers, which seems to be flattening out after the year 2006. Some of our sample's low-performing retailers in terms of internationalization are Big Lots, Barnes & Noble, and Target, while some of the most high-performing ones are L'Occitane, Yum! Brands, and Mothercare. Regarding digitalization, the average score for grocers is 0.04, and for non-grocers 0.03. Fig. 3 graphically depicts the extent of retailer digitalization for the same period. While non-grocery retailers had increasingly digitalized their sales channels in the first years of digital revolution (i.e., up until 2003), grocery retailers are comparatively stronger in digitalizing their channels from the year 2004 and onwards. Therefore, the digital footprint of grocery retailers is comparatively stronger when it comes to assessing the extent of digitalization across different product lines. Some of our sample's weakest retailers when it comes to digitalization are Esprit, Falabella, and Praktiker, while some of the strongest retailers are John Lewis, Cencosud, and Carrefour.

The aforementioned analysis shows the significant heterogeneity that exists between grocery and nongrocery retailers
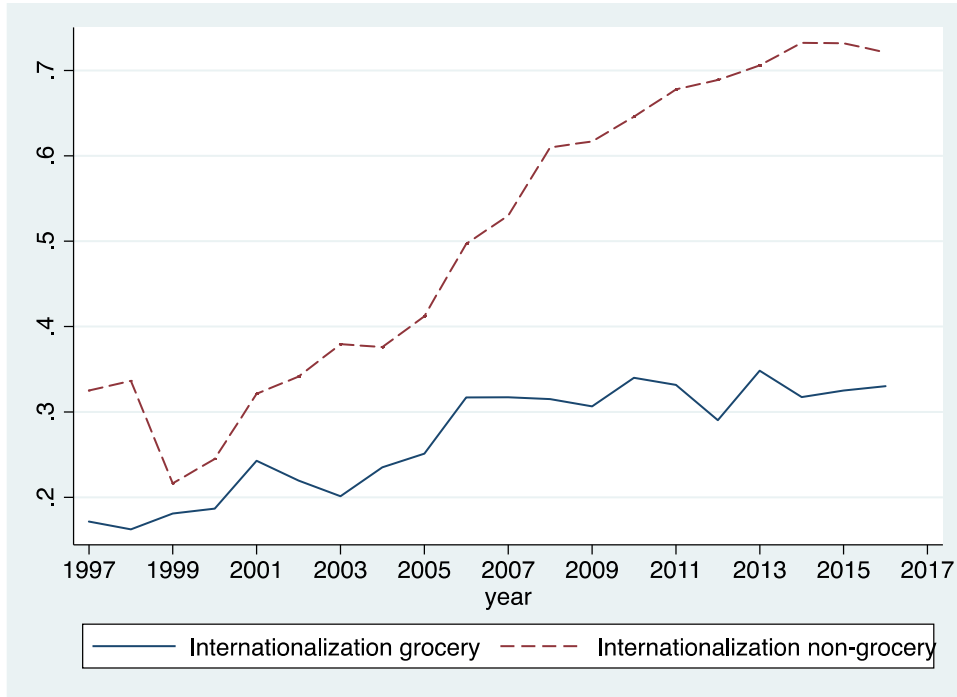
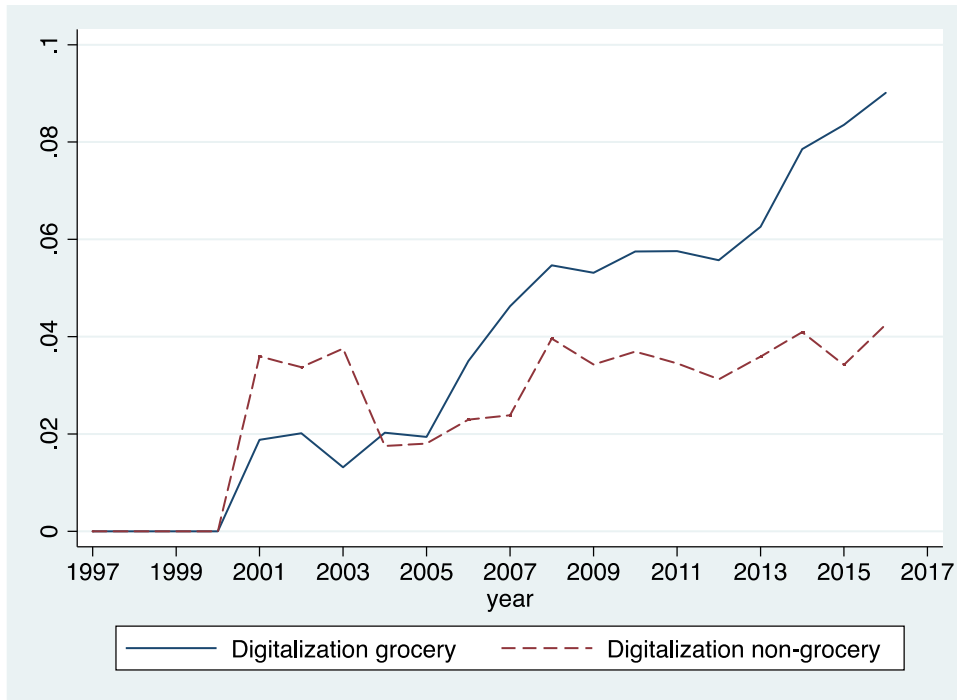Fig. 2. Average annual internationalization: grocers vs. nongrocers.

Fig. 3. Average annual digitalization: grocers vs. nongrocers.

in relation to both internationalization and digitalization, as well as the significant changes that have occurred to these two dimensions throughout this 21-year period. It should be noted here that these plots should be interpreted with caution, since they do not control for several important factors that shape the relationship under examination, that is market- and retailer-specific characteristics.

Control variables

We control for several firm- and country-level variables that may influence retailer performance. Firm-level controls include retail-specific variables that traditionally influence the performance of retail firms, as well as firm-level controls that affect the performance of internationalizing firms. With regard

Table 1
Variable measurements and sources.

	Variable	Description	Source
	Dependent variable		
1	Firm performance	The percentage ratio between a focal firm's net income and its total assets	Osiris Bureau van Dijk
	Independent variable		
2	Internationalization	$\sum P_i \ln(1/P_i)$, where P_i is the percentage of sales in country i; and $\ln(1/P_i)$ is the weight of each country	Edge by Ascential
	Moderating variables		
3	Digitalization	$\sum D_p \ln(1/D_p)$, where D_i is the percentage of digital sales in product category p; and $\ln(1/D_p)$ is the weight of each product category	Edge by Ascential
4	Grocery	Binary variable taking the value '1' if the retailer's main activity is not related to grocery and '0' otherwise	Edge by Ascential
	Control variables		
5	Retail selling space (logged)	The retailer's total retail selling space globally, measured in square meters (logarithmic transformation is applied)	Edge by Ascential
6	Age	The natural logarithm of the difference between the year of observation and the year of inception	Osiris Bureau van Dijk
7	Regional concentration	The percentage ratio between a focal firm's home-region sales and its total sales	Edge by Ascential
8	GDP (logged)	Home country GDP (logarithmic transformation is applied)	World Bank Indicators
9	Cultural distance	For each retailer in a given year, we first calculated the cultural distance between the retailer's home country and all the host countries in which the retailer has operations in that year, and then took the aggregate of all the cultural distances between these home-host dyads. We calculated the cultural distance between pair of countries using the Euclidean distance formula (Konara and Mohr 2019) based on Hofstede's (2001) original four cultural dimensions.	Hofstede's cultural dimensions

to retail-specific variables, we control for retailers' physical footprint by including their total *retail selling space* globally, measured in square meters (González-Benito, Muñoz-Gallego, and Kopalle 2005). This information is also collected from Edge by Ascential. We also incorporate firm-level controls that influence the performance of firms in general and internationalizing firms in particular. We include firm *age*, i.e. the difference between the year of observation and the year of inception (Gaur and Delios 2015). To control for the firm's home-region strategy we introduce regional concentration, which is calculated as the ratio of a firm's home-region sales to total sales (Oh and Rugman 2012). We use Rugman and Verbeke's (2004) concept of the broad triad to classify a firm's home region. In terms of country-level controls, we include *home country GDP* (gross domestic product) and aggregate *cultural distance* to control for the formal and informal institutional contexts (Batsakis and Theoharakis 2021; Schwens, Eiche, and Kabst 2011; Shi et al. 2017). The former control variable captures the macroeconomic conditions in the home market, which can have implications for the retailers' internationalization activities (Swoboda, Puchert, and Morschett 2016), while the latter measures the aggregate cultural distance between the retailer's home country and its host countries (Couper, Reuber, and Prashantham 2020). For each retailer in a given year, we first calculated the cultural distance between the retailer's home country and all the host countries in which the retailer has operations in that year, and then took the aggregate of all the cultural distances between these home-host dyads. We calculated the cultural distance between pair of countries using the Euclidean distance formula (Konara and Mohr 2019) based on Hofstede's (2001) original four cultural dimensions. Variable names,

their short description, and data sources, are appended in Table 1.

Method

Our model is a typical panel data model with retailer and year as the two dimensions in the data structure. We use a feasible generalized least squares (FGLS) estimator which delivers more efficient estimators and addresses heteroskedasticity and first-order panel-specific autocorrelation (Wooldridge 2010). We lag the independent, moderating, and control variables by one year. We include year fixed effects to account for any business cycle effects.

Model specification

We model the impact of internationalization on ROA as:

$$
\begin{aligned}
ROA_{i,\,t+1} = {} & \beta_0 + \beta_1 Int_{i,t} + \beta_2 Int_{i,t}^2 + \beta_3 Grocery_i + \beta_4 Dig_{i,t} \\
& + \beta_5 Int_{i,t} x\ Grocery_i + \beta_6 Int_{i,t}^2\ x\ Grocery_i \\
& + \beta_7 Int_{i,t} x\ Dig_{i,t} + \beta_8 Int_{i,t}^2\ x\ Dig_{i,t} \\
& + \beta_9 Grocery_i x\ Dig_{i,t} + \beta_{10} Int_{i,t}\ x\ Grocery_i x\ Dig_{i,t} \\
& + \beta_{11} Int_{i,t}^2\ x\ Grocery_i\ x\ Dig_{i,t} \\
& + \sum_{n=1}^{N} \varphi_n Controls_n + a_1 \lambda_{1i,t} + a_2 \lambda_{2i,t} + y_t + \varepsilon_{i,t+1} \quad (1)
\end{aligned}
$$

where, $ROA_{i,\,t+1}$ is performance, $Int_{i,t}$ is retailer internationalization, $Int_{i,t}^2$ is the squared term of retailer internationalization, $Grocery_i$ is a binary variable denoting the grocery retailers, and $Dig_{i,t}$ is digitalization. *Controls* denotes the control variables that we described previously, a_1 and a_2 are the coefficients of the inverse Mills ratio λ_1 and λ_2 respectively,

y_t is the time fixed effects, and $\varepsilon_{i,t+1}$ is the error term for each observation. All time-varying right-hand side variables correspond to retailer i at time t. All continuous variables are mean-centered. This means that the estimates capture average change in performance (ROA) at the retailer level. Fig. 1 presents the conceptual model of the study.

Sample selection bias

Internationalization decision

This study's focus is on retailers with international operations. This means that our sample can suffer from sample-induced endogeneity, because retail firms may opt for internationalization (independent variable) earlier, later, or not at all in their corporate lifetime. To address this issue, we adopt a Heckman selection model (Heckman 1979) and expand our original sample by drawing on a larger panel dataset which includes some retail firms that have not internationalized in the examined period (1997–2017). Next, we create a dummy variable that takes the value 1 if the retailer has conducted its first internationalization (i.e., it has reported its first international sales) in the focal year, and the value 0 otherwise. As exclusion restrictions (i.e., instruments), we use home country GDP growth, trade to GDP ratio, and population (in millions). The selection of these three instruments is based on the consideration that the intention of a retailer to internationalize is largely driven by demand and supply conditions of the home market. All three variables are time-varying, and we expect them to influence retailers' decision to internationalize but to be uncorrelated with their corporate level performance (ROA). Additionally, we use firm sales, age, GDP, and grocery, as additional predictors. The probit model is estimated using a panel formation of 3619 firm/year observations, where a firm will remain in the dataset until its first year of internationalization. The coefficients of all instrumental variables are statistically significant. Also, the likelihood-ratio test for the restricted (without instruments) versus full model (with instruments) is statistically significant (Chi-square = 13.43, $p = 0.003$), thus confirming the incremental explanatory power of the incorporated instruments. The results of the first-stage probit model can be found in the web appendix (please see Table A1, Model A1.1). After we obtain the first-stage estimates, we generate the inverse Mills ratio (λ_1) which accounts for potential self-selection biases and use this inverse Mills ratio (λ_1) for the firms that internationalized (at the year of first internationalization) in the second stage, where we have internationalized firms only.

Digitalization decision

Also, our sample can further suffer from sample-induced endogeneity as our models assume that retail firms are able to offer their products using digital channels. However, while some retail firms offer their products through digital channels, others do not. In order to correct such a sample-induced endogeneity issue, we once again adopt a Heckman selection model, where the original sample is expanded with the inclusion of additional retail firms. This time, we create a dummy dependent variable that takes the value 1 if the retailer has reported its first digital sales in the focal year, and the value 0 otherwise. As instruments, we use home country internet users and mobile phone users (as a percentage of total population), and the local retail firms' ecommerce activity. The selection of these three instruments is based on the logic that the intention of a retailer to embrace ecommerce activity is likely to be influenced by home market conditions related to the familiarization of the local population and competition with digital technology. Once again, all three variables are time-varying, and we regard them as predictors of retailers' decision to offer products through digital channels but to be uncorrelated with their corporate level performance (ROA). As we also did in the previous case, we use firm sales, age, GDP, and grocery, as additional predictors. The probit model is estimated using a panel formation of 3513 firm/year observations, where a firm will remain in the dataset until its first year of digitalization. The coefficients of all instrumental variables are statistically significant and the likelihood-ratio test for the restricted versus full model is statistically significant (Chi-square = 33.87, $p = 0.000$) which confirms the incremental explanatory power of the instruments used. The results of the first-stage probit model can be found in the web appendix (please see Table A1, Model A1.2).

After we obtain the first-stage estimates we generate our second inverse Mills ratio (λ_2), and use this inverse Mills ratio (λ_2) for the firms that digitalized (at the year of first digitalization) in the second stage, where we have digitalized firms only. We follow extant literature and incorporate both inverse Mills ratios (λ_1 and λ_2) as control variables in the second-stage model (Li et al. 2022).

Results

Findings

Table 2 presents descriptive statistics and pairwise correlations. The mean variance inflation factor (VIF) is 3.35. This is below the commonly accepted critical value of 10 (Baum 2006) while the highest correlation between variables is 0.58. Overall, we consider that multicollinearity is not a problem.

Table 3 presents the full model on the effect of internationalization on retailer performance (ROA).[2] In hypothesis 1, we argued for a U-shaped curvilinear relationship between internationalization and firm performance, so that performance decreases at low levels of internationalization, while performance increases at high levels of internationalization. The results show that the linear term of internationalization has indeed a negative and statistically significant influence on firm performance ($\beta_1 = -0.372$, $p = 0.000$), while the

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[2] In addition to the full model, we also present the results in a stepwise process. For robustness purposes, we present these results in the web appendix (please see Table A2).

Table 2

Correlation table and descriptive statistics.

		Mean	Std. Dev.	1	2	3	4	5	6	7	8	9	10	11
1	ROA	7.60	12.32	1.00										
2	Internationalization	0.43	0.65	0.10	1.00									
3	Digitalization	0.04	0.14	0.02	0.14	1.00								
4	Grocery	0.51	0.50	−0.04	−0.23	0.05	1.00							
5	Retail selling space (logged)	11.43	4.35	0.02	−0.03	0.02	0.09	1.00						
6	Age (logged)	3.28	0.98	0.00	0.00	0.15	0.10	0.06	1.00					
7	Regional concentration	91.36	21.56	0.05	−0.39	−0.09	0.18	0.09	0.06	1.00				
8	GDP (logged)	28.58	1.79	0.03	0.10	0.06	−0.25	0.07	−0.05	−0.08	1.00			
9	Cultural distance	9.63	25.32	0.14	0.58	0.14	−0.19	−0.03	0.02	−0.26	0.27	1.00		
10	IMR1	2.11	0.18	−0.02	−0.01	0.07	0.59	0.07	0.01	0.08	−0.08	−0.03	1.00	
11	IMR2	2.18	0.25	0.02	−0.15	−0.01	0.62	0.07	0.03	0.11	−0.40	−0.17	0.46	1.00

Note: Values above |0.05| are significant at the 5% level; Correlations are estimated based on mean-centered values; descriptive statistics are estimated based on original values.

Table 3

The effect of internationalization on retailer performance (ROA).

Dependent variable: ROA	Full model		
	Coef.	p-value	std. err.
Focal variables and their interactions			
Internationalization ($\beta1$)	−0.372	*0.000*	(0.100)
Internationalization square ($\beta2$)	0.203	*0.000*	(0.055)
Internationalization square x Grocery ($\beta6$)	−0.242	*0.003*	(0.080)
Internationalization square x Digitalization ($\beta8$)	0.369	*0.019*	(0.157)
Internationalization square x Grocery x Digitalization ($\beta11$)	−0.514	*0.002*	(0.165)
Grocery	−0.011	*0.932*	(0.131)
Digitalization	0.223	*0.059*	(0.118)
Internationalization x Grocery	0.484	*0.000*	(0.124)
Internationalization x Digitalization	−0.467	*0.037*	(0.224)
Grocery x Digitalization	−0.306	*0.018*	(0.129)
Internationalization x Grocery x Digitalization	0.675	*0.005*	(0.239)
Control variables			
Retail selling space (logged)	0.035	*0.185*	(0.026)
Age (logged)	0.053	*0.085*	(0.031)
Regional concentration	0.066	*0.104*	(0.040)
GDP (logged)	−0.190	*0.000*	(0.042)
Cultural distance	0.369	*0.000*	(0.055)
IMR1	0.030	*0.548*	(0.051)
IMR2	0.036	*0.553*	(0.061)
Wald Chi-square	4672.91	*0.000*	

Notes: FGLS estimator that is robust to first-order panel-specific autocorrelation (AR1) and heteroskedasticity; all continuous variables are mean-centered; standard errors are reported in parentheses; p-values are reported in italics; all models include year dummies; number of observations = 2541; number of firms = 234.

squared term has a positive and statistically significant influence ($\beta_2 = 0.203$, $p = 0.000$). To examine the U-curve relationship for all the firms, we graphically depict the relationship in Fig. 4. We can clearly see a U-curve relationship between internationalization and firm performance. To further confirm the U-shaped hypothesis, we follow the process proposed by Haans, Pieters, and He (2016), that is we test and confirm that the slope is sufficiently steep at both ends of the curve (low and high), as well as we confirm that the turning point of the curve is located within the range of the independent variable. Hypothesis 1 is thus supported. This shows that the turning point of the curve is located where Internationalization = 0.8 and ROA = 0.71.

Hypothesis 2 proposes that the U-shape of the internationalization-performance relationship is relatively steeper for non-grocery retailers, i.e., flatter for grocery retailers. The results show that the interaction term between the squared term of internationalization and the binary variable for grocery retailers is negative and statistically significant ($\beta_6 = -0.242$, $p = 0.003$). Fig. 5 depicts the effect of the aforementioned relationship. This shows that while non-grocery retailers do follow a U-shaped I-P relationship, the curve for grocers is flatter and actually flips indicating that increasing levels of internationalization result in decreasing firm performance (ROA). The turning point of the curve is at the point where internationalization equals 0.93, while ROA at this point is 0.6. Therefore, although our hypothesis 2 is supported in the sense that U-shaped I-P relationship is steeper for non-grocers, we find that grocery retailers follow an inverted U-shaped I-P relationship.
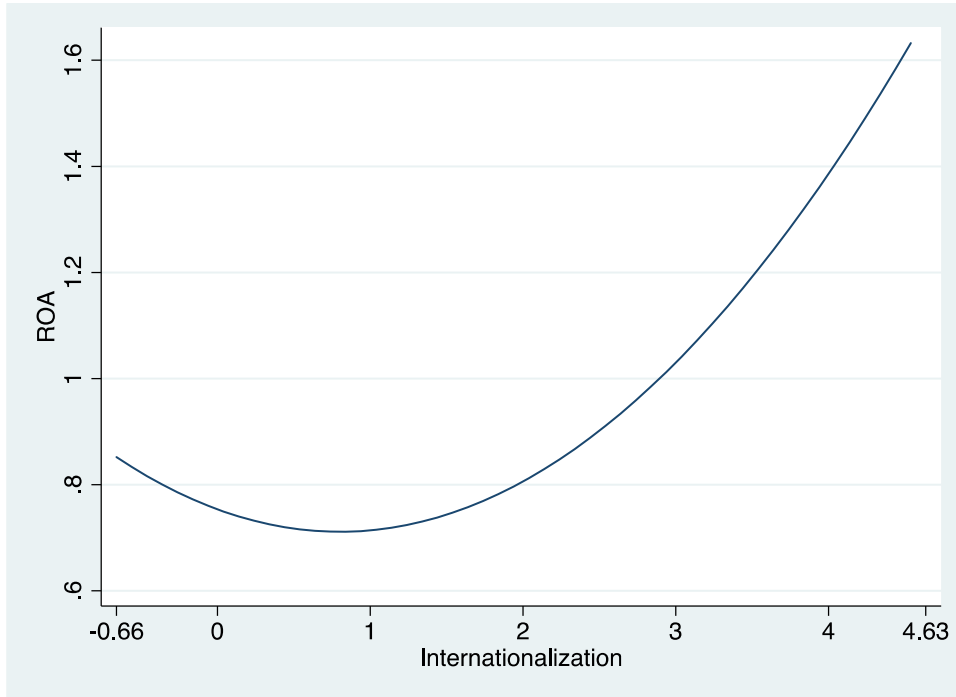
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Fig. 4. The U-shaped relationship between internationalization and firm performance.
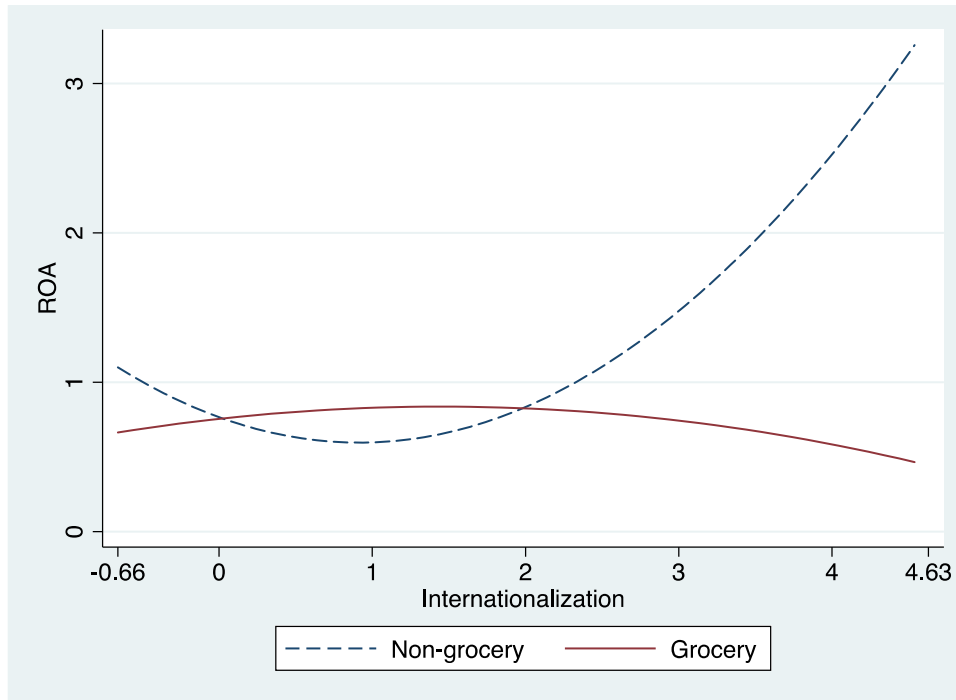*Note:* Values of ROA and Internationalization are mean-centered.

Fig. 5. The moderating effect of grocery retailers on the U-shaped relationship between internationalization and firm performance.
Note: Values of ROA and Internationalization are mean-centered.

In hypothesis 3, we argued that the U-shape of the internationalization-performance relationship is steeper for retailers with higher levels of digitalization. The results show that the interaction term between the squared term of internationalization and the linear term of digitalization is positive and statistically significant ($\beta_8 = 0.369$, $p = 0.019$).

Fig. 6 depicts the effect of the aforementioned moderating effect. Specifically, the figure shows that the curve of high-digitalization retailers is steeper than this of low-digitalization retailers. The turning point of the curve is where internationalization equals 0.68, while ROA at this point is 0.75. Therefore, hypothesis 3 is supported. Another interesting ob-
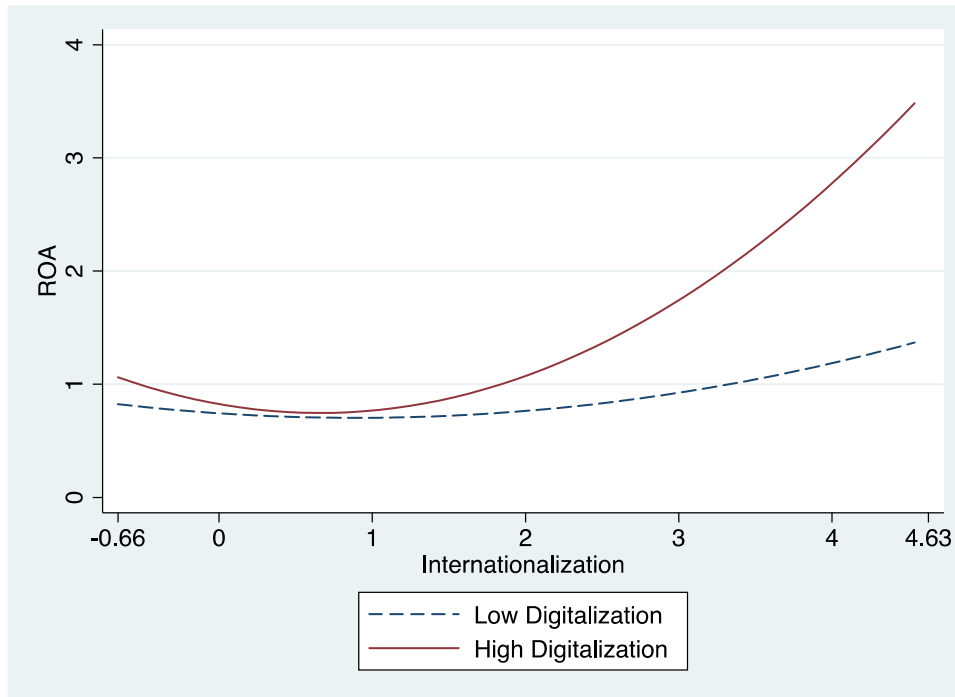
Fig. 6. The moderating effect of digitalization on the U-shaped relationship between internationalization and firm performance.
Note: Values of ROA, Internationalization, and Digitalization are mean-centered.

servation is that across all levels of internationalization, high-digitalization retailers outperform low-digitalization retailers.

In hypothesis 4, we argued that digitalization strengthens the moderating influence of grocery retailers on the I–P relationship The estimates show that the interaction between the squared term of internationalization, the binary variable of grocery retailers, and the linear term of digitalization has a negative and statistically significant effect on firm performance ($\beta_{11} = -0.514$, $p = 0.002$), indicating that digitalization tend to moderate the influence of grocery retailers on the I–P relationship. Fig. 7 depicts the moderating effect of this relationship. The graphic illustrations of the predictive margins show that for both low and high digitalization cases, non-grocery retailers have a more pronounced (steeper) U-curve compared to that of grocery retailers. However, this contrast in steepness between the graphs for non-grocery retailers vs grocery retailers is stronger in the case of high digitalization. Moreover, highly digitalized non-grocery retailers have the steepest U-curve, and interestingly, significantly outperform the rest of the three subgroups, for almost all levels of internationalization. The turning point of the curve for high-digitalization non-grocery retailers is at the point where internationalization equals 0.73 (ROA at this level equals 0.68), while ROA at the highest level of internationalization is 8.96. Hence, hypothesis 4 receives support.

Monetary implications

To gain more insights into the economic significance of our results, we estimate the predictive margins (i.e., adjusted predictions) that correspond to our full model. These are pre-sented in Table 4 (H1, H2, and H3) and Table 5 (H4). As far as Hypothesis 1 is concerned, at moderate levels of internationalization ROA is 0.75 above the mean value of ROA (or 82.5 million US dollars in net income[3]) on average, while a one standard deviation increase in internationalization (i.e., mean + 1 std. dev.) results in a ROA of 0.71 above the mean value of ROA (or 78.1 million US dollars in net income) on average. At the maximum level of internationalization (i.e., 4.63 standard deviations above the mean value) ROA is 1.68 above the mean value of ROA (or 184.8 million US dollars in net income) on average. This means that retailers at the maximum level of internationalization earn 106.7 million US dollars more in net income on average than retailers at moderate levels of internationalization do.

As far as the moderating effect of grocery retailers on the U-shaped relationship between internationalization and ROA is concerned, at moderate levels of grocery retailers' internationalization ROA is 0.76 above the mean value of ROA (or 83.6 million US dollars in net income) on average, while at moderate levels of non-grocery retailers ROA is 0.77 above the mean value of ROA (or 84.7 million US dollars in net income) on average. Yet, a one standard deviation increase in internationalization (i.e., mean + 1 std. dev.) leads grocery retailers' ROA to 0.83 above the mean value of ROA (or 91.3 million US dollars in net income) on average, while the ROA of their non-grocery counterparts is 0.60 above the mean value of ROA (or 66 million US dollars in net income)

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[3] We estimate net income with the assumption that the assets remained constant at 11billion US dollars, which is the average amount of assets for our sample's retailers.
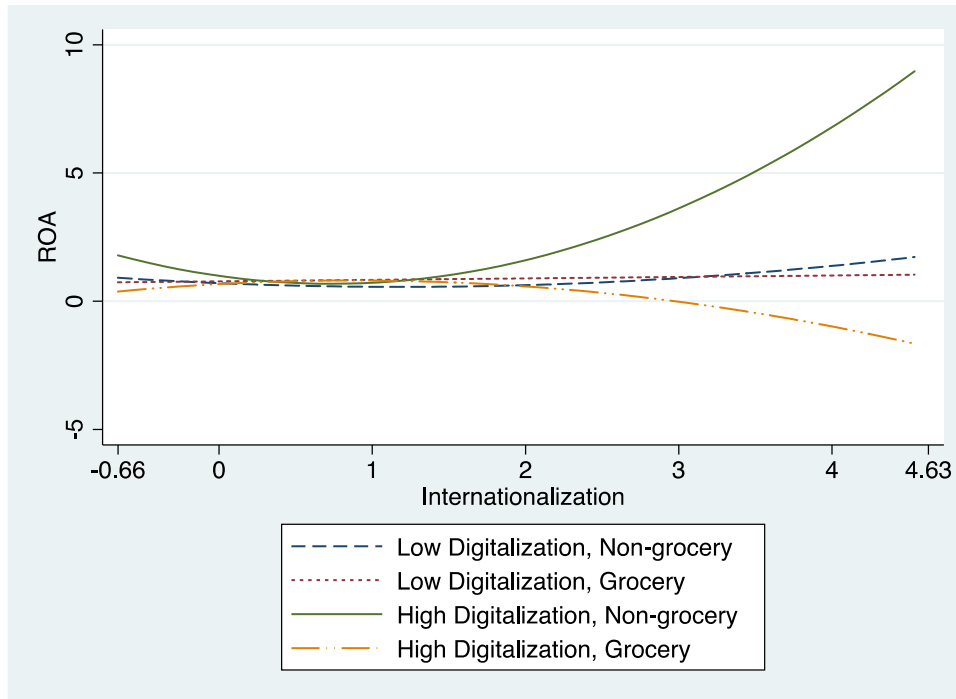
Fig. 7. The interaction between digital product assortment, grocery retailers, and internationalization.
Note: Values of ROA, Internationalization, and Digitalization are mean-centered.

Table 4
Predictive margins on ROA (H1, H2, and H3).

| | Hypothesis 1 | | | Hypothesis 2 | | | | | | Hypothesis 3 | | | | | |
| | | | | Grocery retailers | | | Non-grocery retailers | | | Low Digitalization | | | High Digitalization | | |
Internationalization	Margin	Std. Err.	p-value	Margin	Std. Err.	p-value	Margin	Std. Err.	p-value	Margin	Std. Err.	p-value	Margin	Std. Err.	p-value
LOW (M-1SD)	0.852	0.054	0.000	0.664	0.073	0.000	1.100	0.106	0.000	0.825	0.048	0.000	1.063	0.171	0.000
MEAN	0.754	0.044	0.000	0.755	0.076	0.000	0.766	0.082	0.000	0.743	0.044	0.000	0.825	0.084	0.000
HIGH ($M + 1SD$)	0.714	0.065	0.000	0.829	0.101	0.000	0.598	0.108	0.000	0.704	0.065	0.000	0.767	0.096	0.000
MAX	1.681	0.641	0.009	0.442	0.974	0.650	3.404	0.884	0.000	1.405	0.615	0.022	3.623	1.686	0.032

Note: Margins indicate mean-centered adjusted predictions of ROA. The mean value of ROA is 7.6.

Table 5
Predictive margins on ROA (H4).

	Hypothesis 4											
	Low Digitalization						High Digitalization					
	Grocery retailers			Non-grocery retailers			Grocery retailers			Non-grocery retailers		
Internationalization	Margin	Std. Err.	p-value	Margin	Std. Err.	p-value	Margin	Std. Err.	p-value	Margin	Std. Err.	p-value
LOW (M-1SD)	0.740	0.073	0.000	0.914	0.084	0.000	0.379	0.111	0.001	1.792	0.339	0.000
M	0.778	0.078	0.000	0.707	0.080	0.000	0.672	0.094	0.000	0.989	0.159	0.000
HIGH ($M + 1SD$)	0.835	0.103	0.000	0.564	0.107	0.000	0.809	0.127	0.000	0.723	0.157	0.000
MAX	1.041	1.023	0.309	1.793	0.611	0.003	−1.787	1.117	0.110	9.397	3.285	0.004

Note: Margins indicate mean-centered adjusted predictions of ROA. The mean value of ROA is 7.6.

on average. Non-grocery retailers enjoy comparatively greater benefits above 1.98 standard deviations of internationalization (i.e., mean + 1.98 std. dev.), that is at the point where the ROA of both retail groups is the same (i.e., 0.82 above the mean value of ROA or 90.2 million US dollars in net income on average). At the maximum level of internationaliza-

tion (i.e., 4.63 standard deviations above the mean value) the ROA of non-grocery retailers is 3.25 above the mean value of ROA (or 357.5 million US dollars in net income) on average.

As per the moderating effect of digitalization on the U-shaped relationship between internationalization and ROA, we find that at moderate levels of internationalization, ROA for

high-digitalization retailers is 0.83 above the mean value of ROA (or 91.3 million US dollars in net income) on average and this of low-digitalization retailers 0.74 above the mean value of ROA (or 81.4 million US dollars in net income) on average. Further, a one standard deviation increase in internationalization (i.e., mean + 1 std. dev.) leads to a ROA of 0.77 above its mean value (or 84.7 million US dollars in net income) on average for high-digitalization retailers and 0.7 above its mean value (or 77 million US dollars in net income) on average for low-digitalization retailers. At the maximum level of internationalization (i.e., 4.63 standard deviations above the mean value) high-digitalization retailers have a ROA of 3.62 above the mean value of ROA (or 398.2 million US dollars in net income) on average, while this of low-digitalization retailers is 1.4 above the mean value of ROA (or 154 million US dollars in net income) on average. This means that at the maximum level of internationalization high-digitalization retailers earn 244.2 million US dollars more in net income on average than low-digitalization retailers do.

Finally, we discuss the predictive margins associated to the assessment of the triple interaction between internationalization, grocery, and digitalization. These indicate that at 1.28 standard deviations and above the mean value of internationalization, high-digitalization non-grocery retailers enjoy the highest performance in terms of ROA. Specifically, for this group ROA is 0.85 above the mean value of ROA (or 93.5 million US dollars in net income) on average. At the maximum level of internationalization (i.e., 4.63 standard deviations above the mean value) high-digitalization non-grocery retailers have a ROA of 9.4 above the mean value of ROA (or 1.03 billion US dollars in net income) on average.

Sensitivity tests

Although we address the issue of sample selection bias through a Heckman two-stage approach, additional concerns, such as reverse causality and omitted variable bias, may exist. In order to further address these issues, we proceed to another sensitivity test by employing a system dynamic panel data Generalized Methods of Moments, commonly known as System GMM (Blundell and Bond 1998). The System GMM estimator uses lagged values of the endogenous variables, and lagged differences as instruments. We treat internationalization and its squared term as endogenous regressors and we enter their lagged values and the lagged values of all control variables into a predetermined set thus treating them as instruments for our model. We employ a two-step GMM estimator using a two-lag structure. For each model, we test for autocorrelation and for the validity of the instruments. Specifically, p-values for first (AR1), second order autocorrelation (AR2), the p-value of the Hansen J test for overidentifying restrictions, and the difference-in-Hansen test are all reported at the end of the table (see Table A3 in the web appendix). The results are consistent with these of the main analysis thus providing additional support for the reliability of our estimates.

Further to the Heckman two-stage approach, we proceed to some additional analysis to ensure that our findings are

robust. Specifically, we incorporate seven additional control variables, that control for retail-characteristics, such as retail banner standardization and entry mode; financial data, such as current ratio, fixed assets ratio, and leverage; as well as country level characteristics, such as physical and digital infrastructure advantage of the retailers' home country. By augmenting the number of control variables, the dataset size truncated significantly resulting in 122 retailers and 930 firm/year observations. Despite the significant loss of data points, the analysis delivers consistent estimates (the results of the full model can be found in Table A4 in the web appendix).

Discussion

Internationalization and digitalization, i.e., expansion of a firm's international scope and its digital channel, respectively, are two of the most significant diversification decisions of retail firms (Gielens and Dekimpe 2001; Sohl, Vroom, and McCann 2020). In this paper, we focus on the interplay between retailer internationalization and digitalization and its performance implications for grocery vis-à-vis non-grocery retailers. We test our hypotheses against a panel of the 234 largest international retailers in the world, and we find that the relationship between internationalization and retailer performance is U-shaped, since retailers initially incur greater costs than benefits owing to the liability of foreignness, followed by comparatively greater benefits than costs with growing market power, experience, and scale economies.

We also find that the idiosyncrasies of retail sectors affect this relationship. Specifically, the U-shaped effect is stronger for non-grocery retailers. While they first incur more costs for building and supporting a global brand (Özsomer and Altaras 2008), they later on manage to capitalize upon this particular strength and more efficiently scale their internationalization. On the other hand, grocery retailers face a relatively lower financial impact at the initial phase of their internationalization as they typically expand to fewer countries, and only after they have established a strong presence and experienced market saturation in their home market (Alexander 1990). This cautious approach to internationalization seems to reduce LoF costs, thus helping retailers to enjoy a net performance gain (i.e., the benefits of internationalization exceed its costs) at the early stage of internationalization. However, at higher levels of internationalization they face greater complexities relative to their non-grocery counterparts mainly owing to the need for continuous and deeper social embeddedness with the associated *unfamiliarity* and *relationship hazards*, as the products they offer require adjustment to local consumer needs and tastes, local food consumption cultures, and regional supply structures and regulations.

In addition, we find that an expanded channel digitalization further steepens the U-shaped relationship and that this effect is stronger for non-grocery retailers, as initially the investment in building digital competences along with a global brand development can be particularly costly, but when wider internationalization has been achieved, an expanded digital presence offers substantial benefits to the more scalable non-

grocery retailers. While grocery retailers also incur costs from expanding their channel digitalization at the initial stage of their internationalization, they are relatively less exposed to financial constraints as compared to non-grocery retailers as they are typically active in significantly fewer foreign markets. However, at higher levels of internationalization, grocery retailers will not be able to benefit extensively from an expanded channel digitalization due to the nature of the products they sell (i.e., perishable grocery goods) and the repetitive nature of online grocery shopping. These findings point to a synergistic relationship between international expansion and digital channel growth at high levels of internationalization that positively affects firm performance, but an interfering effect of digitalization at low levels of internationalization that hampers retail performance, particularly for non-grocery retailers.

Implications for the retailing literature

Our study makes contributions to extant retailing scholarship by advancing our understanding of the interplay between internationalization and digitalization in the context of heterogeneous retail sectors. In particular, our work contributes to the retailing literature by examining the idiosyncratic role retail sectors (i.e., grocery vs. non-grocery) play in shaping the relationship between internationalization and retailer performance. This study is the first to examine this relationship by disentangling the heterogeneity that characterizes each of these two retail sectors. The idiosyncratic characteristics of grocery (i.e., perishable goods, need for social embeddedness, adaptation of products to local cultural needs) and non-grocery retailers (i.e., global brands, standardized products, early and rapid expansion to culturally dissimilar markets) indicate that the effect of internationalization on retailer performance will also greatly differ.

Furthermore, even though digital retail channels have become increasingly important (Cao and Li 2015; Reinartz, Wiegand, and Imschloss 2019; Tolstoy et al. 2021), research on their effect on internationalization remains scarce. Our work shows that expanding channel digitalization does not only complement conventional retail channels for non-grocers, but also strengthens both, the opportunities and threats associated with a retailer's internationalization endeavors. However, digital channel expansion is less beneficial for internationalizing grocery retailers. Thus, while our research connects two megatrends, globalization and digitalization, it examines their implications contingent upon the inherent differences between retail sectors. Further, the effect of digital channel expansion has not received the same level of attention as in physical channels (Sethuraman, Gázquez-Abad, and Martínez-López 2022). By showing that the digital channel strengthens the moderating influence of non-grocers on the I–P relationship, we add considerable nuance to the literature of internationalization in retailing, and we reveal the challenges grocers face when they internationalize and digitalize their product offerings.

Managerial implications

Our research offers several insights to retail managers in the grocery and non-grocery sector. Retail managers in both sectors need to recognize both, the synergistic potential of international expansion and digital channel growth on firm performance and their potentially destructive interplay. While retailers eventually enjoy substantial benefits from internationally scaling their operations, their main challenge lies with their initial costs for developing a global brand and early internationalization. This is particularly true for non-grocery retailers, whose executives need to pay particular attention to mitigating their liability of foreignness at early stages of international expansion by carefully conducting market research, establishing local networks, and building their brand abroad, before they are able to benefit from greater scale economies and market power.

With respect to digital channels, establishing digital sales channels at lower levels of internationalization, when the retail firm has not established a strong international presence, can prove costly and inefficient, whereas at higher levels of internationalization building strong e-commerce channels can be highly beneficial and complement the physical sales strategy, especially for non-grocery retailers. This means that retail executives need to consider that the costly digitalization investments at lower internationalization levels that add complexity, tend to improve the performance of retail firms at high levels of internationalization.

Our study's findings also reveal that not all internationalization and digitalization decisions have proved successful. Some retailers, such as Walmart, have greatly expanded their international scope, digital channel, and achieved superior firm performance. Specifically, our data positions Walmart in the top-performing group of retailers with respect to international and digital expansion, while the US headquartered retailer achieves a 12 percent ROA on average over the examined 21-year period. Walmart has been systematically internationalizing, having a significant presence in nearly 20 countries. While known failures and exits of Walmart from important markets are documented (e.g., exit from Germany in 2006), the retailer has managed to accumulate significant market share in many markets it operates in. At the same time, Walmart has managed to combine its international expansion with a growing investment in digitalization and embracement of digital channels. A characteristic example of such a strategy is their acquisition of a majority stake in Flipkart in 2018 (Walmart 2018), one of the most successful e-commerce companies in the Indian market gaining access to a very large customer base. It is therefore clear that Walmart has embraced digitalization as a means of implementing its international strategy.

Yet, other retailers have systematically struggled to improve their corporate performance while being in the process of adopting both strategies. Such an example is Sainsbury's, the UK-based retailer, who has shown limited international and digital channel expansion activity while experiencing a subpar ROA of approximately 4 percent over the examined

period. While Sainsbury's is known for its early attempts to invest in ecommerce (e.g., in 1995 Sainsbury's launched 'Wine Direct', an internet wine sales service), this was not combined with a successful international expansion strategy which would have allowed the retailer to reap the benefits of digitalization at a larger scale. Sainsbury's has remained particularly local, with several documented failed international expansion attempts (El-Amir and Burt 2008).

Limitations and future research

This study has limitations with respect to digitalization, internationalization, and supply chain integration that provide avenues for future research. First, our work only examines one aspect of digitalization, albeit an important one, i.e., digital channel expansion. While this is very suitable for the retail sector, since digital sales channels have revolutionized the industry and, to some extent, replaced physical channels, digitalization can have other implications for the retail sector. For example, digital communication technologies can also help reduce administrative costs and increase communication and trust abroad. This may help reduce the liability of foreignness and could also affect the relative benefits of internalized versus market-based international activities, whereby influencing their entry mode choice.[4]

Second, we are unable to directly measure how well digital and physical stores complement each other for the firms in our sample. While we build our arguments on previous research that has frequently documented a complementary relationship between digital and physical channels, typically devoid of cannibalization effects (e.g., Herhausen et al. 2015; Pauwels et al. 2011), subsequent research may attempt to collect data and examine the actual relationship between different sales channels in an international context.

Third, while digital channels do offer what appears to be unlimited room for expansion, the manner in which digital channels are expanded needs to be examined in more detail (Gielens and Steenkamp 2019). Thus, a more expanded digital channel would need to also come with a well-organized storefront that needs to be examined in more detail as an additional moderator.

Further, our study examines the I-P relationship from a corporate-aggregate level perspective rather than a local market-level perspective. This means that our analysis is on the aggregate internationalization and performance of the retail MNE and not on the internationalization and performance of the retailer in each individual local host market. As a result, our analysis is not able to fully capture the idiosyncrasies that characterize each local market that include cultural distance, economic differences, and differing institutions. Future research may examine the differences between the individual host markets and their implications on the interplay between

international expansion and digital channel growth in the context of retail performance.

Lastly, a traditionally important factor affecting retailer performance is the level of integration in their supply chain (Ganesan et al. 2009). Supply chain integration often requires that retailers increase their level of coordination with suppliers or that they expand their activities in the production stage. This is usually associated with offering private labels (i.e., retailer brands), which is considered a competitive advantage for retail firms and their brand value (Geyskens et al. 2018). While we did not examine this critical factor due to lack of data, studying supply chain integration can generate interesting insights, particularly for smaller retail firms that have different levels of supply chain integration, as compared to the large firms in our sample that normally have high levels of supply chain integration (Zhao et al. 2011), and help advance our understanding of how globalization and digitalization affect the success of retail firms.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jretai.2023.07.005.

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