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DIGITAL INTERNATIONALISATION OF FIRMS

STRATEGIES, CHALLENGES AND LEGAL ASPECTS

Edited by Marzanna K. Witek-Hajduk,
Magda Górska Grginović, and Bartosz Targański



Digital Internationalisation of Firms

Digital Internationalisation of Firms offers a comprehensive examination of the digital outward internationalisation of firms, focusing on both Internet-based and Internet-enabled businesses, including SMEs and large enterprises. This monograph provides in-depth analysis of the processes, modes, and strategies firms employ to expand internationally in the digital age. It also addresses key challenges, including legal aspects of cross-border e-commerce (CBEC), making it a vital resource for those navigating the complexities of global digital markets. This book offers a multifaceted approach to digital internationalisation, covering theoretical perspectives, practical strategies, and empirical evidence. It provides valuable insights into e-consumer behavior, big data, and sustainability challenges. The inclusion of legal considerations, such as consumer rights, tax regulations, and intellectual property protection, distinguishes this work from other publications in the field.

Readers will gain a holistic understanding of the digital internationalisation process, from strategy formulation to navigating legal hurdles, and the book is ideal for academics, researchers, and advanced students in international business, marketing, and law. It also serves as a valuable resource for business managers, advisors, and policymakers seeking to understand the intricacies of digital internationalisation and the legal frameworks that influence cross-border e-commerce.

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**Edited by Marzanna K. Witek-Hajduk,
Magda Górska Grginović, and
Bartosz Targański**



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Introductory chapter

Digital internationalisation of firms – general overview, research streams, and theoretical approaches

Marzanna K. Witek-Hajduk, Magda Górska Grginović, and Bartosz Targański

0.1 Introduction

The development of the Internet and Information and Communications Technologies (ICT) has contributed to the improvement of the control of various processes in enterprises and communication with various stakeholder groups on the domestic and foreign markets, including not only buyers but also suppliers, intermediaries, enterprises performing auxiliary functions (banks, advertising agencies, research institutes, forwarding and transport companies, etc.), mass media, and consumer organisations. The application of Internet-based technologies and the numerous benefits of using the Internet are of great importance for the internationalisation of firms and determine their strategies on the international market. That is why researchers have been paying attention to the phenomenon of Internet-based and Internet-enabled internationalisation, or the so-called internetisation (Etemad, Wilkinson, Dana, 2010).

A key benefit of using the Internet by companies operating in international business is the compression of spatial distance and time, as well as facilitating the acquisition and processing of information about foreign markets, which can be transformed into knowledge about them. The application of Internet/ICT facilitates and improves the process of data collection, also data on foreign buyers, and developing information, facilitating and increasing the certainty of decision-making. Moreover, the use of Internet-based technologies allows a better response to the individualisation of foreign consumers' preferences and contributes to the cost reduction, including the costs of foreign expansion.

Since the late 1990s, the phenomenon of digital internationalisation of firms has been considered one of the most important issues in international business studies. Digital internationalisation of firms is understood both narrowly as a foreign expansion of companies (outward internationalisation) with the use of Internet and Internet-based technologies and more broadly as both inward and outward firm internationalisation applying Internet tools. Moreover, digital internationalisation of firms refers to both so-called Internet-based firms and traditional, Internet-enabled companies.

2 *Digital Internationalisation of Firms*

Based on the literature review, the introductory chapter presents a general overview of digital internationalisation, its dimensions, as well as related terms and concepts. Moreover, various perspectives and theoretical frameworks, as well as legal dimensions that have been adopted in the analysis of these phenomena in international business and legal studies are indicated.

Referring to the presented overview of the terms and theoretical concepts, this chapter also illuminates the structure of the monograph, and summarises the contributions included in this publication.

0.2 Digital internationalisation of firms: related terms, research streams, and theoretical frameworks

During the last two decades, the issue of the digital internationalisation of firms has been one of the key facets in literature on international business (IB), international management (IM), and marketing, as well as in publications in legal fields, including consumer protection, tax and customs aspects, and intellectual property rights. In research on the digital internationalisation of firms, also from the legal perspective, various directly and indirectly related terms, constructs, and concepts are applied. These terms and constructs related to the digital internationalisation of firms are presented in [Table 0.1](#).

Research on digital internationalisation of firms covers various streams, such as ([Eduardsen, Ivang, 2016](#); [Gong, He, Lengler, 2024](#); [Appiah, Gabrielsson, Rialp Criado, 2025](#)):

1 The process and modes of digital internationalisation of Internet-enabled and Internet-based firms, including:

- a The role of the Internet and Information and Communications Technologies (ICT) in building international competitive advantages of firms (e.g., [Sinkovics, Sinkovics, Jean, 2013](#)) and in firm internationalisation (e.g., [Alcácer, Cantwell, Piscitello, 2016](#)).
- b The process and modes of digital internationalisation of Internet-based companies (e.g., [Shneor, Flåten, 2008](#); [Witek-Hajduk, 2021](#); [Vadana, Kuivalainen, Torkkeli, Saarenketo, 2021](#), [García-Canal, Guillén, Ponte, 2024](#)).
- c The process and modes of digital internationalisation of Internet-enabled firms/digital platforms (e.g., [Witek-Hajduk, Grudecka, 2021](#); [Witek-Hajduk, Grudecka, Napiórkowska, 2022](#); [Du, Huang 2025](#)), including CBEC as a distribution system in foreign markets (e.g., [Ghobakhloo, Arias-Aranda, Benitez-Amado, 2011](#); [Sinkovics et al., 2013](#); [Fan, Wang, Ying, 2023](#); [Eduardsen, Marinova, Leonidou, Christodoulides, 2023](#)).
- d The application of the Internet and ICT in the internationalisation process of SMEs (e.g., [Ghobakhloo et al., 2011](#)), as well as digital international entrepreneurship (e.g., [Yang, Gabrielsson, Andersson, 2023](#); [Reuber, Fischer, 2011](#)).

Table 0.1 The definitions of terms/constructs directly or indirectly related to the digital internationalisation of firms

<i>Term/construct</i>	<i>Source of definition</i>	<i>Definition</i>
Digitalisation	Gartner	The use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business.
	Gabrielsson, Fraccastoro, Ojala, and Rollins (2021, p. 5070)	Transformation of business processes so that the majority of the information is handled in a digital format.
	Tilson, Lyytinen, and Sørensen (2010, p. 749)	Sociotechnical process of applying digitising techniques to broader social and institutional contexts that render digital technologies infrastructural.
	Guo, Yang, Huan, and Guo (2020, p. 4)	The process of organisational transformation through the adoption of digital technologies, manifested in organisations as digital artifacts, platforms, infrastructures, and digital business models.
	Rachinger, Rauter, Müller, Vorraber, and Schirgi (2019, p. 1144)	The exploitation of digital opportunities. For instance, combining different technologies (e.g., cloud technologies, sensors, big data, 3D printing) . . . to create radically new products, services, and business models.
	Verhoef, Broekhuizen, Bart, Bhattacharya, Dong, Fabian, and Haenlein (2021, p. 891)	Through digitalisation, firms apply digital technologies to optimise existing business processes by allowing a more efficient coordination between processes, and/or by creating additional customer value through enhancing user experiences.
	Mazzone (2014)	The deliberate and ongoing digital evolution of a company business model, idea, process, or methodology, both strategically and tactically.
Digital transformation	Verhoef <i>et al.</i> (2021, p. 889)	A change in how a firm employs digital technologies to develop a new digital business model that helps to create and appropriate more value for the firm.
	Feliciano-Cestero, Ameen, Kotabe, Paul, and Signoret (2023, p. 8)	Implies the use of digital technologies in many areas of business strategy, namely: digital platforms, Internet technologies, digital services, digital ecosystems, and information and communication technology, among the use of other advance technologies, as automation, artificial intelligence, and big data analytics.

(Continued)

4 *Digital Internationalisation of Firms*

Table 0.1 (Continued)

<i>Term/construct</i>	<i>Source of definition</i>	<i>Definition</i>
	OECD	The impact of digital technologies and data and their use on existing and new activities – is accelerating worldwide, affecting all sectors. It offers immense opportunities for our economies and societies yet poses important risks that must be addressed to reap its benefits. Countries and stakeholders must work together in an evidence-based, whole-of-governance approach to advance a trusted, sustainable and inclusive digital future for all.
Digital internationalisation	Dagnino and Resciniti (2021, p. 698)	The ways with which the design and implementation of a digital transformation path and the application of digitalisation processes and tools may help firms of all sizes thrive in international and global contexts.
	Dillon, Glavas, and Mathews (2020, p. 3)	Firm internationalisation processes impacted by digital technologies . . . that is, when firms engage in cross-border, international activity through digital technologies and platforms.
	Shaheer (2020, p. 2)	A process of foreign market penetrations in which born digital firms simultaneously acquire interested users across multiple countries.
Online internationalisation	Ipsmiller, Dikova, and Brouthers (2022, p. 1)	An important method of taking advantage of these international opportunities by making a firm’s products/services available to customers in foreign markets via websites (i.e., via virtual presence instead of physical presence entry modes).
Internetisation	Etemad, Wilkinson, and Dana (2010, p. 319)	The process of increasing adoption, diffusion, and deployment of Internet-based technologies and processes that increasingly serve as the backbone of internationalisation, especially in the innovative entrepreneurial firms. May be compared to the firm’s adoption and use of the Internet and the Internet-based processes in transforming the firm to a hybrid network internally and externally within the firm’s home and international markets, especially when the members of its external network have already internationalised.

(Continued)

Table 0.1 (Continued)

<i>Term/construct</i>	<i>Source of definition</i>	<i>Definition</i>
Internetalisation	Buttriss and Wilkinson (2003, p. 1)	The process of a firm committing resources to Internet commerce and Internet-mediated transactions, including communication and coordination of internal and external relations.
	Mathews and Healy Wickramasekera (2012, p. 735)	The process of integrating the Internet into the internationalisation processes of the firm.
Internet-based firms	Shneor and Flåten (2008, p. 45)	(Otherwise known as “pure clicks”) which use the Internet platform as their only service channel.
Internet-enabled firms	Shneor and Flåten (2008, p. 45)	(Otherwise known as “click & mortars”) which use the Internet platform as an extended channel of service, usually in addition to offline service channels.
Internet-based internationalisation	Witek-Hajduk and Grudecka (2021, p. 739)	Internet technologies are used to support a firm’s internationalisation, and . . . online channels are applied as the only way of distribution.
Internet-enabled internationalisation	Eduardsen and Ivang (2016, p. 152)	The increasing involvement of firms in international markets through the utilisation of the Internet.
	Witek-Hajduk and Grudecka (2021, p. 739)	Internet technologies are used to support a firm’s internationalisation, and online channels are additional or alternative to offline distribution channels in the foreign markets.
Internet-enabled international entrepreneurship	Reuber and Fischer (2011, p. 662)	Driven by firm-specific resources associated with Internet-enabled markets that are expected to be related to a firm’s successful pursuit of international opportunities.
Digital entrepreneurship	Le Dinh, Vu, and Ayayi (2018, p. 1)	Defined as the reconciliation of traditional entrepreneurship with the new way of creating and doing business in the digital era.
	Kraus, Palmer, Kailer, Kallinger, and Spitzer (2019, p. 354)	A phenomenon which arose through technological assets like Internet and information and communications technology. In general, any entrepreneurial activity that transfers an asset, service, or major part of the business into digital can be characterised as digital entrepreneurship.
	Elia, Margherita, and Passiante (2020, p. 2)	Represents a critical pillar for digital economic development and underlines the need to pursue the opportunities based on digital media and technologies through a pivotal business model framework leveraging three key components such as marketing, transaction, and back-office.

(Continued)

6 Digital Internationalisation of Firms

Table 0.1 (Continued)

<i>Term/construct</i>	<i>Source of definition</i>	<i>Definition</i>
Digital entrepreneurial internationaliser	Gabrielsson <i>et al.</i> (2021, p. 5072)	Its products or services are based on digital artifacts and whose identification, evaluation, and exploitation of opportunities through value chain activities can be digitalised, and the firm is entrepreneurial in terms of innovativeness, proactiveness, and risk-seeking behaviour, and it crosses national borders as part of its intention to create value in organisations.
Born global digital firms	Fraccastoro, Ojala, and Gabrielsson, (2023, p. 4714)	The conceptualisation of born global digital firms merges elements of digital entrepreneurship with those of literature dealing with born global firms. They are defined as ventures whose value offerings are available in digital format of binary codes (such as software, a mobile game, and . . .) from the moment they are created and serve global markets soon after their inception.
Born digital firm	Shaheer (2020, p. 2)	Firms whose core value proposition is enabled by digital infrastructures. They can conduct international business on virtual channels without taking ownership of assets. Instead, the most important determinant of the internationalisation of born digital firms is their success in acquiring users across countries, which leads to larger user bases and higher revenues.
	Vadana, Kuivalainen, Torkkeli, and Saarenketo (2021, p. 2)	All parts of their value chain are highly digitalised at the foundation or soon after. They provide products and services to customers using the Internet and other technologies early in their life cycle.
	Stallkamp, Chen, and Li (2023, p. 2)	Firms that from inception are built around intangible digital offerings – such as apps – that are distributed through digital infrastructure. By using digital channels to offer services and interact with customers, born digitals can access foreign markets instantly and at minimal cost.
Distance contract	Directive 2011/83/EU of 25 October 2011 on consumer rights	Any contract concluded between the trader and the consumer under an organised distance sales or service-provision scheme without the simultaneous physical presence of the trader and the consumer, with the exclusive use of one or more means of distance communication up to and including the time at which the contract is concluded.

(Continued)

Table 0.1 (Continued)

<i>Term/construct</i>	<i>Source of definition</i>	<i>Definition</i>
E-commerce	World Trade Organization (WTO)	The “production, distribution, marketing, sale or delivery of goods and services by electronic means”. An e-commerce transaction can be between enterprises, households, individuals, governments, and other public or private organisations.
	Eurostat (2024) European Commission	The sale or purchase of goods or services, whether between businesses, households, individuals, or private organisations, through electronic transactions conducted via the Internet or other computer-mediated (online communication) networks. The term covers the ordering of goods and services which are sent over computer networks, but the payment and the ultimate delivery of the goods or service may be conducted either online or offline. Orders via manually typed emails, however, are excluded.
	Statistics Poland (GUS)	Transactions conducted via networks, IP-based, and other computer networks. Goods and services are ordered via these networks, but payment and final delivery of the ordered goods or services can be made on or off the network. Transactions may be concluded between businesses, with individuals, government institutions, or other private and public organisations. Orders made by telephone, fax, or email are not part of e-commerce.
	OECD (2011)	Includes any transaction for the sale or purchase of goods and services conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders. Payment and the ultimate delivery of the goods or services do not have to be conducted online, while orders made by telephone calls, facsimile, or manually typed email are excluded.
	OECD (2013)	E-commerce transactions can occur between enterprises, individuals, governments, and other public or private organisations: depending on the seller and buyer, the most common transactions are business to business (B2B), then business to consumer (B2C), business to government (B2G), and, more recently, consumer to consumer (C2C).

(Continued)

8 Digital Internationalisation of Firms

Table 0.1 (Continued)

<i>Term/construct</i>	<i>Source of definition</i>	<i>Definition</i>
Cross-border e-commerce (CBEC)	Koh, Fichman, and Kraut (2012, p. 887)	Online transaction conducted by buyers and suppliers across the globe to exchange goods and services using information systems.
	Gomez-Herrera, Martens, and Turlea (2014, p. 94)	An online transaction that triggers a flow of goods crossing one or more national borders. A transaction that triggers a financial transfer across national borders, independently of the underlying physical transaction.
	Hsiao, Chen, and Liao (2017, p. 285)	Online trading activities between the sellers and customers located in different countries and customs territories via e-commerce trading platforms, and the goods are delivered to customers by cross-border logistics services.
	Mou, Ren, Qin, and Kurcz (2019, p. 752)	An online transaction of buying and selling products and services using information communication technologies (ICTs), where buyers and sellers are located in two different countries and therefore, different jurisdictions.
	Pan, Fu, and Li (2023, p. 2329)	Refers to a cross-border trade completed between different countries via e-commerce. In this way, a company can conduct transactions via the internet on either the company's own website or a site within a third-party platform without any physical presence in the target market.

Source: own elaboration.

- e Internationalisation of “born digital” firms (e.g., Vadana *et al.*, 2021; Stallkamp *et al.*, 2023).
- f Consequences and outcomes of digital internationalisation of firms, including impact of digitalisation on international market performance (e.g., Neubert, van der Krogt, 2018; Bhandari, Zámorský, Ranta, Salo, 2023).
- g The disruptive role of digital platforms in the internationalisation process of Internet-enabled firms (e.g., Witek-Hajduk, 2021; Witek-Hajduk, Grudecka, 2021; da Rocha, Neves da Fonseca, Kogut, 2024; Gong, He, Lengler, 2024).
- h The application of websites and social media in communication with foreign audience (e.g., Matarazzo, Penco, Profumo, 2021; Witek-Hajduk, Zaborek, 2022).

- 2 **Antecedents, drivers, and challenges of digital internationalisation of firms** (e.g., Senarathna, Warren, Yeoh, Salzman, 2014), including:
 - a Determinants of digital internationalisation of SMEs (e.g., Elia, Giuffrida, Mariani and Bresciani, 2021; Ipsmiller, Dikova, Brouthers, 2022; Du, Huang, 2025) and large companies (e.g., Benmamoun, Singh, Lehnert, Lee, 2018; Zeng, Khan, De Silva, 2019), including digital platforms (e.g., Ojala, Evers, Rialp, 2018; García-Canal *et al.*, 2024).
 - b Internet-based knowledge acquisition and the process of firms' internationalisation (e.g., Nguyen, Barrett, 2007; Glavas, Mathews, Russell-Bennett, 2019).
 - c Opportunities and challenges of leveraging artificial intelligence (AI) and big data in digital internationalisation, including digital marketing (e.g., Yin, 2022; Taherdoost, 2023; Li, Cai, Hanafiah, Liao, 2024).
 - d Consumer behaviour from a perspective of cross-border e-commerce (CBEC) (e.g., Witek-Hajduk, Grudecka, Napiórkowska, 2022; Chen, Lan, Chang, 2023; Witek-Hajduk, Grudecka, 2024).
 - e Sustainability challenges and digital internationalisation of firms (e.g., Li, Zhao, Ortiz, Chen, 2023; Durão, Santos Pereira, Lobo, Moreira, 2024).
- 3 **Legal aspects of digital internationalisation of firms** (e.g., Cumming, Johan, Khan, Meyer, 2023), including, inter alia:
 - a International harmonisation of the legal framework, including consumer protection in CBEC (e.g., Smits, 2010; Targański, Mokrysz-Olszyńska, 2017).
 - b Anti-competitive practices in digital economy (e.g., Targański, 2020; Holzwarth, Christodoulou, Vischi, 2023).
 - c Tax and customs aspects of CBEC (e.g., Papis-Almansa, 2019; Karwat, 2021; Merkx, Gruson, Verbaan, van der Doef, 2023).
 - d Intellectual property issues from the perspective of digital internationalisation of firms (e.g., Rakoto, 2018; Retnaningdiah, Resmi, Kurniawati, Winarso, 2020; Jankowska, 2024).

Thus, research on digital internationalisation of firms has been conducted from various perspectives, including (1) the strategic/management perspective (Ipsmiller *et al.*, 2022; Du, Huang, 2025), (2) the customer/consumer perspective (Chen *et al.*, 2023; Witek-Hajduk, Grudecka, 2024), and the perspective of institutional environment (Nguyen, Le, Vu, 2022; Brieger, Chowdhury, Hechavarría, Muralidharan, Pathak, Lam, 2022), including the legal aspects (Cumming *et al.*, 2023), and refer to various types of organisations (firms, research institutes, non-profit organisations, etc.), different types of firms in terms of their size (large vs small and medium enterprises – SMEs) (Benmamoun

et al., 2018; Elia *et al.*, 2021) and business model applied (Rachinger *et al.*, 2019; Anwar, Scheffler, Clauss, 2022; Jean, Kim, Sinkovics, Cavusgil, 2024).

Moreover, the digital internationalisation of firms, including Internet-enabled and Internet-based firms, as well as the related concepts (e.g., CBEC), have been researched in reference to various theoretical frameworks, such as, *inter alia* (e.g., Eduardsen, Ivang, 2016; Cumming *et al.*, 2023; Gong *et al.*, 2024; Appiah *et al.*, 2025):

- Transaction Cost Theory (e.g., Jean, Kim, Cavusgil, 2020; Qi, Chan, Hu, Li, 2020; Du, Huang, 2025), and the transaction cost analysis (e.g., Andersen, 2005; Gabrielsson, Gabrielsson, 2011).
- Internalisation theory (e.g., Nambisan, Zahra, Luo, 2019; Zeng *et al.*, 2019; Li, Chen, Yi, Mao, Liao, 2019; Chen, Li, Wei, Yang, 2022).
- OLI framework (e.g., Pezderka, Sinkovics, 2011; Benmamoun *et al.*, 2018; Bhandari *et al.*, 2023; Surana, Chavan, Kumar, Chirico, 2024).
- Institutional theory (e.g., Eduardsen *et al.*, 2023; Lee, Yang, Ghauri, 2023),
- Resource-Based View (RBV) (e.g., Tabares, Alvarez, Urbano, 2015; Lee, Falahat, 2019; Elia *et al.*, 2021, Cassia, Magno, 2022).
- Dynamic capabilities perspective (e.g., Nambisan *et al.*, 2019; Scuotto, Nicotra, Del Giudice, Krueger, Gregori, 2021; Cassia, Magno, 2022).
- The internationalisation process models (the stage model) (e.g., Coviello, Kano, Liesch, 2017; Eduardsen, 2018).
- Born-global perspective (e.g., Foscht, Swoboda, Morschett, 2006; Gabrielsson, Gabrielsson 2011; Tobiassen, Pettersen, 2023).
- International New Ventures (INV) concept (e.g., Ojala, Evers, Rialp, 2018; Jean *et al.*, 2020; Brieger *et al.*, 2022).
- Entrepreneurial opportunity approach (e.g., Glavas, Mathews, Bianchi, 2017; Dillon *et al.*, 2020; Yang *et al.*, 2023).
- Effectuation concept (Tolstoy, Nordman, Hanell, Özbek, 2021; Gabrielsson, Raatikainen, Julkunen, 2022).
- Network approach (e.g., Benmamoun *et al.*, 2018; Garcia-Canal *et al.*, 2024; Verhoef *et al.*, 2021).
- User-network approach and externalisation logic (e.g., Zeng *et al.*, 2019; Li *et al.*, 2019).
- Technology-organisation-environment (TOE) framework (Hossain, Azam, Quaddus, 2021; Nguyen, *et al.*, 2022; N'Dri, Su, 2024).
- Signalling theory (e.g., Jean, Kim, Zhou, Cavusgil, 2021; Luo, Ma, Wang, 2022; Jean *et al.*, 2024).
- Ecosystems theory (e.g., Li *et al.*, 2019; Nambisan *et al.*, 2019; Chen *et al.*, 2022).
- Exploration-exploitation framework (e.g., Brouthers, Chen, Li, Shaheer, 2022; Caputo, Fiano, Riso, Romano, Maalaoui, 2022).
- Empowerment theory (e.g., Fan *et al.*, 2023; Zhang, Duan, 2024).

- Embeddedness theory (e.g., [Brouthers et al., 2022](#)).
- Micro-foundations perspective (e.g., [Scuotto et al., 2021](#); [Zahoor, Khan, Shamim, Puthusserry, 2023](#); [Santangelo, Phene, Coviello, Tung, Felin, 2024](#)).

0.3 Legal dimensions of digital internationalisation

The research area covered by the monograph is subject to dynamic adaptation of national legal systems to the reality of the digital economy, in which the traditional limitations of distance and time as a barrier to international communication have lost their relevance. Here we provide a brief overview of the main legal developments affecting internationalisation involving the Internet within the European Union (EU).

By facilitating the free movement of goods and services between EU Member States, the Internet contributes to the EU's main objective of building the internal market. However, the potential of Internet/ITC for CBEC transactions has largely remained (and remains) untapped due to barriers to accessing individual countries' markets. The EU has taken several legislative initiatives to reduce or eliminate barriers to the movement of goods or services procured online. One of the most important legislative initiatives in recent years, called the Digital Single Market Strategy (DSM), was initiated in 2015 and covered 16 legislative and non-legislative actions in three areas to create one digital market by gradually removing the regulatory obstacles between the EU Member States ([European Parliament, 2015](#)). DSM focuses on three main areas: improving access for consumers and businesses to digital goods and services across the EU, creating the conditions for digital networks and services to prosper, and maximising the growth potential of the digital economy.

In the context of CBEC and digital expansion, the most important tools introduced under DSM were (1) prevention of geographical blocking and other forms of discrimination based on customers' nationality or place of residence, (2) reduction of postal charges for cross-border parcels, and (3) improvement of consumer protection against unfair commercial practices in the digital world.

Under Regulation (EU) 2018/302 of 28 February 2018 on addressing unjustified geo-blocking and other forms of discrimination based on customers' nationality, place of residence or place of establishment within the internal market, online buyers from different EU countries should have access to the same language versions of sellers' websites, the same product ranges, the same prices and payment options. Their nationality or place of residence does not justify treating them differently from local customers of the online shop.

Another legal instrument was Regulation (EU) 2018/644 of 18 April 2018 on cross-border parcel delivery services. Its goal was to avoid situations where the benefits of buying cheaper goods online across borders were eliminated due to the high cost of postal cross-border services. This regulation requires parcel delivery companies to provide pricing information allowing national regulators

to improve price transparency and regulatory oversight of parcel delivery providers and their subcontractors.

Another DSM stream focused on improving cooperation between consumer protection authorities of EU Member States, so they better respond to the challenges of the digital economy and enforce consumer rights consistently throughout the EU. Under Regulation (EU) 2017/2394 of 12 December 2017 on cooperation between national authorities responsible for the enforcement of consumer protection laws and repealing Regulation (EC) No 2006/2004, national consumer protection authorities have strong powers to combat unlawful online practices, for example, they can request information from domain registrars and banks to detect the identity of the responsible trader, carry out mystery shopping, check geographical discrimination or after-sales conditions, and order the immediate takedown of infringing websites (European Parliament, 2024).

In parallel to new enforcement powers, the European Commission (EC) in 2021 published a soft law on the interpretation of unfair commercial practices in the digital era throughout the EU. The Guidance on the interpretation and application of Directive 2005/29/EC of the European Parliament and of the Council concerning unfair business-to-consumer (B2C) commercial practices in the internal market provides legal guidance in new areas of consumer rights infringement such obligations of digital platforms/marketplaces, transparency of search results, consumer reviews and endorsements, influencer marketing, and data-driven personalisation and dark patterns (European Commission, 2021).

Yet another important action to better understand and address specific problems occurring in the distribution of goods sold in the digital economy was an extensive study of the competition concerns affecting the e-commerce sector. In its report, the EC identified numerous restrictions imposed on retailers by wholesalers or manufacturers (European Commission, 2017). The most common restrictions on online sales imposed on distributors by manufacturers included restrictions on resale pricing, restrictions on sales on platforms, limitations to sell cross-border, limitations to sell on retailers' websites, limitations to use price comparison tools, and limitations to online advertising. These restrictions make goods less available online, weaken intra-brand competition between distributors, and lead to higher prices. In addition to the investigation of the e-commerce sector, the EC and national competition authorities have been very active in recent years in dealing with restrictions on online sales by owners of well-known brands such as Guess, Asus, Denon & Marantz, Philips, and Pioneer or Asics.

The large number of restrictions on online sales led to changes in the main EU legal act regulating relations within the distribution chain, i.e., Commission Regulation (EU) 2022/720 of 10 May 2022 on the application of Article 101(3) of the Treaty on the Functioning of the European Union to categories of vertical agreements and concerted practices. This regulation sets out the principles of permissible influence of the supplier on the distributor, defines the permitted

restrictions of competition in the different distribution models (e.g., exclusive distribution, selective distribution), and lists the commercial practices that constitute the most serious restriction of competition law (hardcore restrictions). Since 2022, the hardcore restriction category includes prevention the effective use of the Internet by distributors. In parallel, the European Commission has published Guidelines on Vertical Restraints, which allow a detailed assessment of the restrictions imposed by suppliers on distributors using the most popular online tools such as online platforms and comparison websites.

A neighbouring legislative stream in the EU has emerged recently around digital dominant players. Companies such as Google, Amazon, Apple, and Facebook have market power of a new kind derived from strong network effects. Thanks to access to big data, these companies enter areas beyond traditional commerce and exert an influence on private life as well as social and political order. As a result of their market power, the traditional tools of competition law, and the prohibition on abuse of a dominant position (Article 102 of the Treaty on the Functioning of the European Union) became insufficient. Therefore, ex post antitrust enforcement is supplemented by ex-ante regulation that defines the largest digital platforms as “gatekeepers” and imposes obligations on them to behave fairly and leave room for smaller players (Regulation (EU) 2022/1925 of 14 September 2022 on contestable and fair markets in the digital sector (Digital Markets Act). On 6 September 2023, the EC designated for the first time six gatekeepers: Alphabet, Amazon, Apple, ByteDance, Meta, and Microsoft ([European Commission, 2023](#)). In parallel, Digital Services Act (Regulation (EU) 2022/2065 of 19 October 2022 on a Single Market for Digital Services and amending Directive 2000/31/EC has created the world’s first digital regulation that holds digital companies across the EU responsible for the content on their platforms.

0.4 The aim and structure of the monograph

Various phenomena in the global economy, such as intensifying firm internationalisation and international entrepreneurship, as well as digital transformation, growing importance of CBEC, and digital platforms in international business, raise vital questions about the specifics of digital internationalisation of both Internet-enabled and Internet-based firms, as well as about antecedents, challenges, and legal aspects.

This monograph presents the digital internationalisation of both fully Internet-based firms and traditional, Internet-enabled firms as complex phenomena with an interdisciplinary nature, as well as various antecedents and challenges influencing companies’ digital internationalisation strategies. Its purpose is to provide significant contributions to both theory and practice of international business, taking the interdisciplinary approach (international business and marketing, international entrepreneurship, international economics, and legal

perspectives). In parallel, the objective of this monograph is to identify key legal issues specific to CBEC as the key mode of foreign markets entry applied in the process of digital internationalisation of firms.

The monograph consists of three parts and 13 chapters, including the introductory chapter, and presents an overview of the concept of digital internationalisation of firms, its antecedents and challenges, including legal aspects, as well as theoretical approaches and key research streams related to the issue of digital internationalisation.

The first part is devoted to digital internationalisation of firms from a strategic perspective. It starts with a discussion on foreign digital expansion of Internet-enabled firms, which represent product-based firms from traditional industries and can be identified both among large and small- and medium-sized enterprises. Next, the issue of the internationalisation process of Internet-based companies such as online distributors/retailers (e.g., Zalando, Net-a-Porter) and various types of digital platforms, including e-commerce platforms (e.g., [Amazon.com](https://www.amazon.com), [Alibaba.com](https://www.alibaba.com), [Booking.com](https://www.booking.com), Netflix) that play key roles in both B2B and B2C international markets, is presented. Finally, the digital internationalisation phenomenon from the perspective of research institutes is illuminated, followed by a literature review that investigates the strategic role of service offshoring in facilitating digital internationalisation with relation to multinational corporations (MNCs).

The second part of this monograph considers the antecedents and challenges of digital internationalisation of firms. The first topic discussed is consumer behaviour with regard to CBEC, followed by sustainability engagement initiatives and their challenges identified during the process of digital foreign expansion of firms. The second issue covered is the transformative role of Internet-based tools and digital platforms applied to knowledge acquisition among digitally internationalised companies. Afterwards, the disruptive role of AI and big data analytics in international marketing, examining their potential opportunities and challenges, are characterised. The last issue addressed in the second part of the monograph is the firm and managerial capabilities antecedent to digital internationalisation of SMEs, which allow resource-constrained, small businesses to shape new value propositions in global, increasingly digitalised markets.

The third part of the monograph presents three legal dimensions related to internationalisation using the Internet: protection of consumer rights, tax and customs, and intellectual property. In all three areas, legal systems and procedures are confronted with complex enforcement problems caused by the CBEC. Firstly, the focus is on substantive and procedural issues of consumer protection in CBEC. Current challenges and new forms of international cooperation between consumer protection authorities are presented, as well as AI-based tools to detect and remedy consumer rights infringements typical of the digital economy. Next, the focus shifts to tax and customs challenges resulting from the dynamic growth of e-commerce as well as the tools that tax authorities have

or should have at their disposal. Finally, intellectual property considerations in digital internationalisation are presented from the perspective of the fashion industry. The monograph provides a comprehensive framework that EU-based fashion retailers can utilise to navigate the complexities of global IP protection in an increasingly digital and technologically advanced marketplace.

To conclude, the monograph takes a novel, interdisciplinary approach to the research area, discussing various aspects of firm digital internationalisation, including theoretical perspectives, antecedents, challenges, and benefits as well as implications for international business, and empirical evidence delivered by scholars representing various fields of science. A distinguishing feature of the monograph is also the multifaceted approach to digital internationalisation from the perspective of both the Internet-based and Internet-enabled firms, as well as SMEs and large companies and research institutes. Key antecedents and challenges of digital internationalisation of firms (e.g., e-consumer behaviour, sustainability challenges, Internet-based knowledge acquisition, leveraging AI and big data) are also discussed. Moreover, legal aspects of digital internationalisation of companies (protection of consumer rights, methods of resolving disputes with consumers, tax and customs aspects, protection of property rights from the perspective of CBEC) are covered.

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Part 1

**Digital Internationalisation
of Firms – a strategic
perspective**



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1 Digital internationalisation of Internet-enabled firms

Processes, modes, and strategies

*Marzanna K. Witek-Hajduk and
Magda Górska Grginović*

1.1 Introduction

The development of the Internet and Information and Communication Technology (ICT) has contributed to changes in the functioning of both large corporations and small- and medium-sized enterprises (SMEs), including those operating in the international market (Sinkovics, Sinkovics, Jean, 2013; Senarathna, Warren, Yeoh, Salzman, 2014). It is linked not only with the development of new e-business models, digital platforms, and various types of Internet-based firms but also with the digital transformation of companies from traditional industries (Witek-Hajduk, 2021).

The rapid growth of the Internet and ICT for many companies has also been a source of new opportunities to do business internationally (Jean, Kim, Cavusgil, 2020) by reaching customers from many, often geographically distant, markets thanks to less cost-intensive online modes of entry for foreign markets (e.g., corporate/brand websites, company/brand online stores, and third-party digital platforms, including multi-sided digital platforms, etc.) instead of offline entry modes (Brouthers, Geisser, Rothlauf, 2016; Katsikeas, Leonidou, Zeriti, 2019). Digital (online) modes of foreign expansion are important for companies from traditional sectors, especially for SMEs (Sinkovics *et al.*, 2013; Gabrielsson, Gabrielsson, 2011; Yordanova, Dana, Manolova, Pergelova, 2024).

Digital internationalisation of firms has been considered one of the key topics in contemporary international business studies. Since the late 1990s, the phenomenon of the Internet-enabled firm has been gaining in importance (Bai, McColl, Moore, 2017). The Covid-19 pandemic significantly accelerated the digital transformation of firms, also the traditional companies applying online channels in addition to their offline distribution – referred to hereafter as Internet-enabled companies (Morais, Ferreira, 2020). Moreover, thanks inter alia to the growing importance of various types of digital platforms, also multi-sided platforms (e.g., Amazon, Alibaba), and online distributors (e.g., Zalando), dynamic internationalisation of Internet-enabled firms is observed.

In 2022, cross-border e-commerce (CBEC), as the key mode of foreign market entry applied in the process of digital internationalisation of Internet-enabled firms, represented 22% of global e-commerce. The CBEC global market is projected to reach a value of 5.1 trillion USD in 2030, while in 2021 alone it was valued at 0.757 trillion USD (Statista, 2022). Physical products account for 97% of cross-border e-commerce, while digital products account for the remaining 3%. In 2023, 53% of manufacturers and retailers worldwide declared that they applied CBEC, and 8% planned to do so in the next 12 months (Statista, 2023).

Digital transformation processes and the adoption of digital internationalisation strategies are key for both SMEs and large enterprises to build and maintain their international competitiveness and secure long-term growth (Bargoni, Ferraris, Vilamová, Wan Hussain, 2024).

Thanks to the application of new technologies, such as, e.g., Internet of Things, cloud computing, generative AI, and big data, as well as “traditional” ICT, internationalisation of traditional companies, including SMEs, is no longer hampered by their liability of smallness, liability of foreignness, and liability of newness (Reuber, 2018). The ubiquitous digitalisation phenomenon enables companies to achieve greater flexibility and efficiency, optimise and accelerate internationalisation processes, and respond in a timely way to constantly changing foreign markets’ needs.

The internationalisation process of Internet-enabled firms may take different paths and include various stages, due to the modes of internationalisation utilised (traditional offline, as well as via online channels) and the order these modes are applied in, among other reasons. Moreover, we distinguish two types of digital internationalisation of Internet-enabled firms: the so-called Internet-enabled internationalisation and Internet-based internationalisation.

Despite growing adoption of digital tools/technologies in traditional, Internet-enabled companies’ foreign expansion, there is still little theoretical considerations and empirical evidence explaining the process of digital internationalisation of traditional Internet-enabled companies from the perspective of both SMEs and large firms (Wittkop *et al.*, 2018; Jin, Hurd, 2018).

Given the preceding, the purpose of the chapter is to answer the following research questions:

- 1 What is the essence and what is the strategic importance of the digital internationalisation of Internet-enabled firms in contemporary international business from the perspective of small and medium companies and large companies?
- 2 What are the stages of Internet-enabled companies’ digital internationalisation processes?
- 3 What modes of digital outward internationalisation are applied by Internet-enabled firms?

- 4 What is the disruptive role of digital platforms in the internationalisation process of Internet-enabled firms that are business users of digital platforms?
- 5 What are the relations between a firm's age, its internationalisation speed, and CBEC adoption, as well as between CBEC usage and a firm's export sales?

To address these research questions, an in-depth literature review and empirical research was performed. The chapter presents the results of the multiple case studies of digital internationalisation of Internet-enabled firms, and the results of a quantitative analysis based on data from the 2024 edition of World Bank Enterprise Survey (WBES).

1.2 Processes and modes of the Internet-enabled firms' internationalisation: literature review

Shneor and Flåten (2008, p. 45) distinguish between (1) Internet-enabled firms ("click & mortars"), i.e., companies, often from traditional industries, whose business models include both offline and online operations, and which apply online channels only additionally to offline ones, and (2) Internet-based companies ("pure clicks") that apply e-business models and present only/mainly in the online world (digital modes are their only service channels).

In the past two decades, there have been many publications on the use of the Internet and Internet-based technologies in the foreign expansion of Internet-enabled firms. The researchers address inter alia such issues as:

- 1 The role of the Internet and ICT in creating competitive advantages of Internet-enabled firms in the foreign markets (e.g., Sinkovics *et al.*, 2013; Sun, 2021).
- 2 The process and modes of Internet-enabled firms' internationalisation (e.g., Shneor, Flåten, 2008; Witek-Hajduk, Grudecka, 2021; Witek-Hajduk, Grudecka, 2024; Witek-Hajduk, Grudecka, Napiórkowska, 2022), including the usage of cross-border e-commerce (CBEC) as a distribution system in foreign markets (e.g., Ghobakhloo, Arias-Aranda, Benitez-Amado, 2011; Sinkovics *et al.*, 2013; Cassia, Magno, 2022).
- 3 Internet-based knowledge and the process of firm internationalisation (e.g., Nguyen, Barrett, 2007; Glavas, Mathews, Russell-Bennett, 2019).
- 4 The specificity of using the Internet and ICT in the internationalisation of SMEs (e.g., Cassia, Magno, 2022; Kevin Tseng, Johnsen, 2011; Ghobakhloo *et al.*, 2011), including companies classified as born globals or international new ventures (e.g., Yu, de Koning, Oviatt, 2005; Gabrielsson, Gabrielsson, 2011; Jean *et al.* 2020; Brieger, Chowdhury, Hechavarría, Muralidharan, Pathak, Lam, 2022).

- 5 The use of websites and social media in international digital marketing, especially in communication with a foreign audience (e.g., [Witek-Hajduk, Zaborek, 2022](#); [Ipsmiller, Dikova, Brouthers, 2022](#)).
- 6 Antecedents of the adoption of digital modes in the foreign markets' expansion, including the motives of CBEC adoption in the Internet-enabled firms' foreign expansion (e.g., [Nguyen, Barrett, 2006](#); [Senarathna, Warren, Yeoh, Salzman, 2014](#); [Qi, Chan, Hu, Li, 2020](#)).
- 7 Digital internationalisation of firms and firm performance (e.g., [Sinkovics et al. 2013](#); [Cassetta, Monarca, Dileo, Di Bernardino, Pini, 2020](#); [Trąpczyński, Kawa, 2023](#)).
- 8 The disruptive role of digital platforms in the internationalisation process of Internet-enabled firms (e.g., [Witek-Hajduk, 2021](#); [Witek-Hajduk, Grudecka, 2021](#); [Gong, He, Lengler, 2024](#)).

Researchers of digital internationalisation, including the process of foreign expansion of Internet-enabled firms, emphasise that traditional theories of firm internationalisation, such as, e.g., the concepts of phased internationalisation, do not refer fully to the context of digital transformation and digital modes of foreign expansion (e.g., [Coviello, Kano, Liesch, 2017](#)).

Studies on the internationalisation process of Internet-enabled firms confirm that the use of the Internet/ICT can contribute to the development or strengthening of the international competitiveness of such companies. Not only Internet-enabled large companies but also SMEs can create or strengthen the competitive advantages in foreign markets thanks to the application of the Internet/ICT, if they develop the unique so-called Internet-enabled capabilities, which can be the key dynamic capabilities of a given firm. Thus, firms are not able to develop/strengthen competitive advantages and performance in the foreign markets only thanks to the Internet-based technologies at their disposal but must develop unique capabilities to apply these technologies and develop other resources and skills as well ([Sinkovics et al., 2013](#)). Internet-enabled capabilities are of particular importance for building competitive advantages and internationalisation of SMEs, which usually have limited resources, while the basic limitation of benefiting from the application of Internet/ICT by SMEs is linked with human resources (e.g., [Levenburg, Schwarz, Motwani, 2005](#)). Researchers (e.g., [Nguyen, Barrett, 2007](#)) emphasise also the great importance of so-called Internet-based knowledge for the internationalisation of companies from transition economies, which often have limited resources compared to firms from developed economies. Firms that use Internet/digital technologies to acquire knowledge about foreign markets/partners internalise it by combining it with the knowledge they already have. The ability to internalise Internet-based knowledge depends, e.g., on the firm's knowledge orientation ([Nguyen, Barrett, 2007](#)), and, as a result, the company's orientation towards internationalisation may change and, consequently, acceleration of foreign expansion. Gaining knowledge about foreign

competitors, consumers, and business partners can also help reduce the risk of choosing the wrong strategy to enter foreign markets. The use of the Internet/ICT also contributes to reducing the costs of access to knowledge about foreign markets. The skills of acquiring information about foreign markets, processing it, and internalising it using Internet tools can also contribute to improving a company's performance, also export performance (e.g., [Trąpczyński, Kawa, 2023](#)). Studies confirm that the use of the Internet/ICT contributes to the acceleration of the internationalisation process of Internet-enabled companies, especially SMEs (e.g., [Yu et al., 2005](#)), as well as an increase in the geographical diversification of foreign expansion (e.g., [Zaheer, Manrakhhan, 2001](#)), also thanks to the reduction of export barriers, e.g., cultural distance (e.g., [Sinkovics et al., 2013](#)). Moreover, the key benefit of using the Internet/ICT from the perspective of Internet-enabled firms operating on the international market is the compression of spatial distance and time ([Carnoy, Castells, 2001](#)), which is linked inter alia with the use of CBEC. The application of digital modes of foreign markets expansion facilitates or enables Internet-enabled firms to access the global market and compete on an international scale ([Javalgi, Ramsey, 2001](#)), and thus promotes the achievement of economies of scale, experience effects and cost reduction, and thus – the development/strengthening of competitive advantages. Internet-enabled companies with unique capabilities to use CBEC can therefore gain a sustainable competitive advantage by focusing on the “operational efficiency” of e-commerce (e.g., lower costs compared to competitors) or on strategic, unique positioning (online distribution as a source of unique value for foreign target groups).

Internet-enabled companies that adopted the Internet/ICT for business purposes early tend to internationalise faster (acceleration of internationalisation) than companies that started using it later ([Yu et al., 2005](#)). Some Internet-enabled firms are even “born global”, precisely because of their skills in using the Internet/Internet-based technologies (e.g., [Loane, McNaughton, Bell, 2004](#)). The application of the Internet/ICT can contribute to the initiation of Internet-enabled firm internationalisation also by reducing the perceived risk associated with entering new foreign markets ([Mathews, Bianchi, Perks, Healy, Wickramasekera, 2016](#)). Moreover, [Matarazzo, Penco, and Profumo \(2021\)](#) underline that digital firm transformation enhances internationalisation by expanding both the number of foreign markets and the share of foreign sales. Based on multiple case studies of three “made in Italy” SMEs, researchers state that digital tools help to innovate their business model, develop new “online” distribution channels, and create new digital ways of delivering value to customers. Additionally, the research of [Matarazzo et al. \(2021\)](#) confirms that the application of social media is one of the drivers and one of the “prerequisites” of the SMEs' foreign expansion.

The application of the Internet/ICT in the internationalisation process of Internet-enabled companies involves the use of non-traditional, digital modes

of foreign markets' entry, which constitute alternative distribution channels in comparison to the physical presence abroad (e.g., Sinkovics *et al.*, 2013). Shneor and Flåten (2008) identified four digital modes of internationalisation of Internet-enabled companies: (1) website/websites addressed to foreign audience (web presence), (2) online agents/online distributors, (3) global online store, and (3) market-specific (localised) online store. Researchers indicate also two paths of digital internationalisation applied by Internet-enabled firms contrary to traditional offline foreign expansion: (1) global online store → online agent/online distributor → market-specific online store, and (2) website (e-presence) → global online store → online agent/distributor → market-specific online store. However, Shneor and Flåten (2008) consider only digital foreign markets' entry modes applied by Internet-enabled firms, but do not take into account various types of online intermediaries (e.g., online distributors, multi-sided digital platforms) nor the sequence of the adoption of digital modes of internationalisation in relation to offline ones. In turn, Witek-Hajduk *et al.* (2022) conclude that fashion Internet-enabled SMEs apply e-commerce in their foreign expansion in two forms: (1) own online store with deliveries abroad and (2) online intermediary (online distributors, multi-sided digital platforms). Moreover, fashion Internet-enabled companies differ in terms of the applied digital modes of foreign expansion, as well as the stage of the foreign expansion on which they started to use digital modes of foreign markets' entry in relation to the traditional, offline ones. Witek-Hajduk *et al.* (2022) indicate following models of application e-commerce in comparison to offline foreign markets' entry modes in the internationalisation process of Internet-enabled companies: (1) as the first and the most important mode of foreign expansion, (2) as one of the first and very important, in parallel with other "traditional" offline modes of entry (e.g., stationary stores), and (3) as a mode of entry of minor importance at the later stage of foreign markets' expansion, and contrary to Shneor and Flåten (2008), conclude that an Internet-enabled firm may first use its own online store with deliveries to foreign customers rather than an online distributor.

Ipsmiller *et al.* (2022) draw attention to the important – from the point of view of digital internationalisation of Internet-enabled firms – choice between customised (active) or general (default) forms of firm websites addressed to a foreign audience. Referring to the entrepreneurial orientation concept and based on research on a sample of traditional product-based Austrian exporting SMEs, Ipsmiller *et al.* (2022) confirmed the positive impact of entrepreneurial firm orientation on the application of active internationalisation websites.

Researchers underline that CBEC as a digital mode of foreign market entry is characterised by huge growth prospects (Mir-Bernal, Guercini, Sadaba, 2018). There are many reasons that Internet-enabled companies apply CBEC in foreign expansion, wherein many of them are linked with financial benefits. CBEC enables reducing barriers that result from resource constrains of both Internet-enabled large companies and SMEs (Bianchi, Glavas, Mathews, 2017). For

many Internet-enabled firms, CBEC allows entry into global markets before establishing major business relationships (Jeffcoate, Chappell, Feindt, 2002), and with significantly lower financial involvement. Moreover, CBEC helps generate higher profits in the foreign markets than in domestic markets (Jin, Cedrola, 2016) and facilitates foreign expansion by reducing physical liabilities, information gaps, and operational threats (Guercini, Ranfagni, Runfola, 2020). CBEC helps Internet-enabled firms, especially SMEs, accelerate their foreign expansion by reducing the risk linked with traditional internationalisation processes and modes of entry (Mir-Bernal *et al.*, 2018). Despite their limited resources, SMEs' flatter organisational structure makes them more predisposed to facilitate innovations such as new e-commerce models (Osano, 2019).

Referring to Sanchez-Torres and Juarez-Acosta (2019), there are three groups of determinants of the application of CBEC: (1) organisational/internal factors, such as, e.g., organisational readiness, ITC application, firm size, innovativeness of a company; (2) environmental factors, e.g., industry, governmental support, competition, country's infrastructure; and (3) technological factors, including perceived risk, relative advantage compared to the competitors, utility, compatibility with information systems, ease of use. Witek-Hajduk *et al.* (2022) identified the following motives of CBEC application by fashion Internet-enabled SMEs: (1) market, reactive motives, including increased importance of CBEC in various industries and countries, industry trends, product category specifics, foreign customers' preferences towards direct relations with the seller via online store, inquiry from a foreign online distributor/digital platform, and (2) strategic, proactive motives, such as higher efficiency of brand creation on foreign markets thanks to CBEC, faster brand internationalisation and creation via online stores/digital platforms, reaching a large group of foreign clients of digital platforms, ease of brand creation worldwide thanks to CBEC, creation of brand awareness abroad through presence in online stores/digital platforms, greater control over brand creation on foreign markets in the case of own online store. Studies confirm that CBEC helps Internet-enabled firms generate higher profits than in the domestic market (Jin, Cedrola, 2016), develop the customer base, expand the brand's scope, gain greater exposure on websites, increase sales in the foreign markets, as well as increase customer loyalty (Nauwelaerts, Chakri, 2016).

However, the use of CBEC also encounters many barriers of a sociocultural, technical, economic, and political/legal nature, including regulations on cross-border e-commerce (Zaied, 2012), which are difficult to overcome, particularly for Internet-enabled SMEs. Moreover, from the consumer perspective are indicated such concerns of CBEC as long delivery time, high delivery costs, and payment security (Mir-Bernal *et al.*, 2018). Thus, the application of various modes of CBEC requires not only overcoming the political, legal, sociocultural, and technical barriers but also integration of digital foreign expansion with the firm's overall internationalisation strategy. According to Sinkovics *et al.* (2013),

Internet-based firms, especially these classified as born globals, which rely too much on digital modes of foreign markets entry, including CBEC, are susceptible to the so-called virtuality trap. A dilemma therefore arises as to whether firms from traditional industries should treat e-commerce as an alternative way of selling on foreign markets or rather as complementary to traditional modes of expansion. Replacing traditional trade intermediaries on foreign markets with digital modes may lead to the loss of personal relationships with buyers and thus limit the possibility of obtaining knowledge about these markets from them and is associated with the need to ensure the security of transactions and efficient logistics of deliveries.

Many researchers emphasise the importance of digital internationalisation from the perspective of Internet-enabled SMEs. The impact of the Internet/ICT application on the internationalisation process of Internet-enabled SMEs and their relations with foreign customers varies, depending on (Kevin Tseng, Johnsen, 2011) the ways in which the firm applies Internet/ICT in the internationalisation, their perception as the tools supporting communication with foreign customers, and the extent to which the company relies on more personal and interactive forms of relations with foreign customers. Moreover, Internet-enabled SMEs from emerging markets compared to ones from highly developed countries are characterised by greater application of Internet tools, especially during the initial stage of firm internationalisation (Kundu, Katz, 2003).

One of the key streams in the study of the internationalisation of Internet-enabled companies is the role of digital platforms (e.g., Amazon.com, Netflix, Rakuten), including multi-sided platforms (e.g., Witek-Hajduk, 2021; Witek-Hajduk, Grudecka, 2021; da Rocha, Neves da Fonseca, Kogut, 2024; Gong *et al.*, 2024), although still there has been little research on the application of digital platforms in their business users' internationalisation (Hänninen, Smedlund, Mitronen, 2018). Based on the systematic literature review on the SMEs' international market entry enabled by digital platforms, da Rocha *et al.* (2024) conclude that (1) articles on the digitalisation through the prism of firm internationalisation are underrepresented in the literature; (2) most papers are focused mainly on the early uses of the Internet and "traditional" digital tools (email, websites, digital advertising) and on the positive and negative effects of digital transformations on internationalisation at the individual, firm, and macro levels; and (3) a limited number of articles approach the role of digital platforms in the foreign expansion of firms, and these papers focus primarily on social media usage in communication with foreign audiences and not on digital platforms' international activities and their role in the internationalisation of, e.g., SMEs.

Research shows that digital platforms have changed the internationalisation process of many firms (their business users), enabling new ways of acquiring knowledge about foreign markets/partners, building relationships, new modes of foreign markets' entry, as well as new ways of creating/delivering value to foreign customers (Nambisan, Zahra, Luo, 2019; Witek-Hajduk, 2021). The

following features of digital platforms determine their disruptive role in the internationalisation of their business users, including Internet-enabled firms (Witek-Hajduk, 2021): (1) international/global scope, enabling, (2) development of relations between platform users (buyers, suppliers) from various countries, (3) network externalities that are the greater, the larger the user base, and (4) exchanging/sharing information with platform users, also from distant markets.

Thanks to the access to shared resources and user groups abroad offered by digital platforms with international scope, their business users can use shared resources in different foreign market contexts (Nambisan *et al.*, 2019) that translates into lower innovation costs (Iansiti, Levien, 2004), and the opportunity to apply new ways of creating relationships with foreign customers, as well as new modes of foreign markets entry. Internationalisation based on digital platforms is particularly important for Internet-enabled SMEs, especially firms with little or no international experience and limited resources that make it difficult to use traditional modes of foreign expansion (Witek-Hajduk, 2021), as digital platforms eliminate/reduce physical presence abroad (Arenius, Sasi, Gabriellsson, 2005), reduce the cost and risk of foreign expansion thanks to sharing them with other platform users, promote the acceleration of internationalisation of firms already present on foreign markets, and give access to many markets worldwide (Coviello *et al.*, 2017). In particular, Western companies using CBEC should enter Chinese markets applying local digital platforms (Jin, Hurd, 2018; Qi *et al.*, 2020) due to (1) initial lack of brand recognition in China; (2) intense brand competition in retail markets; (3) different shopping preferences of Chinese consumers, which change quickly, Chinese e-shoppers preferences towards purchasing products via local e-commerce platforms (e.g., Tmall, JD.com) rather than from brand online store (Walters *et al.*, 2017), and searching for brand information on local social media (e.g., WeChat, Weibo); and (4) logistics bottlenecks that plague Chinese parcel shipments.

Researchers also underline the role of digital platforms in the internationalisation of international new ventures (INVs), also from emerging markets. INVs entering foreign markets through digital platforms face various challenges and risks. Based on multilevel modelling on a sample of over 6000 entrepreneurs from 62 countries, Brieger *et al.* (2022) state that a home country's institutional voids and a weak digital infrastructure strengthen the positive relations between digitalisation and internationalisation of INV. According to this research, Internet-enabled companies applying the Internet/ICT in marketing are more likely to focus on foreign countries when they face institutional voids and a lack of digital infrastructure in the home market. In turn, drawing on transaction cost theory, Jean *et al.* (2020) identify antecedents of digital platform risk for INVs' internationalisation such as: product specificity, foreign market uncertainty, foreign market competition, and home market institutional voids. Moreover, based on research on a sample of Chinese INVs by Jean *et al.* (2020), digital platform risk tends to reduce the internationalisation scope of INV, although INVs'

entrepreneurial orientation mitigates this negative effect. In turn, referring to the concept of cross-side network interaction, and taking the demand-side perspectives, Liu, Wu, and Song (2022) explore the influence of cross-side network interaction on digital platforms on manufacturing firms' internationalisation. Based on the research made on a sample of 4197 Chinese manufacturing firms, researchers conclude that (1) manufacturing companies' cross-side network interaction on digital platforms improves international intensity, (2) industry growth at home market and larger company sizes negatively moderate the relations between cross-side network interaction and international intensity, while (3) regional industry agglomeration has no significant moderating effect.

1.3 Case studies of internationalisation process of Internet-enabled firms

To answer the research questions, multiple case study methods were applied based on various secondary sources (firms' reports/websites, industry reports, and press articles). Data was analysed using codes resulting from the literature review. The following categories were applied: process of Internet-enabled companies' foreign expansion, countries of foreign expansion, and digital and traditional modes of foreign expansion. Purposeful sampling was applied so that the studied companies represent certain features/processes of interest from the research problem's perspective. The sample includes two large and internationally recognised companies (Breuninger – multi-brand fashion retailer, ISDIN – cosmetics producer) and two internationally active SMEs (Save the Duck – outerwear producer, Krayna – cosmetics producer).

Breuninger is a German multi-brand retailer specialising in fashion and beauty products that carries 1500 brands. Founded in 1881 in Stuttgart, it started to expand beyond its flagship Stuttgart store into other German locations in 1973. In 2025, it operates 12 luxurious department stores in Germany, one in Luxemburg and an outlet store in Stuttgart. Since 2008, it also operates an online shop – [breuninger.com](https://www.breuninger.com) – and since 2016, the Breuninger app. The online store is active in ten countries, and in 2023, was responsible for 50% of its annual turnover of 1.5 billion euro. The company is the second biggest privately owned department store in Europe (after Harrods). Breuninger operates one of the most modern logistics centres in Europe, in Sachsenheim. Its business model is omnichannel retail in Germany: products bought online can be returned in the stores, and some of the shipping also takes place from stores apart from warehouses. Moreover, it offers “click and collect” and personal shopping services. However, internationally it relies mainly on CBEC as a sales channel.

Save the Duck is an Italian vegan outerwear and lifestyle brand founded in 2012 in Milan with the aim to create jackets that are 100% animal free. It is a medium-sized business with a revenue of 63 million euro in 2023. Production is done in six factories in China. Three quarters of the 2023 revenue were

generated outside of Italy: 20% in the United States, 18% in the DACH area (Germany, Austria, and Switzerland), and 5% in Japan. Currently, e-commerce represents 10% of the company's revenue, but still 85% of total sales is contributed to 2000 offline multi-brand stores in 42 countries. It operates 11 brand stores in Italy, four in Turkey, and singular stores in three countries: Switzerland, the United States, and Hong Kong. It recently operated several pop-up stores in Japan, including Tokyo, Nagoya, and Osaka, and plans to open permanent stores there. Its business model is based on sustainable values and multichannel strategy selling via retail and e-commerce.

ISDIN, a Spanish cosmetics brand that specialises in photo-protection, was set up in 1975 in Barcelona as a joint venture between two Catalan companies, pharmaceutical laboratory Puig and cosmetics giant Esteve. It is a large company with revenues of approximately 400 million euro in 2023. In Spain, the company is present in 12,000 pharmacies, which accounts for 90% of the pharmacies in the whole country. It operates a flagship store in Barcelona. Its flagship products are technologically advanced sunscreens. ISDIN, whose sales outside Spain already account for more than half of its production, strives to continue its foreign expansion. Annual sales of the company's water-based sunscreen Fusion Water in China outstrip sales in the rest of the world combined. The firm has grown organically without acquisitions, with the exception of the Auriga takeover to enter France and Belgium. Its first international markets were in Latin America due to cultural closeness and a similar approach to pharmaceuticals.

Krayna is a Polish vegan cosmetics producer and skincare brand established in 2016. It is a small business. The cosmetics and its ingredients are environmentally friendly, cruelty free, and harvested in Krajna, a small region in Poland located near the city of Bydgoszcz. In 2024, its best-selling cosmetic oil received an Excellence award from the European Natural Beauty Awards in Stockholm. The company is present in 17 foreign countries, including continental Europe, the United Kingdom, the United States, Canada, and Saudi Arabia and United Arab Emirates. Its sales strategy includes multichannel distribution via distributors both in Polish (e.g., Douglas, Hebe) and foreign markets (e.g., Sephora UK and Whites in Saudi Arabia and UAE). The owners have set up operations in North America and oversee foreign expansion in this region of the world. Krayna is also internationalising via online cosmetic retailers with international reach. The firm is very active in social media and has dedicated profiles in its countries of expansion.

The process and modes of internationalisation of the researched Internet-enabled firms are presented in [Table 1.1](#).

To sum up, all of the four Internet-enabled companies in the sample combine digitalised (online) modes of entry with physical (offline) forms to optimise their foreign expansion strategy and thereby successfully apply Internet-enabled internationalisation. The firms differ with regards to the role played by CBEC and other modes of digital internationalisation. Breuninger prefers online stores

Table 1.1 Process of internationalisation of the studied Internet-enabled firms

<i>Company, year of establishment, domestic market, business model, number of employees, firm size</i>	<i>Process of foreign expansion</i>	<i>Digital modes of foreign expansion</i>	<i>Traditional (offline) modes of foreign expansion</i>
Breuninger Germany, 1881, multi-brand wearing apparel retailer, 1500 employees, large company	2017 – Austria (operated in German based on the original online store) 2019 – Switzerland (operated in German based on the original online store) 2021 – Poland (online store operated in Polish) 2021 – Luxemburg, Belgium, Netherlands, Spain, Italy (store operated in English) 2022 – Czechia (online store operated in Czech) All online stores are operated from the logistic centre in Sachsenheim, Germany.	9 country websites (4 languages, 3 currency options) Mobile application Social media	Acquisition of a fashion department store BRAM in Luxemburg in 2021
Save the Duck Italy, 2012, mono-brand jackets and outerwear producer, 95 employees, medium-sized firm	First expansion step was entering the DACH area and Turkey. Followed by entry into the US market and the rest of EU countries as well as the UK, Norway, Switzerland. In 2022, internationalisation to Japan and as a stepping stone to start Asia Pacific expansion.	European e-store (4 languages, 4 currency options) Dedicated, localised e-stores: US and Canada, Japan, Turkey Online distributors: e.g., Breuninger, Sportofino, Zalando Online platforms: e.g., Amazon, eBay Social media	4 offline brand stores in Turkey and in St. Moritz, New York, and Hong Kong; Pop-up stores in, e.g., Vienna, Toronto, Tokyo. Distributed by multi-brand department stores in 42 countries. Joint venture with a fibre and yarn producer Teijin Frontier to distribute clothes and improve customer service in Japan.

(Continued)

Table 1.1 (Continued)

<i>Company, year of establishment, domestic market, business model, number of employees, firm size</i>	<i>Process of foreign expansion</i>	<i>Digital modes of foreign expansion</i>	<i>Traditional (offline) modes of foreign expansion</i>
ISDIN Spain, 1975, mono-brand cosmetics producer, 1300 employees, large company	Late 1990 – Latin America (Argentina, Chile, Peru with Mexico and Brazil) After 2010 – several European countries (distributors, pharmacies) 2014 – Germany (pharmacies) also France and Belgium (takeover of Auriga) 2015 – China (e-commerce platform Tmall and specialised chains) 2016 – the US (online and at dermatologists) It is also present in United Arab Emirates (UAE), Morocco, South Africa, India and Thailand.	Website localised for 23 countries (11 languages including Chinese, Thai Croatian, Dutch) Online stores in 3 countries (Mexico, Chile, US; 3 currency options) Tmall – e-commerce platform in China Social media	15 subsidiaries in 59 foreign countries 2014 – takeover of Auriga and entry to French and Belgian market 2024 – distributed in pharmaceutical chain covering 60 pharmacies in Germany 2024 – entered 323 physical stores of Sephora in the US
Krayna Poland, 2016, mono-brand cosmetics producer, 10–15 employees, small business	First foreign expansion was to continental Europe including Scandinavia, afterwards into the UK. In second step, the US, Canada, and Saudi Arabia and UAE were entered.	E-shop for Europe (albeit so far in Polish language only and payment only in Polish zloty) Localised online store for US and Canadian markets Social media	Sephora UK stores and online. Cosmetic retail chain Whites in Saudi Arabia with 100 stores. US market operations set up

Source: own elaboration based on <https://retail-news.de/breuninger-historie-eigentuemer/>, https://www.neuhandel.n.de/beitraege/db/nh_110638.html, https://de.wikipedia.org/wiki/Breuninger#Weitere_Warenh%C3%A4user, <https://www.savetheduck.com/en-eu/blogs/sustainability/tagged/coefficient-1>, <https://www.ispo.com/en/companies/animal-free-conviction-save-duck-produces-vegan-sportswear#:~:text=Nicolas%20Bargi%20launched%20the%20Italian%20fashion%20brand%20Save,animal-free%20materials%2C%20100%25%20vegan%20-%20with%20full%20conviction.>, <https://www.the-spin-off.com/news/stories/The-Brands-Bargis-Save-The-Duck-Higher-sustainability-and-global-sales-are-our-next-aims-16503>, <https://pharmaboardroom.com/interviews/juan-naya-ceo-isdin-spain/>, <https://www.esade.edu/en/news/juan-naya-ceo-isdin-being-a-global-leader-means-winning-in-your-market-by-supporting-the>, <https://www.premiumbeautynews.com/en/isdin-banks-on-daily-sun,23450>, <https://krayna.pl/>, <https://pl.linkedin.com/company/krayna-sp%C3%B3%C5%82ka-z-o-o>, <https://wirtualnekosmetyki.pl/eksport/krayna-od-poczatku-stawiamy-na-eksport>.

as a foreign market entry strategy (with the notable exception of Luxembourg), whereas Save the Duck declares that it will open several mono-brand offline stores in new foreign locations to make its brand name more recognisable, in addition to intensive social media presence and sales via localised e-shops. Krayna is an example of a company that started its digital internationalisation first, working actively in social media among other outlets, and only afterwards followed with establishing a subsidiary in the United States. ISDN started with traditional foreign expansion modes (e.g., in Latin America in the 1990s), but in recent years successfully applies digital internationalisation: it operates market-specific e-shops and conquered the Chinese market via the local e-commerce platform Tmall.

The cases partially confirm findings of previous research. In line with [Elia et al. \(2021\)](#) SMEs in the sample do not suffer from weaker propensity to engage in CBEC than their large counterparts. In addition, as suggested by [Fayos, Calderon, Cotarelo, and Frassetto \(2023\)](#), digitalisation, sustainability, and internationalisation reinforce each other and produce favourable results, especially for internationalising SMEs. ISDN used a local e-commerce platform Tmall as an entry mode into the physically distant Chinese market, which is in accordance with [Qi et al. \(2020\)](#) recommendation. Save the Duck and Krayna confirm the observations of [Matarazzo et al. \(2021\)](#) that the application of social media is one of the drivers and “prerequisites” of SMEs’ internationalisation.

1.4 The relations between Internet-enabled firm’s age, its internationalisation speed, and CBEC adoption, and between CBEC usage and firm’s direct export sales

The newest edition of World Bank Enterprise Survey (WBES)¹, which was collected on a three-year rotation basis by January 2025, was performed in eight EU countries. The data was collected in years 2023 and 2024 and describes the situation of companies in fiscal year 2022 or 2023. Data for other EU countries including bigger economies (e.g., Germany or Poland) was not collected within the newest edition yet. In total, 5210 companies participated in the WBES in these EU countries. However, only manufacturing and wholesale businesses included in the sample were questioned if they apply digital exports. The question, which was asked for the first time in the WBES, was phrased: “Were any of the goods directly exported ordered through electronic means and shipped by mail parcel or courier service?” In this study, we assume that this question relates to CBEC performed by firms surveyed following [Qi et al. \(2020\)](#), who claims that transactions in CBEC are measured by individual parcels rather than traditional bulk export.

The structure of the sample is presented in [Table 1.2](#) and [Table 1.3](#). The research sample is composed of 1283 companies, which constituted 24.6% of the total number of companies surveyed. The research sample is composed of

Table 1.2 The structure of sample in terms of country-of-origin in eight EU countries

Country	Utilise CBEC		Do not utilise CBEC		Do not know (spontaneous)		Total		Firms participating in WBES 2024
	No. of firms	Percentage	No. of firms	Percentage	No. of firms	Percentage	No. of firms	Percentage	
Bulgaria	21	11.1	166	87.4	3	1.6	190	26.8	710
Croatia	12	11.9	89	88.1	0	0.0	101	21.3	474
Estonia	25	21.4	85	72.6	7	6.0	117	33.3	351
Greece	28	17.4	133	82.6	0	0.0	161	26.9	598
Hungary	54	21.3	198	78.3	1	0.4	253	30.4	831
Portugal	32	14.4	185	83.3	5	2.3	222	22.0	1007
Romania	33	18.5	144	80.9	1	0.6	178	18.8	947
Slovakia	25	41.0	34	55.7	2	3.3	61	20.9	292
Total/ Average	230	17.9	1034	80.6	19	1.5	1283	24.6	5210

Source: own elaboration based on WBES (2024).

Table 1.3 The structure of sample in terms of sectors of the economy

Sector	Utilise CBEC		Do not utilise CBEC		Do not know (spontaneous)		Total sample	
	No. of firms	Percentage	No. of firms	Percentage	No. of firms	Percentage	No. of firms	Percentage
Food	16	7.0	190	18.4	3	15.8	209	16.3
Fabricated metal products	29	12.6	143	13.8	3	15.8	175	13.6
Wearing apparel	33	14.3	139	13.4	1	5.3	173	13.5
Wholesale	24	10.4	83	8.0	3	15.8	110	8.6
Machinery and equipment	17	7.4	81	7.8	1	5.3	99	7.7
Rubber and plastic products	8	3.5	38	3.7	0	0.0	46	3.6
Non-metallic mineral products	7	3.0	39	3.8	0	0.0	46	3.6
Furniture	7	3.0	35	3.4	0	0.0	42	3.3
Textiles	11	4.8	28	2.7	0	0.0	39	3.0
Basic metals	11	4.8	27	2.6	1	5.3	39	3.0
Manufacturers from diverging sectors	67	29.1	231	22.3	7	36.8	305	23.8
Sum	230	100.0	1034	100.0	19	100.0	1283	100.0

Source: own elaboration based on WBES (2024).

230 exporters that confirmed they were engaged in CBEC and 1034 exporters that denied it and 19 enterprises, which were represented by respondents who answered “do not know”. The frequency of companies engaged in CBEC among the 1283 exporters that constituted the sample was the highest among firms registered in Slovakia (41%), Estonia (21.4%), Hungary (21.3%), Romania (18.5%), and Greece (17.4%). While the highest percentage of firms that do not utilise CBEC was observed in Croatia (88.1%), Bulgaria (87.4%), and Portugal (83.3%). The mean frequency of manufacturing and wholesale firms engaged in CBEC for eight EU economies was 17.9%. Interestingly, the highest share among the 5210 companies that participated in the [WBES 2024](#) edition and were included in this particular research sample came from Estonia (33.3%) and Hungary (30.4%). While the largest number of firms that were subject to this analysis originated from Hungary (253) and Portugal (222) (see [Table 1.2](#)).

As shown in [Table 1.3](#), the majority of companies in the sample were food manufacturers (16.3%), producers of fabricated metal products (13.6%), manufacturers of wearing apparel (13.5%), wholesale (8.6%) and producers of machinery and equipment (7.7%). Among the firms that apply CBEC, manufacturers of wearing apparel (14.3%), fabricated metal products (12.6%), wholesale (10.4%), machinery and equipment (7.4%), and food (7.0%) were most frequently represented. While the top five sectors that do not utilise CBEC were represented by food manufacturers (18.4%), producers of fabricated metal products (13.8%), manufacturers of wearing apparel (13.4%), wholesale (8%), and producers of machinery and equipment (7.8%). Food manufacturers, although numerous in the total sample, apply CBEC only in 7.7%, while 21.8% of the wholesalers and 19.1% of manufacturers of wearing apparel and 16.6% of fabricated metal products producers utilise cross-border e-commerce as a sales channel.

Another important characteristic of the research sample is the company size, as defined by the number of persons employed (micro: 1–9 employees, small: 10–49, medium: 50–249, and large: more than 250 employees). As shown in [Table 1.3](#), regarding firm size, the largest share of the eight EU countries that utilises CBEC are micro-firms, with 24.1%. Among small firms, 19.9% of small businesses apply CBEC, while 16.3% of large organisations do so. The lowest percentage of surveyed medium-sized firms utilising CBEC is 15.6%. Although it is worth mentioning that in the research sample 576 medium-sized companies and 438 small businesses were included. Thus, SMEs constituted 79% of the research sample.

In terms of firm age, almost 83% of the companies under study were more than 16 years old (see [Table 1.4](#)). Thus, in the sample, the majority, i.e., 50% of the companies which apply CBEC are 16–30 years old, while only 2.6% (six firms) are enterprises that are active three to seven years on the market. For both groups (CBEC utilising and not utilising), the share of firms that are aged 8 to 15 years is 13.9%. Interestingly, in the research sample, there are 26 companies

Table 1.4 Structure of companies according to size and age which answered if they are engaged in CBEC in eight EU countries

CBEC		Firm size				Firm age				Total (no. of firms/percentage)
		Micro	Small	Medium	Large	3–7 years	8–15 years	16–30 years	>31 years	
Yes	No. of firms	28	87	90	25	6	32	115	77	230
	Percentage	24.1	19.9	15.6	16.3	2.6	13.9	50.0	33.5	100
No	No. of firms	84	343	480	127	34	144	434	422	1034
	Percentage	72.4	78.3	83.3	83.0	3.3	13.9	42.0	40.8	100
Do not know	No. of firms	4	8	6	1	0	5	6	8	19
	Percentage	3.4	1.8	1.0	0.7	0.0	26.3	31.6	42.1	100
Total	No. of firms	116	438	576	153	40	181	555	507	1283
	Percentage	100	100	100	100	3.1	14.1	43.3	39.5	100

Source: own elaboration based on WBES (2024).

that are more than 100 years old as of 2025. The oldest company surveyed is a 208-year-old wholesaler originated from Portugal with domestic private owners.

In order to answer the research questions, T-student statistics for foreign sales to total sales (FSTS), internationalisation speed, and firm age were calculated and compared across two independent groups of companies: firms applying CBEC and firms not utilising CBEC (see Table 1.4). Means and standard deviation of each parameter in both groups are also reported in Table 1.4. An FSTS parameter is the ratio between direct export sales and total sales in percentage available in WBES data. Internationalisation speed was calculated by the authors as the difference between company establishment year and the year the company started its international sales; firm age was also calculated as the difference between year 2025 and the company establishment year.

As displayed in Table 1.5, the mean FSTS ratio among firms which utilise CBEC is 44.7%, whereas the exporters that do not sell online have an average FSTS of 49%. In addition, the difference between those two groups with relation to FSTS is statistically insignificant. This result suggests that companies applying CBEC do not record higher FSTS.

The average age among firms which apply CBEC is approximately 28 years, whereas the exporters that do not sell online operate on the market for approximately 30.5 years. Thus, the CBEC-utilising companies are a bit younger, and the difference is statistically significant, albeit the effect is small due to Cohen’s *d* (a standardized effect size for measuring the difference between two group means) reaching a value below 0.2.

Table 1.5 Differences between companies utilising and not utilising CBEC in eight EU countries with regards to their FSTS, internationalisation speed, and firm age

<i>Parameter</i>	<i>Utilising CBEC</i>		<i>Not utilising CBEC</i>		<i>Degrees of freedom</i>	<i>T</i>	<i>p-value</i>	<i>Cohen's d</i>
	<i>Mean</i>	<i>Standard Deviation</i>	<i>Mean</i>	<i>Standard Deviation</i>				
FSTS	44.69	34.07	49.04	34.81	1262	-1,72	0.09	-0.126
Internationalisation speed	5.97	11.79	8.09	13.87	1262	-2.15	0.02*	-0.140
Firm age	27.72	16.22	30.51	20.62	1262	-2.23	0.01*	-0.157

Source: *statistically significant at $p \leq 0.05$. Own elaboration based on [WBES \(2024\)](#).

The firms which utilise CBEC internationalised when they were nearing the sixth year of operation, while those exporters which do not sell online operated in their domestic markets for an average of eight years before they started foreign expansion. The companies applying CBEC internationalised faster than the ones that did not, and the difference is statistically significant, albeit the effect is small due to Cohen's *d* reaching a value below 0.2.

1.5 Conclusions

In recent years, companies from more traditional, product-based industries, regardless of their firm size, started to take advantage of Internet-enabled internationalisation on a much larger scale. Internet-enabled companies ("click and mortars"), as shown in the presented case studies and quantitative research, keenly and successfully apply digital internationalisation regardless if they are large companies or SMEs. These new, global market players exploit low-risk and low-cost digital foreign market entry to reach a wider customer base in addition to traditional, offline entry modes. Internet-enabled firms apply digital outward internationalisation via multichannel and omnichannel marketing and sales activities by intensively leveraging global social media, especially to communicate with foreign audiences and in setting up global and localised corporate/brand websites and company/brand online stores. Moreover, they also take advantage of the third-party digital platforms, including multi-sided platforms (e.g., Amazon, AliExpress) and established local e-marketplaces (e.g., Tmall or [JD.com](#) in China or Zalando in Europe). The rise of globally active and locally embedded digital platforms revolutionised the foreign market entry by accelerating the internationalisation process and due to significantly lower cost, making it more accessible to all firms, also resource constrained SMEs. To sum up, Internet-enabled companies apply either traditional or digital internationalisation modes in order to better exploit the potential of the foreign market they enter.

The quantitative study based on the newest [WBES \(2024\)](#) data, performed among companies located in eight EU countries, illustrates that firms applying CBEC are on average younger and internationalise faster than their counterparts that do not utilise cross-border e-commerce. In our sample more, because 24% of micro-firms and 20% of small firms apply CBEC, more so than medium-sized (15.5%) and large companies (16%) do. Despite these positive effects, the international performance, i.e., direct export sales (as measured by FSTS ratio), does not differ regardless of whether the companies apply or do not apply CBEC in their internationalisation strategy. CBEC as a digital form of market entry has a large market potential, as the CBEC global market is projected to reach a value of 5.1 trillion USD in 2030 ([Statista, 2022](#)). Internet-enabled companies with unique capabilities to use CBEC can gain a sustainable competitive advantage by focusing on the “operational efficiency” of e-commerce (e.g., lower costs compared to competitors) or on strategic, unique positioning (online distribution as a source of unique value for foreign target groups).

Note

- 1 This quantitative study would have not been possible without the WBES Project. We thank the Enterprise Analysis Unit of the Development Economics Global Indicators Department of the World Bank for the data.

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2 Digital internationalisation of Internet-based firms

Processes, modes, and strategies

Marzanna K. Witek-Hajduk

2.1 Introduction

Digital internationalisation of firms is a key phenomenon in international business. In recent decades, there has been a rapid development of digital firm internationalisation due to the digital transformation that has significantly accelerated since the Covid-19 pandemic.

Moreover, in recent years there has been a dynamic development and internationalisation of diverse types of Internet-based companies applying e-business models. Internet-based firms, such as online distributors/retailers (e.g., Zalando, Net-a-Porter), and various types of digital platforms, including e-commerce platforms (e.g., [Amazon.com](https://www.amazon.com), [Alibaba.com](https://www.alibaba.com), [booking.com](https://www.booking.com), Netflix, India Mart, eBay), play an increasingly important role in international business in both business-to-business (B2B) and business-to-consumer (B2C) markets. The internationalisation process and foreign markets' entry modes of Internet-based firms differ immensely from those applied by traditional companies, which are Internet enabled.

The internationalisation process of Internet-based firms may take different pathways and include various stages, also due to the modes of internationalisation used by a given company (not only online but also traditional, offline channels) and order of their application. Thus, these firms' digital internationalisation may not only be limited to Internet-based, but also to Internet-enabled internationalisation ([Witek-Hajduk, 2021](#)).

Despite the growing role of Internet-based firms in international business, there is still little theoretical considerations and empirical evidence explaining the process of firms' digital internationalisation from the perspective of Internet-based companies ([Surana, Chavan, Kumar, Chirico, 2024](#)).

Given the preceding, the purpose of this chapter is to answer the following research questions:

- 1 What is the essence and strategic importance of the digital internationalisation of Internet-based companies?

- 2 What are the stages of Internet-based companies' digital internationalisation process?
- 3 What modes of outward internationalisation are applied by Internet-based firms?

To answer these research questions, an in-depth literature review was conducted. Following it, the chapter discusses results of the empirical research, including multiple case studies of the digital internationalisation of Internet-based firms.

2.2 Characteristics of Internet-based companies

Shneor and Flåtén (2008, p. 45) differentiate between two types of firms, regardless of size or degree of internationalisation: (1) Internet-based companies, so-called “pure clicks” present only in the online world, with digital platforms being their only service channels and (2) Internet-enabled firms, i.e., “click & mortars”, whose business models include online and offline operations, using digital platforms additionally to offline channels. However, in publications on e-business, researchers use various terms (e.g., Internet-based firms, digital firms, ibusiness firms), definitions, and categorisations in reference to firms conducting business using the Internet and Internet technologies.

The United Nations Conference on Trade and Development (UNCTAD, 2017) distinguishes two categories of companies in the digital economy: (1) digital firms characterised by the key role of the Internet in their business operations and (2) information and communication technology (ICT) companies, which provide the infrastructure for various digital organisations. According to this approach, Internet-based firms are only those businesses that are digital, and ICT companies providing the enabling infrastructure making the Internet accessible to individuals and businesses are excluded. According to the UNCTAD (2019), there are four types of Internet-based (digital) firms: Internet platforms (search engines, social networks, and other platforms), digital solutions companies (e.g., electronic payments), e-commerce firms (e.g., online Internet retailers), and digital content companies (e.g., digital media).

Internet-based firms operate online and provide products to customers using the Internet and ICT. Shaheer (2020) underlines that digital firms' core value proposition “is enabled by digital infrastructures”. Nearly all business processes of Internet-based firms and relationships with stakeholders are digitally enabled and mediated, and key corporate assets are managed using digital tools.

Brouthers, Geisser, and Rothlauf (2016) apply the term “ibusiness firms”, which are defined as companies characterised by the use of the Internet and computer-based information system (CBIS) technologies to develop Internet-based platforms enabling interactions between their users and customers, and creating “customer value by channelling and managing the input and interaction

between users”. [Grover and Saeed \(2004\)](#) use the term “Internet-based businesses” and, according to the concept of e-business models developed by [Tapscott, Ticoll, and Lowy \(2000, p. 28\)](#), distinguish the following types of these companies: business networks, systems of interconnected suppliers, distributors, service providers and infrastructure providers, and firms using the Internet as a basis for business communication and transactions. [Li, Chen, Yi, Mao, and Liao \(2019\)](#) apply the term “digital firms”, defined as companies relying on digital infrastructure based on the ICT/CBIS technology, and which operations, including delivery processes, are based on the Internet. [Piqueras \(2020\)](#) distinguishes two categories of Internet-based firms by type of e-business model: (1) “purely born digital” firms such as digital platforms, providers of digital solutions, and digital content producers/distributors of goods/services in digital format and (2) “mixed born digital” firms, which include only full online and online-born commerce companies involved in distribution of both digital and physical products/services (online retailers and e-commerce digital platforms).

Growing numbers of Internet users, the development of Internet-based technologies, and the digital transformation of firms understood as the use of ITC/CBIS technologies to develop new e-business models ([Vadana, Torkkeli, Kuivalainen, Saarenketo, 2019](#), pp. 199–200) have led to the rapid development of Internet-based firms. The application of e-business models is one of the characteristic features of such companies. As researchers present various classifications of e-business models, it is very difficult to apply a uniform typology of Internet-based firms. One of them was developed by [Timmers \(1998\)](#), who distinguished such e-business models and thus also types of Internet-based firms, as: (1) “e-shop” – an online store enabling placing orders and making payments, (2) “e-procurement” – offering and delivering goods/services electronically, (3) “e-auction” – organising electronic auctions, (4) “e-mall” – online stores, (5) “virtual community” – appealing to the loyalty of Internet users that are an attractive target group for many companies/brands, (6) “collaboration platforms” – dealing with the provision of tools and an IT environment for cooperating companies, (7) “third-party marketplace” – offering access to the electronic market to suppliers of catalogue products, (8) “value chain integrator” – dealing with the integration of links in complex value chains to exploit the flows of information between these links, (9) “value chain service provider” – specialising in the implementation of specific functions in the value chain (e.g., electronic payments), (10) “information brokerage” – offering a wide range of information services that add value to the data available on the network, and (11) “trust and other third-party services provider”. In turn, [Weill and Vitale \(2001\)](#) indicate the following Internet-based firms by the e-business models: (1) “content provider” – providing buyers with electronic content form through other partners, (2) “direct to customer” – when the buyer and seller contact directly, bypassing traditional intermediary links, (3) “full-service provider” – offering products that meet a wide range of needs of a given buyer in a specific

field, available in one place (e.g., health care), (4) “intermediary” – connecting many buyers and sellers, (5) “shared infrastructure” – providing an infrastructure, (6) “value net integrator” – coordinating the flow of products and acting as a value chain coordinator, and (7) “virtual community” – ensuring communication between members of the virtual community and suppliers. [Hartman, Sifinis, and Kador \(2001\)](#) distinguish e-business models referring to various types of Internet-based companies: (1) “e-commerce platform” – providing network-based products, services, and content distributed via the Internet, (2) “information intermediary” – aggregating buyers and sellers to facilitate transactions, (3) “trust intermediary” – creating a safe environment in which contracts can be concluded and values can be exchanged in a confidential and complete manner, (4) “e-business venture animator” – supporting the capabilities of suppliers of e-business products/services, and (5) “infrastructure provider” – aggregating information, technology, network services, and brand management to create an infrastructure supporting the creation and exchange of value in the vertical market.

In the last two decades, one of the key phenomena in international business was the so-called platformisation, i.e., the increasing number and prevalence of digital platforms in the global economy ([Shah, Shome, 2019](#), pp. 31–32). According to the [OECD \(2019, pp. 20–21\)](#), digital platforms are online services enabling interactions via the Internet between two or more different and independent groups of users, while [UNCTAD \(2017, pp. 165–167\)](#) defines digital platforms as firms creating and delivering digital content/goods/services/data via the Internet. In turn, according to the [World Bank \(2016\)](#), digital platforms are systems providing digital services (communication or transactions) and enabling collection, processing, and sharing of data on common interests or activities of their users.

Referring to the typology of digital platforms developed by [Evans and Gawer \(2016\)](#), there are the following types of Internet-based firms: (1) transaction platforms – enabling interactions between user groups (e.g., [Alibaba.com](#), [Booking.com](#)), (2) innovation platforms – bringing together creators of modern technologies/products/services (e.g., iOS), (3) integration platforms – combining elements of two types of platforms just mentioned (e.g., Amazon), and (4) investment platforms – functioning as a kind of holding company investing/allowing investments (e.g., Softbank). Referring to the typology of digital platforms developed by the [OECD \(2019, pp. 61–64\)](#), there are following Internet-based firms: (1) Web browsers enabling quick search of content/websites/information (e.g., Chrome, Yahoo), (2) app stores (e.g., Apple App Store, Google Play) providing paid or free applications, (3) messaging platforms (e.g., WhatsApp, WeChat) enabling making audio/video calls and sending text messages/photos/videos, (4) crowdsourcing platforms (e.g., Topcoder), (5) fintech platforms offering the implementation of various types of financial operations (currency exchange, payments) and raising capital (crowdfunding) (e.g., PayPal), (6) food delivery platforms (e.g., UberEats) which connect people ordering

food with restaurants/grocery stores and organise the delivery of orders, (7) job platforms (e.g., LinkedIn) connecting people looking for employment with potential employers, (8) short-stay accommodation platforms (e.g., Airbnb), connecting people looking for accommodation with people renting apartments/houses/hotels, (9) social media platforms (e.g., Facebook, TikTok) enabling communication between different groups of users, (10) passenger transportation platforms (e.g., Uber, Bolt) connecting people needing transport with drivers/taxi companies/car rental companies, (12) travel booking platforms (e.g., [Booking.com](https://www.booking.com)) which enable planning a trip, accommodation, flight, (13) dating apps (e.g., Tinder) which enable finding a partner, (13) streaming platforms (e.g., Netflix) enabling playback and downloading of audio-visual content for a fee, (14) e-commerce platforms (e.g., Amazon), (15) mapping services (e.g., Google Maps) providing users with maps enabling them to plan travel routes, and (16) civil services platforms providing citizens access to services provided by the public administration of a given country.

As [Witek-Hajduk \(2021, p. 62\)](#) notes, considering the geographical scope of the user base, there are the following digital platforms and thus Internet-based firms: (1) of local scope – platform users are from only one country, (2) of international reach – users are from two or more countries, and (3) of global reach – users are from most countries in the world. In turn, considering the geographical scope of the digital platform, there are such Internet-based firms as: (1) operating locally (in one country only) (e.g., WeChat), (2) operating at the regional level (e.g., Allegro with counterparts in some Eastern European countries), and (3) operating globally (e.g., Facebook).

2.3 Specifics of Internet-based firms from the perspective of the internationalisation process

The international expansion of Internet-based firms is facilitated by their specific features, e.g., e-business models they use. Internet-based companies differ significantly from traditional industries' companies ([Witek-Hajduk, 2021](#)), e.g., by digital nature ([Wu, Gereffi, 2018](#)), value creation logic ([Smedlund, 2012](#)), network effects ([Kolka, Ciullib, 2020](#)), transmission and monetisation of data generated through their business operations, external data/content, and data collected via electronic devices/sensors ([Evans, Gawer, 2016](#)). According to [Luo, Hongxin Zhao, and Du \(2005\)](#), compared to traditional companies, Internet-based firms, including e-commerce firms, (1) are more open and flexible organisations enabling multidirectional flows of products/information using the Internet – thus, these companies can acquire and absorb information faster than traditional firms and consequently – to lower costs in cross-national coordination and communication, (2) have a more synchronised system for exchanging information in real time, facilitating faster response to customer needs, enabling consumers and business units in various foreign markets to participate in

decision-making and contributing to reducing costs by, e.g., eliminating foreign intermediaries, and (3) due to operating in virtual space are less physically and culturally constrained.

The digital nature of Internet-based firms means that their e-business models rely on digital technologies and digital infrastructure, including computers, mobile devices, and the Internet, allowing for a presence in cyberspace. Due to e-business models being applied, Internet-based firms are flexible in configuring and coordinating their international activities and can quickly build and take advantage of economies of scale in core business processes, allowing for early and rapid firm internationalisation (Monaghan, Tippmann, Coviello, 2020). Internet-based companies tend to be not only “born global” but also “born digitals” (Banalieva, Dhanaraj, 2019), so since the inception the value chain of such companies is based on the Internet and Internet technologies, and their digital innovations are globally available (Shaheer, 2020). Technological affordances enable Internet-based firms direct engagement with various stakeholder groups, including users/customers, and automation and network effects (Monaghan *et al.*, 2020). By automating various business processes and thus reducing costs of, e.g., communication/transactions with partners/users, especially foreign ones, Internet-based firms may increase productivity/efficiency. However, there can be variation in the degree of digitalisation across business processes of Internet-based firms (Monaghan *et al.*, 2020). Thus, due to the digital nature, taking control of physical assets (internalisation), also those located abroad, is less of a concern for Internet-based companies from the perspective of their foreign expansion (Shaheer, 2020). The digital nature of Internet-based firms determines their internationalisation process, enabling easier replication across borders, and allows reducing transaction costs of foreign market entry related, *inter alia*, to the acquisition/verification of foreign suppliers/buyers, matching customer’s needs, and concluding, implementing, and monitoring transactions/costs of the geographic distance (Brouthers *et al.*, 2016; Coviello, Kano, Liesch, 2017). Moreover, the digital nature of Internet-based firms and access to the Internet and ICT technologies make it easier to adapt to changes in their environment and facilitate the acquisition of knowledge about foreign markets (so-called Internet-based knowledge), which, according to the Uppsala model, is one of the key premises for making a decision to enter a new foreign market (Ye, Kang, Scott-Kennel, 2022).

Furthermore, the specificity of value creation logic of Internet-based companies (Smedlund, 2012) is that (1) such firms can create value by applying “external” resources they do not have and do not control, also “cross-border” ones and (2) clients/users of such firms may co-create value, e.g., by likes/comments/opinion sharing, that contributes to an increase in the value proposition to customers, also in foreign markets. Thus, such characteristic value creation/co-creation logic supports the rapid internationalisation of Internet-based companies.

Internet-based companies are also network oriented, as digital technologies integrate these companies with various actors within their networks and easily allow the extension of the network of business relations. A characteristic feature of Internet-based firms, significantly applied to digital platforms, is also the network effect (network externality) (Kolka, Ciullib, 2020) – the increased numbers of platform users improve the value/utility one derives from a product. The network effects may be direct when they occur within one platform user group, or cross-side, i.e., between different users groups. Thus, the internationalisation process of many Internet-based firms is linked to the extension of the existing client/users base to foreign ones, which can be considered as one, and often key, mode of foreign market entry. García-Canal, Guillén, and Ponte (2024) underline the crucial role of geographical scope of network effects in the process of Internet-based firm's internationalisation, including especially global network effects benefiting first movers, and local effects favouring followers starting the foreign expansion in a different foreign market than the first movers. Moreover, Internet-based firms that are followers, entering less-competitive foreign markets with local network effects may apply such strategies as, e.g., launching a clone to increase their potential market share (García-Canal *et al.*, 2024).

2.4 Internationalisation of the Internet-based firms: literature review

Although research on the internationalisation of Internet-based firms, especially Internet portals, began at the beginning of the 20th century (e.g., Kim, 2003), scholars (Gabrielsson, Fraccastoro, Ojala, Rollins, 2021; Ye *et al.*, 2022) underline that these studies are still in the emergent phase, as research on the foreign expansion of digital platforms started only a few years ago (Brouthers *et al.*, 2016; Ojala, Evers, Rialp, 2018). Moreover, international business (IB) and international entrepreneurship (IE) researchers indicate that the e-business models applied by Internet-based companies tend to rapidly modify/adapt to changes in the business environment, and analysing them from a theoretical perspective seems to be quite challenging. Moreover, Hazarbassanova (2016) indicates two dimensions of the Internet-based firms' internationalisation: (1) passive internationalisation – firm has a general/domestic website also serving foreign customers, but does not actively target them through adaptations (localisation) and (2) active internationalisation – relying on the firm presence in a foreign market, e.g., through a local website, website adaptations, or even foreign direct investment or alliances with local firms.

When analysing the internationalisation process of Internet-based firms, researchers have referred to various theoretical concepts, including those developed based on research regarding foreign expansion of traditional firms, i.e., the Uppsala model, International New Ventures (INVs) and born global firms' theories, network approach, and Transaction Costs Theory. However, researchers

(Axinn, Matthysens, 2002; Witek-Hajduk, 2021) agree that the theoretical concepts developed and used in research on the internationalisation of traditional firms, particularly manufacturing ones, whose resources are mainly tangible, are not fully applicable to describe and explain the foreign expansion of Internet-based companies.

Empirical research on the internationalisation of Internet-based firms has covered the following issues:

- 1 Process of Internet-based firms' internationalisation (Forsgren, Hagström, 2007; Brouthers *et al.*, 2016), including such dimensions as scale (Kozlenkova *et al.*, 2021), speed (Luo *et al.*, 2005; Schu, Swoboda, Sinning, 2022), timing (Shaheer *et al.*, 2020), scope/international penetration (Chen, Shaheer, Yi, Li, 2019), internationalisation stages (Ojala *et al.*, 2018; Ye, Kang, Scott-Kennel, 2022), and performance (Brouthers *et al.*, 2016).
- 2 Modes of foreign market entry applied by the Internet-based companies (Vadana *et al.*, 2019; Witek-Hajduk, 2021; Vadana, Kuivalainen, Torkkeli, Saarenketo, 2021).
- 3 Process of digital companies' internationalisation (e.g., Vadana *et al.*, 2019; Vadana *et al.*, 2021).
- 4 Factors determining the internationalisation of Internet-based firms (Kotha, Rindova, Rothaermel, 2001), including the role of ICT technologies in coordinating/supporting their internationalisation (Alcácer, Cantwell, Piscitello, 2016; Coviello *et al.*, 2017); role of value creation logic (Hazarbassanova, 2016); impact of business models components (Wittkop, Zulauf, Wagner, 2018); influence of cultural, administrative, geographic, and economic distances as market entry barriers (Shaheer, Li, 2018); role of innovations in business models (Ma, Hu, 2021); and role of an entrepreneurial approach referred to as "platformisation" (Petersen, Rasmussen, 2024).
- 5 Factors determining the process of Internet-based firms' de-internationalisation (Lindblom, Nadayama, Asakawa, Cuthbertson, 2022).

Research on Internet-based firms confirms that the process of their foreign expansion is not slow and gradual, as described by the Uppsala model and other models of staged internationalisation, but fast and discontinuous (Kim, 2003; Brouthers *et al.*, 2016). This also means an acceleration (greater speed) of the internationalisation compared to traditional firms. Thus, the foreign expansion of Internet-based firms is more reminiscent of the internationalisation of so-called born-global firms (Monaghan *et al.*, 2020).

Moreover, Internet-based firms often expand in a short period into foreign markets that are distant by the geographical (physical) and psychic distance (Forsgren, Hagström, 2007). When they expand into countries close by psychic distance, it is not because of the cultural affinity of these markets/reduction of uncertainty related to this, but primarily because of the strategic importance of

the market for the company. To have access to specific knowledge about a given market (Kim, 2003), Internet-based firms often decide to locate joint ventures with a local partner in strategically important countries and provide customer service in a given region. Some research on the internationalisation of “born digitals” confirms that they first expand abroad in a given region, and then – globally. The research of Ye *et al.* (2022) using tabulation analysis and mini case studies, confirms that Internet-based firms’ foreign expansion path significantly differs from conventional brick-and-mortar companies, namely Internet-based companies internationalise (1) through niche markets, and thanks to the digital technologies may apply a long-tail strategy (realising profits due to selling hard-to-find items to many geographically dispersed customers), (2) expand primarily into developed markets, and usually (3) earlier/faster and using fewer resources (low asset involvement). Some studies also confirm the significant dynamics (speed) of the foreign expansion process of Internet-based firms based on the use of the Internet and the omission of some stages of internationalisation indicated in the Uppsala model (Vadana *et al.*, 2019, pp. 199–220; Vadana *et al.*, 2021, pp. 1–18). Shaheer and Li (2018) underline that the internationalisation process of Internet-based firms does not conform to conclusions presented in IB and IE research conceptualising foreign expansion of a firm as a gradual process, which course is conditioned, e.g., by cultural, administrative, and geographic distances. Researchers indicate that these distances may be less significant market entry barriers for internationally operating Internet-based firms with global users’ base. Considering the analysis of internationalisation of 127 apps globally available via Apple’s app store, Shaheer and Li (2018) state that the international penetration of these digital platforms is limited by cultural/administrative/geographic/economic distances that may act as barriers of adoption by foreign users, wherein such barriers may be overcome by engaging them in value co-creation.

Referring to the resource-based view, and based on the research of 150 e-retailers of international scope, Schu, Morschett, and Swoboda (2016) confirmed a curvilinear influence of the imitability of an online store, geographic scope, and the level of diversity within the country portfolio on the internationalisation speed of Internet-based firm, and a negative influence of the distance between the newly entered and home country on internationalisation speed.

Based on the observations of the foreign market selection behaviour of 140 online retailers in Europe, Schu and Morschett (2017) state that the size of the target foreign market and e-commerce market in the country, better legal and regulative conditions (rule of law), knowledge from the previous presence of other sales channels of an Internet-based firm in the foreign target market have a positive effect on an online shop’s propensity to select a specific foreign country for entry, while cultural/geographic distance have a negative influence on an online shop’s propensity to select a new foreign market.

Internet-based firms, which are usually born digital, have customers/users in different countries and develop their offer based on it (Monaghan *et al.*, 2020).

Due to the lack of experience of managers of born digital firms at the beginning of their foreign expansion, they often imitate internationalisation strategies applied by other companies in a given industry (Domurath *et al.*, 2020). Petersen and Rasmussen (2024) emphasise that the internationalisation of born global digital platforms requires the application of an entrepreneurial approach referred to as “platformisation”, encompassing activities undertaken in the digital platform space.

Extending the INV theory, Ojala *et al.* (2018) indicate four different phases of the Internet-based firms’ internationalisation: (1) establishment stage, when an Internet-based firm is established and its owner (provider) looks for ways to commercialise and be available globally, which highly depends on whether the required resources are available in the home market: when there are no technical/strategic limitations, a company can move directly to the commercialisation stage, while when an Internet-based firm has to obtain the necessary resources, the company must move to the early internationalisation stage to overcome potential obstacles; (2) early internationalisation stage, when an Internet-based firm focuses on entering foreign markets in which it can obtain the missing resources crucial for commercialisation and generate multi-sided markets, using active networking with a view to find local partners who are able to provide assets; (3) commercialisation stage, when actively networking with local partners, the Internet-based firm launches its products (services) on the foreign markets with large customer bases; and (4) globalisation stage, when an Internet-based firm becomes mature and globally accepted, and focuses on developing the users base internationally. According to the longitudinal, exploratory single-case study, Ojala *et al.* (2018) state that the internationalisation of Internet-based firms is moderated by both technical/strategic bottlenecks in the foreign markets. Moreover, young Internet-based firms apply the “doing rather than planning” approach to the foreign expansion. Considering the decreased cost risk/failure due to the digitalisation, the advantages of entering foreign market firms without detailed market research are perceived by digital companies as superior compared to a long, costly incremental market entry (Autio, Zander, 2016).

According to the quantitative research of Kotha *et al.* (2001) made on 86 US-based pure Internet B2C firms, the following firm-specific factors are associated with the propensity of Internet-based companies to enhance internationalisation by developing country-localised websites: (1) levels of the intangible assets (especially reputation and website traffic are positively related to the degree of internationalisation) and strategic activity, (2) levels of competitive and cooperative activity, and (3) interaction effects between reputation and competitive and cooperative activity.

Based on an explorative single case study of three internationalising e-stores managed by a researched company, Grochal-Brejdak and Szymura-Tyc (2018) state that the increasing internationalisation of an e-commerce firm follows the development of knowledge acquired thanks to the interrelationships between

inward and outward internationalisation, wherein the evolution of internationalisation modes is limited to trade (importing/exporting) and contractual cooperation.

The specificity of the internationalisation process of Internet-based firms, including mode of foreign market, differ by e-business model applied by a given company and industry in which it operates (Jia, Kenney, Zysman, 2018, pp. 194–195). Wittkop *et al.* (2018) underline the impact of the following business model components on Internet-based firms' internationalisation strategies: (1) value proposition (three main value creation logics: (a) value chain logic – firm tends to optimise business processes and decrease costs thanks to scale economies, (b) mediating network logic – company co-creates value with users, and additionally to the value offered by the infrastructure the digital platform, the network of users add value, and (c) value shop logic – value is created by the development of customised solutions to individual customers); (2) value creation and delivery infrastructure, i.e., processes' architecture, which together creates a competitive advantage; and (3) value capture. Based on the multi-case study of six Internet-based firms, Wittkop *et al.* (2018) conclude that value proposition and value creation logic (components of the Internet-based firms' e-business models) significantly influence internationalisation patterns, although it is not explained by the traditional IB and IE theories. In turn, the value capture dimension is less determining the internationalisation. Authors underline that digitalisation influences a business model as technologies (e.g., Big Data, AI) enable new ways of customer value creation and relationships with buyers. Similarly, based on the multiple case study of three Internet-based firms, Hazarbassanova (2016) states that value creation logic of a digital company determines the process of firm international expansion.

Using the example of the TikTok application, Ma and Hu (2021) indicate that Internet-based companies from transforming economies can launch successful global products (Internet applications) to the international market thanks to innovations in e-business models. Moreover, international expansion can be facilitated by, e.g., location features, including the possibility of developing an innovative business model by using the potential of a domestic market and support of a national high-tech policy.

The results of the study by Luo *et al.* (2005), considering archive data of 92 US e-commerce companies (entirely), and using regression analysis, confirm that the speedy foreign market entry by these types of Internet-based firms is positively influenced by (1) international experience of top management teams/founders, (2) innovation, and (3) marketing capabilities. Thus, employing top managers with international experience may contribute to accelerating the internationalisation of an e-commerce company. Innovative and marketing skills, as key sources of competitive advantage, are especially valuable and are essential to generate large traffic volume, reduce uncertainties, differentiate products, and build strong brand equity and firm reputation (Luo *et al.*, 2005).

Some researchers (Vadana *et al.*, 2019, pp. 199–220; Vadana *et al.*, 2021, pp. 1–18) explain the specificity of the foreign expansion process of Internet-based firms by referring to the network approach, social network theory, and a concept of network effects. Brouthers *et al.* (2016) state that for Internet-based firms, the liability of an outsidership issue refers to user-network outsidership instead of supplier/distributor networks. Thus, their foreign market expansion depends, *inter alia*, on becoming an insider in the target market's user network. Based on an explanatory multiple case study of nine German marketplaces and virtual communities, Brouthers *et al.* (2016) confirm that entering foreign markets, Internet-based firms exploit their users' international networks and apply Internet-based mass-media communication channels to move from network outsider to insider. Moreover, to become embedded in the user network in the foreign market, they refer to external opinion leaders either directly working with such opinion leaders in the foreign market or cooperating with firms being opinion leaders regarding a company's offer.

Referring to a user-network approach and externalisation logic, Chen *et al.* (2019) underline that the process of Internet-based firms' internationalisation is determined first by collective interactions between its clients (users), and that they may suffer from liabilities of outsidership due to the limitations of international network effects. Employing a social network theory and based on the longitudinal quantitative research regarding 24 apps from eight subcategories, Chen *et al.* (2019) confirm that Internet-based firms can mitigate liabilities of outsidership expanding first to the countries with higher clout.

In turn, based on a multi-case study of 12 Indian headquartered digital platforms, Surana *et al.* (2024) identify advantages that Internet-based firms create during the internationalisation process, which help overcome the liability of foreignness. Researchers developed the new POLI framework for Internet-based firms consisting of three categories of specific advantages, including a few novel ones: (1) open resource advantage – firms gain access to core assets/services to meet demand, and also deploy reputational and relational resources; (2) linkage advantage, gaining through investors, customers, partners, opinion leaders, and ad hoc networks; and (3) information and knowledge advantage, created through acquiring market/social/institutional/platform information.

Based on a single case study of transactional digital platform, Lindblom, Nayama, Asakawa, and Cuthbertson (2022) state that internal factors, particularly internal operational failures related to, e.g., problems with business model adaptation to the context of a foreign market, are the most critical from the perspective of de-internationalisation of Internet-based firms. If they appear at an early stage of foreign expansion, the platform may fall into a so-called De-Internationalisation Negative Spiral, which may ultimately lead to exit from the foreign market. Thus, the lack of ability to recontextualise is a key factor in the internationalisation process of Internet-based companies because the platform e-business model consists of elements embedded in specific local contexts that may be overlooked.

Digital firms sometimes use traditional modes of entry into foreign markets, e.g., strategic alliance with a partner from a foreign market, including joint venture, but also branches/subsidiaries on foreign markets in important locations from the prism of business development. Some digital companies also make acquisitions on foreign markets (Witek-Hajduk, 2021; Vadana *et al.*, 2021): as part of the foreign expansion of Amazon Prime Video, in 2011, Amazon took over DVD shipping service LoveFilm, which in 2010 had over 1.6 million subscribers in the United Kingdom, Germany, Sweden, and Denmark and, using infrastructure/network of users, expanded into the British market and then to other European markets, where LoveFilm have had a strong position (Halliday, 2011).

2.5 Case studies of internationalisation process of Internet-based firms

To answer the research questions, both the literature review and a qualitative approach was applied using multiple case study methods that are justified, especially when the examined issues are not sufficiently researched (Hennink *et al.*, 2020). The data was obtained from various secondary sources, including firms/platforms, reports/websites, industry reports, and scientific articles. The data was coded using a priori codes resulting from the literature review, and the following main categories were applied: process of Internet-based companies' foreign expansion, countries of foreign expansion, and digital and traditional modes of foreign expansion. As recommended in qualitative research, purposeful sampling was chosen so that the studied companies represent certain features/processes of interest from the research problem's perspective. The sample includes four large Internet-based companies of international scope: two e-commerce firms (Zalando SE – online retailer, [Amazon.com](https://www.amazon.com) – online retailer and multisided e-commerce platform) and two streaming platforms (Netflix, Max).

Zalando SE is a German multi-brand online retailer specialising in fashion and beauty products and is also active in other business fields (online shopping club “Lounge by Zalando”, outlet stores in Germany). It was founded in 2008, and in 2023, Zalando online stores had more than 51 million active users in 25 European countries. Zalando cooperates with more than 6000 brands from many countries, and sells products labelled with six of Zalando's private labels. It started its foreign expansion in 2009 from entering Austria. In the subsequent years, Zalando expanded to other 24 European countries. Since 2013, Zalando SE has developed a new business model, an e-commerce platform (shopping mall), allowing fashion companies to sell via the partner program. In 2018, it launched a beauty category in Germany, Poland, and Austria, and in 2020, it launched a second-hand clothing platform. Almost 50% of the company's sales revenues are nowadays generated in Germany, Austria, and Switzerland.

[Amazon.com](https://www.amazon.com) was founded in 1994 in the United States as an e-commerce platform. Nowadays it is a multinational technology company doing business

in e-commerce, cloud computing, online advertising, digital streaming, artificial intelligence, etc. [Amazon.com](https://www.amazon.com) is the world's largest multi-sided e-commerce platform with a range of diversified products, including books, games, apparel, auto and industrial items, electronics, groceries, jewellery, kids/baby products, beauty and health products, movies and music, sports goods, toys, and tools. The company applies various e-business models: it serves both as an e-retailer selling products directly to customers and as a multi-sided digital platform, that is, information technology services provider and middleman between third-party sellers and customers.

Netflix is a streaming platform for audio-visual content founded in the US in 1997 and initially specialised in mailing rental DVDs of movies. In 1998, its website was created, enabling rental and purchase of DVDs, in 1999 subscription packages were made available, and in subsequent years, its website was enriched with the ability for users to create lists of films or film genres, and rate and recommend productions available on the website. In 2007, Netflix introduced a streaming service, allowing platform users to instantly access movies and TV series. In subsequent years, thanks to partnerships with technology companies, its offer has been made available on Xbox, Blu-Ray, smart TV, and mobile devices. In 2010, Netflix started international expansion – first to Canada, and in 2022, the Netflix platform was available in 190 countries, in over 60 languages.

Max (formerly HBO Max) is a streaming video-on-demand digital platform launched in 2020 by Warner Bros. HBO Max replaced two previously operating streaming platforms: HBO Now and HBO Go, taking over their content, existing subscribers, and infrastructure. In 2023, Max – a new platform combining HBO Max and Discovery+ was launched. This streaming service is based on over-the-top subscriptions, offering direct access to its library for a flat monthly fee. The HBO Max platform was first made available to users in the US in 2020, and in 2021, it started international expansion, firstly to Latin American markets, and a few months later also to European countries. Max is now available in 66 American, European, and Asian countries.

The process and modes of internationalisation of the researched Internet-based firms are presented in [Table 2.1](#).

In the case of [Amazon.com](https://www.amazon.com), just one year after its establishment, foreign customers without access to a localised Amazon website could purchase eBooks on Amazon US online store, and three years later localised e-stores were created for European consumers ([amazon.co.uk](https://www.amazon.co.uk) and [amazon.de](https://www.amazon.de) available in several languages, serving a few neighbouring markets) and in India ([amazon.in](https://www.amazon.in)). Amazon therefore began its expansion from strategically important markets such as the UK, Germany (large European markets), and India (strategically important market with a large English-speaking population). Then, the foreign expansion of [amazon.com](https://www.amazon.com) consisted in creating localised e-stores addressed to platform users from strategically important countries, including European markets (23 country/region websites and payments available in 67 currencies). It was accompanied

Table 2.1 Process of internationalisation of the studied Internet-based firms

<i>Company name, year of establishment, domestic market, e-business model</i>	<i>Process of foreign expansion</i>	<i>Digital modes of foreign expansion</i>	<i>Traditional (offline) modes of foreign expansion</i>
Amazon.com , 1994, US e-commerce digital platform	1995 – US: amazon.com (English, Spanish, Arabic, German, Hebrew, Korean, Portuguese, Chinese – Simplified, Chinese – Traditional); foreign customers purchased e-books from the Kindle Store on Amazon US. 1998 – UK: amazon.co.uk (English), also serves Ireland; India: amazon.in ; Germany: amazon.de (German, English, Czech, Dutch, Polish, Turkish), also serves Austria, Denmark, Switzerland 2000 – Amazon Japan: amazon.co.jp (Japanese, English, Chinese – Simplified); France: amazon.fr (languages: French, English) 2002 – Canada: amazon.ca (English, French) 2004 – China: amazon.cn (Chinese Simplified) 2010 – Italy: amazon.it (Italian, English) 2024 – South Africa: amazon.co.za (English) 2011 – Spain: amazon.es (Spanish, Portuguese), also serves Portugal 2013 – India: amazon.in (English, Hindi, Tamil, Telugu, Kannada, Malayalam, Bengali, Marathi) 2014 – Netherlands: amazon.nl (Dutch, English) 2013 – Mexico: amazon.com.mx (Spanish) 2012 – Brazil: amazon.com.br (Portuguese) 2017 – Singapore: amazon.sg (English) 2017 – Australia: amazon.com.au (English), also serves New Zealand 2018 – Turkey: amazon.com.tr (Turkish) 2019 – United Arab Emirates: amazon.ae (Arabic, English), 2020 – Saudi Arabia: amazon.sa (Arabic, English), Sweden: amazon.se (Swedish, English) 2021 – Poland: amazon.pl (Polish); Egypt: amazon.eg (Arabic, English) 2022 – Belgium: amazon.com.be (Dutch, French, English) 2025 – Ireland: amazon.ie (English)	23 country/region websites (payments in 67 currencies). Mobile applications. Social media.	Acquisitions – e.g., 1998 – Bookpages, UK; 1998 – Telebook, Germany; 2005 – Mobipocket, France; 2007 – Digital Photography Review, UK; 2017 – Souq.com , United Arab Emirates; 2018 – Tabzo, India. Subsidiaries in, e.g., Canada, UK, Germany, France, China, Japan, Italy, Spain, Brazil; over 200 Amazon fulfilment and warehousing centres worldwide.

(Continued)

Table 2.1 (Continued)

<i>Company name, year of establishment, domestic market, e-business model</i>	<i>Process of foreign expansion</i>	<i>Digital modes of foreign expansion</i>	<i>Traditional (offline) modes of foreign expansion</i>
Zalando, 2008, Germany online multi-brand store	25 European markets: 2008/2009 – Germany, Austria 2010 – Netherlands and France 2011 – online retail sites in Italy, UK, Switzerland 2012 – expansion to Sweden, Denmark, Finland, Norway, Belgium, Spain, Poland 2018 – launched Beauty in Germany, Poland, Austria 2018 – Ireland, Czech Republic 2021 – Slovenia, Lithuania, Slovakia, Croatia, Estonia, Latvia 2022 – Hungary, Romania	Country/region websites available in 19 languages, over 20 local payment options. Mobile applications. Social media.	Fulfilment and warehousing centres operated by independent partners (strategic alliances) in six foreign markets.
Max (formerly:HBO Max), 2020, US streaming platform	June 2021 – 39 Latin American countries (Anguilla, Antigua and Barbuda, Argentina, Aruba, Bahamas, Barbados, Belize, Bolivia, Brazil, British Virgin Islands, Chile, Curacao, Dominica, Dominican Republic, Ecuador, Grenada, Guam, Guiana, Haiti, Honduras, Jamaica, Cayman Islands, Colombia, Costa Rica, Mexico, Montserrat, Nicaragua, Panama, Paraguay, Peru, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, El Salvador, Suriname, Trinidad and Tobago, Turks and Caicos Islands, Uruguay, Venezuela) October 2021 – Sweden, Denmark, Norway, Finland, Spain, and Andorra (HBO Nordic in the Nordic countries and HBO España in Spain and Andorra). 2022 – Denmark, Finland, Spain, Norway, Sweden, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, Czech Republic, Kosovo, Macedonia, Moldova, Portugal, Romania, Serbia, Slovakia, Slovenia, Hungary, Netherlands, Poland June 2024 – France, Belgium, Monaco 2024 – Japan, Indonesia, Malaysia, Singapore, Thailand, Taiwan, Hong Kong, Philippines Plans for 2025 – Australia, New Zealand, several European countries	Country/region websites available in 40 languages. Mobile applications. Social media.	Strategic alliances. Subsidiaries.

(Continued)

Table 2.1 (Continued)

<i>Company name, year of establishment, domestic market, e-business model</i>	<i>Process of foreign expansion</i>	<i>Digital modes of foreign expansion</i>	<i>Traditional (offline) modes of foreign expansion</i>
Netflix, 1997, US streaming platform launched in 2007	2010 – Canada 2011 – launch of services in over 40 Latin American and Caribbean countries 2012–2015 – entry into the 43 European and Asian countries, including: 2012 – UK, Ireland, Denmark, Finland, Norway, Sweden 2013 – Netherlands 2014 – Austria, Belgium, France, Germany, Luxembourg, Switzerland, other European markets 2015 – Spain, Italy, Portugal 2015 – Australia, New Zealand 2015 – Japan 2016 – announced expansion into 130 new countries, e.g., Poland, many African countries, excluded countries subject to US sanctions (China, North Korea, Russia, Syria) As of 2024 – 282.7 million paid memberships in over 190 countries	Country/region websites available in 21 languages. Mobile applications. Social media.	Strategic alliances. Subsidiaries. 2016 – a partnership with LG to market pre-paid services in Asia, Europe, and the Middle East.

Source: own elaboration based on Wu, Gereffi (2018), pp. 327–356; <https://doi.org/10.1108/S1745-886220180000013014>; <https://help.netflix.com/en/node/14164>; <https://corporate.zalando.com/en/about-us/holistic-strategy-connected-fashion-world>; Statista: <https://www.statista.com/statistics/370657/zalando-active-buyers/>; <https://corporate.zalando.com/en/about-us/what-we-do/zalando-logistics>; <https://www.wirtualnemedi.pl/artykul/max-hbo-max-warner-bros-discovery-azja-start-oferta-programowa>; <https://hbr.org/2018/10/how-netflix-expanded-to-190-countries-in-7-years>; <https://about.netflix.com/pl>; <https://press.wbd.com/us/media-release/max/warner-bros-discovery-launch-max-7-new-markets-southeast-asia-taiwan-and-hong-kong>.

by the opening of order fulfilment centres/warehouses, often in cooperation with local partners. In turn, Zalando entered 13 foreign European markets within four years of its establishment, and during the subsequent ten years – another ten countries. The internationalisation process of the studied streaming platforms has been even faster than that of e-commerce firms. Thus, the HBO Max platform was launched in 39 Latin American and six European countries within a year of its establishment, and over the next two years it expanded its operations to another 24 European markets and then began expanding to Asia. In turn, Netflix began its international expansion, entering Canada three years after its founding, but over the next three years it expanded to a total of 84 Latin American, Caribbean, European, and Asian countries.

The surveyed companies use both digital (online) and traditional (offline) foreign markets entry modes. The following digital modes of internationalisation are applied by the Internet-based firms: (1) localised country/region websites/e-stores, thanks to which companies make their products/services available to customers/users from the countries of foreign expansion; (2) mobile applications targeted at customers/users from the foreign markets where the company is expanding, and used to make the products/services/content available to them; and (3) social media accounts/profiles applied to communicate with users/customers from a given foreign market and to acquire new customers.

Both the studied e-commerce firms and streaming platforms have applied the country/region websites available in both .com and local domains (e.g., .de, .pl, .it, .fr, .in), as well as in various language and currency/payment versions (Amazon – 23 country/region websites and 67 currencies options; Zalando – country/region websites available in 19 languages and over 20 local payment options; Netflix – country/region websites in 21 languages; Max – country/region websites in 21 languages). E-commerce platforms' websites primarily serve a transactional function, enabling foreign users to not only purchase/sell products but also serve to promote brands/products available on the platform. Amazon delivers products to customers in 105 countries through Amazon global shipping program, although, e.g., shipping and return fees depend, inter alia, upon the delivery address. In turn, streaming platforms' websites addressed to foreign users serve to promote audio-visual content offered and inform about prices, terms, and conditions for subscription.

The digital firms also apply mobile applications available to users from foreign countries through application stores such as Google Play and App Store. Using the applications, Zalando and [Amazon.com](https://www.amazon.com) customers from markets of foreign expansion can order/sell products, while users of streaming platforms with a valid subscription gain access to movies, TV series, and TV programs. These applications allow users to search for content, watch it even on several devices simultaneously, and download it to play it offline. The interface of the services is available on the markets of foreign expansion in two languages: English and a given country's language.

Moreover, both studied e-commerce and streaming firms apply social media in the internationalisation process ([Amazon.com](https://www.amazon.com): Instagram, Facebook, X, Pinterest, Spark; Zalando: Instagram, Facebook, X, Pinterest; Netflix and Max: Instagram, Facebook, X). Streaming services apply various social media, including Instagram, which hosts both the profiles of a given streaming service in English and the profiles of a given platform in the languages of the countries of the foreign expansion. Moreover, it accounts for individual original productions on local markets, and the published content is intended to engage users and create strong relationships with subscribers.

The digital firms also apply traditional modes of entry into the foreign markets. Zalando serves customers from 12 fulfilment and warehousing centres

in seven countries, wherein nine fulfilment centres are in six foreign markets (France, Sweden, Poland, Italy, Spain, the Netherlands). Zalando fulfilment centres abroad are operated by trusted independent partners. Lately, Zalando has signed a partnership agreement with GXO Logistics, Inc. – the world’s largest logistics provider – regarding a fulfilment centre in Montereau-sur-le-Jard, France. In cooperation with logistics partners, new distribution centres are being built – e.g., in Poland in Żerniki and Gorzów Wielkopolski (with DHL), and Zalando Lounge Operations’ centre in Bydgoszcz (with Panattoni).

In turn, Amazon has subsidiaries, including in countries such as Canada, the UK, Germany, France, China, Japan, Italy, Spain, Brazil, and in over 200 Amazon fulfilment and warehousing centres worldwide. Moreover, Amazon software is developed not only in Seattle but also in centres across the globe in three major regions: Americas, Europe; Middle East, Africa; Asia and the Pacific. Netflix has 24 local offices, e.g., in Amsterdam, Berlin, Madrid, Warsaw, Bangkok, Jakarta, Manila, Mumbai, Seoul, Singapore, Sydney, Tokyo, Mexico City, Buenos Aires, and Bogota. In the case of Max (HBO Max), representatives of the HBO television network in over 80 countries worldwide also manage local activities of this streaming platform.

Moreover, not only e-commerce firms but also streaming platforms apply strategic alliances, e.g., with mobile operators, Internet providers, and commercial television networks. Netflix in Poland cooperates with CANAL+ television network, mobile operators (e.g., T-mobile), and cable television operators (e.g., UPC). In turn, HBO Max cooperates on the Polish market with the Cyfrowy Polsat television network and the Plus mobile network operator. Streaming platforms also cooperate internationally with manufacturers of devices on which the services are available: TV sets (e.g., Samsung, LG, Sony), smartphones, tablets, game consoles (Xbox, PlayStation) or laptops, with platforms providing software (iOS, Android), and mobile application stores (App Store, Google Play). Alliances with these partners not only serve to ensure the compatibility of audio-visual content provided by streaming platforms with devices and the comfort of their use, but also to acquire new users in many foreign markets. Especially since the websites of these streaming platforms in various language versions provide lists of devices, operating systems, and application stores in which they are available.

2.6 Conclusions

In recent years there has been a dynamic development and internationalisation of various types of Internet-based firms characterised by the key role of the Internet and ICT technologies in their business operations. Internet-based firms differ, inter alia, by the e-business models they apply. The development of Internet-based companies in international business is linked to the phenomena of platformisation, i.e., increasing number and prevalence of various types of

digital platforms. The internationalisation of Internet-based firms is facilitated by the e-business model they apply, specific features such as the digital nature, value creation logic, network effects, and transmission and monetisation of data generated through their business operations.

Based on the literature review and empirical study, it was confirmed that:

- 1 The process of foreign expansion of Internet-based companies is rather fast and reminiscent of the internationalisation of early internationalised (born-global) companies in terms of the speed and early internationalisation: they expand abroad relatively quickly after their establishment, often to many geographically distant foreign markets.
- 2 The internationalisation process of Internet-based firms may take different pathways and include various stages, also due to the modes of internationalisation used by a given company (not only online, but also traditional, offline channels).
- 3 Internet-based firms expand into foreign markets primarily using new, digital modes of internationalisation based on the application of the Internet and ICT technologies, including country/region websites or online store/platform websites, mobile applications, and accounts/profiles in social networks.
- 4 Internet-based firms apply also traditional offline modes of entry into foreign markets in their foreign expansion, including strategic alliances with foreign partners, and foreign branches in locations that are important from the point of view of business development.

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3 Digital internationalisation through R&D collaboration amongst research institutes

The Łukasiewicz Research Network –
Institute of Aviation case study

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3.1 Introduction

The development of digital technologies has abruptly accelerated the internationalisation process of enterprises (Teruel, Coad, Domnick, Flachenecker, Harasztosi, Janiri, Pal, 2022). This accelerated internationalisation may result, for example, from the possibility of using new sales channels and marketing activities, reducing barriers to entry into foreign markets and, reducing costs incurred due to the geographical distances of new markets (Bianchi, Mathews, 2016). New digital technologies are conducive to the faster and more comprehensive acquisition of information on foreign markets and more efficient communication between market participants (Goldfarb, Tucker, 2019), which fosters a better adjustment of the offer of goods and services to the needs of each market segment in the world and the development of a more effective strategy towards competitors and suppliers on foreign markets (Borges, Hoppen, Luce, 2009). Furthermore, the use of digital technologies increases innovation (Dung, Dung, 2024) and international corporate efficiency (Liu, Prajogo, Oke, 2016). Global and regional value chains are better managed as a result of increased flexibility and speed of activity (Cassetta, Monarca, Dileo, Di Bernardino, 2020; Szalavetz, 2022). Eventually, it increases the international competitiveness of enterprises, leading to faster development and a significant improvement in financial indicators (Calvino Criscuolo, 2019).

For more than two decades, there has been an increase in companies' interest in the processes of internationalisation of their businesses through digital platforms. This period has also seen increased publication activity on the topic of digital internationalisation in the world (Da Rocha, Neves da Fonseca, Kogut, 2024). According to research by Gong, He, and Lengler (2024) based on a sample of 61 publications on internationalisation through digital platforms, a radical increase in research interest was recorded after 2020, and 65.57% of the analysed publications have been published in the last five years.

Explaining the phenomenon of internationalisation of enterprises through digital platforms, researchers referred to the achievements of many theoretical

concepts, the most important of which include the Resource-Based View (RBV) (Elia, Giuffrida, Mariani, Bresciani, 2021), transaction costs theory (Deng, Zhu, Johanson, Hilmersson, 2022; Hennart, 2022), signalling theory (Kromidha, Robson, 2021; Jean, Kim, Zhou, Cavusgil, 2021; Deng *et al.*, 2022), and the OLI paradigm (Pezderka, Sinkovics, 2011; Hennart, 2019; Luo, 2021; Surana, Chavan, Kumar, Chirico, 2024). The impact of the development of digital technologies and the use of digital platforms in the process of internationalisation gave rise to the need for a reevaluation of the existing theoretical concepts as well as for an elaboration of the new ones (Wittkop, Zulauf, Wagner, 2018).

The concept of the digital platform ecosystem is becoming increasingly important, as it accounts for the possibility of using heterogeneous resources, the multi-laterality of international relations, the interdisciplinarity of implemented projects, and the benefits of network collaboration. With this approach, trust between parties within the digital platform is on the rise (Li, Chen, Yi, Mao, Liao, 2019; Nambisan, Wright, Feldman, 2019a; Rong, Kang, Williamson, 2022).

To date, research on digital internationalisation has dealt primarily with corporate activities. Researchers have focused on small- and medium-sized enterprises (Arenius, Sasi, Gabrielsson, 2005; Westerlund, 2020; Pan, Fu, Li, 2023; Feliciano-Cestero, Ameen, Kotabe, Paul, Signoret, 2023; Da Rocha, Neves da Fonseca, Kogut, 2024). Far fewer publications are devoted to the issue of multinational corporations in the era of digital internationalisation (Hennart, 2019; Mendes, 2022; Zhou, Rong, Parente, 2022). The issue of the internationalisation of university digital activities appears in a few publications (van Biljon, Marais, Platz, 2017; Velinov, Bleicher, 2023). Analyses of publications in the Web of Science, Scopus, EBSCO, ProQuest, and Emerald databases show a huge gap in the area of digital internationalisation of research institutes. So far, this issue has not received due research and publication attention.

The development of technology as part of Industry 4.0 has resulted in the intensification of work and expenditure on research and development (R&D). The costs of developing new technologies (including digital ones) exceed the technical and economic capabilities of entities, even large ones. Therefore, it is necessary to build international R&D consortia through digital platforms.

The aim of this chapter is to characterise the digital internationalisation of research institutes. Institutes deciding to participate in international R&D consortia through digital platforms expect benefits from international collaboration and from operation through platforms. Operation on digital platforms is often a prerequisite for joining a consortium. The specificity of operation and services offered by research institutes affects the expected benefits from R&D work.

Due to the scarcity of literature on the digital internationalisation of research institutes, we decided to use the research achievements on the internationalisation of enterprises through digital platforms. However, in our analyses, we account for the differences resulting from the specific activities of research

institutes. Due to these specific activities (R&D services), digital internationalisation is more complex than in the case of enterprises. Research institutes create international R&D consortia using appropriate digital platforms. The specific nature of the activities of research institutes requires the appropriate protection of communication between consortium members and the effects of their work conducted as part of international R&D collaboration.

The analysis of literature on corporate digital internationalisation accounts for the specificity of the internationalisation of research institutes through digital platforms. Therefore, considering the specificity of the establishment of R&D consortia by research institutes and the benefits resulting from this collaboration, this chapter will attempt to answer the following questions:

- 1 What is the specificity of digital internationalisation which research institutes are involved in?
- 2 What are the key benefits from digital internationalisation for research institutes through R&D collaboration?
- 3 Which of them are specific to research institutes?

Besides the analysis of literature on digital internationalisation, empirical research was conducted. The activities of the Łukasiewicz – Institute of Aviation (Łukasiewicz – ILOT) were selected for the study. The choice was made due to the fact that among European aviation institutes, the share of revenues from R&D work in international research consortia is crucial, and the development of Łukasiewicz – ILOT depends to a large extent on participation in international R&D consortia.

The 25 largest international R&D projects acquired and implemented in the last five years at Łukasiewicz – ILOT through digital platforms were evaluated. The analyses not only pertained to the way of joining the consortium but also the management of large R&D projects, the geographical (international) scope, and the benefits from collaboration.

3.2 R&D collaboration with research institutes in the Industry 4.0 era

The development of Industry 4.0 technology is characterised by intensive digitisation and the automation of production processes, which results in increased efficiency and the optimisation of value-added creation (Schmidt, Veile, Müller, Voigt, 2021; Muscio, Ciffolilli, 2020). Market complexity and competition between players are also on the rise (Kagermann, Anderl, Gausemeier, Schuh, Wahlster, 2016). As a consequence, the willingness of enterprises to cooperate and integrate within the business ecosystem is growing, which is conducive to the development of innovation and the increased competitiveness of partners (Vanpoucke, Vereecke, Muylle, 2017).

The ever-faster development of communication technologies contributes to almost immediate access to information. Digitisation results in the faster transfer of innovation, but also the faster erosion of competitive advantages (Dicken, 2007, pp. 77–79). The development of industrial enterprises operating in the high-tech sector is based on the continuous search for innovation as a source of new competitive advantages (Bonel, Rocco, 2007). The constant race for innovation results in the need to shorten the timeframe of research work, which in turn makes it necessary to increase investment outlays and causes a higher risk of project failure. Limited resources and operational uncertainty make companies more willing to turn to collaboration, for example, in order to reduce the level of risk associated with the development of technological innovations (Park, Hong, 2011). Research institutes are increasingly important partners in collaboration, sharing some of the sources of risk.

R&D projects conducted in high-tech sectors are characterised by high complexity and require specialised research infrastructure (Bloch, 2004). In the process of designing and building technologically complex products, technologically advanced digital systems and tools are used to ensure the high quality and efficiency of processes. A crucial factor is the cost of developing new technologies, which makes them unattainable and too risky to implement within a single organisation (Gürgen, 2024). R&D work requires specialised knowledge and costly infrastructure, which is often geographically and organisationally dispersed (Ruan, Feng, Wei, Wang, Lu, 2024).

R&D centres play a key role as technology providers for Industry 4.0, supporting complex and high-risk innovation projects. Enterprises, on the other hand, indicate the directions of development by providing information about their needs so that the solutions developed are tailored to their requirements (Benitez, Ferreira-Lima, Ayala, Frank, 2022).

Collaboration between enterprises and research institutes generates benefits for all parties. Enterprises gain access to research infrastructure and a wide range of scientific facilities without the need to maintain their own laboratories and additionally to hire high-class specialists and researchers. By using the competences and experience of partners, companies gain faster access to the development of technological innovations (Pippel, 2015). Research institutes receive research orders, and their results can be quickly commercialised. In addition, they improve their research competences.

Collaboration in partnerships fosters the exchange of knowledge and experience, while collaboration with research entities also increases the availability of financial support programmes, both national and international. Easier access to financial resources makes it possible not only to quickly implement innovations but also to develop staff prepared to implement the most demanding projects (Mocenco, 2016).

The complexity, wide scope, and costs of research and implementation of the developed innovations force the collaboration of industry with the broadly

understood world of science. Even the largest corporations, with R&D centres in their global structures, launch collaboration with research institutes. The use of knowledge possessed by research centres allows companies to reduce the costs and risk of R&D work, to accelerate the implementation of their effects, and to generate a new competitive advantage. On the other hand, research institutes are developing their R&D competences on an international scale, and their recognition and market value are on the rise.

3.3 Digital internationalisation of research institutes

Increasingly, research institutes are applying to join international R&D consortia through dedicated digital platforms. Due to their specific activities, research institutes operate on two types of digital platforms: external and internal digital platforms. The task of an external digital platform is to obtain and provide information about planned international R&D projects and to acquire the best (according to specific criteria) candidates for the implementation of work. This platform is usually open. An example of such a platform is the EU Funding and Tenders Portal, which is the official platform of the European Commission for gathering information on ongoing and future calls for project proposals, funding programmes, and the results of completed projects. The portal also offers the possibility of registering information about a specific company and browsing the database of potential partners in consortia. An undoubted improvement is the ability to filter the database of entities by keywords, programmes, call topics, or country of origin of partners. Multi-criteria search significantly simplifies navigation within the extensive database of an organisation.

The CORDIS (Community Research and Development Information Service) platform is equipped with similar functionalities. It is a portal which publishes the results of projects and research within the programmes funded by the European Union. The platform enables users to search for project results by thematic groups (e.g., Air Traffic Management and the Green Deal, Leading the Way in European Supercomputing, or Building Smarter and More Sustainably with Green Manufacturing) or according to the geographical location of partners. The database allows users to search for potential partners based on their experience in ongoing projects.

An example of a platform dedicated to companies in the space sector is the esa-star portal, provided by the European Space Agency (ESA), whose main task is to support the process of applying for funds and managing projects implemented with co-financing. Like the EU Funding and Tenders Portal, esa-star provides access to information on projects implemented with ESA funds, which allows users to establish contracts with potential partners. The portal also allows users to register a consortium and facilitates compliance with ESA requirements and regulations.

Establishing collaboration at the stage of setting up an international R&D consortium requires quick access to information and its effective management. Tools such as the EU Funding & Tenders Portal, CORDIS, and esa-star offer features to support this process. However, each of them has limitations, which are worth accounting for when using these tools in a specific project.

Collaboration in R&D projects poses many challenges. Effective communication and secure data exchange are becoming a necessity. Configuration management and data synchronisation between partners are also extremely important factors in order to avoid wasting time associated with working on outdated file versions. In the case of international consortia, where the significant geographical distance between partners becomes a challenge for effective communication and coordination of activities, it is important to use appropriate digital tools to support project activities. These tools are used as part of internal digital platforms. The main areas of their use include communication and videoconferencing (e.g., Microsoft Teams, Zoom, Skype, Google Meet, and Cisco Webex), documentation management and file sharing (e.g., NextCloud, MFT – Managed File Transfer), project management (EMDesk), and supervision of file versioning (SVN or CMake). In the case of projects with confidentiality clauses, dedicated portals are often created for the aforementioned tasks with secure access and supervision of documentation appropriate to the degree of confidentiality. The deviser and administrator of the internal digital platform is the consortium leader. This may be either a research institute or a corporation (usually with an international reach, e.g., Airbus).

In the case of tools used for communication and videoconferencing, the undisputed advantages are the quality and simplicity of use as well as clear and intuitive interfaces. These tools allow people to communicate without having to spend too much time traveling and are very often equipped with meeting recording and note-taking facilities. The advantages of each tool include integration with the commonly used MS Office package (MS Teams), work on shared documents in freely configurable teams (MS Teams), the ability to access the tool using a browser (Google Meet), or separate rooms for group work (Zoom) or work on virtual whiteboards (Cisco Webex).

The major challenges of communication and videoconferencing tools are the quality of the connection and stability of transmission. An important factor is also the limitations resulting from the IT security policies of partners and the communication programmes preferred within the organisation.

Tools used for document management and file sharing enable the secure exchange of large datasets generated in project sentences. In addition to the ease and security of use as well as the control of data transfer and access, file-sharing tools are able to integrate with instant messengers (Sharepoint), to store data on private servers (NextCloud), or to perform extended file access management (MFT) functions. In many cases, these tools require IT resources to operate and properly configure on an international scale.

Tools dedicated to project management have the most extensive functionalities. They allow users to prepare and monitor the project schedule, plan and control the budget, and supervise the progress of work in different parts of the world. It is also possible to monitor the use and load of resources, which is a key issue in the case of large projects involving institutes from different countries. EMDESK and Microsoft Project are examples of such tools.

The file versioning tools group can oversee the updated versions of source code, engineering documentation, or research reports. A key advantage here is the ability to collaborate on files in real time (GitHub), the use of automation to support work (CMake), or the stability of the solution and ease of use (SVN). A barrier to the use of these types of tools is the need for technological expertise so as to properly configure environments and adapt them to the needs of the project.

3.4 Benefits of digital internationalisation

The literature on digital internationalisation deals with the issue of the benefits thereof, mainly from the perspective of enterprises. However, the benefits described are universal and may also apply to other entities, including research institutes.

Internationalisation through the use of digital platforms provides measurable benefits. The parties have quick access to information about potential international research projects, the value of the projects, and opportunities for collaboration with other research entities (often competitors, creating cooperation) and customers. Digital platforms serve the function of verification of the quality of the R&D service offers made by institutes as well as proposals made by customers or project leaders. Thanks to such interaction, there is a reduction in transaction costs resulting from negotiations, international travel, or the need to have a wide range of specific assets necessary to carry out specific work and projects. Digital platforms are excellent verifiers of comparisons of the competitiveness and international reputation of market players through immediate benchmarking with others – globally competitive entities (Deng, Zhu, Johanson, Hilmersson, 2022). They also provide market information on what goods and services (including R&D) will be in demand in the coming years. Thanks to such information, research institutes can develop a more effective development strategies and focus on R&D work for which there will be higher demand. Thanks to multilateral R&D collaboration within digital platforms, the innovation and quality of research work of institutes is increasing (Pan, Fu, Li, 2023). Digital platforms increase the effectiveness of market players' marketing efforts (Fan, Wang, Ying, 2023). Their international recognition (as well as that of their brands) and credibility are growing (Luo, Ma, Wang, 2020). This credibility is much broader, not only among the closest participants in the business ecosystem but also among those outside the network. This approach fosters the growth of trust between parties within the digital platform (Li *et al.*, 2019; Nambisan, Zahra, Luo, 2019b; Rong *et al.*, 2022).

One of the key advantages of digital platforms in the internationalisation process is the speed of the process. According to Nambisan *et al.* (2019a), within a short period of time, the geographical scope of activities may become more global. Through the implementation of diversified international R&D projects, in which partners can be from different countries, the overall geographical scope of research institutes will expand. The time of the process of entering foreign markets is reduced to a minimum due to the infrastructure provided by the platform, mutual sharing of costs and information.

The main benefits from digital internationalisation are of a general nature. Therefore, there is a well-justified need to expand this list to include the benefits of international R&D collaboration of research institutes through digital platforms with benefits characteristic of these units. Given the preceding, we analysed the effects of international R&D collaboration by the Łukasiewicz – Institute of Aviation.

3.5 The Łukasiewicz – Institute of Aviation: A digitally internationalised institute

The Łukasiewicz Research Network – Institute of Aviation is the largest research institute in Poland and one of the largest institutes in the aerospace sector in Europe. It conducts R&D projects aimed at developing and implementing innovative solutions in the aviation and space sectors. The Institute also carries out work for the automotive, construction, mining, energy, chemical, security, and defence industries. The Institute's customers include the largest companies in the aerospace sector, e.g., General Electric, Pratt & Whitney, Ariane Group, Lockheed Martin, Thales, Boeing, and Airbus.

Over 65% of Łukasiewicz – ILOT's revenues come from collaboration with industry (mainly international). Revenues from international grants conducted together with industry account for 15% of total revenue, while the remaining 20% of revenue is national grants and a subsidy from the State Treasury.

The scope of R&D work includes the design and testing of manned and unmanned aerial vehicles, research in the field of aerodynamics and structural strength, the development of new materials and manufacturing technologies, the testing of aircraft components, and the production and testing of avionics systems.

Łukasiewicz – ILOT focuses its R&D research activities primarily on the European market. Its projects are financed, for example, by the European Commission (EC), the European Space Agency (ESA), the Polish Space Agency (POLSA), the US Air Force, NATO, the European Defence Fund (EDF), and the European Defence Agency (EDA).

The analysis covered international research projects carried out by the Institute through digital platforms in the last five years (Table 3.1). The main verifier of the selection of projects was the choice of a digital platform as a way to create

Table 3.1 List of projects implemented at the Łukasiewicz Research Network – Institute of Aviation

<i>No.</i>	<i>Project acronym</i>	<i>Country of origin of consortium partners</i>	<i>Project implementation period</i>	<i>Object of collaboration</i>	<i>Use of digital tools at the consortium setting-up stage</i>	<i>Use of digital tools during project implementation</i>
1	HIGHTRIP	Netherlands, Poland	2018–2022	Aerodynamic configuration study of civil next-generation powered-lift aircraft (NGCTR) in wind tunnels.	EU Funding & Tenders Portal EU Portal Partner search CORDIS – EU research results	EMDESK Microsoft Teams, Webex Google Meet
2	DSVD	Poland, United Kingdom	2019–2024	Development of rocket engine valves for one-component and two-component propellant.	Microsoft Teams Webex esa-star (https://esastar-publication-ext.sso.esa.int/)	Microsoft Teams Webex NextCloud
3	GRACE II	Germany	2019–2024	Development of an innovative propulsion engine dedicated to geostationary satellites.	Microsoft Teams Webex esa-star (https://esastar-publication-ext.sso.esa.int/)	NextCloud Webex
4	IMOTHEP	Austria, Belgium, France, Germany, Italy, Romania, Spain, Sweden, United Kingdom	2020–2024	Feasibility analysis of potential configurations of green propulsion systems in next-generation passenger aircraft.	EU Funding & Tenders Portal EU Portal Partner search CORDIS – EU research results	EMDESK Microsoft Teams, Webex Google Meet
5	SAMAS 2	Poland, Italy	2021–2024	Development of a tool for monitoring and predicting the condition of helicopter structure in relation to corrosion degradation and damage.	EU Funding & Tenders Portal	Microsoft Teams
6	Premium	Spain, Netherlands, Poland, Portugal, Italy	2022–2025	Development of models and algorithms of ageing of energetic materials depending on external factors.	SVN (Subversion version control system)	Webex Microsoft Teams, Microsoft SharePoint

(Continued)

Table 3.1 (Continued)

<i>No.</i>	<i>Project acronym</i>	<i>Country of origin of consortium partners</i>	<i>Project implementation period</i>	<i>Object of collaboration</i>	<i>Use of digital tools at the consortium setting-up stage</i>	<i>Use of digital tools during project implementation</i>
7	NBSOIL	Austria, France, Netherlands, Poland, Switzerland, United Kingdom, Spain, Italy	2022–2026	Development of a database, training system, and online portal to implement soil management using the NBS method and integrate soil monitoring and mapping into all decision-making processes related to land management.	EU Funding & Tenders Portal EU Portal Partner search CORDIS – EU research results	Microsoft Teams
8	NEUMANN	Belgium, Cyprus, Czechia, Greece, Germany, Italy, Poland, Portugal, Romania, Spain, Sweden, Slovenia	2022–2027	The project “Novel Energy and propulsion systems for Air dominance” (NEUMANN) aims to address propulsion and energy systems technologies required for a highly efficient powerplant, able to simultaneously deliver increased electrical power generation and increased thrust-to-weight ratio, which are necessary to cope with the mission requirements and operational needs of the next generation of fighter aircraft.	EU Funding & Tenders Portal EU Portal Partner search CORDIS – EU research results	Microsoft Teams
9	FASETT	Austria, Belgium, Finland, France, Germany, Greece, Spain, Poland, Sweden	2023–2024	Development of a feasibility study for a new type of transport aircraft with a planned lifting capacity of between 12 and 20 tonnes.	EU Funding & Tenders Portal EU Portal Partner search CORDIS – EU research results	SharePoint Microsoft Teams, Webex Google Meet
10	CHAD	France, Netherlands	2023–2025	A project to develop a rocket engine demonstrator powered by liquefied carbon monoxide and oxygen.	Microsoft Teams Webex esa-star (https://esastar-publication-ext.sso.esa.int/)	Microsoft Teams NextCloud

(Continued)

Table 3.1 (Continued)

No.	Project acronym	Country of origin of consortium partners	Project implementation period	Object of collaboration	Use of digital tools at the consortium setting-up stage	Use of digital tools during project implementation
11	THOMAS	Germany	2023–2025	Feasibility analysis of conceptual solutions for rocket propulsion using aerospike nozzles in terms of their application in planetary landers.	Microsoft Teams Zoom esa-star (https://esastar-publication-ext.sso.esa.int/)	Microsoft Teams Zoom TU-Dresden file exchange folder
12	OFELIA	Austria, Belgium, Czechia, France, Germany, Italy, Poland, Spain, Sweden, Turkey	2023–2025	Development of an aircraft engine demonstrator in the Open Fan configuration, designed for SMR aircraft.	EU Funding & Tenders Portal EU Portal Partner search CORDIS – EU research results	Microsoft Teams
13	EFACA	Spain, Germany, Portugal, Ukraine, Italy	2023–2026	Development of demonstrators of propulsion system components dedicated to new, environmentally friendly configurations of passenger aircraft.	EU Funding & Tenders Portal EU Portal Partner search CORDIS – EU research results	
14	EU HYDEF	Belgium, Spain, Sweden, Poland, Norway, Germany	2023–2026	Development of feasibility studies for a defence system against hypersonic threats.	HYDEF Repository (secured ShareFile cloud service) Microsoft Teams	Shared drive SVN (Subversion version control system) Microsoft Teams
15	AMBER	Czechia, Germany, Poland, Turkey, Italy	2023–2026	Development of an aircraft hybrid propulsion demonstrator for the next generation of SMR aircraft.	EU Funding & Tenders Portal EU Portal Partner search CORDIS – EU research results	Microsoft Teams Microsoft Teams
16	EMPOF	Sweden	2023–2026	Ensuring Europe’s self-sufficiency in the production of key energy components (explosives, gunpowder and rocket fuels) used in existing and future weapon systems.	SVN (Subversion version control system)	MyEDA Webex Microsoft Teams

(Continued)

Table 3.1 (Continued)

<i>No.</i>	<i>Project acronym</i>	<i>Country of origin of consortium partners</i>	<i>Project implementation period</i>	<i>Object of collaboration</i>	<i>Use of digital tools at the consortium setting-up stage</i>	<i>Use of digital tools during project implementation</i>
17	REACTS	Austria, Czechia, France, Germany, Hungary, Italy, Lithuania, Netherlands, Norway, Poland, United Kingdom	2023–2026	Development of a system that makes use of resources and solutions available in Europe to provide a rapid response to crisis needs.	SharePoint Microsoft Teams	Shared drive SVN (Subversion version control system) Microsoft Teams
18	HERA	Belgium, Czechia, France, Germany, Greece, Ireland, Israel, Italy, Netherlands, Portugal, Romania, United Kingdom, Spain	2023–2026	Development of the concept of a new configuration of a low-emission regional aircraft.	EU Funding & Tenders Portal EU Portal Partner search CORDIS – EU research results	MFT - projects workspace Microsoft Teams, Webex Google Meet
19	RECBALL	Spain, Poland	2023–2026	Development of an internal ballistics model for propelling systems.	Microsoft Teams SharePoint	SVN (Subversion version control system), Git (GitHub), CMake Microsoft Teams Webex, SharePoint Microsoft Teams Google Docs Google Drive
20	CAT-IOD	Czechia, Poland, Italy	2024–2025	The project aims to develop a concept of technical solutions for capturing and removing (deorbiting) space objects which have completed their missions.	Microsoft Teams Webex esa-star (https://esastar-publication-ext.sso.esa.int/)	Microsoft Teams Google Docs Google Drive

(Continued)

Table 3.1 (Continued)

No.	Project acronym	Country of origin of consortium partners	Project implementation period	Object of collaboration	Use of digital tools at the consortium setting-up stage	Use of digital tools during project implementation
21	INSPOC-2	Czechia, France, Germany, Poland, Italy	2024–2025	Development of a concept of technical solutions for refuelling and servicing satellites in orbit.	Microsoft Teams Webex esa-star (https://esastar-publication-ext.sso.esa.int/)	Microsoft Teams Google Docs Google Drive
22	HERFUSE	Spain, Poland, Italy	2024–2026	Design of an innovative fuselage and antenna for a future regional hybrid-electric aircraft.	EU Funding & Tenders Portal EU Portal Partner search CORDIS – EU research results	MFT – projects workspace Microsoft Teams Webex, Google Meet
23	AREANA	Austria, Belgium, Czechia, France, Germany, Italy, Portugal, Romania, Spain, Switzerland, Ukraine, United Kingdom	2024–2026	Development of analyses to support synergies between European, national, and regional R&D programmes and to stimulate international collaboration between organisations operating in the European aviation sector.	EU Funding & Tenders Portal EU Portal Partner search CORDIS – EU research results	Microsoft Teams – a dedicated team NextCloud Skype Webex
24	OVERHEAT	France, Germany, Italy, Spain, Poland	2024–2026	Development of innovative solutions, based on unmanned aerial systems, in the field of fire detection and prevention on sea cargo ships.	EU Funding & Tenders Portal EU Portal Partner search CORDIS – EU research results	
25	EXALIA	Austria, Belgium, France, Germany, Italy, Romania, Great Britain, Spain, Netherlands, Portugal	2025–2028	Development of analyses of new configurations of future climate-neutral long-range aircraft.	EU Funding & Tenders Portal EU Portal Partner search CORDIS – EU research results	Internal NLR server

Source: authors' own elaboration.

an international research consortium. In the end, 25 research projects which met all selection criteria were chosen for evaluation. Then, in-depth interviews were conducted with the management board of Łukasiewicz – ILOT (three interviews), directors of research centres (seven interviews), project managers, and scientists involved in the implementation of R&D work in the analysed projects (29). In most cases, the researchers fulfilled the dual functions of researcher and project manager. A total of 39 interviews were conducted. The documents and opinions collected provided the basis for analyses of the specificity of digital internationalisation through the creation and management of international research projects and a wider spectrum of benefits for the Institute achieved through collaboration in the area of R&D (Table 3.1).

Out of 25 projects implemented by international R&D consortia (Table 3.1) in the last five years, in only two cases was an internal digital platform not created (OVERHEAT and EFACA). In another four, it was limited to MS Office tools; in the remaining 19 projects, a dedicated internal digital platform for managing R&D collaboration was created using complex IT instruments. The need to create dedicated internal digital platforms results from the complexity of R&D projects, the degree of confidentiality of work, and their results (EU HYDEF, THOMAS).

The analysis of the projects presented in Table 3.1 and the interviews conducted at Łukasiewicz – ILOT indicate the benefits for the Institute resulting from digital internationalisation through R&D collaboration. Thanks to the platforms, it was possible to establish research consortia which included institutes and business companies from many countries. Furthermore, as part of the established consortia, the institutes could exchange information through internal digital platforms related to their domestic cooperators who were looking for specific R&D services.

A key benefit of digital internationalisation is time savings. Within a very short time, the range of the Institute's operations, through collaboration in international R&D consortia, increases abruptly. Such a rapid internationalisation of institute activities is possible thanks to the reduced entry barriers which need to be overcome in the case of traditional internationalisation. Processes and phenomena occur almost instantaneously. Information about R&D projects and their contractors spreads rapidly. Communication between consortium members is continuous and interactive, and information noise is reduced to a minimum. The costs associated with the physical movement of people and things are also reduced, and personal contacts are limited to those which are indispensable. It should be noted that they should not be completely excluded, as R&D consortia are continuous and the relations between parties are also maintained after the completion of research projects.

Scientists and management at the institute emphasised that building international research consortia with a wide geographical reach is possible primarily thanks to digital platforms. These are a hub for the exchange of information and

knowledge, not only for planned and organised research projects but also for information on entities offering R&D services. Digital platforms are becoming a base of data and information about entities offering R&D services and the scope of this work. If it were not for digital platforms, obtaining this information would be time- and cost-consuming.

Digital platforms help organise R&D projects, the budgets of which exceed the capabilities of each country. Research projects concern work on the development of future technologies, which require huge expenditure on R&D. It is only in the international dimension that such projects can be implemented. The use of these effects is also international. Therefore, consortium members take an active part in the implementation of the technologies developed (e.g., NBSOIL).

Many projects created by digital platforms are interdisciplinary. Increasingly often, not only engineers, physicists, or mathematicians but also economists or specialists in the field of medicine and biology are invited to participate in projects. Global research problems concerning various aspects of the life of the planet (AREANA, THOMAS, OPHELIA, EFACA, EXALIA) are solved. Therefore, digital platforms provide an excellent space for knowledge sharing, of which the consortium participants (NBSOIL) are integral actors. These projects deal with the development of technologies related to, for example, CO₂ reduction, the carbon footprint, new energy sources, or the development of digital technologies (IMOTHEP, NEUMANN, AMBER, HIHGTRIP). Importantly, R&D solutions dedicated to one sector can be used in other sectors (IMOTHEP, NEUMANN, AMBER). One such example is work on space and aviation technologies (satellites, UAVs), which are used in defence and security (DSVD, GRACE II, NEUMANN, HYDEF, RECBALL).

An important benefit of participating in international research projects is participation in work on the development of technological standards of international scope (HIGHTRIP, HERFUSE). It should be emphasised that the scope of these standards is much broader than the activities of the research consortium (NBSOIL). Thanks to participation in large R&D projects, Łukasiewicz – ILOT becomes a co-creator of these standards, which is helpful in the process of international certification of works and technological solutions offered by the Institute of Aviation (HERA).

Participation in international research consortia through digital platforms also results in greater recognition of the Institute and the work done by Łukasiewicz – ILOT. The Institute has ceased to be a purely national entity and has become a strong player on the international arena. As a consequence, research proposals are addressed directly to the Institute, offering specific contracts from countries involved in joint research consortia as well as from third countries.

Participation in international projects through digital platforms significantly increases the innovativeness of Łukasiewicz – ILOT, defined by the number of patents and commercialised R&D products (CHAD, EFACA, RECBALL, CAD-IOD, INSPOC-2, HERFUSE). Innovation growth is possible thanks to

improved research qualifications and the acquisition of unique technological competences (SAMAS 2, IMOTHEP, Premium, THOMAS). Due to the fact that the Institute participates in many international R&D consortia, technological competences develop additively.

Another important benefit of digital internationalisation is the improved use of research infrastructures (HIGHTRIP). Institutes conducting R&D research in high-tech sectors have a highly complex and expensive research infrastructure. Maintaining this world-class infrastructure requires continuous investment and modernisation. A prerequisite for the proper use of this infrastructure is the implementation of work as part of high-budget international research projects. The largest research projects in Europe are carried out through digital platforms, especially in the aviation, space, defence, and automotive sectors.

International collaboration through digital platforms has also become the stimulus for setting up further technological alliances with the participation of Łukasiewicz – ILOT (the snowball effect). Participation in international R&D projects within the framework of digital platforms fosters direct communication, strengthening relationships and creating new research projects (AREANA, HERA, FASETT). Stable network links are formed, not only between research institutes, but also with academic centres and manufacturers.

Due to the speed and directness of contacts within R&D consortia through digital platforms, the horizon of cooperative activities is extended and opportunistic behaviour mitigated – *tit for tat* and *shadow of the future* strategy (Axelrod, 1984; Rapaport, 1988, pp. 126–134). Digital platforms shorten the distance in communication between parties, which promotes increased trust in contacts (Newell, Swan, 2000; Chrisidu-Budnik, 2016). As a result, stable inter-organisational networks are created to support the internationalisation of the activities of its members (Dunning, 2015; Agramunt, Berbel-Pineda, Capobianco-Uriarte, Casado-Belmonte, 2020).

Collaboration within the network through digital platforms prompted Łukasiewicz – ILOT to specialise in research on an international scale and to focus on those competences that generate the Institute's transnational competitive advantage. Similar decisions were also made by other research institutes that participated in R&D projects through digital platforms, as a result of comparing their own and partners' research and development potential. This was followed by international research specialisation. As a result, international R&D consortia are created according to transactional logic. Synergies, as well as scale and scope benefits, are generated. International research specialisation has resulted in an increase in the effectiveness of the use of research potential of the institutes, the development of competences in key technologies, an improvement in the financial situation, and an increase in the quality of management and further internationalisation of activities.

International collaboration in the area of R&D through digital platforms has also left its mark on the management system at Łukasiewicz – ILOT. Collaboration

within an internal digital platform has necessitated changes in structure and governance processes towards more flexible ones. Decision-making powers were delegated in the field of creating and implementing international R&D projects through digital platforms to the level of middle management (directors of research centres). Those responsible for the research project have considerably more decision-making discretion in relation to the work carried out in international projects. This shortens the decision-making process, and decisions are made by the people involved in the project. Management processes have also been changed. The number of people involved in decision-making processes has been reduced and procedures significantly simplified, and bureaucracy reduced and adapted to the requirements of collaboration with other institutes located in various parts of the world. As a result, the involvement not only of the people responsible for the projects is on the rise, but also researchers, whose impact on the final result of the work has also dramatically increased. Collaboration with foreign institutes through digital platforms has forced the coalition partners to adjust activities related to the creation and management of collaboration in the area of R&D to the international standards adopted.

Scientists involved in international R&D consortia, as well as the directors of Łukasiewicz – ILOT research centres, pointed to the improved ability to cooperate with culturally diverse partners. Collaboration is most often network-based, and its actors are other research institutes, corporations, and public administration organisations (both national and international).

3.6 Benefits of the digital internationalisation of research institutes

Analyses of the literature on digital internationalisation, documentation of international projects implemented by the Łukasiewicz – Institute of Aviation digital platforms, and opinions collected during interviews show a wide spectrum of benefits of R&D collaboration for research institutes. The general benefits of digital internationalisation presented in the literature are reflected in the Institute's activities. Furthermore, there are additional benefits, which are very important for research centres, and so far have hardly been the subject of research.

International R&D collaboration between research institutes, within the framework of digital platforms, can give rise to market, technological, financial, and managerial benefits. Therefore, it is difficult to analyse them separately, and it is only the presentation of all groups of benefits that will create a full picture of digital internationalisation through R&D collaboration amongst research institutes.

The key benefits of digital internationalisation through participation in R&D consortia related to market factors include an accelerated, easier, and cheaper geographical and sectoral expansion of research institutes. This group of benefits also includes the possibility of easier acquisition of market information

related to the launch of R&D collaboration, concerning customers, competitors, and market development trends. An important market aspect is improved recognition of institutes on the international market for R&D services, which results in their higher market value.

The technological benefits of digital internationalisation undoubtedly include participation in international R&D consortia to develop future-oriented technologies which will set new technological standards in the world. In the era of the dynamic development of Industry 4.0 technologies, access to the latest technological knowledge is considered one of the most important benefits of digital internationalisation through R&D collaboration. The creation and development of technological competences, as well as the creation of new knowledge, are equally important for research institutes. Each international research project enables the development of existing technical competences and the acquisition of new ones. In addition, it is very important for research institutes to be able to fully use and develop research laboratories. Thanks to laboratory research and testing for international R&D projects, research infrastructures and testing methods are subject to rapid modernisation. Their quality and credibility are increasing. R&D collaboration through digital platforms fosters the international technological and research specialisation of institutes and the creation of recognisable competitive advantages. Internationally recognised modern technological competences enable the participation of research institutes in certification processes, which has further positive consequences for the internationalisation of their activities. It also affects the international market position of institutes and strengthens their financial situation.

The financial benefits of R&D collaboration-based digital integration are very important. They may be either direct or indirect. Direct benefits are associated with participation in high-budget R&D projects, thanks to which research work on future technologies can be conducted, which would not be possible within the budgets of individual institutes and countries. Thanks to work within international R&D projects through digital platforms, it is possible to attract the best scientists and researchers from various parts of the world. The funds obtained will also enable the expansion and modernisation of research institute laboratories.

Participation in international R&D projects through digital platforms brings indirect financial benefits. The consequence of international collaboration through digital platforms is the greater recognition of research institutes among potential customers (mainly international ones), which results in more R&D projects and increased financial revenues.

Digital internationalisation through R&D collaboration offers benefits to research institutes in the management area. Both management structures and processes are changing to increase the flexibility and speed of activity of research institutes. The involvement of researchers in the implementation of projects is increasing, which comes as a result of direct and continuous communication not only between managers but also at the level of implementation of each task.

Institutes acquire the competence to work in a multicultural environment and the competence to cooperate internationally (Lambe, Spekman, Hunt, 2002). In many cases, it is the competence of coopetition (Cygler, 2009). As a result, the management systems of research institutes are becoming similar and adopt international management standards. The accelerator of such radical changes is international collaboration amongst research institutes through digital platforms. Thanks to these, the benefits of collaboration with research institutes are generated faster, while reducing transactional costs that would arise during the traditional form of internationalisation (Hennart, 2022; Deng, Zhu, Johanson, Hilmersson, 2022).

Due to the specificity of research institutes, the technological benefits from digital internationalisation through R&D collaboration are more often considered crucial for functioning and development. In the case of Łukasiewicz – ILOT, in 32 out of 39 interviews, technological issues were thought to be predominant, followed by financial and market ones. This belief prevailed especially among scientists and project managers. However, the representatives of the highest level of management and some directors of research centres additionally pointed to the importance of management aspects within digital integration. It is worth noting that market and financial benefits are generated primarily as a result of external digital platforms, while management benefits seem to result from collaboration within internal digital platforms. Moreover, technological benefits arise as a result of R&D collaboration conducted by both types of digital platform.

The analysis of projects implemented by Łukasiewicz – ILOT also shows that digital internationalisation of research institutes as part of R&D collaboration takes place primarily through external digital platforms. Internal digital platforms are tools for efficient management of international collaboration and their role depends on the complexity and nature of the implemented project.

3.7 Conclusions

The digital internationalisation of research institutes through R&D collaboration is a complex and as yet insufficiently examined process. So far, no results of research devoted to the phenomenon of digital internationalisation involving research institutes have been published. The presented research results are the first attempt to fill the gap in the knowledge of the specificity of the internationalisation of research institutes through digital platforms. It is particularly important that the digital internationalisation of research institutes differs from the analogous process carried out by enterprises, for example, through the use of external and internal digital platforms. Moreover, the analysis of benefits derived from digital internationalisation by research institutes shows differences compared to those obtained by enterprises and described in the literature on international business (Witek-Hajduk, 2021; Da Rocha, Neves da Fonseca, Kogut, 2024). According to project evaluations and the analysis of in-depth interviews

with people involved in the implementation of international R&D collaboration at Łukasiewicz – ILOT, technological and financial benefits are crucial for project managers and scientists; they are followed by market benefits. Management staff additionally pointed to management aspects. The assumptions made in the study limited the scope of analysis. Due to the pioneering nature of research and the very limited state of knowledge of digital internationalisation of research institutes, the choice of case study was by all means justified (Meyer, 2001). Thanks to the case study method, we were able to use several sources of knowledge. In spite of this diversity, we are aware of the limitations of our research. We analysed 25 international R&D projects implemented by the Łukasiewicz – Institute of Aviation. Despite the wide sectoral spectrum of the Institute's activities, there is a need to investigate the digital internationalisation process of research institutes from various parts of the world. It would be extremely valuable to know more details about the differences in the international activities of research institutes in different geographical and cultural zones.

The subject framework of activities of institutes is also important. The analysis covered an institute operating mainly in the aviation, space, and defence sectors. The others are complementary. Thus, there is a question of the impact of the subject framework of research institute activities on the process of digital internationalisation.

As a result of the research, four main groups of benefits of digital internationalisation for research institutes were identified. However, the list of these benefits is not yet complete. To verify the list of benefits, in-depth quantitative research is necessary. It would be particularly useful to study the benefits from digital internationalisation depending on the characteristics of research institutes and their geographical location.

The case study method also limits the possibilities of analysis-based inference and synthesis. It is extremely important to continue research using quantitative methods. Due to the rapid development of new technologies and the need for their rapid implementation in the world, the role of research institutes in this work will continue to grow. The key success factor for research institutes is not only technological skills but also the range of operation (sectoral and geographical) and flexibility of operation. Therefore, there is a justified need for in-depth research on the specificity of the digital internationalisation of research institutes.

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4 Digital internationalisation through service offshoring

Science mapping analysis

Radosław Malik and Roman Wosiek

4.1 Introduction

The development of information and communication technology (ICT), alongside political and economic liberalisation and the wave of globalisation in the 1990s, laid the groundwork for the emergence of service offshoring (Mukherjee, Kumar, Pandey, Lahiri, 2023). This phenomenon, driven by the ability to perform services digitally, allowed multinational corporations (MNCs) to relocate service activities to diverse locations offering optimal economic and operational conditions (Dzikowska, Malik, 2023). The shift of service functions from home economies (typically well-developed markets) to host economies (often in developing regions) has had significant implications (Grossman, Rossi-Hansberg, 2006). Host economies, such as India, the Philippines, and countries in Central and Eastern Europe, have experienced growth in their service sectors, with positive outcomes including increased foreign direct investment (FDI), export growth, and knowledge spillovers (Malik, 2018). Conversely, the impact on home economies has been more nuanced, with challenges such as job losses and the depletion of knowledge stocks being noted (Kovak, Oldenski, Sly, 2021). However, it has been long acknowledged that MNCs in home economies have generated benefits from accessing a well-educated and cost-competitive workforce in host locations, thereby enhancing their global competitiveness (Levy, 2005).

The connection between service offshoring and digital internationalisation of MNCs represents a pivotal transformation in global business strategies (Feliciano-Cestero *et al.*, 2023). Digitalisation has enabled MNCs to fine-slice service processes, allowing them to outsource specific tasks to offshore locations where they can be executed with optimal efficiency (Cano-Kollmann, Hannigan, Mudambi, 2018). This task specialisation not only improves productivity but also enhances value creation within the global service delivery model (Dzikowska, Gammelgaard, Andersson, 2023). Additionally, digital internationalisation empowers MNCs to make strategic location choices by leveraging robust digital infrastructure and skilled talent pools in offshore destinations (Li *et al.*, 2024). Supported by advanced ICTs, firms can decentralise their

operations while maintaining seamless coordination across dispersed global teams (Xia, Li, Weng, Zhang, Gao, 2021). Furthermore, service offshoring facilitates enhanced cross-border knowledge exchange and innovation through digital platforms, enabling collaboration between geographically distant teams (Khraishi *et al.*, 2023). This dynamic fosters research and development (R&D) initiatives and supports the integration of expertise from diverse regions, driving innovation in both home and host markets (Spithoven, Merlevede, 2023). These interconnected dimensions highlight how digitalisation and service offshoring collectively reshape the operational and strategic landscape of MNCs, offering new pathways for efficiency, scalability, and resilience in an increasingly globalised economy (Luo, 2021).

The remainder of this chapter is structured as follows: Section 4.2 introduces the statement of the research problem and discusses the science mapping method used in this study and describes the tools applied for analysis. Section 4.3 presents and analyses the research findings, providing insights into the key themes and trends identified. This is followed by a discussion of the implications of the results in Section 4.4, highlighting their relevance to the field and addressing the study's research questions. Finally, the chapter concludes with a summary of the main findings, their contributions to the existing literature, and potential directions for future research.

4.2 Statement of the problem and description of research method

In the first decade of the 21st century, service offshoring became a universally accepted business practice, laying the groundwork for the digital internationalisation of firms, particularly MNCs (Doh, 2005). These firms began to adopt increasingly fine-sliced processes and developed complex location strategies, geographically dispersing their service-related activities to optimise their global value chains (Linares-Navarro, Pedersen, Pla-Barber, 2014). While cost reduction initially drove service offshoring, there was a clear evolution towards more strategic motives, including efficiency improvements and fostering innovation (Polese, Malik, 2023). This shift was accompanied by a progression from offshoring relatively simple tasks to more complex, value-added activities, including elements of R&D, reflecting the growing sophistication of service offshoring practices (Klimek, Sass, 2023).

The global financial crisis of 2008–2009 and the Covid-19 pandemic temporarily slowed the development of service offshoring but did not halt its progression. However, the rise of protectionist measures in host economies, driven by public concerns over the loss of high-paying, knowledge-based jobs and declining living standards, has fuelled the governmental response to digitalisation (Visvizi, 2023), which includes concepts of reshoring and nearshoring – efforts to relocate previously offshored activities back to or closer to home economies (Zahoor *et al.*, 2023). Simultaneously, advancements in service optimisation

through automation and, more recently, artificial intelligence (AI) have further challenged the prospects of service offshoring (Troisi, Visvizi, Grimaldi, 2023) by reducing the need for certain types of human labour (Kinkel *et al.*, 2023). These trends have increased scepticism towards service offshoring, both in public opinion and among policymakers, creating a backlash that negatively impacts its appeal (Mukherjee *et al.*, 2023). Consequently, these dynamics pose significant challenges for firms seeking to leverage service offshoring as a means of advancing their digital internationalisation strategies (Drori *et al.*, 2024).

At this important moment for service offshoring and its role in the digital internationalisation of firms, this study focuses on mapping how research in this area has evolved from 2004 to 2023. The main problem this study addresses is to review the existing literature on how firms use service offshoring to achieve digital internationalisation. This study employs science mapping analysis, a research method that is a type of bibliometric analysis, which examines patterns in large research fields by analysing the co-occurrence of keywords. The study aims to explore the main themes in service offshoring research, track how these themes have developed over time, and identify gaps in current knowledge. In particular, it seeks to answer the following research questions:

- 1 What were the primary thematic areas of focus in service offshoring research and their connection with digital internationalisation during the period from 2004 to 2023?
- 2 What were the key directions in the evolution of research on service offshoring and their connection with digital internationalisation between 2004 and 2023?

This study employs science mapping analysis to achieve its research objective and address the two research questions. Science mapping is a type of bibliometric analysis that uses keyword co-occurrence to analyse the primary focus of research texts. Science mapping is a data-driven method designed to understand the knowledge components and structure of a research field by analysing the relationships among keywords in the literature. By focusing on keyword co-occurrence, this approach identifies patterns and connections within a body of research, providing an unbiased view of the field. As a bibliometric technique, it leverages algorithmic processes to generate objective insights into the thematic and structural dynamics of the research domain under study (Chen, 2017).

Keywords co-occurrence examines the frequency with which any two keywords appear together (co-occur) within a given text in a selected pool of texts. By treating each keyword as a node and each co-occurrence as a link between two nodes, a network of keywords is constructed. The strength of the connection between keywords is determined by the frequency of their co-occurrence, which is graphically represented by the thickness of the line linking the respective keywords. These networks of interconnected keywords are visualised as

thematic network graphs (thematic cluster), where each theme is labelled with the keyword that is central to its network, representing the core concept of the theme (Lozano *et al.*, 2019).

The SciMat open-source software was used to conduct the keyword co-occurrence analysis in this research. SciMat is one of several tools available for this type of analysis, selected for its robust range of visualisation features (Cobo, López-Herrera, Herrera-Viedma, Herrera, 2011b). For the purpose of this study, the visualisation was carried out using strategic diagrams and evolution maps provided by SciMat. The strategic diagram offers insights into the thematic structure of the research, categorising themes based on their centrality and density. The evolution map, on the other hand, examines changes in the thematic structure of the research over time, enabling the analysis of thematic trends across predefined time intervals. These tools facilitate a comprehensive understanding of the development and dynamics of the research field (Cobo, López-Herrera, Herrera-Viedma, Herrera, 2012).

The strategic diagram provides a visual overview of a research field by representing themes along two dimensions: centrality and density. Centrality reflects the extent of a theme's interaction with other themes within the diagram, indicating the strength of its external connections and, consequently, its significance in the research area. Density, in contrast, measures the internal coherence of a theme, represented by the strength of connections among the co-occurring keywords that form its thematic network. This dimension indicates the level of development of a theme. Based on their centrality and density, themes can be categorised into motor themes, basic themes, emerging or declining themes, and specialised themes (Cobo *et al.*, 2012).

In the strategic diagram, research themes are categorised into four quadrants based on their density and centrality. Motor themes (upper-right quadrant) are highly developed and central, playing a crucial role in structuring and advancing the knowledge area. These themes are considered the driving forces of the research field. Basic themes (lower-right quadrant) are less developed but central to the field, serving as foundational elements that are relevant across various contexts. Specialised themes (upper-left quadrant) are specialised and strongly connected internally but lack centrality, making them peripheral to the core knowledge area. Finally, emerging or declining themes (lower-left quadrant) exhibit low density and centrality, representing themes that are either in decline or in the early stages of development, highlighting transitional aspects of the research field (Cobo *et al.*, 2011a).

Evolution maps are another analytical tool used in this study to examine the progression of research themes over time. These maps help identify the primary evolutionary trajectories within the research field, their origins, and their interconnections. To achieve this, an evolution map is constructed, utilising the inclusion index to detect conceptual links between research themes across different time periods. The map illustrates the transition of thematic clusters over time,

with each column representing a specific period and listing all clusters plotted on its corresponding strategic map. Weighted lines connecting clusters across periods indicate the strength of relationships between themes over time, providing a clear visualisation of thematic continuity and transformation (Cobo *et al.*, 2012).

The analysis was conducted in four main steps: (1) data search, (2) data cleansing, (3) theme discovery, and (4) result visualisation. During the data search phase, queries were executed in the Web of Science (WoS) database to compile a collection of articles related to the research field. In the data cleansing phase, the bibliometric data associated with these articles underwent refinement processes, including the removal of duplicate records, completion of missing information, and grouping of keywords. These steps aimed to ensure the robustness and reliability of the dataset. In the third phase, theme discovery, the dataset was analysed using SciMat software to detect co-occurrences of keywords within the selected texts. Finally, in the result visualisation phase, the identified keyword co-occurrences were utilised to construct a strategic diagram and an evolution map, offering insights into the thematic structure and progression of the research field (Gutiérrez-Salcedo *et al.*, 2018).

Although SciMat supports the application of various algorithms for theme identification and visualisation, this study employed the standard set of algorithms and methods provided by the software to ensure consistency and reliability. The normalisation measure used was the equivalence index, which facilitated the comparison of co-occurring keywords. For clustering, the simple centre algorithm was applied, with cluster sizes restricted to a maximum of five and a minimum of three keywords. To measure the evolution of themes over time, the Jaccard index was utilised, highlighting the connections between clusters across different periods. Additionally, the inclusion index was used as the overlapping measure to identify conceptual links between themes from various time intervals. This configuration ensured a robust and systematic analysis of the thematic structure and its evolution in the service offshoring research field, and the results of the analysis are presented in Section 4.3 (Santana, Cobo, 2020).

While bibliometric analysis, specifically science mapping based on keyword co-occurrence, provides valuable insights into the thematic structure and evolution of a research field, it is not without limitations. One significant limitation is its reliance on keywords, which may not fully capture the depth and nuances of the research content. Keywords are often author-selected and can vary in terminology, leading to potential inconsistencies despite efforts to standardise them during data cleansing. Additionally, the method focuses on patterns and relationships between keywords, which may overlook the broader context or interpretive aspects of the research. Bibliometric analyses are also highly dependent on the quality and scope of the database used; for instance, articles not indexed in the chosen database or those in languages other than English are excluded, potentially introducing a selection bias. Furthermore, while science mapping highlights structural and temporal relationships between themes,

it does not provide detailed insights into the causes or implications of thematic shifts, requiring complementary qualitative analyses for a more comprehensive understanding (Malik, Visvizi, Troisi, Grimaldi, 2022).

4.3 Results of science mapping analysis of service offshoring

The results section presents the findings of this study, based on a comprehensive analysis of bibliometric data obtained through a search query performed in the WoS database on 2 December 2024. The query used the keywords “offshoring*” AND “service*,” with a time span restricted to 2004–2023. To ensure consistency and focus, the analysis included only scientific articles written in English, resulting in a dataset of 554 texts. The findings are organised into three main parts. First, the annual distribution of texts is analysed to capture general trends in the number of publications, offering an overview of the growth and shifts in research interest within the field over the two-decade period. Second, the thematic structure of the research field is illustrated through strategic diagrams. Third, the evolution of themes over time is visualised through evolution maps, providing insights into the development and interconnections of key research areas.

The 554 articles published in the research area regarding the offshoring of services show that the number of publications has fluctuated significantly over time, with notable peaks and troughs reflecting varying levels of research interest in the topic. While there was steady growth in the early years of the dataset, the number of articles surged during certain periods, indicating heightened academic focus. However, subsequent years also witnessed declines, suggesting shifts in research priorities or external influences affecting publication trends. This variation highlights the dynamic nature of the field and its evolving academic interest over the two-decade span, as shown in Table 4.1.

The publication trends for research on service offshoring reveal distinct patterns over the analysed period. Between 2004 and 2007, the number of articles steadily increased, indicating a growing academic interest as offshoring emerged as an important business strategy. This initial growth was followed by a peak in publication activity from 2008 to 2013, marked by a sharp rise in the number of studies. This surge can be linked to the global financial crisis, which likely intensified academic and industry focus on service offshoring to support digital

Table 4.1 Annual distribution of articles in the service offshoring research field indexed in WoS (2004–2023)

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
No. of publications	1	8	17	15	44	37	45	37	35	48
Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
No. of publications	29	37	32	36	19	32	18	29	21	14

Source: own elaboration.

internationalisation. Between 2014 and 2017, there was a renewed interest in the field, though the number of publications did not reach the peak levels observed in the earlier period. Subsequently, from 2018 to 2023, a gradual decline in the number of studies occurred, potentially signalling a saturation of research interest or shifts in focus towards other related topics.

The remaining three steps of the analysis – (2) data cleansing, (3) theme discovery, and (4) result visualisation – were conducted using SciMat software. Initially, 2118 unique keywords were identified from the pool of 554 articles. During the data cleansing phase, clustering was performed to standardise variations such as plural and singular forms, American and British spellings, and abbreviations versus full terms. This process reduced the number of keywords to 1999, ensuring a refined and consistent dataset for subsequent analysis. The theme discovery and visualisation phases utilised the cleaned dataset to identify research themes and their interrelations, with the number of documents associated with the dominant keyword in each theme represented in the diagram. This process led to the creation of the strategic diagram, which outlines the thematic structure of the field, as presented in Figure 4.1.

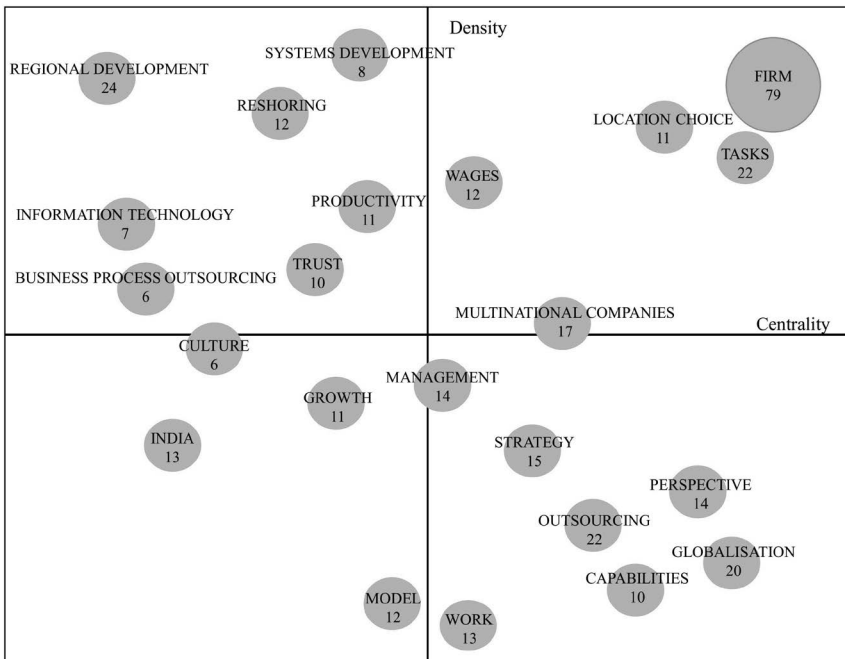


Figure 4.1 Strategic diagram of the service offshoring research field (2004–2023)

Source: own elaboration.

Based on the strategic diagram and the division of themes into four quadrants, the thematic analysis of service offshoring research from 2004 to 2023 reveals a total of 23 distinct themes across the field. These themes are distributed into four groups based on their density and centrality.

The motor themes include five themes: “firm”, “location-choice”, “wages”, “tasks”, and “multinational companies”. These represent the core focus areas of service offshoring research, addressing foundational topics that are both well-developed and central to the field. The basic and transversal themes consist of seven themes: “strategy”, “management”, “perspective”, “work”, “outsourcing”, “capabilities”, and “globalisation.” These themes are broad and central to the research field, providing essential contextual understanding, but they lack the advanced development characteristic of motor themes. The highly developed and isolated themes include seven themes: “trust”, “systems-development”, “regional-development”, “information-technology”, “reshoring”, “productivity”, and “business-process outsourcing”. These themes are highly specialised and exhibit strong internal coherence but are less connected to the central research framework, indicating their peripheral role in the broader field of service offshoring. Lastly, the emerging or declining themes comprise four themes: “model”, “growth”, “India”, and “culture”. These themes are characterised by low density and centrality, suggesting they are either in early stages of development or experiencing a decline in research interest. They represent transitional areas of study, reflecting either new trends or diminishing focus.

The evolution map analysis provides valuable insights into the development and progression of research themes within the service offshoring field over the period from 2004 to 2023. To construct the evolution map, the overall timeframe was divided into subperiods, striking a balance between analytical granularity and the broader perspective required for comprehensive bibliometric studies. Three subperiods were selected: 2004–2009, 2010–2016, and 2017–2023. The first subperiod, 2004–2009, represents the early stages of service offshoring research, encompassing its emergence and the aftermath of the global financial crisis. The remaining 14 years were divided into two equal intervals of seven years each to ensure consistent and systematic analysis. The evolution map specifically focuses on themes identified in the strategic diagram provided separately for each timeframe, tracing their continuity, transformation, or decline across the subperiods, and illustrating the connections and transitions of these themes over time, as shown on the [Figure 4.2](#).

The evolution map analysis reveals significant patterns in the thematic development of the service offshoring research field across the three subperiods. In the first subperiod (2004–2009), four themes were identified in the strategic diagram of the subperiod: “strategy”, “outsourcing”, “globalisation”, and “firm”. These themes reflect the foundational focus of early research, indicating the central topics that dominated the emerging field of service offshoring during this time.

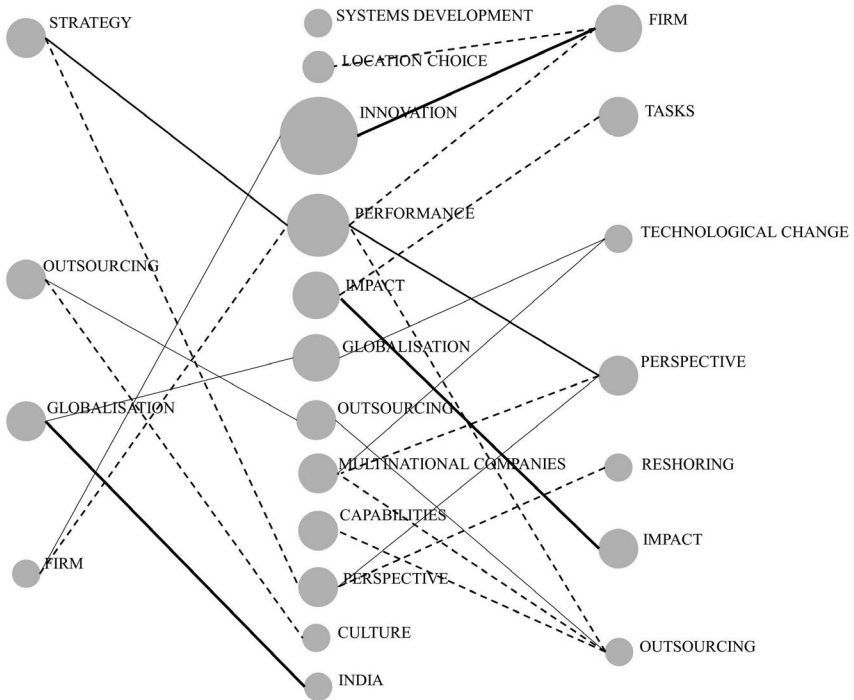


Figure 4.2 Evolution map of the service offshoring research field (2004–2023) across three subperiods: 2004–2009, 2010–2016, and 2017–2023

Source: own elaboration.

In the second subperiod (2010–2016), a considerable thematic proliferation is evident, with the number of themes increasing to 12. This expansion highlights the growing maturity of the field, as the research community began exploring service offshoring in greater depth and nuance. The themes identified in this period include “systems-development”, “location-choice”, “innovation”, “performance”, “impact”, “globalisation”, “outsourcing”, “multinational-companies”, “capabilities”, “perspective”, “culture”, and “India”. Importantly, the evolution map demonstrates continuity between the first and second subperiods, as all themes from the first period remain linked to themes in the second, indicating their sustained relevance. Among the 12 themes identified in the second period, five – “systems-development”, “location-choice”, “multinational-companies”, “capabilities”, and “impact” – emerge as new additions to the research field, reflecting an ongoing diversification of the thematic landscape.

In the third subperiod (2017–2023), the number of themes in the subperiod strategic diagram narrows to seven: “firm”, “tasks”, “technological-change”, “perspective”, “reshoring”, “impact”, and “outsourcing”. Notably, all themes in

this period are directly connected to those in the second period, either as continuations of previously established themes (e.g., “impact” and “outsourcing” indicated by solid lines) or as components of larger thematic clusters (indicated by dotted lines). The reduction in the number of themes in the third period suggests a refocusing of research efforts on a more concentrated set of topics. It may also signal a decline in the overall volume of studies within the service offshoring research field, indicating a potential consolidation of interest or a shift in research priorities.

The transitions between subperiods in the service offshoring research field reveal key insights into its evolution. Core themes such as “outsourcing”, “globalisation”, and “firm” from the first period remained central in subsequent periods, demonstrating the sustained relevance of foundational topics. The second period (2010–2016) saw significant thematic diversification, driven by technological advancements, regional studies, and performance-related research, reflecting the field’s growing complexity. In contrast, the third period (2017–2023) marked a consolidation of themes, with a narrowing focus on specialised topics such as “technological change” and “reshoring” indicative of evolving global trends and the field’s maturation. These transitions highlight the dynamic nature of the research field, balancing continuity with thematic expansion and eventual consolidation, while responding to external factors such as technological progress, economic shifts, and changing global business strategies. Overall, the evolution map highlights the dynamic nature of the service offshoring research field, showing both continuity and adaptation in thematic focus over time, while underscoring the field’s evolution towards more specialised and refined areas of inquiry, which are discussed in detail in the following section of the chapter.

4.4 Discussion of the thematic evolution of service offshoring

The discussion section of this chapter seeks to critically analyse the findings of the science mapping analysis presented in the previous section, focusing on the thematic and evolutionary trends in service offshoring research from 2004 to 2023. The primary objective of this discussion is to contextualise these findings within the broader literature, addressing the main research questions: What were the primary thematic areas of focus in service offshoring research in connection to digital internationalisation during this period (RQ1) and what were the key directions in the evolution of this field (RQ2)? By examining the results, the discussion aims to highlight how firms have leveraged service offshoring as a strategy for achieving digital internationalisation, assess the progression and diversification of research themes over time, and explore the theoretical and practical implications of these trends. This analysis not only deepens the understanding of the service offshoring research field but also provides insights into its role in the evolving landscape of digital internationalisation.

With reference to the first research question (RQ1), the results revealed that the thematic analysis of service offshoring research from 2004 to 2023, based on the strategic diagram, identifies a total of 23 distinct themes across the field. Among these, the motor themes, with the most significant role in structuring and advancing the research field, include five key areas: “firm”, “multinational companies”, “location-choice”, “wages”, and “tasks”. These findings highlight the dominant analytical perspective of service offshoring research from the viewpoint of firms, particularly MNCs, reinforcing the importance of this field in broadening the understanding of digital internationalisation within MNCs.

Studies on firms in this research field emphasise their use of service offshoring to leverage foreign host locations that offer optimal conditions for service delivery (Larsen, Manning, Pedersen, 2013). This capability is driven by the nature of services that can be remotely produced in digital form through the use of ICTs, within the international networks of MNCs (Rodríguez, Nieto, 2016). Research also focuses on the impact of service offshoring on improved business performance, the development of new knowledge, and innovation (Ambos *et al.*, 2021). Similarly, studies on MNCs explore comparable areas but exhibit distinctive characteristics, including an emphasis on the use of FDI as a mode of internationalisation and the development of international production networks. These insights underscore the critical role of service offshoring in shaping the strategies and operations of MNCs within the broader context of global digital transformation (Fuller, Akinwande, Sodini, 2017).

Moreover, themes such as “location-choice”, “wages”, and “tasks” reflect the strategic actions undertaken by companies in the internationalisation process. Research in these areas explores the choice of optimal locations for service offshoring, the specific activities and tasks targeted for service offshoring, and the underlying rationale for these internationalisation decisions (Roza, Van den Bosch, Volberda, 2011). These studies underscore the complex decision-making processes of firms as they seek to harness offshoring for strategic advantages, including cost efficiency, access to skilled labour, and operational flexibility within global networks (Lewin, Volberda, 2011). Notably, a global sourcing perspective adopted by MNCs emerges as a critical focus, highlighting the importance of governance modes for managing service offshoring and the evolution of both sourcing strategies and governance frameworks over time (Mihalache, Mihalache, 2016). Moreover, in the context of digital internationalisation, a prominent stream of research is dedicated to understanding how MNCs utilise offshoring to enhance their R&D capabilities, a critical component of building their competitive advantages (Papanastassiou, Pearce, Zanfei, 2019).

While the firm perspective remains central to much of the research, the broader implications of MNCs’ digital internationalisation are also widely acknowledged. Studies highlight positive impacts on host labour markets, such as increased employment opportunities and skill upgrades, which contribute to the economic development of host locations (Bramucci *et al.*, 2021). However, they

also emphasise negative phenomena, including rising inequalities, job polarisation, and unemployment in the home locations of MNCs. Additionally, research has explored the effects of changes in trade patterns resulting from the internationalisation of services by MNCs, including their impact on trade balances and deficits in home countries. These nuanced insights provide a comprehensive understanding of the dual-edged effects of MNCs' service offshoring strategies on global economic and social structures, highlighting both their benefits and challenges (Driffield, Pereira, Temouri, 2019).

With reference to the second research question (RQ2), the results highlight key trends in the proliferation of scientific inquiry into service offshoring, revealing significant patterns worth discussing. The evolution of research on service offshoring from 2004 to 2023, as reflected in the number of publications, shows clear directional shifts influenced by global business and technological trends. The initial years (2004–2007) marked the growing adoption of service offshoring as a strategic tool for internationalisation, driven by the increasing ability of firms to locate services in specific regions and deliver them remotely as part of their digital transformation strategies. During this period, academic interest steadily grew, focusing on foundational aspects of service offshoring (Karmarkar, 2004). The number of publications surged during the subsequent years, peaking in 2013, likely as a response to the global financial crisis, which amplified the need to investigate how service offshoring supported digital internationalisation and helped mitigate its economic impact on MNCs. This peak reflects an intensified academic focus on understanding the strategic role of offshoring during periods of economic disruption. From 2013 onwards, while publication numbers remained relatively high, research began to focus more on topics such as the role of automation in digital service delivery and the shifting geographies of offshored activities. However, from 2018 to 2023, a gradual decline in the number of publications was observed, potentially signalling the maturity of the research field or a shift in focus towards emerging areas such as the impact of the COVID-19 pandemic and the growing significance of artificial intelligence in shaping the internationalisation strategies of MNCs. These trends illustrate the dynamic and adaptive nature of research in this field, closely tied to evolving economic and technological developments.

Further with reference to second research question (RQ2), some thematic trends in the evolution of the service offshoring research field can be observed based on the results presented in the evolution map in the Results section of this chapter. Thematic shifts in service offshoring research from 2004 to 2023 reveal a dynamic and evolving focus, influenced by changes in global business practices, technological advancements, and economic developments. A central dimension of this evolution is the role of service offshoring in facilitating the digital internationalisation of MNCs, a recurring focus across all subperiods.

During the early years (2004–2009), the research field was characterised by foundational themes such as “strategy”, “outsourcing”, “globalisation”, and

“firm.” These themes reflect the initial stage of service offshoring, as firms began to recognise its strategic potential for achieving cost reductions, enhancing operational efficiency, and expanding into global markets. A defining characteristic of this period was the integration of service offshoring into the broader internationalisation strategies of MNCs, with a particular emphasis on leveraging digital tools to enable the remote provision of services from strategically chosen overseas locations (Zeynep Aksin, Masini, 2008). Furthermore, the development of studies on outsourcing as a relocation mode for service offshoring underscored its importance during this early phase, highlighting the inherent risks associated with operating in foreign markets. This period not only emphasised the role of international firms as key drivers of globalisation but also laid the groundwork for further exploration and refinement of the field in subsequent years (Hätönen, Eriksson, 2009).

During the second subperiod (2010–2016), the thematic landscape expanded significantly, with the emergence of new themes such as “systems-development”, “location-choice”, “innovation”, and “impact”. This period marked a shift towards a more nuanced exploration of service offshoring, emphasising its role in facilitating the digital transformation and international operations of MNCs. It reflected the growing maturity of service offshoring as a business practice, enabling MNCs to pursue increasingly complex location strategies, fine slice their processes, and manage digital internationalisation through a broader network of foreign locations while also evaluating the impact of internationalisation on overall firm performance. Additionally, research during this period increasingly recognised that MNCs leveraged service offshoring to pursue a variety of objectives beyond cost reduction, including enhanced innovation and efficiency (Schmeisser, 2013).

This shift in thematic focus placed greater emphasis on location choice in the decision-making process, with firms evaluating a wider array of location factors, signalling a crucial new trend in the thematic evolution of the research. These factors included not only labour costs but also the quality of knowledge, skills, and experience of employees in host locations. The emergence of themes like “India” and “culture” underscored the growing recognition of regional and cultural dimensions in service offshoring. At the same time, themes such as “capabilities” highlighted the strategic and organisational implications of offshoring within a global context. Studies during this period examined how MNCs leveraged service offshoring to access skilled talent, optimise global value chains, and enhance their innovation capacities, further integrating digital internationalisation into their broader strategies. This thematic proliferation reflected the evolution of service offshoring as a sophisticated and strategic tool in the digital internationalisation of firms (Pisani, Ricart, 2015).

The third subperiod (2017–2023) marked a consolidation of themes, with research focusing on a narrower set of topics, including “technological-change”, “reshoring”, “impact”, and “tasks”. This shift reflects the growing maturity of

the field, as scholars turned their attention to specific challenges and opportunities driven by technological advancements, such as the automation of service provisions and the application of AI – both of which emerged as critical factors shaping service offshoring. The inclusion of “reshoring” in this period indicates a response to shifting global dynamics, including economic protectionism and the re-evaluation of global value chains. However, studies suggest that while reshoring has a greater impact on production processes, its influence on services remains relatively limited, reinforcing the continued efforts of MNCs to optimise their operations through digital internationalisation, enabled by the digital provision of services from offshore host locations (Pedroletti, Ciabuschi, 2023).

Additionally, this period highlighted a novel trend recognised by both the research community and business practitioners: the need to evaluate the costs and benefits of service offshoring at a more granular level. Rather than focusing on broader functions or processes, scholars increasingly emphasised the importance of assessing specific tasks and activities to fully leverage the advantages of digital internationalisation for MNCs (Dzikowska, Malik, 2023). Importantly, the identified themes continued to underscore the critical role of service offshoring in supporting MNCs’ digital strategies, particularly through the integration of advanced technologies that enhance operational flexibility and expand global reach (Kamp, Gibaja, 2021). Lastly, an emerging trend during this period is the noticeable decline in the number of themes attracting research attention within service offshoring, which may indicate a shift in focus towards other forms of digital internationalisation for MNCs, reflecting evolving priorities in international business.

Overall, these thematic shifts highlight the field’s progression from foundational strategies to a more diverse and refined exploration of service offshoring, consistently linked to its role in facilitating digital internationalisation for MNCs. They demonstrate how the research community has adapted to external influences, advancing the understanding of offshoring’s strategic significance while addressing emerging global trends and challenges (Bilbao-Ubillos *et al.*, 2024). The discussion of the results forms the basis for the chapter’s conclusion provided next.

4.5 Conclusions

This study successfully achieved its primary goal of reviewing the existing literature from 2004 to 2023 on how firms use service offshoring to achieve digital internationalisation, addressing two specific research questions outlined in the introduction. The conclusions section highlights the key contributions and novelty of the research, discusses its limitations, and proposes directions for future studies. By providing a comprehensive analysis of thematic trends and evolution in the field, the study offers insights into the intersection of service offshoring and digital internationalisation.

This study makes three significant contributions to the understanding of service offshoring and its role in the digital internationalisation of MNCs. First, it highlights the dominant analytical perspective of service offshoring research from the viewpoint of firms, particularly MNCs. Research in these areas explores key elements of internationalisation in MNCs, such as the underlying rationale for these internationalisation decisions, the choice of optimal foreign locations, and the specific activities and tasks targeted for offshoring, leveraging opportunities created by the proliferation of digital technologies. These findings emphasise the complex decision-making processes of firms as they strive to leverage offshoring for strategic advantages, including cost efficiency, access to skilled labour, innovation creation, and improvements to R&D processes.

Second, the study traces the evolution of service offshoring, from its initial globalisation-driven approach to its integration into broader internationalisation strategies of MNCs. During its early stages, service offshoring was primarily an attempt to capitalise on globalisation opportunities, mostly related to the reduction of operational costs. However, an important direction of evolution became the development of complex location strategies that utilised a variety of foreign host locations to achieve strategic goals. Over time, this approach has matured to incorporate increasingly sophisticated perspectives shaped by technological advancements, such as automation, and shifting political climates, including the growing focus on reshoring. This evolution demonstrates how MNCs have adapted their strategies to embrace new possibilities while addressing emerging challenges in the global business environment.

Finally, the study acknowledges the declining trend in the number of research publications on service offshoring as a means of internationalisation for MNCs. This decline may reflect a shift in academic and industry focus towards newer forms of digital internationalisation, suggesting the need for further exploration of how these emerging trends intersect with or diverge from traditional service offshoring practices. By documenting these shifts, this study provides a starting point for further analysis of service offshoring and its implications for global business strategies.

This study introduces two novel perspectives to the research field. First, it uniquely links the perspective of digital internationalisation of MNCs with the concept of service offshoring, an angle seldom adopted in prior research. By doing so, it provides much-needed insights into a distinct research area, significantly differentiated from the extensively studied application of offshoring for firm internationalisation. Second, it is the first study to apply bibliometric analysis using science mapping through keyword co-occurrence to analyse service offshoring. This methodological approach has produced novel outcomes offering a broader and more comprehensive understanding of the field and supplementing the findings of prior research, which has largely relied on more narrowly focused systematic literature reviews.

While this study makes significant contributions to understanding the role of service offshoring in the digital internationalisation of MNCs, it is not without limitations. Addressing these limitations provides valuable directions for future research. The reliance on keyword co-occurrence analysis for thematic identification, while effective for uncovering structural patterns, may not fully capture the depth and nuances of the research field. The application of other methods, such as text mining analysis and systematic literature reviews, to address the same research questions could further develop knowledge in this area. Additionally, the study lacks qualitative contextualisation, as science mapping does not delve into the causes or implications of thematic shifts. Complementary qualitative analyses could enrich the understanding of these patterns. Furthermore, while the study identifies thematic trends and their evolution, it does not extensively explore how these insights translate into practical strategies for MNCs. A new study with a focus on the practical application of the findings could enhance their relevance and utility for practitioners in the field.

In addition to addressing the limitations of this study, two key directions for future research have emerged from the analysis undertaken. First, while automation has already been identified as an important area of research, future studies could delve deeper into the implications of other emerging technologies, including AI, blockchain, and the Internet of Things (IoT), on service offshoring and its role in the digital internationalisation of MNCs. Second, future research could explore the dynamic relationship between reshoring and offshoring in the context of digital internationalisation. This includes analysing how MNCs balance the benefits of internationalisation with the risks associated with exposure to foreign and domestic political expectations concerning the location of business activities. A potential hypothesis to examine is that the digital internationalisation of MNCs may be less prone to political backlash compared to traditional offshoring due to its lower social visibility. Investigating these dynamics would provide valuable insights into how MNCs utilise service offshoring to enhance digital internationalisation.

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Part 2

**Digital Internationalisation
of Firms – Antecedents and
Challenges**



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5 Consumer behaviour and cross-border e-commerce perspective

Anna Grudecka

5.1 Introduction

The phenomenon of e-consumer behaviour has gained importance in parallel with the proliferation of e-shopping and cross-border e-commerce (CBEC) acceleration (Statista, 2023), so that today's consumers can easily, directly, and in real time interact with sellers worldwide. Therefore, (international) purchasing patterns, accompanied by acculturation understood as alteration of consumers' preferences, etc. (Han, Ma, Addo, Liao, Fang, 2023), have altered, and the number of people shopping in brick-and-mortar stores has decreased. Simultaneously, worldwide, 52% of consumers make e-purchases internationally (Forbes, 2024).

Although there is a considerable body of literature on e-consumer behaviour, fewer studies refer to CBEC, and their number has only increased over the past few years (Chen, Lan, Chang, 2023). These studies mainly consider single factors leading to the usage intention of CBEC and purchase intentions (Bao, Cheng, Zarifis, 2022; Yang, Ma, Han, 2023). Moreover, authors refer in their papers to various theoretical foundations, including cue utilisation theory, signalling theory, stimulus-organism-response (S-O-R) model, theory of planned behaviour (TPB), and technology acceptance model (TAM).

Some scholars identify various antecedents of consumers' cross-border e-purchases, i.e., internal (perceived value, trust in a seller, satisfaction, and perceived risk related to purchases) and external (at the product level, seller's reputation and image, website design and ease of use, quality of e-services, delivery time and costs, return policy, payment methods and security, legal stimuli, as well as economic and sociocultural) determinants. Importantly, based on this research, contradictory conclusions are sometimes drawn (Valarezo, Pérez-Amaral, Garín-Muñoz, García, López, 2018; Chen *et al.*, 2023).

Some studies also address the increasing role of sustainability for consumer behaviour (Xiao, Guo, Yu, Liu, 2019; Cheah, Huang, 2022).

Despite the growing number of publications on e-consumer behaviour within CBEC, a majority of them are fragmented in nature and include a limited

number of stimuli, sometimes just one (Hazarika, Mousavi, 2022; Chen *et al.*, 2023). Moreover, comprehensive classifications of factors shaping these behaviours are lacking. Consumer behaviour evolves and these changes have accelerated recently, *inter alia*, as a result of the Covid-19 pandemic (Pollák, Markovič, Vavrek, Konečný, 2022). Thus, a review of the most current literature is needed as well.

Considering such research gaps, this chapter brings together results of the latest studies and presents a comprehensive insight into external and internal antecedents of e-consumer behaviour within CBEC that also may constitute challenges for business. Thus, the following research questions were formulated:

- 1 Which theories explain consumer behaviour with regard to CBEC?
- 2 What are the internal and external determinants of consumer behaviour with regard to CBEC?
- 3 What causes challenges related to CBEC from a consumer perspective?

To answer the research questions, the author provides a critical synthesis of the existing literature and refers to the primary quantitative data from the authors's own research conducted on a representative sample of 810 Poles.

This chapter contributes to the literature on international and digital marketing, and e-consumer behaviour, particularly in terms of CBEC. Its value-added contributions are practical recommendations for managers in the field of creating successful – *i.e.*, in line with the specifics of consumer behaviour – marketing strategies referring to CBEC.

The chapter is organised as follows. It begins with a general overview of the chosen theoretical foundations that serve as a background in studies on e-consumer behaviour with regard to CBEC. Next, an overview of the internal and external determinants of consumer behaviour within CBEC is presented, followed by a discussion regarding those stimuli that are considered in the literature as the most challenging. Finally, the chapter is summarised with the key conclusions from previous analyses and suggestions for further research.

5.2 Consumer behaviour in the context of cross-border e-commerce: the theoretical background

Consumer behaviour in the context of CBEC is being researched with reference to various theoretical foundations, including signalling theory, so-called halo effect, cue utilisation theory, S-O-R model, theory of reasoned action (TRA) and TPB, TAM, and (self) involvement theory.

Authors often refer to the signalling theory (Hazarika, Mousavi, 2022), assuming that parties (companies, *i.e.*, insiders and consumers) have access to different sets of information, with the former having access to those unavailable to consumers (Yang *et al.*, 2023). However, both parties are rational and risk-averse, and tend to reduce information asymmetry (Witek-Hajduk, Grudecka, 2024a). Consumers use specific cues when evaluating a product's quality, *etc.*,

i.e., information indices (e.g., country-level characteristics) and information signals (e.g., supplier-level characteristics) (Chen *et al.*, 2023). If some information about a product is lacking, consumers draw conclusions based on other available cues.

In a few studies, scholars refer to the so-called halo effect (Luo, Li, Ye, 2022). This term was introduced to describe cognitive bias in a study which concludes that people's impressions of others are influenced by their assessments of specific traits, e.g., intelligence. With regard to CBEC, Shao, Cheng, Wan, and Yue (2021) define cognitive bias as how an observer's general perception of a company/brand/product affects the observer's thoughts and feelings about the specific traits of that company.

Cue utilisation theory states that consumers apply various cues when evaluating the quality of a given product or brand (Shao, Cheng, Wan, Yue, 2021). Internal cues are inherent in the unchanging product's physical attributes (e.g., size), and external cues may be internally altered (e.g., online product reviews). Consumers' tendency to base perceptions/attitudes towards a product on different cues is an especially important antecedent of cross-border e-purchases (Baek, Lee, Choo, 2020). When acting in an uncertain environment, which is especially the case with foreign e-purchases, there is both the typical risk of e-shopping regarding not being able to see a product before purchasing, and the risk associated with buying from foreign suppliers. Therefore, the importance of these cues for consumer behaviour increases. If the access to intrinsic cues is scarce or difficult, the significance of extrinsic cues increases (Miyazaki, Grewal, Goodstein, 2005).

The S-O-R model indicates that environmental factors (stimuli) at first stimulate an organism, and next they are drivers of the final response – approach or avoidance (Xiao *et al.*, 2019). It assumes that an organism plays a mediating role for the relationships between stimuli and response (Chen *et al.*, 2023). Stimuli may refer to any environmental factors, including marketing communication, and are considered broadly as all the factors causing psychological changes in an individual, i.e., one's emotional response (Guo, Li, Xu, Zeng, 2021; Yang *et al.*, 2023). Thus, S-O-R framework's environmental stimuli may serve as predictors of consumers' emotions and behaviour (Xiao *et al.*, 2019).

Consumer behaviour in the context of CBEC is also investigated from the prism of the TRA and its extension – the TPB (Hazarika *et al.*, 2022). According to the TRA, people are rational, and prior to taking any action they consider its meaning and consequences based on integrated information (Jian *et al.*, 2023). Within the TRA, relationships between people's attitudes and certain behaviour are identified. It indicates four elements: two sets of beliefs – attitudes towards a given action (favourable or not) and subjective norms (expectations of others, their pressure) – behavioural intention (e.g., purchase intentions), and actual behaviour. For more commonly used TPB, additional constructs are included – perceived and actual behavioural control. This theory is one of the

most influential for explaining and predicting human behaviour, including purchasing decisions (Han, Kim Lee, 2018).

Drawing from TRA and TPB, the TAM is also applied in studies on consumer behaviour and CBEC (Wistedt, 2024). It assumes that consumers' intentions towards using a given technological system and use result from its design, perceived usefulness, and ease of use, which are directly transferred into attitudes towards using it (Davis, 1989). Similarly to TRA and TPB, TAM presumes that consumers behave in a rational way (Lu, Lin, Wu, Hu, Chang, 2021). Considering CBEC, some authors assume that consumers' intentions (e.g., e-purchase intentions) are determined by technological attributes, including vendors' website ease of use, usefulness, or product information quality (Li, He, 2024; Wistedt, 2024).

The involvement theory states that so-called ego involvement is a predictor of attitudes; thus when a person is stimulated, the person feels a relationship between the stimulation and himself, which leads to interest (Sherif, Cantril, 1947). If involvement is understood as a motivational construct based on one's needs and values, the degree of involvement reflects variations in the complexity of decision-making and information processing (Yang *et al.*, 2023). Such understood theory is applied in research on consumer behaviour and CBEC (Mou *et al.*, 2020). Like the TRA, this theory has also undergone expansions with regard to CBEC, resulting in commitment-involvement theory. It combines both the involvement and commitment, and explains that people committed to a given activity are less likely to terminate it (Mou *et al.*, 2020). Therefore, commitment, alongside trust, can foster behaviours that are mutually advantageous, promoting success of a long-term relationship (Chen *et al.*, 2023).

5.3 Antecedents of consumer behaviour with regard to cross-border e-commerce

As consumer behaviour is a multi-stage process influenced by many factors (Samli, 2013), authors identify its multiple determinants and classify them, however, less frequently with regard to CBEC. In these studies, usually single factors are investigated (e.g., Huang, Chang, 2019; Luo *et al.*, 2022; Wistedt, 2024). For instance, Jaciow, Wolny, Stolecka-Makowska (2013) indicate internal factors (deriving from one's needs and preferences) and external factors (caused by being surrounded by various factors, e.g., prices) that are crucial for e-consumer behaviour. Bao, Cheng, and Zarifis (2022) identify product internal cues (quality, price) and product external cues (e.g., online reviews, delivery time). Sourcing from both studies on consumer behaviour and CBEC and broadly understood consumer behaviour's antecedents (e.g., Gui *et al.*, 2022; Jaciow *et al.*, 2013; Wang *et al.*, 2023a), the key investigated factors influencing CBEC behaviour can be classified into external and internal factors, from the prism of a consumer. The external determinants of consumer behaviour are

economic and political factors, marketing stimuli (vendor's reputation, available information, quality of products, their prices, display, originality and variety, delivery time and costs, return policy, ease of use, usefulness, payment-level stimuli, quality of services), security, sociocultural (consumer characteristics and national culture), technological (Internet penetration, available infrastructure, information technology), and others (country-of-origin and sustainability). In turn, amongst internal factors, demographic factors (age, gender, place of residence, education), economic factors (income), and psychological factors (attitudes, beliefs, perceived risk, perceived security, perceived value, and trust) can be identified.

5.3.1 External determinants of consumer behaviour within cross-border e-commerce

Economic and political determinants are rarely subjects of research regarding CBEC and consumer behaviour, and authors usually investigate them from the prism of countries/companies. Nevertheless, their importance for consumer behaviour is underlined in studies concerning broadly understood e-consumer behaviour (e.g., [Jaciow et al., 2013](#)) that identifies economic and political factors as constituting general conditions under which people operate, e.g., a country's level of economic development. [Chen and Kim \(2021\)](#) identify the following elements of economic environment that influence cross-border e-consumer behaviour: trading links, infrastructure (products' availability, e-payments' infrastructure), local conditions, and competition. They are antecedents of the psychic distance between countries for a consumer, and next – are transferred into satisfaction with CBEC. The significance of economic conditions is also supported in other studies, e.g., the one that identifies them as determinant of purchase decisions for low-carbon products in CBEC ([Wang, Zhou, Zhang, Liu, 2023b](#)). In turn, political determinants include, inter alia, government (current) stability and risk of its instability ([Chen, Kim, 2021](#)), and conditions supporting or not purchases of given products ([Wang et al., 2023b](#)). Close political relations between domestic and foreign country, similar political systems may lead to a decrease of psychic distance in CBEC ([Chen, Kim, 2021](#)). [Wang et al. \(2023b\)](#) conclude that political environment may cause differences in the level of low-carbon consumption within CBEC – favourable conditions supporting such consumption lead to its increase.

Taking into account marketing stimuli, perceived vendor's reputation is indicated, i.e., one's opinion about a given vendor resulting from second-hand information ([Huang, Chang, 2019](#)) or previous interactions ([Witek-Hajduk, Grudecka, 2022](#)). Considering vendor's reputation and CBEC, it is one of the key sources of information for consumers, especially as they do not have face-to-face experience with a particular e-seller. Based on reputation, they evaluate him and make purchase decisions, as it is one of the antecedents of trust in

an e-vendor (Huang, Chang, 2019; Yang *et al.*, 2023). Another marketing determinant is available information, including description, content, and display (Gui *et al.*, 2022), which is crucial for consumers, especially when information is asymmetrical, to evaluate product or platform, and for decision-making (Mou *et al.*, 2020). High quality of information results in an increase of perceived value, trust, and purchase intentions (Han *et al.*, 2023; Yang *et al.*, 2023). Other studies do not support its positive influence on purchase intentions, however indicate that it may have positive effects on product involvement (Mou *et al.*, 2020). Authors also state that there is a risk of information overload that transfers into, e.g., a decrease of purchase intentions (Gui *et al.*, 2022). Besides availability of information, their relevant display matters to consumers, as well as for products themselves (Jian *et al.*, 2023). Consumers also pay attention to product (high) quality – it determines attitudes towards a given vendor/brand, their perception, and purchase intentions (Hazarika, Mousavi, 2022). Although usually people appreciate high quality products, sometimes they have higher preferences for lower quality ones, but at lower prices (Mou *et al.*, 2017). Consumer purchasing decisions are also driven by products' originality and variety, which influences the perceived value of purchases and purchase intentions (Witek-Hajduk, Grudecka, 2022). The issue of counterfeits is especially important for e-purchases from vendors originating from particular countries, e.g., China. Product price is also of high importance. Consumers are to a high degree motivated by prices when e-purchasing, including across borders (Hazarika, Mousavi, 2022). Price incentives, resulting from lower prices in CBEC than in brick-and-mortar or domestic e-stores, are important antecedents of such purchases. Importantly, focus on various research is not on actual monetary cost, but rather on the perceived price that consumers pay (Huang, Chang, 2019). Other marketing determinants of one's behaviour with regard to CBEC are delivery time and costs. People value fast delivery and low cost, and these stimuli increase purchase intentions (Witek-Hajduk, Grudecka, 2022), whilst long waiting times may discourage purchases (Hazarika, Mousavi, 2022). Besides delivery time and costs, another antecedent is the return policy (Shao *et al.*, 2021; Jian *et al.*, 2023). Return policy leniency, predominantly extended return time and low return cost, positively affects purchase intentions (Chen *et al.*, 2023; Yang *et al.*, 2023) and boosts trust and loyalty (Shao *et al.*, 2021). Consumers, when shopping from foreign e-stores, also consider ease of use and usefulness. Ease of use is defined as whether one perceives it easy to use a given website, and usefulness refers to whether CBEC improves performance. These factors are drivers of trust and lead to an increase of purchase intention (Lu *et al.*, 2021; Wistedt, 2024); moreover, ease of use directly affects usefulness. It can be also understood as a simplicity of, e.g., platform, and lead to an increase of purchase intentions in a CBEC setting (Jian *et al.*, 2023). Consumers also attach importance to the payment-level stimuli, e.g., payment service provider, cash-on-delivery option, and payment security (Chen *et al.*, 2023). Suitable payment

options and their safety are not only crucial for building trust, perceived value, and purchase intentions, but also are an important driver of e-commerce itself (Han *et al.*, 2023). The last factor amongst marketing stimuli is quality of services, which refers to all the interactions between vendor's customer service and consumers (Hazarika, Mousavi, 2022). As shown in the results from different studies, service (high) quality transfers into increasing purchase intentions, and beyond them affects one's trust, attitudes, and perceived value (Han *et al.*, 2023). In turn, service dissatisfaction may result in dysfunctional consumer behaviour, i.e., such that violates accepted norms (Lin *et al.*, 2018).

Another group of determinants refers to the legal aspects, specifically regulations aiming at protecting consumers when making e-purchases, including privacy protection and regulations regarding CBEC (Witek-Hajduk, Grudecka, 2022). Although literature on the influence of legal protection within CBEC and consumer behaviour so far is scarce, a few authors indicate its importance for e-consumer behaviour, inter alia, for trust in a foreign vendor and purchase intentions (Witek-Hajduk, Grudecka, 2022). However, Chen and Kim (2021) conclude that legal protection is rather a weak contributor of psychic distance in CBEC and explain it by little understanding of this protection by consumers.

Considering sociocultural antecedents, the literature on social factors and broadly understood consumer behaviour is extensive and it indicates social class, family and its life cycle, household size, status, reference group, and opinion leaders (Schiffman, Wisenblit, 2015). However, for CBEC, no studies directly indicating their influence on consumer behaviour were identified. This may be because research in this context has been conducted for a relatively short time, and it cannot be ruled out that these factors will also prove to be relevant to the behaviour of consumers making e-purchases from foreign vendors. For cultural determinants, previous studies indicate differences in consumer behaviour, with culture defined as nations' material and non-material heritage having relatively permanent nature and shaping behaviour, including purchasing habits (Chen, Kim, 2021; Jaciow *et al.*, 2013). For example, different cultural backgrounds shape one's interests in and purchase intentions of low-carbon products in CBEC, i.e., those originating from more collectivist cultures behave more pro-environmentally (Wang *et al.*, 2023b). Consumers prefer to purchase from foreign vendors representing similar national culture – it requires less effort in cultural cognition (Chen, Kim, 2021). Simultaneously, the progressive acculturation is identified, making the intercultural distance in CBEC shrink (Han *et al.*, 2023).

The technological environment, including Internet penetration in a given country/region that still varies between countries (Statista, 2024), and available infrastructure may influence consumer behaviour in the context of CBEC, although this does not seem to be a factor that particularly differentiates it from domestic e-commerce. Also, increasingly advanced information technology, including, e.g., artificial intelligence that facilitates e-purchasing, can transfer

into the higher purchase intentions via foreign vendors, e.g., thanks to language translations (Chen, Kim, 2021).

Taking into account so-called “other” determinants of consumer behaviour, another factor is the country of origin (COO) (Bao *et al.*, 2022). People may form perceptions about a product based on a foreign vendor’s COO; thus, providing visible information about a vendor’s COO increases trust (Baek *et al.*, 2020). As there is an asymmetry of information, such details can furthermore reduce perceived risk (Huang, Chang, 2019). Consumers indicate countries that are, according to them, more trustworthy, the ones that they prefer, even if such preferences are based on stereotypes, and declare higher purchase intentions from vendors originating from them (Huang, Chang, 2019). Still consumers better perceive developed countries than emerging markets as the COO (Witek-Hajduk, Grudecka, 2024a), therefore probably this is also the case of a vendor’s COO in CBEC. Sustainability is also worth mentioning, however, it is under-researched with regard to consumer behaviour and CBEC so far (Chen *et al.*, 2023). Cheah and Huang (2022) state that for consumers interested in (environmental) sustainability, delivering information about this aspect is beneficial and may transfer into purchasing decisions. Moreover, some consumers are likely to wait longer for their delivery if such a shipping is less carbon-intense (Cheah, Huang, 2022), so promoting such options by companies seems to be important for consumer behaviour.

5.3.2 Internal determinants of consumer behaviour within cross-border e-commerce

Demographic antecedents of consumer behaviour in the context of CBEC include age, gender, place of residence, and education. These factors are rarely included in studies, usually as control variables (Mou *et al.*, 2017; Han *et al.*, 2023), although their importance for consumer behaviour is proven in relation to other phenomena (Schiffman, Wisenblit, 2015). For age, it is recognised that younger consumers are more likely to purchase from foreign vendors (Chen, Kim, 2021; Wang *et al.*, 2023b), especially compared to those aged 40 years and more (Han *et al.*, 2023). Considering gender, males are more likely to make purchases within CBEC (Valarezo *et al.*, 2018; Wistedt, 2024). There is a gender gap between genders (Lu *et al.*, 2021) that is even evident when analysing respondents’ samples (Mou *et al.*, 2020). Taking into account the place of residence, the bigger it is, the more likely consumers are to purchase within CBEC (Valarezo *et al.*, 2018). Finally, for education, empirical results indicate that well-educated people prefer CBEC more than those with lower education (Wang *et al.*, 2023b; Wistedt, 2024). Hazarika and Mousavi (2022) explain that well-educated people are more aware of CBEC’s advantages.

Considering economic determinants, incomes are crucial. Authors usually examine annual or monthly income per household (Guo *et al.*, 2021) and indicate

that those with higher incomes spend more on CBEC (Valarezo *et al.*, 2018). Moreover, younger consumers (aged 21–30 years) spend more on CBEC than older consumers, even if they have lower incomes (Jian *et al.*, 2023). Although mostly respondents that take part in surveys have lower incomes, those purchasing from foreign e-sellers rather are better off financially (Guo *et al.*, 2021).

Psychological determinants of consumer behaviour in the context of CBEC take into account a wide range of factors (Witek-Hajduk, Grudecka, 2024b). Starting with consumers' attitudes, the favourable ones towards CBEC increase purchase intentions and trust (Baek *et al.*, 2020; Wang *et al.*, 2023a), whilst negative attitudes lead to dysfunctional consumer behaviour (Yang *et al.*, 2023). Attitudes, being shaped, e.g., by CBEC convenience, service and information quality, and perceived value, also mediate the influence of one's perception on purchase intentions (Mou *et al.*, 2020; Wang *et al.*, 2023a). Also attitudes towards specific issues related to CBEC are investigated, e.g., sustainability, whose importance for consumer behaviour has been increasing recently (Chen *et al.*, 2023). Considering beliefs, e.g., that vendors care about consumers' interests (Gui *et al.*, 2022; Huang, Chang, 2019), are important antecedents of one's behaviour, including attitudes, trust, and purchase intentions (Jian *et al.*, 2023). Authors also examine, e.g., consumer ethnocentrism understood as a belief about appropriateness of buying domestic products, etc., and conclude that it can decrease intentions to purchase from foreign vendors (Bao *et al.*, 2022). As CBEC is associated with certain risks (Luo *et al.*, 2022), perceived risk, understood not only through the financial lens but also as a risk of a product's confiscation or poor quality, delivery failure, privacy risk, etc. (Hazarika, Mousavi, 2022; Chen *et al.*, 2023), is an important internal determinant of behaviour. Perceived high risk related to foreign transactions can decrease consumer purchase intentions (Chen, Kim, 2021; Wang *et al.*, 2023a), and both psychological and geographical distance, increase perceived risk (Huang, Chang, 2019). In turn, Jian, Lv, and Wan (2023), instead of perceived risk, investigate perceived security related to personal and financial information within the transaction process. They conclude that this factor has relatively little influence on purchase intentions.

Perceived value of CBEC is usually understood broadly as a kind of trade-off between what one receives and what is given. There is a consensus – (high) perceived value increases purchase intentions within CBEC (Guo *et al.*, 2021; Han *et al.*, 2023; Huang, Chang, 2019). As authors indicate, perceived value is shaped by multiple factors, including prices of products and their uniqueness, information and service quality, and trustworthiness. Besides purchase intentions, perceived value also influences consumer satisfaction, e-loyalty, trust, and attitudes (Mou *et al.*, 2017; Chen *et al.*, 2023; Wang *et al.*, 2023a).

As results from the literature review, trust is one of the most commonly studied internal determinants of consumer behaviour with regard to CBEC. Similarly to the perceived value, there is a consensus that it positively affects attitudes towards CBEC (Jian *et al.*, 2023) and consumer purchase intentions (Gui

et al., 2022; Hazarika, Mousavi, 2022). Some authors (Jian *et al.*, 2023) indicate that this is the strongest antecedent being shaped by many external and internal factors, including product description, service quality, perceived risk and value, and consumer's previous experience (Wang *et al.*, 2023a).

5.4 Antecedents of cross-border e-purchases on digital platforms: conclusions from the quantitative research

An example of an empirical research that investigates multiple external and internal determinants of consumer behaviour within CBEC is the one by Witek-Hajduk and Grudecka (2022). Besides the number of determinants, this quantitative study is conducted on a representative sample of Poles. Based on the perceived value concept and signalling theory, it examines the influence of one's disposition to trust, perceived usefulness of e-purchases, legal protection, and conditions of making purchases during the Covid-19 pandemic on e-purchase intentions and intentions to purchase on a foreign multi-sided digital platform (MSP), and, moreover, the influence of perception of a foreign MSP on perceived value of purchases on a foreign MSP, and, next, on purchase intentions.

This quantitative survey used the Computer-Assisted Web Interview (CAWI) technique on a representative sample of 810 Poles aged 18 to 65 years making purchases on foreign MSPs, and data was gathered in 2020. To analyse them, the partial least squares structural equation modelling was applied (PLS-SEM).

The surveyed sample varies by age (in years: 18–34 – 37.2%, 35–54 – 43.7%, 55–65 – 19.1%), gender (male 50.1%, female 49.9%), education (primary/basic 30.8%, secondary 39.1%, higher 30.15%), place of residence (rural areas 18.1%, cities up to 100,000 – 36.8%, cities exceeding 100,000 – 45.1%), and disposable income in Polish Zloty (PLN) (1999 and less 34.1%, 2000–3999 – 43.6%, 4000 or more – 22/23%).

Further evaluations applying descriptive statistics in Statistical Package for the Social Sciences (SPSS) show that respondents from all age groups indicate a very similar order of MSPs; they had made the largest number of purchases in the year preceding the study (Table 5.1): Chinese AliExpress (50.4% of all respondents), German Zalando (23.3%), “others” (12.6%, with particular MSPs indicated by single individuals), American Amazon (9.1%), and eBay (5.6%). MSP offering premium/luxury products/brands (Net-a-Porter) was indicated only by 2 respondents aged 25–34 years, and B2B Chinese Alibaba, by singular respondents in the age groups 25 or more years of age. Also, with regard to the consumer gender, similar order of MSPs can be identified, although, e.g., for Zalando, slightly more women than men made the largest purchases in the period under review, whilst on Amazon and eBay, slightly less.

Considering product categories purchased by respondents in e-stores and their age, gender, and disposable income (Table 5.2), some differences between consumer groups are visible. As shown in the part for product categories and age,

Table 5.1 MSPs where respondents made the largest number of purchases in the year preceding the survey by consumer age and gender

		<i>Age (in years)</i>					<i>Gender</i>	
		<i>18–24</i>	<i>25–34</i>	<i>35–44</i>	<i>45–54</i>	<i>55–65</i>	<i>Female</i>	<i>Male</i>
Largest number of transactions on foreign MSP in recent year*	Amazon	4.5%	6.8%	12.6%	10.4%	9.7%	7.2%	11.1%
	Zalando	12.6%	22.6%	24.2%	24.4%	29.7%	26.2%	20.4%
	Alibaba	0.0%	0.5%	1.1%	0.6%	1.9%	1.0%	0.7%
	AliExpress	67.6%	55.8%	47.4%	42.7%	43.2%	51.2%	49.5%
	eBay	2.7%	1.1%	4.7%	6.7%	5.2%	4.0%	7.1%
	Net-a-Porter	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	0.5%
	Other	12.6%	5.8%	10.0%	15.2%	10.3%	10.4%	10.6%

* Respondents could indicate more than one MSP.

Source: own elaboration based on SPSS.

the most frequently indicated category by all respondents is “clothing”, regardless of the analysed period, i.e., before, during, or after the Covid-19 pandemic. This is not surprising, as many reports indicate that these are the most frequently e-purchased products. In positions two and three appear: household appliances and electronics and cosmetics (for consumers aged 25–34 and 45–65); household appliances and electronics and books (for consumers aged 18–24); household appliances and electronics and shoes, bags, and accessories (for those aged 35–44). Therefore, consumer needs somehow change with age, and so, e.g., for younger consumers household appliances and electronics are not as popular as among older consumers. Overall, one can observe an increase in the popularity of almost all product categories purchased online after the Covid-19 pandemic, which may be because during Covid more people were persuaded to make e-purchases. The minimal decreases for some of them (single indications by respondents) may be due to the fact that the questionnaire included 11 items, and it was possible to mark more than one, and thus – even by mistake – someone may not have marked a post-pandemic purchase declaration for a particular product category. Interestingly, the oldest respondents’ group for all categories declared greater interest after the pandemic – maybe this is the result of older consumers being the most convinced by e-shopping during the pandemic.

Considering all the analysed periods for gender and product categories, purchases of household appliances and electronics, interior and garden furnishings, and groceries are the domain of men. Medicines and pharmaceutical products are e-purchased almost equally by both genders. E-purchases of remaining categories are slightly more the domain of women, with one exception – cosmetics are definitely more often purchase by women, regardless of the studied period.

Examining interest for product categories before, during, and after the Covid-19 pandemic by disposable income, there is an apparent upward trend in the popularity of e-shopping for almost all types of products regardless of

Table 5.2 Product categories purchased by respondents by consumer age, gender, and disposable income

Product Category No.*	Age (in years)														
	18–24			25–34			35–44			45–54			55–65		
	Prior to Covid	During Covid	After Covid	Prior to Covid	During Covid	After Covid	Prior to Covid	During Covid	After Covid	Prior to Covid	During Covid	After Covid	Prior to Covid	During Covid	After Covid
1	55.0%	45.9%	53.2%	54.7%	50.0%	62.1%	65.3%	55.3%	62.6%	66.5%	52.4%	68.9%	63.2%	52.3%	66.5%
2	75.7%	68.5%	77.5%	76.3%	70.0%	77.9%	77.9%	73.7%	77.4%	72.6%	65.9%	70.7%	69.0%	58.7%	75.5%
3	56.8%	56.8%	60.4%	63.7%	49.5%	63.7%	63.2%	55.8%	63.7%	58.5%	48.8%	63.4%	60.6%	47.1%	65.2%
4	44.1%	29.7%	47.7%	38.9%	30.5%	43.7%	37.9%	32.1%	38.4%	27.4%	20.1%	33.5%	18.1%	9.7%	20.6%
5	56.8%	53.2%	63.1%	58.9%	58.9%	62.6%	60.5%	54.2%	60.0%	58.5%	52.4%	64.0%	58.7%	51.6%	65.2%
6	55.9%	42.3%	55.0%	51.6%	40.5%	54.2%	50.0%	45.3%	51.1%	48.8%	37.8%	51.2%	49.0%	41.3%	53.5%
7	19.8%	22.5%	31.5%	32.1%	29.5%	32.1%	40.0%	38.4%	43.2%	38.4%	39.6%	41.5%	34.2%	32.9%	37.4%
8	14.4%	17.1%	23.4%	23.2%	27.4%	30.0%	24.2%	32.1%	35.8%	22.6%	25.6%	31.1%	19.4%	21.9%	29.0%
9	26.1%	21.6%	38.7%	31.6%	40.0%	41.6%	36.8%	43.2%	44.2%	36.0%	40.2%	43.9%	38.7%	45.2%	53.5%
10	26.1%	23.4%	27.9%	31.6%	31.1%	36.8%	43.2%	47.4%	47.4%	38.4%	41.5%	42.1%	43.2%	45.2%	51.0%
11	39.6%	29.7%	45.9%	41.6%	39.5%	47.4%	50.5%	48.4%	54.7%	48.8%	43.3%	59.8%	47.7%	40.0%	60.0%

(Continued)

Table 5.2 (Continued)

	Gender					
	Female			Male		
	Prior to Covid	During Covid	After Covid	Prior to Covid	During Covid	After Covid
1	50.7%	39.9%	53.7%	71.7%	63.3%	72.7%
2	79.2%	70.5%	79.5%	69.7%	64.8%	72.2%
3	63.1%	52.5%	64.9%	58.9%	50.2%	62.1%
4	37.4%	25.7%	40.1%	28.8%	23.6%	33.0%
5	67.6%	62.1%	73.0%	50.2%	46.6%	52.7%
6	51.0%	39.1%	54.7%	50.5%	43.8%	51.0%
7	33.7%	33.2%	38.6%	34.2%	33.5%	36.5%
8	20.3%	24.3%	28.0%	22.4%	27.1%	33.0%
9	33.9%	39.4%	45.8%	34.7%	39.2%	43.3%
10	38.1%	38.4%	41.8%	36.2%	38.9%	41.9%
11	43.8%	38.1%	52.7%	48.3%	44.1%	54.9%

(Continued)

Table 5.2 (Continued)

	Income (in PLN)											
	999 and less			1000–1999			2000–3999			4000 and more		
	Prior to Covid	During Covid	After Covid	Prior to Covid	During Covid	After Covid	Prior to Covid	During Covid	After Covid	Prior to Covid	During Covid	After Covid
1	63.0%	46.3%	63.7%	62.6%	55.9%	66.7%	59.2%	47.0%	60.6%	63.0%	56.9%	66.9%
2	77.8%	72.2%	81.5%	76.1%	68.9%	76.6%	73.4%	65.7%	75.6%	73.5%	68.5%	75.3%
3	64.8%	50.0%	66.7%	59.9%	50.9%	65.8%	60.3%	52.4%	62.6%	62.4%	50.3%	61.3%
4	31.5%	20.4%	33.3%	33.8%	27.0%	37.8%	31.4%	22.7%	36.3%	35.9%	27.1%	36.5%
5	59.3%	55.6%	70.4%	55.9%	51.4%	60.4%	57.8%	56.9%	63.2%	64.6%	52.5%	63.0%
6	48.1%	24.1%	50.0%	47.7%	38.3%	51.4%	52.4%	45.6%	55.8%	51.9%	42.5%	49.7%
7	24.1%	18.5%	25.9%	26.6%	28.4%	33.8%	38.5%	38.0%	41.4%	37.0%	34.8%	38.1%
8	5.6%	14.8%	14.8%	20.7%	21.6%	28.4%	20.4%	25.5%	31.4%	28.7%	34.3%	35.9%
9	29.6%	38.9%	38.9%	34.7%	38.7%	42.8%	32.9%	37.1%	43.3%	38.1%	44.2%	50.8%
10	25.9%	29.6%	29.6%	37.4%	36.0%	41.0%	36.3%	38.2%	42.5%	42.0%	45.3%	45.3%
11	44.4%	38.9%	53.7%	45.0%	41.0%	51.4%	46.5%	40.5%	55.2%	47.0%	43.1%	54.1%

Source: own elaboration based on SPSS.

* 1 – household appliances and electronics; 2 – clothing; 3 – shoes, bags, and accessories; 4 – jewellery and watches; 5 – cosmetics; 6 – books; 7 – pet food and accessories; 8 – groceries; 9 – household chemicals; 10 – medicines and pharmaceutical products; 11 – home and garden furnishings

	Particular groups of respondents' declines in purchases
	Particular groups of respondents' increases in purchases
bold font	Changes of 5.0% or more in a given respondents' group

income. The exception is the group of the highest-earning respondents (PLN 4000 and more), who, for books, cosmetics, and shoes and accessories, declared slight decreases. These decreases are small enough to be justified as before – by a mistake in filling out the questionnaire.

As results from the study (Witek-Hajduk, Grudecka, 2022), internal determinant, i.e., one's disposition to trust – contrary to expectations – does not statistically significantly influence e-purchase intentions or intentions related to foreign MSP. Perhaps because respondents were consumers who already had experience in purchases on foreign MSPs, while trust is especially important for the first-time transactions. In line with the literature, perceived usefulness of e-purchases determines e-purchase intentions and intentions to purchase on a foreign MSP. Similarly, a significant factor influencing these intentions is the legal protection at the national/international level (protection related to consumer privacy/personal data, security of e-purchases, prevention of violations, guaranteeing the right to cancel a contract signed remotely) – in line with the results of previous studies concluding that the institutional (legal) environment influences consumer behaviour, e.g., by lowering perceived risk associated with e-purchases. Considering conditions of making purchases during the Covid-19 pandemic (possibility of becoming infected, changes related to retailers' activities, legal regulations regarding making purchases in stationery stores), they positively influence e-purchase intentions; however for purchase intentions on a foreign MSP, only legal regulations significantly influence them. Therefore, these results partially support other conclusions (e.g., PWC, 2020), according to which the realities of the pandemic have changed consumer behaviour. For the influence of perception of a foreign MSP on perceived value of purchases on a foreign MSP, and, next, on purchase intentions on such a platform, this study reveals that the former relationship is only partially supported. Specifically, quality of information, website layout, perception of products/brands, and prices and costs influence discussed perceived value – as assumed based on previous studies. Contrary to them, customer service and payment security on a foreign MSP, and its reputation, do not influence perceived value. Maybe for Polish respondents, prices and costs are the most important factors, also in comparison to customer service, while foreign MSPs' reputation and payment security do not play that significant role. Moreover, perceived value of purchases on a foreign MSP positively affects purchase intentions on such an MSP – in line with the conclusions drawn from the literature. Overall e-purchase intentions positively influence these intentions, too.

5.5 An overview of the key challenges related to cross-border e-commerce from a consumer perspective

When analysing the determinants of consumer behaviour related to CBEC, indirect inferences can be made about the specific challenges consumers face;

however, it is worth pointing them out explicitly. Amongst them, access to a huge variety of products/vendors can be indicated (Bao *et al.*, 2022; Witek-Hajduk, Grudecka, 2022). Considering products themselves, while finding them on the Internet is not problematic, the possibility of coming across fakes and those of low quality is a real concern, especially for vendors from certain countries, e.g., China (Baek *et al.*, 2020; Chen *et al.*, 2023). It is related inter alia to less familiarity and trust usually attributed to multiple foreign e-vendors (Valarezo *et al.*, 2018). This is mainly challenging for the first-time transactions, when consumers rely on extrinsic cues, including the vendor's reputation, COO, and online reviews (Huang, Chang, 2019; Luo *et al.*, 2022). Meantime, trust is crucial for CBEC and consumer purchase intentions (Gui *et al.*, 2022). The problem of trust may be related to the security issues that include mainly privacy concerns, e.g., leakage of personal data or credit card theft, that increase perceived risk related to CBEC (Lin *et al.*, 2018; Jian *et al.*, 2023). With regard to the preceding, it is important to consider a foreign e-vendor's return policy, as no lenient return policy may cause lack of trust and higher perceived risk, resulting in decrease of purchase intentions (Shao *et al.*, 2021; Yang *et al.*, 2023).

Consumers may be also sensitive to the cultural issues, predominantly national culture and language, which constitute so-called psychic distance in CBEC and prevent them from making purchases, even despite existing acculturation (Chen, Kim, 2021; Wang *et al.*, 2023b). As these authors explain, for cultural factors, there can be various norms, values, etc., that shape one's behaviour and transfer into decreasing purchase intentions, and for linguistic differences, translation may be a difficulty for a consumer, causing problems in understanding a website's content.

Consumers still have to overcome constraints of poor information quality regarding, e.g., product description on a website (Mou *et al.*, 2020; Han *et al.*, 2023), whilst this quality, alongside a vendor's reputation, is the key component of building trust (Huang, Chang, 2019; Jian *et al.*, 2023). For information asymmetry (Valarezo *et al.*, 2018), the quality of information is crucial, but it is not the only factor that matters. Also important are display (connected with website design) and number – sometimes consumers have to overcome the information overload, suffer from its lack, or time-consuming searching for data (Yang *et al.*, 2023). Presenting prices and costs in a foreign currency, which may be time-consuming to analyse, can also be problematic (Chen *et al.*, 2023).

Problems consumers face when purchasing from foreign e-vendors may be related to the quality of the non-standardised customer service as well, including both professional guidance when shopping and after-sales uncertainty, especially in the light of information (poor) quality (Gui *et al.*, 2022). Also challenging may be logistics service quality that results, e.g., in a parcel loss/damage, especially as vendors cooperate with multiple third parties.

Another group of obstacles is related to the checkout process. One obstacle is the additional costs that consumers learn about during the checkout process,

the ones that are hidden or unanticipated (Mou *et al.*, 2017). Such fees mainly concern taxes or shipping and may discourage consumers from finalising e-purchases (Forbes, 2024). Another inconvenience is the need to create an account, inability to checkout as a guest (Forbes, 2024). It can be associated with a lack of ease of use and poor usefulness of CBEC. Importantly, the preceding is also often associated with privacy concerns, time waste, and hassle resulting from creating an account. For shipping itself, a key issue besides costs is how long it takes from a foreign vendor. Often the information on websites is enigmatic and indicates that it can take up to, e.g., 30 days. The question is whether this refers to the working days, and, in fact, do shipments usually arrive after a month, or perhaps after a few days? For delivery, especially from a foreign country, there are also additional issues, e.g., risk of not receiving goods, damage resulting from the shipping process (Lin *et al.*, 2018). Moreover, purchasing from foreign e-vendors in the context of shipping option may cause a dilemma around how to find a trade-off between shipping speed and charges, and sustainability issues, as increasingly common are various shipping options (Cheah, Huang, 2022).

5.6 Conclusions

Considering literature on consumer behaviour and CBEC, authors refer in their studies to various theoretical foundations. These include those formulated several decades ago, e.g., signalling theory, cue utilisation theory, so-called halo effect, TRA and TPB, and those slightly more recent ones – TAM, S-O-R model or (self)involvement theory, e.g., Witek-Hajduk, Grudecka (2024b). Therefore, there is no consensus on what theoretical background provides the best basis for explaining consumer behaviour in relation to CBEC.

Moreover, the literature indicates some external and internal determinants of consumer behaviour. The former include, inter alia, economic and political factors shaping general consumer behaviours' framework. Amongst the economic determinants are product availability or infrastructure supporting e-payments, etc. (Wang *et al.*, 2023b), and, for political determinants, mainly stability level and similarity of systems between countries (Chen, Kim, 2021). Another group of external factors refers to the marketing stimuli, including multiple agents. However, a majority of authors focus on the following: vendor's reputation; available information; information quality; product price and originality; their variety, delivery, and return options; ease of use; and usefulness. Considering the e-vendor's reputation, studies conclude that it is somehow a starting point for the first-time transactions, however also important for further ones, especially as consumers do not have personal experiences with sellers and build trust based on reputation (Huang, Chang, 2019). Available information is also crucial, inter alia, because of information asymmetry (Han *et al.*, 2023). Therefore, availability of valuable information, their display, etc., significantly matter

to consumers. Moreover, the product itself is very important (mainly its quality), as e-purchases are associated with relatively high risk (Jian *et al.*, 2023), predominantly in light of their originality and variety (Hazarika, Mousavi, 2022). Additionally, their prices, altogether with delivery costs and time, are vital, as e-purchases offer lower prices than brick-and-mortar stores but are associated with waiting costs. For marketing stimuli and risks of e-purchases, return policy plays an important role, because it can decrease the aforementioned risks (Shao *et al.*, 2021), similarly to e-payment issues, e.g., cash-on-delivery option or guarantees regarding e-payments (Chen *et al.*, 2023). Worth mentioning are also ease of use and usefulness of purchases within CBEC, in comparison to the stationery stores – as they help save time and money (Lu *et al.*, 2021). When analysing perceived risks discussed previously, one should also mention legal protection that refers mainly to the payment security, including protection of consumer's privacy and other regulations of CBEC (Witek-Hajduk, Grudecka, 2022). Moreover, sociocultural factors determine consumer behaviour, especially national culture that shapes purchasing habits, despite progressive acculturation (Han *et al.*, 2023). Other factors considered amongst external factors refer to the COO and sustainability. Consumers perceive products, etc., through the prism of information about the vendor's COO, their preferences towards certain countries, specifically developed ones (Baek *et al.*, 2020). Moreover, sustainability is a factor of increasing importance for many people. That is why delivering consumers information about this aspect of a company/product is crucial (Cheah, Huang, 2022).

For internal determinants of consumer behaviour, literature delivers some, however little, evidence, inter alia, on demographic factors. Considering age, younger consumers are more prone to make purchases within CBEC (Han *et al.*, 2023), as well as males (Wistedt, 2024). In turn, the bigger the place of residence, the higher the probability of e-purchases via CBEC (Valarezo *et al.*, 2019). Besides, higher education suggests that people are more likely to make purchases via foreign vendors (Wang *et al.*, 2023b). Lastly, an internal economic factor, i.e., income, indicates that customers with higher income spend more on CBEC and have higher knowledge about it (Guo *et al.*, 2021). In turn, psychological factors include, inter alia, consumers' (favourable) attitudes that may cause increasing purchase intentions via CBEC, similarly to the perceived benefits related to them (Gui *et al.*, 2022). Considering (high) perceived risk, specifically the issue of security (e.g., personal and financial data), may decrease purchase intentions (Jian *et al.*, 2023). This is closely related to the issue of trust that positively affects consumer purchase intentions (Gui *et al.*, 2022). Similarly, perceived (high) value of CBEC increases purchase intentions within CBEC (Han *et al.*, 2023).

One can also indicate various challenges related to the CBEC that result in lower trust (Valarezo *et al.*, 2018), including the multiplicity of products and e-vendors, especially as resulting in counterfeits or quality products, especially

if they originate from a country with a poor image (Baek *et al.*, 2020). Especially as people have to rely on extrinsic cues, such as the vendor's reputation, COO, online reviews (Huang, Chang, 2019; Bao *et al.*, 2022), or return of products (Yang *et al.*, 2023). Consumers can also face the issue of so-called psychic distance in CBEC, and therefore acculturation may be necessary to allow them to adjust to various norms or values (Chen, Kim, 2021). The issue of information quality also plays a significant role here, especially as together with an e-vendor's reputation it is the key determinant (Jian *et al.*, 2023). One should furthermore consider foreign currency issues, as customers often face this problem when shopping through CBEC (Chen *et al.*, 2023), as well as (poor) customer service, especially for poor quality transactions and checkout processes, and hidden costs (Gui *et al.*, 2022). Worth mentioning are the privacy concerns described previously, as well as the risks associated with delivering products, i.e., damage, delay, etc.

Although consumer behaviour with regard to CBEC has gained momentum in recent years, studies usually include single determinants of these behaviours. Therefore, more complex studies on both external and internal factors shaping one's behaviour in the context of CBEC are needed. What is more, a majority of studies were conducted on consumers from Asia and, less frequently, Europe or the United States. Thus, studies including other nations would be valuable, e.g., in relation to African consumers (e.g., Chen *et al.*, 2023).

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6 Sustainability challenges in digital internationalisation

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6.1 Introduction

Digital businesses must be well-prepared to incorporate sustainability into their digital and internationalisation strategies. The influence of sustainability on internationalisation performance can either facilitate progress or present obstacles, as noted by [Cantele and Zardini \(2020\)](#). Technological advancements and international expansion may involuntarily lead to the transfer of pollutants or excessive consumption of natural resources, posing significant challenges ([Li, Zhao, Ortiz, Chen, 2023](#)). As more countries adopt and enforce sustainability standards, companies pursuing internationalisation are increasingly scrutinised by global stakeholders ([Maksimov, Wang, Yan, 2019](#)).

[Denicolai, Zucchella, and Magnani \(2021\)](#) observe that while digitalisation and sustainability are positively correlated, they become competing growth paths when internationalisation is involved. This finding highlights the complexity of balancing these priorities within a business strategy. As companies navigate the challenges of international digital expansion, they must also consider the environmental and social impacts of their operations. Balancing these priorities is essential for achieving long-term success and maintaining a strong reputation among consumers, investors, and regulatory authorities.

Integrating sustainability into digital internationalisation is not merely a strategic advantage but a fundamental necessity in today's business environment. Companies must understand the importance of sustainable practices not only to comply with regulations but also to gain a competitive advantage and promote long-term growth. As emphasised in recent research (e.g., [Durão, Santos Pereira, Lobo, Moreira, 2024](#)), the interplay among digitalisation, sustainability, and internationalisation is intricate and multifaceted, requiring careful strategic planning and execution.

This chapter aims to enhance understanding of how businesses can effectively integrate sustainability into their digital internationalisation strategies. Its primary goal is to identify the key sustainability aspects and challenges

associated with digital internationalisation. To achieve this, the study addresses two research questions:

- 1 What are the main sustainability areas that companies prioritise in their digital internationalisation efforts?
- 2 What are the primary barriers companies face in implementing sustainability during digital internationalisation?

To comprehensively address these questions, the study undertakes a literature review. This review examines the primary research areas linking sustainability and digital internationalisation, identifying trends, research gaps, and potential future directions. By synthesising existing knowledge, the literature review establishes a foundation for understanding the current landscape and the challenges that businesses encounter.

Following the literature review, the study includes case analyses of companies that have successfully integrated sustainability into their digital internationalisation strategies. These case studies provide insights into common factors and distinctive approaches among digitally internationalised companies. They highlight best practices and potential pitfalls, offering valuable guidance for other businesses deciding on similar sustainability initiatives.

By addressing the research questions through a literature review and comprehensive case studies, this chapter provides insights and recommendations. It supports companies in balancing digital innovation, international expansion, and sustainability, ensuring their long-term success in a competitive and sustainability-focused global market.

6.2 Literature review

6.2.1 Digitalisation and sustainability convergence

The intersection of digitalisation and sustainability is increasingly gaining importance within both the private and public sectors (Merrill, Schillebeeckx, Blakstad, 2019). In recent years, organisations have begun to re-evaluate their strategic objectives, aligning digital transformation with the widely accepted goal of sustainability (Valero-Gil, Suárez-Perales, Garcés-Ayerbe, Rivera-Torres, 2024). This convergence has given rise to the concept of digital sustainability, which emphasises the responsible and sustainable use of digital technologies (Ciacci, Ivaldi, Penco, Testa, 2024). When companies strategically combine digitalisation with sustainability to optimise resources, they can unlock significant value, achieving a synergistic effect that goes beyond the sum of implementing each element separately (Chauhan, Parida, Dhir, 2022). By leveraging the interplay between these two domains, organisations can maximise their impact on both efficiency and sustainability.

The body of research exploring the nexus between digitalisation and sustainability generally focuses on two primary dimensions. The first dimension investigates how digital technologies can directly enhance sustainability initiatives, demonstrating that the adoption of digital measures significantly improves environmental and social outcomes for companies (Broccardo, Truant, Dana, 2023). For instance, deploying digital solutions such as automated inventory systems can optimise resource management, reducing waste and energy consumption. Additionally, digital tools can reduce an organisation's carbon footprint by minimising the need for printed documents, in-person meetings, and physical office space (Valero-Gil *et al.*, 2024). Furthermore, providing digital alternatives, such as online ordering and delivery, can reduce the necessity for customer travel, while sustainable packaging and waste minimisation measures help reduce environmental impact (Niehoff, 2022).

Digital technologies, ranging from big data analytics to artificial intelligence (AI)-driven processes, enable companies to gain deeper insights into their operations, thereby facilitating the adoption of more sustainable practices. This data-driven approach helps firms monitor their environmental impact, identify areas for improvement, and implement targeted sustainability strategies. It also fosters greater transparency and enhances engagement with stakeholders, enabling organisations to effectively communicate their sustainability efforts and progress (Durão *et al.*, 2024).

The second key research area examines the tangible benefits that arise from integrating digitalisation and sustainability. Studies indicate that this integration can enhance a firm's competitive advantage, drive stronger financial performance (Broccardo *et al.*, 2023), foster innovation (Ardito, 2023), and improve data management practices (Bendig, Schulz, Theis, Raff, 2023). Additionally, companies that effectively merge these areas often experience increased export intensity (Denicolai *et al.*, 2021) and better consumer and stakeholder engagement, particularly when adopting circular business models and advanced communication tools (Piccarozzi, Stefanoni, Silvestri, Ioppolo, 2024).

However, some scholars highlight potential challenges in simultaneously pursuing digitalisation and sustainability. Balancing these objectives may result in trade-offs that can complicate achieving both goals. For example, companies might face difficult decisions between investing in green technologies to enhance environmental stewardship and prioritising digital platforms to boost operational efficiency and cost reduction (Valero-Gil *et al.*, 2024). Additionally, Hellemans, Porter, and Diriker (2022) raise concerns about the unintended consequences of merging digitalisation with sustainability. They argue that digital platforms designed to advance sustainability may accidentally introduce tensions or paradoxical effects, which could ultimately undermine value creation for societal stakeholders. Overall, while integrating digitalisation with sustainability presents significant opportunities for innovation and value creation, it

also demands careful navigation of potential conflicts and strategic trade-offs to realise its full potential.

6.2.2 Internationalisation and sustainability

Recent studies have provided deeper insights into how businesses are adapting to the rising expectations for social responsibility and sustainability, particularly in the context of their global operations (Aragón-Correa, Marcus, Hurtado-Torres, 2016). For example, Bansal (2005) conducted a study on Canadian firms in industries like forestry, mining, and oil and gas, revealing a significant positive relationship between international experience and sustainable development. Interestingly, this positive influence of international exposure remained consistent across both the early and mature stages of a firm's internationalisation process, showing little sensitivity to time-based factors.

As firms expand globally, they encounter a complex set of global norms, standards, and legitimacy requirements. These pressures are often enforced by international bodies and NGOs that monitor the social and environmental impact of corporations. Additionally, companies face diverse and, at times, conflicting institutional demands from various stakeholders, including governments, regulators, markets, and social groups in different regions (Gómez-Bolaños, Hurtado-Torres, Delgado-Márquez, 2020). For multinational enterprises (MNEs), legitimacy, defined as the perception that a firm's practices align with socially accepted norms and values (Suchman, 1995), becomes increasingly critical. MNEs are subject to more complex stakeholder environments compared to their domestic counterparts, compelling their managers to adapt to the distinct expectations of each host country. For instance, Gómez-Bolaños *et al.* (2020) found that emerging-market MNEs often tailor their sustainability strategies to align with the ethical expectations of developed nations, where higher sustainability standards are typically required.

Operating on a global scale naturally pushes MNEs towards sustainable practices as a means of avoiding illegitimacy and meeting the rising expectations for environmental responsibility. Sustainability has become a cornerstone in international business, with significant implications for long-term profitability, market positioning, and corporate reputation. Embracing sustainable strategies not only helps firms address urgent social and environmental issues but also aligns their operations with the evolving priorities of regulators, investors, and consumers (Porter Kramer, 2011). As Park (2018) observes, emerging-market MNEs are increasingly committing to sustainability initiatives as they become more dependent on foreign sales, driven by the stronger emphasis on sustainability among global stakeholders compared to domestic ones.

This growing emphasis on sustainability is reinforced by evolving regulations and stakeholder pressures, which now include competitors, customers,

suppliers, and local communities (Cantele, Zardini, 2020). As new regulatory frameworks and market expectations emerge, sustainable growth is poised to become a non-negotiable standard for businesses worldwide (Valero-Gil *et al.*, 2024). For instance, there is a notable trend among investors shifting their portfolios toward companies with strong sustainability credentials. Likewise, consumers are becoming more conscious of the environmental impact of their purchases, while suppliers increasingly demand adherence to greener standards (Park *et al.*, 2018).

For companies navigating diverse global markets, a commitment to sustainability is essential not only for risk mitigation but also for seizing opportunities in varied environmental and social contexts. Practices such as improving resource efficiency, reducing waste, and ensuring ethical sourcing can enhance operational performance, while simultaneously building stakeholder trust and reinforcing a positive brand image. By integrating these sustainability measures into their core strategies, firms can meet regulatory and market demands while positioning themselves as socially responsible and resilient competitors (Bansal, 2005).

To achieve moral legitimacy in foreign markets, firms often prioritise strengthening their environmental efforts and adopting proactive measures (Bansal, 2005). Climate change, in particular, poses a challenge for globally active firms. Research indicates that international firms are increasingly using enhanced environmental disclosures to build legitimacy (Aragón-Correa *et al.*, 2016). However, there remains a debate as to whether international expansion actually drives greater environmental commitment or leads to superior environmental performance. The elevated visibility of MNEs subjects them to increased scrutiny, encouraging them to improve their environmental policies and practices, even if these enhancements do not always correlate directly with better performance metrics (Aragón-Correa *et al.*, 2016).

In conclusion, as firms navigate the complexities of globalisation, embracing sustainability is no longer merely a compliance requirement but a strategic imperative that influences their competitive advantage and long-term success. Addressing these challenges requires a delicate balance between aligning global norms and responding to localised institutional pressures, ultimately fostering sustainable growth that benefits both businesses and society at large.

6.2.3 *The linkage among digitalisation, sustainability, and internationalisation*

Digitalisation, sustainability, and internationalisation have emerged as three key growth strategies that increasingly shape the strategic landscape for modern firms (Denicolai *et al.*, 2021). The convergence of these pillars has not only transformed business operations but also redefined economic and social systems on a global scale. The integration of digital technologies into sustainable

international business practices has fundamentally changed how companies approach entry and expansion in global markets. This digital transformation acts both as a catalyst and enabler for sustainable business models, driving a paradigm shift that optimises strategies for market expansion and enhances operational efficiency in international settings (Durão *et al.*, 2024).

Research by Vadana *et al.* (2021) underscores the influence of digitalisation on the internationalisation strategies of “born-digital” firms, highlighting that the integration of sustainability considerations adds layers of complexity to decision-making processes. This, in turn, affects how swiftly and flexibly these companies can navigate international markets. Aligning digital transformation with sustainability objectives not only elevates a firm’s attractiveness to key global stakeholders, such as customers, investors, and regulatory bodies (Eisenhardt, Graebner, 2007), but also strengthens internationalisation strategies by creating competitive advantages and opening new paths for market penetration (Lee, Kim, Kim, Kang, 2020).

Digital technologies have become crucial in advancing sustainable practices by showcasing a company’s commitment to environmental, social, and ethical principles. This alignment significantly boosts a firm’s reputation in global markets, appealing to eco-conscious consumers while building trust and fostering stronger relationships with international stakeholders (Durão *et al.*, 2024). The enhancement of brand credibility and social responsibility through sustainable digital practices not only supports long-term business success but also positions companies to navigate the complexities of international expansion more effectively.

When examining the challenges associated with digital internationalisation through the lens of sustainability, it is useful to categorise them into three pillars: environmental, social, and economic challenges. The growing digital infrastructure, including data centres and cloud computing, presents significant environmental challenge due to high energy consumption and associated carbon emissions (Al Kez, Foley, Laverty, Del Rio, Sovacool, 2022). Additionally, the demands for resources and energy required to support digital trade and global expansion can intensify environmental degradation (Zhu, Bao, Qin, 2024). As businesses adopt digital technologies and expand internationally, it is crucial for them to mitigate environmental impacts. Strategies such as adopting renewable energy sources, reducing carbon footprints, and promoting eco-friendly supply chains can help companies align with global sustainability goals (Durão *et al.*, 2024). While technological progress and internationalisation are sometimes criticised for their potential environmental threats, they can also provide opportunities for greater efficiency in resource utilisation and waste reduction, ultimately minimising negative environmental impacts.

Integrating sustainability into digital internationalisation poses, as well, economic challenges, particularly due to the higher operational costs associated with sustainable practices (Valero-Gil *et al.*, 2024). The pressure to deliver short-term

financial gains can conflict with the long-term investments needed for sustainable initiatives. However, integrating sustainability into business strategies can drive innovation, market differentiation, and customer loyalty. Firms that incorporate sustainability into their operations can attract environmentally and socially conscious customers, differentiate themselves from competitors, and access new market opportunities (Schaltegger, Wagner, 2011). The challenge lies in balancing the immediate costs of sustainable investments against the long-term benefits of enhanced competitiveness and resilience in global markets.

On the social front, businesses expanding internationally face the challenge of adapting sustainability practices to diverse cultural contexts while maintaining a consistent global presence. Firms must navigate varying institutional pressures from governments and regulators in different regions (Gómez-Bolaños *et al.*, 2020). As companies scale their operations globally, digital compliance becomes increasingly complex, necessitating agile management systems to ensure adherence to evolving international sustainability standards (Durão *et al.*, 2024). Moreover, digital and remote work environments can complicate the alignment of employees and stakeholders around a shared commitment to sustainability (Hellemans *et al.*, 2022). Companies must therefore develop strategies to integrate sustainability into their corporate culture, especially when managing distributed teams. Maintaining stakeholder alignment is crucial as firms expand into new markets. The pressure to adhere to local regulations, societal expectations, and ethical norms can be particularly intense in regions where sustainability concerns are prioritised. For example, emerging-market MNEs are increasingly adopting sustainability measures as they expand their presence in more developed countries, where higher ethical standards are often expected (Gómez-Bolaños *et al.*, 2020).

Embracing sustainability in digital internationalisation offers significant strategic benefits, particularly in terms of risk management and competitive positioning. As global stakeholders, including consumers, investors, and regulators, place greater emphasis on sustainability, businesses that prioritise responsible practices are better positioned to capitalise on emerging opportunities. By adopting sustainable technologies, enhancing transparency, and demonstrating a commitment to ethical conduct, firms can differentiate themselves, build stakeholder trust, and secure a competitive advantage in international markets (Durão *et al.*, 2024). However, the journey is not without its challenges. Firms must balance the pursuit of digital efficiency with sustainability goals, ensuring that technological advancements do not compromise environmental or social standards. The ability to navigate these challenges will increasingly determine the success of firms in the interconnected landscape of global business. The integration of internationalisation, digitalisation, and sustainability represents a strategic imperative for modern businesses. As companies continue to expand their digital and global footprints, the alignment of these three pillars will play a critical role in shaping the future of sustainable business practices.

6.3 Case studies of sustainability challenges in digital internationalisation

The study examines the sustainability aspects and challenges associated with digital internationalisation by focusing on three specific companies: Ecosia, Too Good To Go, and Vinted. By analysing these companies, the study explores how digital companies address sustainability challenges while expanding their operations globally. The qualitative nature of the study allows for an exploratory approach, seeking to understand the unique sustainability strategies and challenges faced by each company as they scale their digital platforms across different markets. The research identifies patterns, common themes, and specific strategies used by the companies to integrate sustainability into their internationalisation processes.

6.3.1 Ecosia

Ecosia, an independent, non-profit search engine based in Germany, illustrates the intersection of digital internationalisation and sustainability. As a social business enterprise, Ecosia represents an intriguing case study in how business models can integrate sustainability with global digital expansion. By focusing on social responsibility, Ecosia demonstrates that digital platforms can drive positive environmental change. Certified as a B-Corporation, Ecosia allocates its profits towards tree planting and community projects worldwide, showcasing how the integration of social and environmental missions can shape corporate strategies (Cussans, 2023).

Ecosia's primary revenue stream comes from advertisements displayed on its search engine. The business model is straightforward: when users click on ads, Ecosia earns money from advertisers. Even if users do not engage with ads directly, the search engine's growing user base increases the value of its ad placements, indirectly driving revenue. The company reports an average monthly income of approximately \$3 million (Ivanov, 2022). Notably, Ecosia commits to reinvesting at least 80% of its profits into reforestation initiatives, contributing to high-impact agroforestry and forest conservation projects across the globe. Since its establishment in 2009, Ecosia has facilitated the planting of millions of trees by redirecting ad-generated revenue into these environmental efforts (Ecosia, 2024).

Operating in a market dominated by giants like Google, Bing, and Yahoo, Ecosia sets itself apart through its IT-based green business model. Unlike its competitors, whose data centres contribute significantly to CO₂ emissions due to their reliance on non-renewable energy sources (Schmidt, 2011), Ecosia uses green energy to reduce its carbon footprint (Ecosia, 2024). This eco-conscious approach not only differentiates Ecosia but also aligns with growing public concerns over the environmental impacts of digital technology. However, the challenge lies in balancing its commitment to tree planting with the increasing costs associated with scaling this social impact initiative, making profitability a delicate balance.

Despite Google's overwhelming dominance, commanding over 95.3% of the global desktop search market, Ecosia has managed to secure a modest market share of 0.29% (Statcounter GlobalStats, 2024). However, the company has set an ambitious goal of capturing 1% of the global search engine market. Achieving this requires Ecosia to expand its user base beyond environmentally conscious European audiences into new international markets, particularly in regions like the United States where it currently faces lower brand recognition. To broaden its reach, Ecosia has initiated partnerships with universities and organisations, targeting younger generations who are increasingly aware of environmental issues (Ecosia, 2024). However, success in global markets demands from Ecosia tailored marketing strategies to align with local digital habits and varying levels of environmental awareness.

One of the critical challenges Ecosia faces in its digital internationalisation journey is navigating legal and ethical concerns around data privacy. In an industry where personalised search results can significantly enhance user experience and drive revenue, Ecosia has taken a principled stand. According to Piotr Drozd, former Head of Growth and Analytics, Ecosia refrains from storing detailed user data or deploying personalisation algorithms (Ivanov, 2022). The company only collects essential data such as IP addresses and search queries, which are aggregated for performance improvement (Thibeault, 2024). This privacy-first approach enhances user trust, particularly among privacy-conscious individuals and institutions, although it limits potential revenue growth from data-driven ad personalisation.

Ecosia's growth strategy relies heavily on grassroots movements and partnerships with educational institutions and non-profits. This approach, combined with its commitment to transparency and impact reporting, has helped the company build a loyal user base (Ecosia, 2024). Ecosia's symbolic appeal, where every search contributes to tree planting, resonates with eco-conscious users who are increasingly seeking ethical alternatives to traditional tech platforms. By consistently communicating its mission and demonstrating tangible environmental impacts, Ecosia strengthens its brand credibility and fosters deeper engagement with its community of users.

The case of Ecosia highlights the complex but rewarding path of integrating sustainability into digital business models. Its ability to navigate competitive pressures, resource constraints, and diverse market conditions illustrates how mission-driven organisations can use ethical differentiation to find a niche in crowded industries. Ecosia's journey underscores the potential for digital enterprises to align their growth strategies with sustainability objectives, ultimately demonstrating that businesses can achieve financial success while making meaningful contributions to environmental stewardship. As it continues to expand globally, Ecosia's efforts show that it is possible to build a scalable, socially responsible business that thrives on community support and a commitment to positive environmental change.

6.3.2 Too Good To Go

The advancement of technologies has significantly transformed the food life cycle, leading to the rise of various food-sharing and redistribution platforms and apps. Too Good To Go, founded in 2015 in Copenhagen, stands as a prime example of how digital internationalisation can align with sustainability objectives while fostering global growth. As the world's largest marketplace for surplus food, Too Good To Go uses digital innovation to connect businesses with unsold food to consumers who can purchase these items, known as “surprise bags”, at discounted prices (Ho, Nguyen, 2024). This model not only helps reduce food waste but also lessens the associated environmental impact. According to Too Good To Go's Impact Report, saving just one meal (equivalent to 1 kg of food) can prevent 2.7 kg of CO₂-equivalent emissions (Too Good To Go, 2024), showcasing the substantial environmental benefits of its platform.

Scaling this innovative model internationally has presented both sustainability challenges and opportunities for innovation. The app integrates local food businesses with consumers by providing real-time updates on available surplus, thus simplifying the process of participation. Currently, Too Good To Go operates in 17 countries, adapting its model to fit diverse regulatory environments and food waste policies (Too Good To Go, 2024). This requires a strategic approach to understanding and navigating regional differences in food supply chains, consumer behaviour, and compliance with local food labelling standards. Ensuring sustainable cross-border operations involves addressing logistical inefficiencies, optimising transportation, and minimising emissions during the redistribution process. This complexity is even greater by the need to align with varying national regulations and sustainability expectations.

Too Good To Go's success is based on its ability to build solid collaborations, partnering with over 170,000 food businesses, including major brands like Starbucks and Carrefour, to expand its market reach (Too Good To Go, 2024). However, maintaining these partnerships at scale requires sophisticated digital tools and efficient allocation of resources. Too Good To Go provides its partners with data-driven market analyses to optimise inventory management and proactively reduce food waste (Too Good To Go, 2024). This dual value proposition creates a win-win-win scenario for businesses, consumers, and the environment by reducing waste, saving costs, and addressing sustainability goals simultaneously.

While Too Good To Go's platform significantly reduces food waste, its rapid international expansion presents challenges related to its own carbon footprint. To address this, Too Good To Go has partnered with Planety to measure, audit, and offset its emissions, earning a Carbon Neutral+ status in 2021. This commitment to sustainability is further reinforced through consumer education campaigns like “Look, Smell, Taste”, which are designed to reduce confusion around food expiration labels and prevent unnecessary waste. These initiatives,

deployed across multiple countries, emphasise the importance of consistent messaging and consumer education in driving behavioural change (Too Good To Go, 2024). However, scaling these campaigns effectively across diverse markets poses its own set of challenges, requiring careful adaptation to local cultural and regulatory contexts.

The case of Too Good To Go demonstrates how digital platforms can tackle global challenges like food waste while navigating the complexities of international expansion in a sustainable manner. However, as the company continues to grow, it faces the ongoing challenge of balancing its rapid expansion with its commitment to reducing environmental impact. Achieving this balance is crucial as Too Good To Go seeks to scale its operations while maintaining its social mission. By using digital tools, fostering strategic partnerships, and continuously innovating its business model, Too Good To Go exemplifies how mission-driven digital enterprises can sustainably scale solutions to global problems.

6.3.3 *Vinted*

Vinted, a leading online platform for buying and selling second-hand clothing, has positioned itself as a key player in the circular economy by promoting sustainable consumption practices. Founded in Vilnius in 2008, the platform's growth reflects a broader shift towards extending the life cycle of consumer goods, which reduces the environmental impact related with the production of new items. By facilitating the resale of pre-owned clothing, Vinted estimates it avoided approximately 679,000 tons of CO₂-equivalent emissions in 2023 (Vinted, 2024). However, its rapid international expansion also introduces a range of sustainability challenges, particularly in the areas of shipping, logistics, and regulatory compliance.

One of the main sustainability concerns for Vinted is the environmental footprint of its logistics operations. While promoting second-hand goods reduces the carbon emissions linked to new product manufacturing, the transportation and packaging required to move items between buyers and sellers generate significant emissions. As part of its commitment to aligning with the Paris Agreement, Vinted has adopted Science-Based Targets to reduce its overall carbon footprint (Vinted, 2024). However, the challenge lies in balancing the environmental benefits of second-hand shopping with the emissions produced during the shipping process, especially as the platform scales globally. To address these logistical challenges, Vinted launched "Vinted Go", a dedicated shipping service designed to optimise delivery routes, reduce packaging waste, and increase efficiency in its logistics network. This initiative aims to mitigate the environmental impact of shipping while maintaining the speed and reliability expected by consumers (Vinted, 2024). However, scaling this model internationally while ensuring low emissions remains a complex task, particularly as Vinted enters new markets with varying infrastructure and regulatory landscapes. The company is

exploring more eco-friendly logistics solutions, such as consolidating shipments and using sustainable packaging, to reduce its carbon footprint.

Another significant obstacle for Vinted is maintaining marketplace integrity across diverse regions. As Vinted expands into new markets, ensuring the quality and authenticity of items becomes crucial to building and sustaining customer trust. To address this, Vinted has introduced services like luxury item verification and enhanced quality assessments, which are especially important in markets where second-hand goods may not be as culturally accepted or where consumer expectations are higher. These efforts are part of Vinted's strategy to overcome barriers to adoption in regions where buying second-hand is not yet mainstream. For example, data from Vinted indicates higher acceptance of second-hand goods in countries like France, while other markets may require more educational efforts to shift consumer perceptions (Vinted, 2024).

Cultural acceptance is not the only challenge; Vinted must also navigate a complex set of environmental, consumer protection, and e-commerce regulations as it expands its global footprint. Different jurisdictions impose varying requirements on aspects such as product safety, data privacy, and waste management. This regulatory complexity can slow down the implementation of Vinted's sustainability initiatives, as the company must tailor its practices to comply with local laws and standards. The ability to adapt to these regulations is crucial for Vinted's continued international growth and sustainability efforts.

Despite these challenges, Vinted's commitment to sustainability remains at the core of its business model. The company emphasises reducing emissions, promoting circular consumption, and encouraging consumers to consider second-hand shopping as an alternative to purchasing new items. By using digital tools and data analytics, Vinted can optimise inventory flow, streamline operations, and enhance its impact reporting, which helps to communicate its sustainability efforts transparently to users and stakeholders (Vinted, 2024).

Vinted illustrates how digital platforms can drive sustainable practices while navigating the complexities of global expansion. However, the company must continue to address key challenges, such as reducing emissions in its logistics operations, ensuring the reliability of its marketplace, and adapting to diverse consumer expectations across regions. By staying focused on its sustainability goals, Vinted is well-positioned to influence consumer behaviour and contribute to a more sustainable future in the fashion industry. As it grows, the platform's ability to balance rapid expansion with environmental responsibility will be crucial in maintaining its leadership in the circular economy.

6.4 Discussion

The case studies of Ecosia, Too Good To Go, and Vinted illustrate how these companies prioritise specific sustainability areas in their digital internationalisation efforts.

Ecosia focuses on environmental sustainability through reforestation and green IT, also emphasising user privacy by refraining from tracking or selling user data, thereby aligning with ethical digital practices.

Too Good To Go promotes circular economy, as its core mission is to reduce food waste by connecting businesses with consumers through its app, allowing surplus food to be sold at discounted prices. By doing so, Too Good To Go helps minimise food waste, which contributes significantly to global greenhouse gas emissions. As the company scales internationally, it focuses on optimising its logistics and supply chain processes to minimise the environmental impact associated with food redistribution. This includes efficient transport routes to reduce emissions from deliveries. Too Good To Go also invests in educational campaigns to change consumer perceptions around food expiration dates and reduce food waste at the consumer level. This effort addresses both environmental and social sustainability by promoting responsible consumption.

Vinted focuses on promoting the circular economy by facilitating the resale of second-hand clothing through its online platform. This reduces the demand for new fashion items, thereby lowering the industry's environmental footprint, which is often associated with high levels of waste and pollution. To minimise the environmental impact of its operations, Vinted launched a dedicated shipping service designed to optimise delivery routes and reduce emissions. The focus is on making logistics more efficient while reducing the carbon footprint of cross-border shipments. As Vinted expands into new markets, it emphasises ensuring the quality and authenticity of second-hand goods to maintain consumer trust. This involves implementing stringent checks and verification processes, especially in regions where the concept of buying pre-owned items may not be widely accepted.

On the other hand, the case studies of Ecosia, Too Good To Go, and Vinted reveal several shared sustainability challenges that emerge as these digital companies scale their operations internationally. Despite their differing business models, ranging from search engine reforestation (Ecosia) to food waste reduction (Too Good To Go) and second-hand fashion resale (Vinted), they confront overlapping obstacles as they pursue sustainability goals across diverse global markets.

A primary challenge for all three companies is managing the environmental footprint associated with their international expansion. As these companies scale, their operations inevitably produce emissions, particularly related to logistics, data infrastructure, and product/service delivery. For Ecosia, although its data centres are powered by renewable energy, minimising energy use while expanding globally poses scalability issues. The company must constantly seek ways to enhance the efficiency of its digital infrastructure to sustain its eco-friendly commitment. Similarly, Too Good To Go's model of redistributing surplus food across multiple regions results in emissions, especially in those regions that lack optimised local logistics networks, which can diminish the

environmental benefits of food waste reduction. Vinted, on the other hand, faces emissions challenges associated with shipping and packaging, even though its core mission reduces the carbon footprint of fashion by promoting second-hand goods. Despite these efforts, the global logistics necessary for its operations can offset the gains made from reduced fashion production.

Furthermore, rapid international growth can paradoxically undermine the sustainability objectives that are central to these companies' missions. For Ecosia, the challenge lies in balancing its reforestation projects funded by ad revenue with the potential limitations that may arise as global demand for its services increases. Too Good To Go, while scaling its operations, needs to secure more resources, which can involuntarily offset the environmental benefits of reducing food waste. Vinted, meanwhile, strives to align its circular economy focus with the emissions generated by its logistics operations. As these platforms expand, ensuring that their growth does not compromise their sustainability goals becomes a critical balancing act.

The implementation of efficient, low-emission infrastructure on a global scale is a shared technological and logistical challenge. Ecosia relies on third-party search infrastructure, limiting its control over optimising technological processes for greater sustainability. Too Good To Go faces logistical obstacles in food redistribution, particularly in areas where transportation infrastructure is underdeveloped, which can impede the efficient delivery of surplus food to consumers. Vinted's efforts to optimise its shipping and delivery processes, exemplified by initiatives like "Vinted Go", reflect its commitment to reducing emissions, yet scaling these solutions globally while maintaining low environmental impact is a persistent challenge.

Another significant challenge shared by these companies is the complexity of navigating diverse regulatory frameworks across countries. Each platform must comply with region-specific regulations that can complicate scaling efforts. Ecosia, for example, must adapt to varying privacy laws and advertising regulations in the markets it enters, particularly around data protection and consumer consent. For Too Good To Go, the diversity of food safety and labelling standards across regions requires customised solutions to meet local compliance, adding to the complexity of scaling its food redistribution network. Vinted faces its own set of regulatory hurdles related to e-commerce, environmental compliance, and standards for second-hand goods, which differ significantly between countries, particularly concerning product quality and consumer protection laws.

A shared challenge for all three platforms is the need to educate consumers and promote behavioural change, which can vary greatly across cultures. Ecosia aims to persuade users to adopt eco-friendly browsing practices, yet the uptake of such behaviours often depends on local levels of environmental awareness and Internet usage habits. Too Good To Go's mission to normalise food-saving behaviours encounters resistance in regions where the concept of food waste reduction is not as culturally ingrained. Similarly, Vinted faces challenges in

promoting second-hand shopping in markets where new items are culturally preferred, requiring substantial efforts to shift consumer perceptions about the value and quality of pre-owned goods.

These shared challenges highlight the complexities of digital internationalisation for mission-driven platforms focused on sustainability. For Ecosia, Too Good To Go, and Vinted, addressing issues related to operational emissions, regulatory compliance, consumer behaviour, and logistical efficiency is crucial to sustaining their growth while remaining true to their environmental and social missions. As these companies continue to expand into new markets, they must innovate and adapt their strategies to ensure that their sustainability commitments are upheld, even as they scale globally.

6.5 Conclusions

Digitalisation has become deeply intertwined with organisational sustainability, offering companies new opportunities to advance their environmental and social responsibility initiatives. Using digitalisation as a means to strengthen sustainability allows organisations to not only enhance their environmental performance but also elevate their reputations as responsible, forward-looking entities dedicated to long-term sustainability objectives. The convergence of digitalisation and sustainability not only improves operational efficiency and brand perception but also strengthens companies' global expansion strategies. By utilising digital technologies to achieve sustainability goals, businesses can expand their international reach, effectively engage with global stakeholders, and access new market opportunities. Implementing digital tools for sustainability not only drives organisational growth but also supports broader initiatives aimed at fostering a more equitable, prosperous, and environmentally sustainable global economy (Durão *et al.*, 2024).

This chapter investigates the complex interplay between sustainability, digitalisation, and internationalisation, using the case studies of Ecosia, Too Good To Go, and Vinted to illustrate the challenges faced by digital companies as they scale globally. The research questions centre on identifying the sustainability aspects and challenges that arise when companies pursue digital internationalisation and how these can be addressed to align with long-term social and environmental goals.

One of the common sustainability themes across all three companies focuses on reducing their carbon footprint. Ecosia does so through reforestation and renewable energy, Too Good To Go through food waste reduction, and Vinted through promoting second-hand fashion. Too Good To Go and Vinted emphasise optimising their logistics and supply chains to reduce emissions and waste associated with their business models. Ecosia focuses on energy efficiency in its IT infrastructure. All three companies prioritise engaging with consumers to promote more sustainable behaviours, whether it's through responsible

browsing, reducing food waste, or buying second-hand fashion. As they expand internationally, all three companies face challenges in navigating different environmental regulations and cultural expectations related to sustainability, making compliance and adaptation critical to their strategies.

In line with the indicated sustainability engagement areas, the study identifies major sustainability challenges of the investigated companies, like the environmental footprint of digital operations, regulatory compliance in diverse markets, cultural differences in consumer behaviour, and the balance between rapid growth and sustainability commitments. By analysing the experiences of Ecosia, Too Good To Go, and Vinted, the research answers its key questions by demonstrating that while digital platforms can drive efficiency and sustainability, their global expansion inevitably increases carbon emissions, especially related to logistics, data centres, and product delivery. For instance, Ecosia's reliance on renewable energy-powered data centres still faces scalability issues, Too Good To Go's surplus food redistribution generates emissions due to transportation, and Vinted's shipping processes, while reducing fashion waste, contribute to its overall environmental impact. The research also highlights how these companies navigate varying regulatory landscapes. Ecosia, for example, faces privacy law challenges, Too Good To Go has to comply with diverse food safety standards, and Vinted encounters differing e-commerce and environmental regulations. The study reveals that while all three companies invest in educating consumers to shift towards sustainable practices, cultural and behavioural differences remain significant obstacles in diverse regions. The shared sustainability challenges of analysed companies highlight the complexities of aligning digital internationalisation with environmental and social objectives. Addressing these issues requires tailored approaches, local partnerships, and continuous technological innovation to ensure sustainable global growth.

The research questions were answered by examining the strategic responses of these companies to the identified challenges. The analysis found that although these firms share similar sustainability goals, they require tailored approaches based on their industry, business model, and market conditions. For example, Too Good To Go's partnerships with local businesses help optimise logistics, while Vinted's launch of "Vinted Go" is aimed at reducing the environmental impact of its shipping operations. Ultimately, the study concludes that aligning digital expansion with sustainability requires integrated strategies that consider both market-specific regulations and the environmental impact of digital operations.

The research presented in the chapter has some limitations that should be acknowledged. The study primarily relies on case studies of three specific companies – Ecosia, Too Good To Go, and Vinted. While these cases provide detailed insights into sustainability challenges in digital internationalisation, the findings may not be generalisable to all industries or other types of businesses.

The focus on mission-driven platforms may also limit the applicability of the conclusions to more profit-driven enterprises. The companies analysed predominantly operate in Europe and other developed markets. Therefore, the study may not fully capture the unique challenges that companies face in emerging markets, where regulatory environments, infrastructure, and consumer behaviour can differ significantly. Furthermore, while the current research focuses on successful examples, future studies could examine companies that struggled with digital internationalisation or sustainability integration. Understanding the barriers and failures would provide valuable lessons for other businesses attempting similar strategies. Addressing these limitations in future research could provide a more comprehensive understanding of how digitalisation and sustainability intersect in the context of international business expansion.

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7 Internet-based knowledge acquisition for digital internationalisation

Elzbieta Wąsowicz-Zaborek

7.1 Introduction

The digitalisation of knowledge acquisition has changed international business, offering unprecedented opportunities for firms to navigate complex global markets. For small- and medium-sized enterprises (SMEs) and emerging ventures, leveraging Internet-based tools and digital platforms has significantly reduced costs and accelerated timelines for international expansion. Technologies such as big data analytics, artificial intelligence (AI)-driven decision-making, and cloud computing empower companies to analyse international markets, identify consumer trends, and optimise supply chains in real time. The introduction of these technologies has also prompted a critical strategic choice whether to acquire knowledge through internal efforts or outsource these processes to external experts. This decision shapes how firms allocate resources, develop organisational learning, and maintain competitive advantages in increasingly dynamic environments.

Digital tools have shifted the paradigm from traditional methods of data collection to more streamlined, technology-enabled processes. Studies demonstrate that firms utilising digital resources gain competitive advantages, not only by accessing global knowledge networks but also by integrating this knowledge into decision-making and innovation processes. Researchers emphasise that digital infrastructure, once merely supportive, has now become as vital as physical infrastructure in determining international reach (Di, Zhi, Song, Zhang, 2022). Platforms like LinkedIn, Google Scholar, and industry-specific repositories have revolutionised cross-border learning by linking firms to global knowledge and expertise. These tools challenge traditional competitive advantages rooted in physical location, favouring firms adept at leveraging open digital resources (Eden, Nielsen, 2020; Luo, 2022).

This chapter is a narrative literature review and examines the theoretical foundations and practical applications of knowledge acquisition in a digitalised business environment. The research questions guiding the chapter are:

- 1 How do digital tools and platforms facilitate knowledge acquisition for digitally internationalised companies?

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- 2 What are the strategic implications of choosing between in-house and out-sourced knowledge acquisition?
- 3 How do tacit and explicit knowledge interact in the context of digital internationalisation?

The chapter begins with an exploration of the theoretical foundations for knowledge acquisition, focusing on key frameworks such as the Knowledge-Based View (KBV) and the Uppsala model, and their relevance in the digital era. It then delves into the discussion between tacit and explicit knowledge and their integration in digitally internationalised firms. Following this, the role of Internet-enabled experiences in knowledge acquisition is categorised and analysed. The chapter also examines the impact of digital tools on knowledge acquisition. Additionally, it discusses the advantages and challenges of internal versus external knowledge acquisition strategies. The section concludes with insights on the strategic integration of digital tools in knowledge acquisition and provides recommendations for managers and policymakers.

7.2 Theoretical foundations for knowledge acquisition

Knowledge acquisition for internationalisation is grounded in several theoretical frameworks, including the KBV of the firm and the Uppsala model. These established theories have evolved significantly, reflecting the rapid advancements brought about by digital globalisation.

KBV, pioneered by [Grant \(1996\)](#) (see also [Grant, Phene, 2021](#)), positions knowledge as the most strategically valuable resource for gaining and sustaining competitive advantage. Within the context of internationalisation, KBV emphasises that firms can differentiate themselves and adapt effectively to new markets by leveraging unique knowledge assets. This perspective aligns seamlessly with modern Internet-based knowledge acquisition, where firms utilise digital tools to gather real-time market intelligence and cross-border insights. Digitalisation reduces the need for significant investments in physical infrastructure, creating a critical advantage for SMEs and born-global firms ([Autio, Sapienza, Almeida, 2000](#)).

Traditionally, the Uppsala model posits that firms expand into foreign markets gradually, building local knowledge incrementally through physical presence ([Johanson, Vahlne, 1977](#)). However, the integration of digital tools has significantly accelerated this process. Research by [Gabrielsson and Kirpalani \(2012\)](#) shows that digitalisation enables firms to bypass traditional stages of the Uppsala model, facilitating direct entry into international markets through Internet-enabled resources. [Coviello, Kano, and Liesch \(2017\)](#) extend this concept, demonstrating big data, AI, and social media enhance the speed of knowledge accumulation and market entry, particularly for digital-born firms or born globals.

In practice, firms adopting KBV in a digital context prioritise data-driven decision-making, leveraging analytics to gain a deeper understanding of diverse consumer behaviours. For example, Google's international marketing strategy exemplifies this approach, utilising extensive data analysis to optimise services and products for specific regional preferences. This underscores the enduring relevance of KBV in the realm of digital internationalisation (Coviello *et al.*, 2017).

Similarly, SMEs that adopt a digital KBV approach often experience faster market penetration and greater adaptability to local demands, confirming the framework's applicability to contemporary business.

7.3 Tacit and explicit knowledge in digital internationalisation

In the context of digitally internationalised companies, the distinction between tacit and explicit knowledge is crucial for understanding knowledge acquisition and management. Tacit knowledge, often personal and context specific, and difficult to formalise, contrasts sharply with explicit knowledge, which is codified, documented, and easily transferable. Understanding this dichotomy is essential for companies navigating the complexities of international markets, particularly in the digital age.

Tacit knowledge is primarily acquired through personal experience and is often embedded in the skills and insights of individuals within an organisation. Patalas-Maliszewska and Śliwa (2017) underscore its importance in fostering collaboration and innovation within firms, as it encompasses the nuanced understanding that employees gain through their work experiences. This type of knowledge is particularly valuable in internationalised knowledge-intensive business services (KIBS), where the ability to adapt and innovate in response to diverse market conditions is critical (Magni, Papa, Scuotto, Del Giudice, 2023). Tiwari and Korneliussen (2018) further highlight that experiential knowledge gained through practical experience significantly influences firms' internationalisation processes, particularly in emerging markets.

Explicit knowledge, on the other hand, is characterised by its formalisation and ease of dissemination. It includes documented procedures, policies, and data that can be easily shared across the organisation. Danik and Kowalik (2020) emphasise its role in guiding internationalising companies through new markets, providing a structured approach to understanding market dynamics and operational requirements. Formalised knowledge is particularly advantageous in digital transformation contexts, where it facilitates entry into international markets (Magni *et al.*, 2023). What is more, explicit knowledge thus serves as a foundational element for companies looking to scale their operations internationally, as it allows for consistent practices and shared understanding among diverse teams.

The integration of tacit and explicit knowledge is not merely a theoretical but carries significant practical implications. Bhatt and Gupta (2005) suggest that organisations do not encounter tacit and explicit knowledge in isolation but

rather as intertwined elements that contribute to overall knowledge management strategies. In the digital age, the challenge lies in harmonising these forms of knowledge.

Wentrup (2016) discusses how digital platforms enhance the codification of tacit knowledge, making it more accessible while still retaining its contextual richness. This integration is essential for fostering innovation and maintaining competitive advantage in international markets, as firms must balance the need for standardised processes with the flexibility to adapt to local conditions.

Nonaka and Von Krogh (2009) proposed a model of knowledge conversion that illustrates how tacit knowledge can be transformed into explicit knowledge through processes such as externalisation and socialisation. This model underscores the importance of social interactions and shared experiences in transforming personal insights into organisational assets. This conversion is essential for organisations aiming to leverage their knowledge assets effectively.

Digitally internationalised firms often adopt a strategic approach that balances tacit and explicit knowledge. Fletcher and Harris (2012) emphasise the unique challenges faced by smaller firms in acquiring knowledge for internationalisation, necessitating a nuanced understanding of both knowledge types. Social networks and external partnerships play a vital role in facilitating access to both knowledge forms, enhancing firms' capacities to innovate and adapt in foreign markets.

7.4 The role of Internet-enabled experiences in knowledge acquisition

Building on the foundational understanding of tacit and explicit knowledge, the role of experiences emerges as a critical factor in shaping how digitally internationalised firms acquire and apply knowledge. In today's interconnected business environment, firms leverage Internet-based experiences to facilitate cross-border expansion and enhance knowledge acquisition strategies. These experiences are integral to the internationalisation process, offering firms nuanced insights into new markets, fostering adaptability to local conditions, and enabling strategic responsiveness to global trends.

Internet-enabled experiences can be categorised into four distinct types: technical, operational, functional, and immersive. Each type contributes uniquely to knowledge acquisition, establishing a comprehensive framework that supports agile and sustained growth. These experiences allow firms to create, share, and utilise information effectively, aligning closely with the integration of tacit and explicit knowledge discussed earlier. Table 7.1 provides an in-depth analysis of each type, detailing their role in fostering effective international engagement.

The four categories of Internet-enabled experiences – technical, operational, functional, and immersive – are integral to the internationalisation strategies of digitally oriented companies. They demonstrate how digital platforms generate

Table 7.1 Types of Internet-enabled experiences in digital internationalisation

<i>Type of Internet-enabled experiences</i>	<i>Description</i>
Technical	Technical experiences involve the use of search engines, online databases, and other digital tools to gather critical information. For digitally internationalised companies, these tools are essential for market research, analysing competitors, and understanding international regulations. The vast resources available online provide firms with the ability to make informed decisions about entering new markets and adapting to diverse cultural and legal environments. Such access not only supports strategic planning but also reduces the uncertainty often associated with global expansion.
Operational	Operational experiences focus on managing online business processes, including supply chain management, customer relationship management (CRM), and enterprise resource planning (ERP) systems. These tools are vital for coordinating activities across multiple countries, ensuring efficiency and scalability. The digitalisation of operational processes has had a profound impact on companies by enabling the adoption of information and communication technologies (ICT) and e-commerce platforms. This shift facilitates the internationalisation of value chain activities, allowing firms to expand globally while maintaining streamlined operations.
Functional	Functional experiences emphasise the use of tailored online tools and applications designed to address specific business needs. Digital marketing tools, for instance, allow firms to reach international audiences, while analytics platforms help monitor performance metrics across global markets. By integrating digital services into their business models, companies can offer value-added services that cater to the preferences of a digitally savvy global consumer base. This adaptability ensures that firms remain competitive in rapidly changing international markets.
Immersive	Immersive experiences encompass engagement with virtual communities and social media platforms, enabling companies to establish a strong brand presence, interact with customers, and collect feedback from diverse markets. Participation in online communities fosters networking with international partners and stakeholders, creating opportunities for collaboration and co-innovation. Such experiences are instrumental in building the trust and relationships necessary for global expansion.

Source: own elaboration.

both explicit and tacit knowledge, supporting various phases of the internationalisation process. For instance, technical experiences provide codified knowledge essential for regulatory compliance, while immersive experiences capture tacit insights through direct interaction with stakeholders.

By effectively leveraging these experiences, firms can navigate the complexities of global markets, improve operational efficiency, and establish meaningful connections with international stakeholders. As digital technologies continue to evolve, the ability to harness these experiences will remain a critical determinant of success in the global business arena. These experiences not only provide firms with the tools to adapt but also position them to lead in a competitive and rapidly changing international environment.

7.5 Digital tools for knowledge acquisition in international business

The rapid evolution of Internet-based knowledge tools is redefining how digitally internationalised companies succeed in the global market. These tools, ranging from open data sources and web crawlers to social media platforms, cloud computing, and advanced technologies like the Internet of Things (IoT) and AI, play a transformative role in shaping organisational strategies. They enable businesses to collect, process, and analyse vast amounts of data efficiently, fostering innovation and enhancing competitiveness in an increasingly digitalised world.

The integration of digital tools empowers organisations to harness the collective intelligence embedded within global networks, driving more informed decision-making and creating pathways to competitive advantages. These tools are not merely operational aids. They are strategic assets that influence how knowledge is acquired, shared, and utilised across borders. For companies navigating the complexities of international markets, the ability to leverage these tools effectively often determines their capacity to adapt to dynamic market conditions and meet diverse consumer expectations.

Moreover, digital tools provide a unique opportunity for companies to bridge the gap between localised knowledge and global trends. Through their capability to capture granular data and offer real-time insights, these technologies enable firms to understand market-specific nuances while aligning their strategies with broader global shifts. From facilitating targeted market research to streamlining internal processes and fostering customer engagement, digital tools may increase responsiveness in the international business.

This section explores the multifaceted role of digital tools in knowledge acquisition, emphasising their potential to revolutionise business processes and create value.

7.5.1 Open data sources and web crawlers

Open data platforms and web crawlers are foundational tools in the knowledge acquisition processes of digitally internationalised companies. These resources facilitate the automated collection of vast amounts of data, streamlining the

identification of key market trends and insights. For instance, platforms such as the World Bank Open Data, OECD Data, and Eurostat provide critical economic, demographic, and industry-specific information. Complementing these are UN (United Nations) Comtrade, which highlights global trade flows, and the CIA World Factbook, which offers comprehensive country profiles. Financial data from the IMF Data and UNCTAD stat further enrich knowledge acquisition by providing metrics essential for assessing macroeconomic stability and investment opportunities. Google Public Data Explorer aggregates data from sources like the World Bank, facilitating easy exploration of global trends. Also, countries' governmental webs or official statistics institutions present data on various sectors. These platforms collectively offer essential data for market analysis, risk assessment, and strategy development in international business contexts.

Web crawlers, in particular, play a transformative role by automating data extraction and tracking changes in real time. By leveraging pattern-matching techniques, companies can identify relevant information and validate insights through cross-referencing multiple sources (Panahi, Watson, Partridge, 2015). This capability is especially valuable in maintaining updated knowledge on market conditions, enhancing strategic decision-making, and fostering a culture of continuous learning. Thus, open data sources and web crawlers collectively enable firms to expand their knowledge bases and improve the accuracy of their strategic analyses.

7.5.2 Internet-enabled platforms, applications, and social media

Internet-enabled platforms and applications offer businesses robust tools for engaging with stakeholders and gathering market intelligence. Tools such as SurveyMonkey and Google Forms allow companies to collect first-hand insights directly from consumers via surveys, enhancing both their knowledge base and customer relationships. The integration of such tools allows for a more nuanced understanding of market needs and consumer preferences, which is essential for driving innovation and competitive advantage.

Social media platforms like Facebook, X, LinkedIn, and Instagram also serve as powerful sources of user-generated content (UGC), capturing real-time consumer opinions and behaviours that help companies understand market trends and preferences on a global scale. Electronic word-of-mouth (eWOM) shared through these channels is highly influential, offering businesses credible insights that traditional media often lack. For digitally internationalised companies, UGC is essential. It not only reflects customer attitudes but also provides localised, actionable intelligence crucial for adapting strategies to diverse markets. By analysing this content, companies can refine their offerings, improve customer experience, and remain agile in a competitive international environment (Wąsowicz-Zaborek, 2023). Furthermore, social media fosters collaborative innovation, enabling companies to co-create value by soliciting input from

consumers during product development (Rashid, Waseem, Akbar, Azam, 2019). Thus, social media serves as a powerful enabler of knowledge acquisition and innovation.

Moreover, other collaborative platforms such as Microsoft Teams and Zoom serve as digital spaces where organisations can engage diverse stakeholders – customers, employees, and partners – in the co-creation of knowledge. Services like UserVoice and Miro further support idea sharing and feedback loops, which contribute to new idea development. This collaborative process enriches the knowledge pool, making it more relevant and tailored to market demands, supporting the development of products and services that align closely with consumer expectations. By engaging various stakeholders, organisations can co-create knowledge that is more relevant and actionable (Hoffmann, Lutz, 2014). This collaborative approach not only democratises knowledge creation but also fosters a sense of ownership among participants, leading to higher levels of engagement and satisfaction. The strategic use of Internet-enabled platforms thus serves as a catalyst for innovation and organisational learning.

7.5.3 Digital marketing

Digital marketing has emerged as a pivotal tool for knowledge acquisition, enabling companies to gather valuable market intelligence and enhance strategic decision-making processes. Internet marketing strategies provide insights that inform product development and optimise customer engagement (Liu, Zhang-Zhang, Ghauri, 2020). The relationship between digital marketing capabilities and market-oriented behaviour is well documented, highlighting how these tools not only improve customer interaction but also generate and disseminate critical market information (Gokce, Bazi, Safavi, Georgiadou, Hajli, 2023).

Digital marketing tools, such as Google Ads, email marketing platforms, and customer analytics software, allow organisations to analyse consumer interactions and identify emerging trends. By harnessing these insights, firms can adapt their strategies proactively to meet changing market conditions, thereby enhancing their competitive edge in the global marketplace (Sun, Ding, Zhang, Gauthier, 2020). Additionally, digital marketing supports the collection of localised knowledge, enabling businesses to tailor their campaigns to regional preferences and cultural nuances.

When discussing digital marketing, it is impossible not to mention one more technology, which is cookies. Cookies are small pieces of data stored on a user's device by websites they visit, and amplify the capabilities of digital marketing by enabling precise data collection and analysis. By storing information about user preferences, past interactions, and browsing behaviour, cookies empower companies to create personalised and relevant content that enhances user engagement. For digitally internationalised companies, cookies serve as an indispensable tool for gathering and leveraging data across diverse audiences.

The dual function of digital marketing, as a driver of customer engagement and a source of actionable knowledge, underscores its importance in the knowledge acquisition. Companies that effectively integrate digital marketing tools into their operations are better positioned to navigate the complexities of international markets and sustain long-term growth.

7.5.4 *Cloud computing and intelligent search engines*

Cloud computing has revolutionised knowledge acquisition for digitally internationalised companies by enabling centralised knowledge repositories accessible across borders. Platforms like Google Cloud, Microsoft OneDrive, and Dropbox facilitate real-time collaboration and data sharing, allowing geographically dispersed teams to work seamlessly (Glavas, Mathews, Russell-Bennett, 2019). Cloud-based platforms allow employees from different regions to work together seamlessly, sharing information and insights. This interconnectedness can foster the continuous learning and collective problem-solving that is essential for innovation. This capability is critical for companies operating in a globalised economy, as it enhances adaptability and responsiveness to changing market dynamics.

The scalability and flexibility of cloud resources are especially relevant for multinational corporations (MNCs) and but also for SMEs, with limited resources. Cloud environments also support the development of intelligent systems, such as ontologies and knowledge bases, which enable advanced analytics and informed decision-making. These systems improve the management of tacit knowledge, often difficult to codify, by documenting and sharing insights more effectively (Evangelista, Mac, 2016).

Intelligent search engines further enhance knowledge management by delivering personalised, context-specific information. These tools employ advanced algorithms to streamline the retrieval of relevant data, empowering organisations to derive actionable insights quickly and efficiently (Hajli, Hajli, 2013). The combination of cloud computing and intelligent search engines ensures organisations remain agile and innovative.

7.5.5 *Internet of Things and real-time sensor data*

The IoT represents a paradigm shift in how devices and systems interact with each other and the environment. It integrates a vast network of interconnected devices equipped with sensors, software, and other technologies that facilitate the collection and exchange of data over the Internet. This interconnectedness allows for real-time monitoring, automation, and enhanced decision-making across various sectors and industries (Miorandi, Sicari, De Pellegrini, Chlamtac, 2012; Ramesh, 2021). The fundamental goal of IoT is to create a seamless integration of the physical and digital worlds, enabling devices to communicate autonomously and efficiently (Khan, Khan, Zaheer, Khan, 2012).

IoT's relevance for digitally internationalised companies lies in its ability to provide real-time insights that are critical for navigating global markets' sensors, actuators, radio frequency identification (RFID) systems, and machine-to-machine (M2M) communication protocols (Miorandi *et al.*, 2012; Sethi, Sarangi, 2017). Sensors are critical components that collect data from the environment, while actuators enable devices to perform actions based on the data received. RFID technology facilitates the identification and tracking of objects, which is particularly useful in supply chain management and inventory control (Miorandi *et al.*, 2012). M2M communication protocols allow devices to communicate directly with each other, streamlining processes and reducing the need for human intervention (Khan *et al.*, 2012). Together, these technologies create a robust ecosystem that supports the functionality of IoT applications and can empower businesses to operate seamlessly across borders.

In the context of knowledge acquisition, IoT allows organisations to harness real-time sensor data, gaining invaluable insights into operations, customer behaviours, and market trends. Such data is essential for making informed decisions and for devising strategies that align with the dynamic and often volatile nature of international markets.

The integration of IoT with business intelligence (BI) services enhances this capability further, enabling organisations to aggregate and analyse vast amounts of data to identify patterns and correlations that might not be evident through traditional data analysis. For instance, in the transportation sector, IoT optimises logistics by analysing traffic patterns, vehicle performance, and delivery schedules, ultimately improving efficiency and reducing costs (Shim, Avital, Dennis, Rossi, Sørensen, French, 2019).

Beyond its operational applications, IoT has a profound impact on customer engagement, which is critical for sustaining competitiveness in international markets. By utilising IoT-enabled devices, companies can collect data on customer preferences and behaviours, allowing them to create personalised marketing strategies and enhance customer experiences (Shim *et al.*, 2019; Ramesh, 2021). This customer-centric approach is essential for maintaining competitiveness in international markets, where consumer expectations may vary significantly across regions (Shim *et al.*, 2019). Furthermore, the ability to respond quickly to customer feedback and market changes is facilitated by real-time data access, enabling organisations to adapt their offerings accordingly (Ramesh, 2021).

In addition to enhancing operational efficiency and customer engagement, IoT contributes to the innovation of business models. Companies can also leverage the insights gained from IoT data to develop new products and services that align with emerging market demands (Turber, vom Brocke, Gassmann, Fleisch, 2014; Shim *et al.*, 2019). Additionally, businesses can create subscription-based models for IoT-enabled products, allowing customers to access services on a pay-as-you-go basis. This model not only attracts a broader customer base but also ensures ongoing value delivery, fostering long-term relationships and

enhancing market presence (Ramesh, 2021). The ability to use IoT-driven insights to refine existing offerings and explore new opportunities underlines its transformative role in enabling businesses to maintain relevance in evolving global markets.

Despite its many advantages, the integration of IoT into knowledge acquisition processes presents several challenges. Concerns related to data security, privacy, and interoperability must be addressed to ensure the effective and ethical use of IoT technologies (Zhang, Cho, Wang, Hsu, Chen, Shieh, 2014; Jurcut, Niculcea, Ranaweera, Le-Khac, 2020). Robust security measures are essential to protect sensitive information and to sustain customer trust, which is particularly crucial in markets where privacy regulations vary widely. Furthermore, the lack of standardisation across IoT devices can hinder seamless communication and data sharing, necessitating the development of common protocols and frameworks to ensure smooth operations across diverse systems (Gubbi, Buyya, Marusic, Palaniswami, 2013; Jurcut *et al.*, 2020). Ensuring the reliability and accuracy of data collected by sensor technologies is another critical consideration, as decisions based on flawed data can undermine strategic efforts.

As IoT technologies continue to evolve, they are poised to remain a cornerstone of effective knowledge acquisition and management strategies, helping digitally internationalised companies achieve development and competitive advantage.

7.5.6 Artificial intelligence and machine learning

AI and machine learning (ML) are increasingly recognised as transformative technologies that significantly enhance knowledge acquisition and management, particularly within digitally internationalised companies.

These advanced tools enable firms to process complex datasets and extract actionable insights, facilitating more informed and strategic decision-making processes. For instance, Puthusserry, Khan, Knight, and Miller (2020) emphasise that rapidly internationalised small- and medium-sized enterprises can leverage network relationships to improve their learning capabilities, which are crucial for navigating foreign markets. By integrating AI and ML into their operations, companies can analyse diverse data sources, including social networks and market trends, more effectively, thereby reducing uncertainty and enhancing their internationalisation strategies.

The concept of absorptive capacity, defined as a firm's ability to recognise, assimilate, and apply external knowledge, is pivotal in this context. Agustí, Hidalgo, and Moreno-Menéndez (2021) highlight that absorptive capacity is essential for firms to effectively acquire and utilise international knowledge, which in turn predicts their international performance. AI and ML technologies enhance this capacity by automating the identification and integration of relevant information from diverse sources. This automation allows firms to adapt

rapidly to shifting market conditions and evolving consumer preferences, positioning them to respond effectively to international market challenges.

Organisational ambidexterity, or the ability to balance the exploration of new knowledge with the exploitation of existing knowledge, is another crucial factor facilitated by AI and ML. [Ubeda-Garcia, Rienda, Zaragoza-Saez, and Andreu-Guerrero \(2021\)](#) discuss how internationalisation serves as a mechanism for achieving this balance, enabling firms to leverage both their established capabilities and emerging opportunities. AI and ML contribute to this dynamic by generating insights that inform strategic choices, helping firms optimise current operations while exploring innovative pathways in international markets. This dual approach ensures that companies remain agile and competitive.

AI and ML also play a critical role in enhancing firms' learning capabilities, particularly in multinational enterprises (MNEs). [Wu and Chen \(2020\)](#) explore how AI-driven insights can foster innovation through international ambidexterity. By analysing patterns in operational data, firms can identify knowledge gaps and implement strategies that enhance their innovation outcomes in diverse markets. The ability to leverage AI and ML for continuous learning and innovation becomes crucial.

In addition to enhancing internal knowledge processes, AI and ML technologies can also facilitate external knowledge acquisition through improved networking and collaboration. [Zhu and Deng \(2023\)](#) note that firms can learn foreign market knowledge from social networks, which is crucial for overcoming the liabilities of foreignness. AI-driven analytics enhance these capabilities by identifying key connections and streamlining knowledge sharing among partners, thereby enriching the firm's knowledge base and supporting its internationalisation efforts.

Moreover, the dynamic capabilities framework emphasises the importance of firms' ability to adapt and reconfigure their resources in response to changing environments. [Duy \(2023\)](#) discusses how MNEs utilise both exploitative and explorative learning to enhance market adaptation during international expansion. AI and ML can support this dynamic capability by providing real-time insights that inform resource allocation and strategic adjustments.

Moreover, AI and ML contribute to the development of competitive advantages in international markets by enabling data-driven predictions and informed decision-making. [Herrero, Jiménez, and Delgado \(2021\)](#) illustrate how ML methods can forecast the success of internationalisation procedures, empowering firms to tailor their strategies based on robust analytical insights. These predictive capabilities reduce risks associated with international expansion and optimise the allocation of resources to achieve strategic goals.

However, the effective implementation of AI and ML in knowledge enhancement requires a strong foundation in data management and analytics. Organisations must invest in developing their data infrastructure and analytical capabilities to fully leverage these technologies. As noted by [Zakery and Saremi](#)

(2020), the role of organisational learning is crucial in this context, as firms must continuously adapt their knowledge acquisition techniques to succeed in internationalisation. This continuous learning process is facilitated by AI and ML, which can automate data analysis and provide insights that drive strategic decision-making.

7.6 Data verification and quality assurance in Internet-based knowledge acquisition

Data verification and quality assurance play a pivotal role in Internet-based knowledge acquisition for digitally internationalised companies. These processes are essential for navigating the complexities of global markets, where the reliability, accuracy, and actionability of data directly impact strategic decision-making. Establishing robust quality assurance frameworks and verification mechanisms is critical to ensuring that the knowledge acquired through online platforms meets the standards necessary for competitive international operations.

The importance of quality assurance in data management cannot be overstated. For digitally internationalised companies sourcing data from diverse geographical locations and platforms, maintaining integrity and reliability is paramount. Effective quality assurance frameworks must address attributes such as accuracy, completeness, consistency, and timeliness to uphold high data standards.

Nicole and Wagh (2019) emphasise that poor data quality in big data engineering undermines the efficacy of analytical solutions, leading to inaccurate results. For companies operating in international markets, the implications of such inaccuracies are significant, as they can result in misguided decisions and missed opportunities. Thus, a proactive approach to data quality is essential for mitigating these risks and enhancing the value of acquired knowledge.

Accreditation also plays a role in reinforcing quality assurance in institutions engaged in international collaborations. Saito and Kim (2019) argue that accreditation is vital for establishing credibility in institutions engaged in international education. This principle applies equally to digitally internationalised companies, where adherence to recognised quality standards and certifications bolsters stakeholder trust and facilitates smoother international operations. Aligning data verification processes with globally recognised frameworks can enhance a company's reputation, making it a more reliable partner in global markets.

Digitally internationalised companies must adopt international best practices in data verification and quality assurance to remain competitive in the global marketplace. This involves not only adhering to established standards but also continuously evaluating and improving their data management processes to align with evolving international norms. In addition to establishing frameworks for quality assurance, companies must also invest in the development

of advanced technologies that facilitate data verification. [Anisetti et al. \(2023\)](#) propose a trustworthiness assurance process for big data applications, aimed at addressing user distrust in complex data environments. Implementing such processes can significantly enhance the reliability of data used for decision-making, particularly in high-stakes international contexts.

Automation is another critical element in improving data verification efforts. [Wang et al. \(2019\)](#) introduce the concept of a “Data Capsule”, which aims to ensure automatic compliance with data privacy regulations. Automated compliance mechanisms like this can alleviate the manual burden of oversight while enhancing the efficiency of data management practices. This approach is particularly valuable for digitally internationalised companies navigating diverse regulatory frameworks across countries. Automation not only ensures adherence to privacy and security standards but also streamlines the integration of data verification into everyday operations.

In addition to internal processes, collaboration with external partners can also enhance data verification efforts. Digitally internationalised companies can leverage partnerships with industry experts, academic institutions, and other organisations to access additional expertise and resources. Such collaborations enhance the robustness of quality assurance frameworks, ensuring the reliability of acquired knowledge. By working with trusted partners, companies can address gaps in their internal systems and benefit from a broader pool of insights and best practices.

Maintaining high data quality standards also has implications beyond operational efficiency. It directly affects organisational reputation and stakeholder trust, which are critical for long-term success in international markets. For digitally internationalised companies, prioritising data verification and quality assurance helps build trust with customers, investors, and partners. This trust not only supports current operations but also fosters enduring relationships that drive sustained growth and competitiveness.

In an increasingly intricate global market, ensuring data quality will be vital for crafting effective international strategies, allowing companies to respond dynamically and operate with clarity and confidence.

7.7 In-house knowledge acquisition versus outsourcing of knowledge acquisition

Digitally internationalised companies also face a fundamental decision when it comes to knowledge acquisition – whether to develop and manage this process internally or to outsource it to external experts, advisors, or specialised firms. This choice carries significant implications for resource allocation, organisational learning, and competitive advantage. Each approach offers distinct advantages and challenges, making it essential for firms to carefully evaluate their strategic priorities and operational capabilities.

Acquiring knowledge internally enables firms to retain full control over the processes of data collection, analysis, and strategic application. This approach promotes organisational learning, enhancing the firm's absorptive capacity, which refers to its ability to recognise, assimilate, and apply new knowledge effectively (Cohen, Levinthal, 1990). Companies that rely on internal teams often benefit from greater alignment between knowledge acquisition activities and overall business objectives, as well as the preservation of proprietary insights.

However, in-house knowledge acquisition can be a resource-intensive endeavour, demanding significant investments in advanced technology, skilled personnel, and robust infrastructure. For instance, advanced analytics tools and skilled personnel are essential for managing the complexities of big data and digital platforms (Ardagna, Ceravolo, Damiani, 2016). Firms must also ensure that their internal systems are agile enough to adapt to rapidly changing market conditions, which can be particularly challenging for SMEs with limited resources.

In contrast, outsourcing knowledge acquisition involves engaging external experts or organisations to gather, analyse, and interpret data on behalf of the firm. This approach is particularly beneficial for companies entering unfamiliar markets or lacking the internal capacity to manage complex knowledge processes. By leveraging the expertise of consultants, market research firms, or industry specialists, businesses can access high-quality insights without overburdening their internal teams.

One significant advantage of outsourcing is the ability to tap into specialised skills and technologies that may not be available in-house. For example, external firms often have access to advanced tools for predictive analytics, AI-driven modelling, and market trend analysis. Moreover, outsourcing can accelerate the knowledge acquisition process, enabling firms to respond more quickly to emerging opportunities or threats in international markets.

Nevertheless, reliance on external partners introduces risks, including potential misalignment of priorities and concerns about data confidentiality. Firms must establish robust contractual agreements and oversight mechanisms to ensure that outsourced knowledge aligns with their strategic goals and complies with ethical standards.

For many companies, the optimal solution lies in adopting a hybrid model that combines internal and external capabilities. This approach allows firms to leverage the strengths of both strategies while mitigating their respective limitations. For example, a company might use its internal team to manage core knowledge processes and collaborate with external partners for specialised tasks, such as conducting in-depth market analyses or implementing advanced AI tools.

Ultimately, the decision to acquire knowledge in-house or through outsourcing depends on an array of factors, including the firm's size, industry, market dynamics, and strategic objectives. Digitally internationalised companies must assess their existing capabilities, resource availability, and the nature of the

knowledge required to determine the most effective approach. As global markets become increasingly interconnected and dynamic, the ability to strategically balance these options will be a critical determinant of success.

7.8 Conclusions

The integration of digital tools and technologies has fundamentally transformed the processes of knowledge acquisition for digitally internationalised companies. As demonstrated throughout this chapter, businesses now have unparalleled opportunities to leverage innovations such as big data analytics, AI, cloud computing, and IoT to effectively navigate the complexities of global markets. These tools not only enhance the capacity to collect, analyse, and apply knowledge but also redefine traditional business models by fostering innovation and adaptability.

For managers of digitally internationalised companies, the findings underscore the importance of investing in robust digital infrastructures that support efficient knowledge acquisition and strategic decision-making. A balanced approach to knowledge acquisition, combining internal efforts with external expertise, emerges as particularly advantageous. Internal strategies ensure control over context-specific, proprietary insights, while outsourcing provides access to specialised capabilities and advanced technologies. The hybrid approach allows businesses to optimise resource allocation and remain agile in highly dynamic environments. Additionally, fostering a culture of continuous learning is essential. Organisations must ensure that employees adapt to technological advancements, equipping them to effectively utilise digital tools while maintaining a human-centred perspective in decision-making.

At a broader level, the findings have implications for policymakers and institutions responsible for data governance. Policymakers should prioritise ensuring the accessibility and reliability of open data while addressing challenges in cross-border data management. Clear regulatory frameworks and international standards are crucial for enabling businesses to confidently utilise digital tools in global contexts. By supporting equitable access to high-quality data, institutions can foster innovation and facilitate the growth of businesses across industries and regions.

This chapter also contributes to the theoretical discourse by contextualising established frameworks such as the Knowledge-Based View and the Uppsala model within the digital era. The Knowledge-Based View emphasises the strategic value of knowledge as a key resource for gaining and maintaining competitive advantage. The analysis demonstrates how digital tools align with this framework, enabling real-time acquisition of market intelligence and global insights. Similarly, the Uppsala model's traditional emphasis on incremental market entry through experiential learning is revisited, showing how digitalisation allows companies – particularly born-global firms and SMEs – to bypass gradual processes and achieve rapid internationalisation.

By exploring the interplay between tacit and explicit knowledge, the chapter highlights the necessity of integrating human expertise with digital technologies. Tacit knowledge, deeply embedded in individual experience and organisational culture, enriches explicit knowledge, which is codified and transferable through digital means. This synthesis underscores the importance of harmonising technological advancements with human-centric approaches to achieve sustainable innovation and competitiveness.

In conclusion, the integration of digital tools into knowledge acquisition processes represents both an opportunity and a challenge for digitally internationalised companies. Businesses that strategically align their technological capabilities with organisational objectives, while maintaining a focus on adaptability and learning, will be better positioned to thrive in the rapidly evolving landscape of international business. Through collaborative efforts, firms can leverage the potential of digital tools to achieve sustained growth and competitiveness in an increasingly interconnected world. Policymakers, in turn, must create regulatory environments that foster innovation while addressing the complexities of global data governance.

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8 Artificial intelligence and big data analytics in international marketing

Navigating opportunities and challenges

Piotr Zaborek

8.1 Introduction

The advent of artificial intelligence (AI) and big data has revolutionised many industries and business processes, with international marketing being a significant beneficiary. Despite the potential benefits, the integration of AI in big data analytics for international marketing presents a double-edged sword of opportunities and challenges that require careful navigation. This chapter aims to explore how AI technologies can be effectively leveraged in international marketing while addressing the associated risks and limitations.

One of the primary benefits of utilising AI in processing big data for marketing is the ability to derive actionable insights from vast amounts of data. AI technologies, such as machine learning and predictive analytics, enable marketers to analyse consumer behaviour, preferences, and trends more effectively than traditional methods. For instance, past research indicates that AI can significantly enhance predictive analytics, improve customer segmentation, and facilitate the creation of personalised content in digital marketing campaigns (Ma, 2023). This capability allows businesses to tailor their marketing strategies to meet the specific needs of their target audiences, thereby increasing engagement and conversion rates. Furthermore, the application of AI in customer journey mapping can lead to a deeper understanding of consumer interactions, enabling marketers to optimise touchpoints and enhance the overall customer experience (D'Arco, Presti, Marino, Resciniti, 2019).

Moreover, the incorporation of AI and big data analytics in international marketing can lead to improved operational efficiency. By automating data processing and analysis, businesses can save time and resources, allowing them to focus on strategic decision-making and creative aspects of marketing (Muhammad, 2023). The ability to quickly analyse large datasets also facilitates real-time marketing adjustments, enabling companies to respond swiftly to changing market conditions and consumer preferences (Davalas, 2020). This agility is particularly crucial in today's fast-paced digital environment, where consumer expectations are constantly evolving (Alghamdi, 2023). Additionally,

the integration of AI can enhance the effectiveness of marketing campaigns by optimising customer targeting and personalising communications, which has been shown to improve overall campaign performance (Logalakshmi, Krishnan, Maheswari, 2023).

However, the use of AI and big data in the marketing context also presents significant threats, particularly concerning data privacy and ethical considerations. As businesses increasingly rely on consumer data to drive their marketing strategies, concerns about data breaches, misuse of information, and the potential for invasive marketing practices have emerged (Badawy, 2023). The ethical implications of AI-driven marketing practices are a growing area of concern, as companies must navigate the fine line between personalisation and privacy invasion (Ma, 2023). Research has highlighted the need for businesses to adopt responsible data practices and ensure compliance with regulations such as the General Data Protection Regulation (GDPR) to protect consumer rights and maintain trust (Mogaji, Olaleye, Ukpabi, 2019).

Furthermore, the rapid advancement of AI technologies raises questions about the potential for bias in marketing algorithms. If not carefully managed, AI systems can perpetuate existing biases present in the data they are trained on, leading to discriminatory marketing practices that could alienate certain consumer groups (Zaman, 2022). This risk underscores the importance of implementing robust oversight and accountability measures in the development and deployment of AI-driven marketing tools (Chen, 2023). Additionally, the reliance on AI for decision-making can lead to a lack of transparency, making it challenging for consumers to understand how their data is being used and how marketing decisions are made (Mir, Kar, Gupta, 2021).

Overall, while the integration of AI and big data in marketing offers numerous benefits, including enhanced consumer insights, improved operational efficiency, and personalised marketing strategies, it also poses significant threats related to data privacy, ethical consideration, and potential biases.

Accordingly, this chapter addresses several core research questions, including:

- 1 How can AI and big data analytics be effectively leveraged to enhance international marketing strategies?
- 2 What are the specific applications, benefits and challenges of popular AI technologies, such as natural language processing, machine learning, and deep learning, in supporting marketing operations?
- 3 What future research directions are critical for enhancing the ethical attributes, cultural adaptability, and long-term strategic benefits of AI in international marketing?

In the rest of this chapter, I will overview three of the information technologies most relevant for international marketing, harnessing AI algorithms and big data inputs. Relying on published research by other authors, I will discuss their

crucial benefits and possible risks. The final section presents implementations of AI and big data in six multinational companies: five of them offering success stories and one serving as a cautionary tale.

8.2 Overview of AI-driven, big data-enabled systems

In a recent systematic literature review, [Chintalopati and Pandey \(2022\)](#) discuss the use of AI across different marketing functions. In their work, three technologies stand out as particularly promising: natural language processing (NLP), machine learning (ML) in social network analysis, and deep learning (DL) in recommendation systems.

NLP has emerged as a pivotal technology in international marketing, particularly for analysing unstructured textual data in different languages sourced from social media, customer reviews, and online forums. The ability of NLP to process and interpret vast amounts of text data allows marketers to gain insights into consumer sentiment, preferences, and trends, which can significantly enhance strategic decision-making and customer engagement.

One of the primary applications of NLP in marketing is sentiment analysis, which involves determining the emotional tone behind a series of words. This technique is particularly useful for analysing customer reviews and social media posts, where the language used can provide valuable insights into consumer perceptions of products and brands. Recent advancements in NLP, particularly through the use of deep learning models such as BERT (Bidirectional Encoder Representations from Transformers), have improved the accuracy of sentiment analysis by enabling models to understand context and nuances in language better than traditional methods ([Tanana, Soma, Kuo, Bertagnolli, Dembe, Pace, Srikumar, Atkins, Imel, 2021](#)). This capability allows marketers to gauge public sentiment towards their brands in real time, facilitating timely responses to consumer feedback and enhancing brand reputation management ([Lin, 2024](#)).

Moreover, NLP can automate the process of extracting relevant information from unstructured data, which is often abundant in international marketing contexts. For instance, NLP algorithms can sift through thousands of customer reviews to identify common themes or issues, such as product quality or customer service experiences. This automated analysis not only saves time but also provides a more comprehensive view of customer opinions than manual methods could achieve ([Németh, Koltai, 2023](#)). By employing NLP techniques, companies can categorise feedback into actionable insights, allowing for targeted improvements in product offerings and customer service strategies ([Michael, 2023](#)).

In addition to sentiment analysis, NLP can also enhance customer engagement through personalised marketing efforts. By analysing the language used in customer interactions, businesses can tailor their messaging to resonate more effectively with different segments of their audience. For example, NLP can

identify specific keywords or phrases that appeal to particular demographics, enabling marketers to craft messages that are more likely to engage those consumers. This level of personalisation is increasingly important in a competitive marketplace where consumers expect brands to understand their individual needs and preferences (Michael, 2023).

Furthermore, NLP plays a crucial role in monitoring brand reputation across various multinational online platforms. By continuously analysing social media conversations and online reviews, businesses can quickly identify potential crises or negative sentiment trends before they escalate. This proactive approach allows companies to address issues promptly, thereby mitigating potential damage to their brand image (Anese, Corazza, Costola, Pelizzon, 2023). The ability to analyse unstructured data in real time equips marketers with the tools necessary to respond to consumer concerns and adapt their strategies accordingly.

However, the use of NLP in marketing is not without challenges. One significant concern is the potential for bias in NLP algorithms, which can lead to misinterpretations of consumer sentiment especially in international, cross-cultural environments. If the training data used to develop these algorithms is not representative of the broader population, the insights generated may not accurately reflect the views of all consumers (Al, 2019). Additionally, the complexity of human language, including sarcasm, idioms, and cultural references, can pose difficulties for NLP systems, potentially leading to inaccurate sentiment assessments. Therefore, it is essential for marketers to continually refine their NLP models and ensure they are trained on diverse datasets to improve their reliability and effectiveness.

Moreover, ethical considerations surrounding data privacy and consent are paramount when utilising NLP for analysing consumer data. As marketers leverage NLP to analyse unstructured data from social media and online forums, they must be mindful of the ethical implications of using personal data without explicit consent (Michael, 2023). Adhering to regulations such as the GDPR of the European Union is crucial to maintaining consumer trust and avoiding potential legal repercussions (Németh, Koltai, 2023). As such, marketers must strike a balance between leveraging data for insights and respecting consumer privacy rights.

Overall, NLP serves as a powerful tool for marketers seeking to analyse unstructured textual data from social media, customer reviews, and online forums. Its applications in sentiment analysis, information extraction, personalised marketing, and brand reputation monitoring provide businesses with valuable insights that can enhance customer engagement and inform strategic decision-making. However, marketers must remain vigilant regarding the potential biases in NLP algorithms and the ethical considerations surrounding data privacy. As NLP technology continues to evolve, its integration into marketing strategies will likely become increasingly sophisticated, offering even greater opportunities for businesses to connect with their consumers.

Machine learning (ML) has become an integral component of social network analysis (SNA) in the international marketing context, enabling businesses to derive actionable insights from complex social interactions and vast amounts of data generated on social media platforms. By leveraging ML algorithms, marketers can analyse user behaviour, predict trends, and optimise marketing strategies based on the intricate relationships and dynamics within social networks.

One of the primary applications of ML in SNA is the identification of consumer behaviour patterns through the analysis of social media interactions. By employing algorithms such as clustering and classification, marketers can segment users based on their preferences, engagement levels, and social connections. For instance, clustering algorithms can group users with similar interests or behaviours, allowing marketers to tailor their campaigns to specific segments effectively. This segmentation is crucial for enhancing targeted marketing efforts, as it enables businesses to deliver personalised content that resonates with different audience groups.

Moreover, ML techniques facilitate sentiment analysis, which is essential for understanding consumer opinions and emotions expressed on social media platforms. By analysing textual data from posts, comments, and reviews, ML algorithms can classify sentiments as positive, negative, or neutral, providing marketers with insights into public perception of their brands and products (ShiXiao, 2023). This capability allows businesses to gauge the effectiveness of their marketing campaigns in real time and adjust their strategies accordingly to address any negative sentiment or to capitalise on positive feedback. The integration of sentiment analysis into SNA helps marketers not only to monitor brand reputation across multiple international markets but also to identify emerging trends and consumer preferences that can inform product development and marketing strategies (Ebrahimi, Basirat, Widge, Nekomahmud, Gholampour, Fekete-Farkas, 2022).

Another significant advantage of using ML in SNA is the ability to predict consumer behavior based on social network characteristics. Research has shown that the structure and dynamics of social networks can significantly influence consumer decisions and market outcomes (He, 2023). By analysing the connections and interactions among users, ML models can predict how information diffuses through networks and how it affects consumer purchasing behavior. For example, businesses can identify key influencers within a network and target them for marketing campaigns, leveraging their reach to amplify brand messages (Taherdoost, 2023). This approach not only enhances the effectiveness of international marketing strategies but also allows for more efficient resource allocation by focusing efforts on high-impact individuals within the network.

Furthermore, ML can enhance the effectiveness of recommendation systems by analysing user interactions and preferences within social networks. By employing collaborative filtering and content-based filtering techniques, businesses can provide personalised product recommendations to users based on their social connections and past behaviors (Yin, 2022). This personalisation

is critical in today's competitive international market, where consumers expect tailored experiences that cater to their individual needs and preferences. The use of ML in recommendation systems not only improves customer satisfaction but can also drive higher conversion rates and sales.

The application of ML in SNA also extends to the analysis of user-generated content, such as reviews and comments. By employing NLP techniques in conjunction with ML, marketers can extract valuable insights from unstructured data. For instance, advanced ML models can analyse the language used in customer feedback to identify common themes, issues, and sentiments, enabling businesses to make data-driven decisions regarding product improvements and customer service enhancements (Alnasrawi, 2024). This analysis can also inform marketing strategies by revealing consumer pain points and preferences, allowing businesses to address these factors in their messaging and offerings.

Despite its vast potential, the integration of ML in SNA may end up in failure. One significant concern is the potential for bias in ML algorithms, which can lead to skewed insights and ineffective marketing strategies. If the training data used to develop these algorithms is not representative of the broader population, the resulting predictions may not accurately reflect consumer behaviour (Guo, Li, Mu, 2021). Additionally, the complexity of social networks and the dynamic nature of user interactions pose challenges for accurately modelling and predicting behaviour. Marketers must continuously refine their ML models and ensure they are trained on diverse and comprehensive datasets to improve their reliability and effectiveness (Gafarov, Berdnikov, Ustin, 2022).

Moreover, ethical considerations surrounding data privacy and consent are paramount when utilising ML for analysing social network data. As marketers leverage ML to analyse user interactions and preferences, they must be mindful of the ethical implications of using personal data without explicit consent (Lu, Zhao, 2024). Adhering to regulations such as the GDPR is crucial to maintaining consumer trust and avoiding potential legal repercussions. Marketers must strike a balance between leveraging data for insights and respecting consumer privacy rights.

In conclusion, machine learning plays a vital role in social network analysis within the international marketing context, enabling businesses to derive valuable insights from complex social interactions and vast amounts of data. Its applications in consumer behaviour prediction, sentiment analysis, recommendation systems, and user-generated content analysis provide marketers with the tools necessary to enhance their strategies and improve customer engagement. However, marketers must remain vigilant regarding the potential biases in ML algorithms and the ethical considerations surrounding data privacy. As ML technology continues to evolve, its integration into marketing strategies will likely become increasingly sophisticated, offering even greater opportunities for businesses to connect with their consumers.

Deep learning has revolutionised the field of recommendation systems, providing enhanced capabilities to analyse complex data and deliver personalised

content to users. By leveraging neural networks, deep learning techniques can uncover intricate patterns and relationships within large datasets, significantly improving the accuracy and relevance of recommendations in various marketing contexts, especially in culturally diversified international markets (Sysko-Romańczuk, Zaborek, Wróblewska, Dąbrowski, Tkaczuk, 2022).

One of the primary advantages of using deep learning in recommendation systems is its ability to process and learn from unstructured data, such as text, images, and user interactions. Traditional recommendation systems often rely on collaborative filtering or content-based filtering methods, which can struggle with sparse data and limited feature extraction capabilities (Li, 2024). In contrast, deep learning models can automatically learn high-level features from raw data, allowing them to capture deeper insights into user preferences and item characteristics (Li, 2024). For example, deep learning can effectively analyse user-generated content, such as reviews and social media posts, to identify sentiments and preferences that inform product recommendations.

Deep learning architectures, such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs), have been successfully applied to recommendation systems. CNNs are particularly effective in processing visual data, making them suitable for applications like image-based product recommendations (Lu, Liu, 2023). RNNs, on the other hand, excel in handling sequential data, which is beneficial for session-based recommendations where user preferences may change over time (Moreira, Ferreira, Cunha, 2018). By integrating these deep learning techniques, marketers can create more dynamic and responsive recommendation systems that adapt to user behavior in real time.

Deep learning enhances the ability to perform hybrid recommendations, combining collaborative filtering with content-based approaches. This hybridisation allows for a more comprehensive understanding of user preferences by considering both user interactions and item attributes (Gupta, Wu, Wang, Naumov, Reagen, Brooks, Zhang, 2020). For example, a hybrid model might analyse a user's past purchases and their interactions with similar products to generate more accurate recommendations. This capability is particularly valuable in international e-commerce settings, where users may have diverse interests and preferences that evolve over time.

Another significant benefit of deep learning in recommendation systems is its scalability. As the volume of data generated by users continues to grow, traditional recommendation algorithms may struggle to keep up with the increasing complexity of user-item interactions (Fudholi, Rani, Arifin, Satyatama, 2021). Deep learning models, however, can efficiently process large datasets and learn from them, enabling businesses to scale their recommendation systems without sacrificing performance. This scalability is crucial for platforms like Amazon and Netflix, where millions of users interact with vast catalogues of products and content daily (Gupta *et al.*, 2020).

Deep learning can also improve the novelty and diversity of recommendations. Traditional recommendation systems often suffer from the “filter bubble”

effect, where users are repeatedly shown similar items, limiting their exposure to new and diverse options (Zhang, Yao, Sun, Tay, 2019). Deep learning models can be designed to incorporate mechanisms that promote novelty, ensuring that users are presented with a broader range of recommendations that align with their interests while also introducing them to new products or content (Li, 2024). This approach not only enhances user satisfaction but also encourages exploration and engagement with the platform.

It should be noted, though, that the implementation of deep learning in recommendation systems may be problematic. One of the primary concerns is the need for large amounts of labeled training data to effectively train deep learning models. In many cases, obtaining sufficient data can be difficult, particularly for niche products or new international users (Alrashidi, 2024). Also there is evidence that deep-learning recommendation systems may be less effective in anticipating the preferences of long-term versus new customers (Sysko-Romańczuk *et al.*, 2022). Additionally, deep learning models can be computationally intensive, requiring significant resources for training and inference, which may pose challenges for smaller businesses or startups (Kumar, Krishna, 2020).

The interpretability of deep learning models remains a critical issue. While these models can achieve high accuracy, understanding the reasoning behind their recommendations can be challenging. This lack of transparency can lead to trust issues among users, who may be hesitant to rely on recommendations generated by “black box” models (Wilson, Korshin, Pollard, Leckie, 2022). As a result, researchers are actively exploring methods to enhance the interpretability of deep learning-based recommendation systems, ensuring that users can understand and trust the recommendations they receive (Feng, Zhang, Ren, Shang, Zhu, Guan, Xu, 2019).

To sum up, deep learning has significantly advanced the capabilities of recommendation systems in international marketing, enabling businesses to deliver personalised and relevant content to users. Its ability to process unstructured data, perform hybrid recommendations, and scale effectively makes it a powerful tool for enhancing user engagement and satisfaction. However, challenges related to data requirements, computational demands, and model interpretability must be addressed to fully realise the potential of deep learning in recommendation systems.

8.3 Advantages and challenges of deploying AI systems on international markets

AI systems are reshaping the marketing landscape by offering innovative tools to navigate the complexities of international markets. Technologies such as natural language processing, machine learning, and deep learning enable businesses to better understand diverse consumer bases, optimise operations, and create highly targeted campaigns. These capabilities open up new opportunities while also presenting challenges that require thoughtful management.

One significant advantage of AI in international marketing is its ability to analyse and interpret large amounts of unstructured data, such as customer reviews, social media posts, and online forums. NLP techniques are particularly adept at uncovering sentiment and behavioural trends in various cultural contexts, helping brands tailor their messaging to resonate with local audiences. For instance, sentiment analysis powered by advanced deep learning models can detect subtle differences in emotional tone or cultural nuances, allowing for the creation of campaigns that connect meaningfully with diverse consumer groups (Fouadi, Moubtahij, Lamtougui, Yahyaouy, 2022).

Predictive analytics is another key area where AI excels, leveraging historical data to forecast consumer trends and behaviours. In international markets, where consumer preferences and economic conditions can vary widely, this capability provides businesses with a competitive edge. By identifying emerging patterns in regional markets, companies can anticipate demand shifts and adapt their strategies proactively, improving both efficiency and responsiveness (Xu, Cohen, 2018).

AI systems also enable real-time feedback and dynamic campaign adjustments, which are crucial for maintaining relevance in fast-moving markets. These technologies can monitor consumer reactions as they happen, providing marketers with actionable insights to refine their approaches immediately. For example, real-time sentiment analysis allows companies to address negative feedback promptly, mitigating potential damage to their brand reputation (ShiXiao, 2023). Additionally, AI-powered tools such as chatbots deliver consistent, multilingual customer support, enhancing consumer satisfaction and loyalty across diverse regions (Taherdoost, 2023).

However, the adoption of AI in international marketing is fraught with challenges. Cultural and linguistic diversity poses significant hurdles for NLP systems, as they must contend with the complexities of language, including idioms, slang, and regional dialects. Misinterpretations in these areas can lead to ineffective campaigns, underscoring the need for robust localisation efforts and comprehensive training datasets (D'Cunha, Oni, Ganiyu, Edet, 2020).

Data privacy and ethical considerations also present substantial obstacles. With regulations like GDPR governing data use in many regions, companies must navigate a complex legal landscape to ensure compliance. Beyond legal requirements, ethical concerns around transparency and consumer consent are critical for maintaining trust. Striking a balance between leveraging data insights and respecting privacy is essential for long-term success.

The implementation of AI systems requires significant technical expertise and resources, which can be a barrier for smaller enterprises. Developing and maintaining sophisticated algorithms often demands substantial investment in infrastructure and skilled personnel. This creates a competitive disparity, as larger organisations are better positioned to capitalise on AI's advantages while smaller businesses may struggle to keep pace (Taherdoost, 2023).

Moreover, the rapidly evolving nature of consumer behaviour and market trends adds another layer of complexity. AI systems must be continuously updated and retrained to stay relevant, as outdated models can quickly become ineffective. This dynamic environment calls for agile management and ongoing investment in technological innovation (ShiXiao, 2023).

Overall, AI systems offer transformative potential for international marketing, enabling businesses to connect with culturally diverse audiences, anticipate market shifts, and respond to consumer needs in real time. However, the successful adoption of AI systems hinges on overcoming cultural, technical, and ethical challenges, ensuring that these sophisticated tools deliver meaningful value across global markets.

8.4 Illustrative examples of multinational companies implementing AI-driven tools in marketing

Having discussed the most relevant AI and big data systems for international marketing, it is worthwhile to show actual implementation efforts undertaken by six well-known international consumer companies. These examples not only demonstrate best practices but also highlight risks that could undermine the success of such projects.

8.4.1 Netflix: advanced personalisation through AI and big data

Netflix has revolutionised the streaming industry by employing sophisticated AI algorithms that process billions of data points daily to deliver highly personalised content and optimise user experience (Gómez-Uribe, Hunt, 2016). The company's hybrid recommendation system combines collaborative filtering, content-based filtering, and deep learning techniques to analyse user behaviour and content attributes comprehensively (Amatriain, Basilico, 2012).

Collaborative filtering enables Netflix to identify patterns in viewing habits by analysing similarities across users and content. By assuming that users with similar preferences will continue to enjoy similar content, this method allows the platform to recommend shows and movies enjoyed by like-minded viewers (Gómez-Uribe, Hunt, 2016). Content-based filtering delves into specific attributes of content – such as genre, director, cast, and even detailed metadata like scenes and dialogue – to suggest titles similar to what a user has previously watched (Amatriain, Basilico, 2012).

The integration of deep learning and neural networks further enhances Netflix's recommendation capabilities. Techniques like recurrent neural networks and convolutional neural networks help understand sequential viewing patterns and visual content, respectively, capturing complex non-linear relationships in the data to improve recommendation accuracy (Gómez-Uribe, Hunt, 2016). Additionally, Netflix employs extensive A/B testing to refine its algorithms and

user interfaces. By experimenting with different recommendation strategies, interface elements, and even streaming protocols, the company identifies the most effective versions to deploy at scale (Gomez-Uribe, Hunt, 2015).

These advanced AI techniques have yielded significant benefits for Netflix. Personalised recommendations have led to increased user engagement and retention, with higher viewer satisfaction keeping subscribers engaged longer and reducing churn rates (Gómez-Uribe, Hunt, 2016). The data-driven approach also guides Netflix in efficient content investment, allowing the company to predict which types of content will perform well. This strategy has contributed to the development of successful original productions, enhancing Netflix's competitive edge in the industry (Gómez-Uribe, Hunt, 2016).

Moreover, AI algorithms adjust video streaming quality in real time based on network conditions and device capabilities, ensuring a seamless viewing experience without buffering or quality degradation (Amatriain, Basilico, 2012). Predictive analytics help Netflix allocate resources efficiently, minimising financial risks associated with content acquisition and production. By forecasting viewer preferences, the company reduces the likelihood of investing in unsuccessful content (Gómez-Uribe, Hunt, 2016). The use of AI-powered A/B testing also refines promotional materials, such as thumbnails and trailers, optimising them to resonate with target audiences and improve click-through rates (Gomez-Uribe, Hunt, 2015).

Netflix continues to pioneer the use of AI algorithms to process billions of data points daily, delivering highly personalised recommendations and optimising content delivery. Since 2021, Netflix has expanded its application of AI beyond recommendations to include targeted advertising. The introduction of an ad-supported subscription tier has been a significant milestone, attracting over 70 million monthly active users by November 2024, with more than half of new subscribers in ad-supported markets opting for this plan. This integration of advertising into Netflix's ecosystem demonstrates the platform's ability to harness AI for dual purposes: viewer engagement and advertiser satisfaction (Investors.com, 2024).

8.4.2 Amazon: precision marketing and dynamic pricing through AI

Amazon harnesses the power of AI and big data to enhance targeted advertising and implement dynamic pricing strategies, fundamentally transforming the e-commerce landscape (Linden, Smith, York, 2003). By deploying machine learning algorithms and predictive analytics, Amazon interprets vast amounts of user data to personalise shopping experiences and optimise pricing in real time.

Through NLP, Amazon analyses customer reviews, search queries, and browsing history, gaining insights into customer sentiment and intent. This deep understanding enables the platform to improve product recommendations

and deliver highly targeted advertisements (Amazon Web Services). Predictive analytics and machine learning models forecast purchasing behaviours by examining past transactions, viewed items, and time spent on product pages. Techniques such as logistic regression, decision trees, and gradient boosting machines estimate the probability of a user making a purchase, allowing Amazon to tailor marketing efforts effectively (Chen, Mislove, Wilson, 2016).

One of the most distinct advantages of Amazon's recommendation system lies in its ability to facilitate cross-selling, which refers to the strategy of prompting customers to purchase related or complementary products. The effectiveness of this strategy can be seen in features such as "Customers who bought this item also bought" and "Frequently Bought Together." These features leverage collaborative filtering to present additional items that enhance or complete the customer's original purchase, ultimately increasing average order value (Chen, Tsai, 2024). The company's dynamic pricing algorithms adjust prices in real time, considering factors like demand elasticity, competitor pricing, inventory levels, and customer behaviour. Machine learning models predict optimal price points to maximise sales and profits while maintaining competitiveness (Chen *et al.* 2016). Additionally, AI-driven inventory management systems forecast product demand, optimising stock levels to prevent overstocking or stockouts and improving fulfilment efficiency (Amazon Web Services).

The implementation of these AI strategies has brought substantial benefits to Amazon. Personalised advertisements and recommendations increase the likelihood of purchases, resulting in higher conversion rates. Dynamic pricing allows Amazon to adapt prices to market conditions swiftly, maximising profitability while offering competitive deals to customers (Zhang, 2024). Enhanced customer experiences through personalisation foster customer satisfaction and loyalty, encouraging repeat business (Amazon Web Services). Real-time insights from AI models enable efficient inventory management, reducing holding costs and ensuring timely product availability. By quickly adapting to market trends and customer preferences, Amazon maintains a significant competitive advantage in the e-commerce industry (Zhang, 2024).

Amazon continues to develop its AI-driven marketing and operational strategies, making dynamic pricing and personalised recommendations even more sophisticated. In 2024, Amazon leveraged its retail and customer behaviour data to launch advertising on Prime Video, underpricing ad slots to compete with platforms like Netflix. By integrating its retail insights with its streaming service, Amazon offers high targeting precision, giving brands significant value.

Additionally, the growth of Amazon Web Services (AWS) continues to bolster its data-driven capabilities. AWS reported a 19% sales increase in 2024, further solidifying its role in supporting advanced machine learning models that power Amazon's marketing strategies (Cinco Días, 2024).

8.4.3 Spotify: personalised music experience through AI

Spotify utilises advanced AI and big data analytics to deliver a highly personalised music streaming experience, setting a benchmark in the digital music industry (Bernhardsson, 2013). The platform employs sophisticated algorithms and machine learning techniques to recommend music and to curate playlists that resonate with individual user preferences.

Analysing user listening habits through collaborative filtering, Spotify identifies patterns among users with similar tastes, suggesting tracks that are popular within these groups (Bernhardsson, 2013). NLP plays a crucial role in processing song metadata, lyrics, blog posts, and articles, helping the platform understand the context and sentiment of music. This aids in accurate genre classification and trend identification, ensuring recommendations are both relevant and timely (Mudaliyar, 2024).

Deep learning models, particularly convolutional neural networks, analyse raw audio data to extract features such as tempo, key, mode, time signature, loudness, and danceability. This allows Spotify to recommend music based on acoustic similarities, enhancing the personalisation of the listening experience (Sander, Böhm, 2019). Reinforcement learning algorithms continuously learn from user interactions – like skips, saves, and playlist additions – to refine future recommendations, ensuring the system adapts to evolving user preferences (Mudaliyar, 2024). By creating detailed taste profiles and segmenting users into micro-genres and mood clusters, Spotify delivers highly targeted recommendations that deepen user engagement (Bernhardsson, 2013).

The benefits of these AI-driven strategies are significant. Personalised playlists such as “Discover Weekly” and “Release Radar” have enhanced user retention and engagement, increasing listening time and reducing churn rates. By staying ahead in identifying and promoting emerging music genres and artists, Spotify maintains its position as a market leader and trendsetter in the music industry (Sander, Böhm, 2019). The platform’s algorithms also support artist promotion and diversity, helping emerging artists gain exposure by connecting their music with users likely to appreciate it, thus enriching Spotify’s music catalogue (Bernhardsson, 2013). Additionally, Spotify leverages user data to offer targeted advertising opportunities to marketers, increasing ad relevancy and effectiveness (Mudaliyar, 2024).

Spotify remains a leader in using AI and big data for personalised music streaming, but recent years have seen both advancements and challenges. On the positive side, Spotify’s premium pricing adjustments and cost-saving initiatives have strengthened its profitability, with the company forecasting higher fourth-quarter profits in 2024 due to steady user growth (Reuters, 2024).

However, Spotify has faced challenges related to AI-generated fake albums, which have caused confusion among users and artists alike. The company has implemented stricter controls over content submissions and partnerships to

mitigate these issues, reflecting a proactive approach to maintaining content integrity (The Verge, 2024).

8.4.4 Coca-Cola: enhancing marketing campaigns with AI

Coca-Cola has embraced AI technologies to enhance its marketing campaigns, focusing on content creation and customer engagement to maintain its iconic brand presence (Ali, 2023). The company uses NLP and sentiment analysis to monitor consumer feedback across digital platforms, including social media and online reviews. This real-time data collection allows Coca-Cola to gauge public perception and emotional responses to its campaigns and products, enabling the company to tailor marketing messages that align with consumer preferences and cultural trends (Ali, 2023).

Leveraging generative AI tools, Coca-Cola creates dynamic and personalised marketing content such as video advertisements and social media posts. By analysing consumer data, AI predicts which types of content will resonate with different audience segments, allowing for highly targeted and effective marketing strategies. An example of this is Coca-Cola's use of AI to develop dynamic, location-specific billboards, significantly improving engagement rates by delivering relevant content to specific markets (Ali, 2023).

The integration of AI has led to enhanced customer engagement, with personalised content driving higher interaction rates and strengthening brand loyalty. Real-time sentiment analysis enables Coca-Cola to adapt its marketing campaigns swiftly, ensuring messages remain relevant and effective in rapidly changing market conditions. The automation of content creation and data analysis has also resulted in cost efficiency, reducing the time and resources required for manual processes and allowing the company to allocate resources more effectively. By utilising cutting-edge AI technologies, Coca-Cola not only enhances its marketing effectiveness but also reinforces its brand image as an innovator in the industry.

8.4.5 Unilever: transforming market research and product development with AI

Unilever employs AI and big data to optimise market research, product innovation, and supply chain management, driving efficiency and consumer satisfaction in its global operations (Purpose Brand, 2023). The company utilises machine learning algorithms to analyse data from diverse sources, including social media, customer feedback, and sales records. By applying predictive analytics, Unilever identifies emerging consumer trends and preferences, such as the increasing demand for sustainable and plant-based products, allowing the company to swiftly respond to market shifts (Unilever, 2019).

One notable application is Unilever's use of data visualisation tools to track shifts in consumer sentiment. This technology enables the company to detect market opportunities faster than traditional research methods, facilitating quicker decision-making and strategy adjustment (Purpose Brand, 2023). AI-driven product innovation platforms simulate the potential success of new products by considering variables like market competition, consumer preferences, and production costs. This streamlines the product development cycle, reducing the time spent on manual research and development (Unilever, 2019).

The benefits of integrating AI into Unilever's operations are substantial. Predictive models accelerate time-to-market by allowing for quicker product launches and minimising delays. By designing products tailored to specific market needs, Unilever improves customer satisfaction and loyalty, achieving tighter consumer alignment (Purpose Brand, 2023). AI also reduces the risk of unsuccessful product launches by providing data-driven insights into potential market performance, enhancing the company's ability to allocate resources effectively. Furthermore, AI streamlines supply chain operations by optimising logistics and inventory management, leading to operational efficiency and cost savings (Unilever, 2019).

The case studies discussed so far showcase the benefits from integrating AI and big data into marketing practices, which could suggest that less positive results or outright failures are uncommon. But the innate complexity of these technologies makes the process of their implementation into companies' functions challenging and unreliable, as was aptly illustrated by the experience of Procter & Gamble.

8.4.6 Procter & Gamble: challenges in hyper-targeted advertising with AI and big data

Procter & Gamble (P&G), one of the world's largest consumer goods companies, ventured into the realm of AI and big data to enhance its marketing strategies. Aiming to leverage advanced data analytics and machine learning algorithms, P&G sought to deliver highly personalised advertisements to specific consumer segments on digital platforms such as Facebook and Google. The company anticipated that precision targeting would increase engagement, improve conversion rates, and ultimately drive sales growth (Hammett, 2017).

To achieve this, P&G employed AI techniques to analyse vast amounts of consumer data, including browsing behaviours, purchase histories, and demographic information. Machine learning models were developed to identify micro-segments within their target audience, allowing for the creation of tailored advertising content intended to resonate with each specific group. Utilising programmatic advertising platforms, P&G automated the buying and placement of ads in real time, optimising for factors like consumer behaviour patterns and contextual relevance.

However, despite the technological sophistication of these methods, P&G encountered significant challenges that hindered the success of their hyper-targeted advertising approach. The intense focus on micro-targeting led to an over-segmentation of their audience, inadvertently limiting the reach of marketing campaigns. By delivering ads to narrowly defined consumer groups, P&G found that they were not reaching a broad enough audience to generate the desired impact on brand awareness and sales (Terlep, Seetharaman, 2016). This overemphasis on personalisation diluted the benefits of scale that are crucial for consumer goods brands reliant on widespread recognition.

Moreover, the costs associated with creating and managing a multitude of personalised ad variations for different segments proved substantial. The operational complexity increased as the marketing team had to oversee numerous campaigns simultaneously, each requiring its own creative assets and performance monitoring. This complexity did not translate into proportional returns on investment; the expected uplift in engagement and sales did not materialise to justify the additional expenditure (Neff, 2017).

Another issue arose from the use of programmatic advertising algorithms, which sometimes placed P&G's ads alongside inappropriate or irrelevant content. This not only diluted the effectiveness of the ads but also posed a risk to the company's brand reputation. Concerns about brand safety became prominent when ads appeared next to controversial or offensive material, leading P&G to question the reliability of automated ad placements driven by AI (Vranica, 2018).

Additionally, the reliance on third-party data for targeting raised questions about data accuracy and consumer privacy. With increasing regulatory scrutiny over data protection, P&G faced challenges in ensuring that their data-driven marketing practices complied with privacy laws and ethical standards. The quality and integrity of the data used for targeting were also uncertain, potentially affecting the effectiveness of their campaigns.

Recognising these challenges, P&G decided to re-evaluate its digital advertising strategy. In 2017, the company announced a significant shift away from hyper-targeted Facebook ads, opting instead to focus on broader reach campaigns that emphasise mass marketing channels like television and wider digital audiences. P&G acknowledged that while personalisation has its benefits, their brands, which cater to a wide consumer base, require advertising strategies that build widespread brand recognition and trust (Roderick, 2016).

By moving towards broader reach marketing, P&G aimed to strengthen brand equity and drive higher sales volumes by engaging a larger, more diverse audience. The company redirected its marketing budget towards channels that offer greater scale, believing that mass reach is more effective for their consumer goods products. This strategic pivot was also accompanied by a call for greater transparency and accountability in digital advertising, with P&G urging industry partners to improve measurement standards and address issues related to ad fraud and viewability (Vizard, 2018).

The implications of P&G's experience extend beyond the company itself, influencing the broader marketing industry. Their decision prompted other major advertisers to reassess the efficacy of hyper-targeted digital advertising and sparked discussions about the optimal balance between personalisation and reach in marketing strategies (Vranica, 2018). P&G's chief brand officer, Marc Pritchard, emphasised the need for greater transparency and efficiency in the digital advertising supply chain, advocating for better standards and practices industry wide (Neff, 2017).

Procter & Gamble's venture into hyper-targeted advertising using AI and big data serves as a cautionary tale about the potential pitfalls of an unbalanced approach.

8.5 Conclusions

This chapter illustrates the transformative impact of AI and big data on marketing strategies across various industries. By leveraging advanced analytics and machine learning techniques, companies gain enhanced customer insights, streamline operations, and foster innovation, leading to sustained growth and competitive advantages.

Analysing vast amounts of data allows businesses to understand user behaviour and preferences deeply, enabling the creation of hyper-personalised experiences that increase customer satisfaction and loyalty (Gómez-Uribe, Hunt, 2016). Predictive models and automation optimise resource allocation and decision-making processes, resulting in cost savings and reduced time-to-market (Amazon Web Services n.d., Unilever, 2019). Companies like Spotify and Coca-Cola stay ahead of market trends by dynamically adapting to changing consumer behaviours and preferences, fostering innovative practices that set them apart from competitors (Mudaliyar, 2024; Ali, 2023).

Data-driven insights also mitigate risks by reducing the likelihood of unsuccessful product launches and marketing campaigns, as seen with Unilever's predictive analytics (Davenport, Guha, Grewal, Bressgott, 2020). Personalised content and targeted advertising enhance marketing effectiveness, increasing engagement and conversion rates, as demonstrated by Amazon and Netflix (Zhang, 2024; Gómez-Uribe, Hunt, 2016). AI and big data enable companies not only to deliver exceptional customer experiences but also achieve operational excellence, securing their positions as leaders in their respective industries.

However, despite generally positive outcomes, implementation failures are not uncommon. Several lessons emerge from the Procter & Gamble case regarding the implementation of AI and big data in marketing. It highlights the importance of aligning technological capabilities with strategic brand objectives. While AI enables advanced targeting, marketers must consider whether such precision aligns with their goals, especially for brands that benefit from mass appeal. The experience underscores the need to critically evaluate the effectiveness

of AI tools and data analytics, ensuring they deliver tangible business benefits without introducing undue complexity or risks.

Moreover, P&G's challenges emphasise the significance of protecting brand reputation in the digital advertising ecosystem. AI-driven ad placements must be carefully managed to avoid associations with inappropriate content, and companies should advocate for greater transparency and control over where their ads appear. The case also illustrates that over-reliance on technology without sufficient strategic alignment can lead to suboptimal outcomes. While personalisation is valuable, it must be balanced with the need for broad audience engagement to optimise marketing performance and achieve business objectives. Companies implementing AI in marketing should strive for a holistic strategy that leverages data insights while maintaining the broad reach necessary for brand growth.

Future research into the integration of AI and big data analytics in international marketing should prioritise several critical areas to address both theoretical and practical implications. A key avenue for exploration involves ethical AI deployment. As businesses increasingly rely on these technologies, it becomes imperative to develop comprehensive frameworks that govern their use. Issues such as data privacy, algorithmic bias, and transparency require nuanced examination, particularly in cross-border marketing contexts where regulatory environments like GDPR in Europe may differ significantly from emerging policies elsewhere. Comparative studies could illuminate best practices and highlight areas where uniformity in standards might benefit both consumers and businesses.

Another critical area for future inquiry is the cultural adaptation of AI systems in international marketing. AI models, particularly in natural language processing and sentiment analysis, often struggle to account for cultural nuances that shape consumer behaviour and language use. Research into culturally sensitive AI tools could advance international marketing by creating systems that resonate more deeply with local audiences. This would involve not only refining algorithms to interpret diverse linguistic and cultural expressions but also understanding how these adaptations influence consumer trust and engagement.

The long-term impact of AI and big data analytics on brand equity represents another fertile ground for research. While these technologies are often lauded for their immediate benefits in personalising marketing and improving operational efficiency, their effects on brand perception, loyalty, and overall equity over extended periods remain underexplored. Investigating how sustained AI use shapes consumer attitudes toward brands could provide valuable insights into balancing innovation with the preservation of brand identity and trust.

Finally, future studies could examine the role of AI in emerging markets, where unique challenges and opportunities arise. Infrastructure limitations, varying levels of digital literacy, and evolving regulatory landscapes influence how AI technologies are adopted and implemented. Understanding these dynamics is essential for creating inclusive AI solutions that cater to the needs of businesses

and consumers in these regions. Moreover, research could explore how the introduction of AI-driven marketing tools impacts market dynamics in developing economies, potentially reshaping competitive landscapes and consumer behaviours in the context of international marketing.

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9 Firm and managerial capabilities as antecedents of digital internationalisation at small- and medium-sized enterprises

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9.1 Introduction

According to the [World Bank \(2024\)](#), small- and medium-sized enterprises (SMEs) are crucial for the global economy, constituting nearly 90% of all businesses and employing over half of the global workforce. European Union (EU) counts nearly 26 million SMEs, employing around 90 million people and generating more than half of Europe's GDP ([European Commission, 2024](#)). In emerging economies, formal SMEs contribute around 40% of the national income (GDP), with informal SMEs playing an even greater role. SMEs are responsible for seven out of ten jobs in emerging markets, and according to rough estimates 600 million new jobs will be created by them by 2030 ([World Bank, 2024](#)). Despite their profound importance, SMEs are disproportionately less internationalised and less digitalised than large enterprises, which makes them an interesting research object.

Internationalisation of SMEs constitutes an important and well-studied area in international business research, and is contingent upon different determinants than foreign expansion of large firms. While large multinational enterprises (MNEs) with generous budgets for foreign direct investments (FDI), globally minded managers and cross-cultural and multilingual employees can expand their operations to several foreign markets simultaneously, for resource-constrained SMEs pursuing opportunities in international markets is known to cause additional risks and costs due to the liabilities associated with their small size, limited experience, and unfamiliarity with foreign markets ([Elbanna, Hsieh, Child, Narooz, Marinova, Puthusserry, Karmowska, Tsai, Zhang, 2024](#)), it is also considered to be a time-consuming process. In spite of that, traditional, product-based SMEs, which used to undergo a gradual internationalisation process utilising accumulated international knowledge and leveraging their network position, started to harness digital technologies to speed up their international growth. Moreover, nimble, flexible, and innovative small businesses such as born globals or born digitals became known for efficient capturing of international opportunities and adapting accelerated internationalisation paths. Thus, re-examining internationalisation of SMEs in light of digitalisation is crucial,

and despite some contributions still constitutes a research gap (Yordanova, Dana, Manolova, Pergelova, 2024).

Digital technologies are “transforming the very paradigm of international business” (Hervé, Schmitt, Baldegger, 2021, p. 5). Technologies that integrate information and communication in the realms of firms are beneficial to faster transport and the development of local and global networks (Li, Zhao, Ortiz, Chen, 2023). This, in turn, allows identifying and exploiting new opportunities, achieving efficiency, flexibility and effective planning, enhancing problem-solving skills, and fostering decision-making as well as innovation in firms (Caputo, Fiano, Riso, Romano, Maalaoui, 2022). Digital transformation also contributes to more efficient local adaptation of firms products and more client interaction, which contribute to better understanding of both old and new international markets (Durão, Pereira, Lobo, Moreira, 2024). Moreover, digitalisation could be particularly beneficial to SMEs by improving their ability to compete with larger companies through operating on an international scale, fully online, using lower risk entry modes, e.g., direct exports and compensating for a weaker physical presence in foreign markets. SMEs need to define a new international value proposition, based on an integrated digital strategy with all their ecosystem stakeholders in various parts of the world. Digital technology adoption has reduced distances and shaped international user communities, which small businesses can tap into. Digital platforms enable SMEs to reach new potential customers around the world and provide SME entrepreneurs with support in upgrading their skill set needed for cross-border e-commerce (CBEC). Moreover, digital platforms allow small businesses to streamline sales, financial transactions, and customer relationship management (Qi, Chan, Hu, Li, 2020). In addition, digitalisation allows for new ways of partnership formation between companies, innovation, and novel possibilities of skill sharing. To sum up, research concludes that digital technology is a propeller for SME internationalisation (Bargoni, Ferraris, Vilamová, Wan Hussain, 2024). Notwithstanding, digitalisation may also have negative effects on SME internationalisation (Feliciano-Cestero, Ameen, Kotabe, Paul, Signoret, 2023). Examples include cybersecurity issues and compliance with international laws associated with e-commerce, and variations in how consumers interact with various technologies in other countries.

For some SMEs, technological barriers are a major concern. During the pandemic, the unexpected need for digitalisation became evident as businesses shifted to online operations. Many small businesses struggled with limited digital infrastructure and a lack of technological expertise, which hindered their ability to adjust to the digital environment and effectively serve customers online both in domestic and international markets (Sharma, Kraus, Talan, Srivastava, Theodoraki, 2024). Moreover, data shows that 55% of EU SMEs have only a basic level in digitalisation (target: at least 90% by 2030), indicating that almost half of SMEs are not taking advantage of the opportunities created by digital technology (European Commission, 2022).

Dagnino and Resciniti (2021, p. 698) refer to digital internationalisation as “the ways with which the design and implementation of a digital transformation path and the application of digitalisation processes and tools may help firms of all sizes thrive in international and global contexts” and suggest that in the aftermath of the global pandemic the spread of the phenomenon was exceeded even more and innovations in business processes in order to adapt it were reinforced. Digital internationalisation technically is selling goods or services to foreign customers through digital channels rather than in traditional ways, thus in practical terms, CBEC is one of the most widespread digital internationalisation forms adopted among SMEs in the world. Two types of digital internationalisation can be distinguished: Internet-based internationalisation, which is focused on reaching international customers via e-commerce, and Internet-enabled internationalisation, where the digital channel exists in addition to physical subsidiaries or stores established in a foreign country. Digital internationalisation of the whole value chain, research and development (R&D) activities, or open-innovation are less popular within this group of enterprises.

Taking into consideration that digital technology adoption is considered inevitable for successful internationalisation, it is crucial to identify those determinants that are key to Internet-based and Internet-enabled internationalisation of SMEs. The general classification of SME internationalisation determinants applied in the literature stems from Ruzzier, Hisrich, and Antoncic (2006), who distinguish three groups of drivers: (1) environmental characteristics, (2) firm characteristics, and (3) managerial characteristics. A similar typology, presented in a literature review by Martineau and Pastoriza (2016), divides the foreign expansion determinants into (1) environmental level, (2) firm level, and (3) individual level.

Unlike environmental-level determinants, firm-level capabilities and competences as well as skills at the individual-level of key decision-makers, which can be identified as success drivers of digital internationalisation at SMEs, are within their direct influence. Thus, the objective of this chapter is to scrutinise the international business and international entrepreneurship literature to answer the following research questions:

- 1 What are the mechanisms through which the digital and traditional competences of firms act as enablers of digital internationalisation of SMEs?
- 2 What is the role of traditional competences in the digital internationalisation process?

9.2 Theoretical framework clarifying managerial and firm capabilities as determinants of SME digital internationalisation

Three theoretical foundations were fruitfully applied to explain the role of capabilities in fostering internationalisation of SMEs: resource-based view (RBV), dynamic capabilities, and micro-foundations perspectives. These frameworks

can serve to illuminate the drivers of digital internationalisation as well. First, a resource-based view conceptualises the firm as a bundle of resources. A key foundation of the RBV is that differences in resource endowments can generate competitive advantage and leverage the firm performance. Moreover, to generate competitive advantage, firms need to possess resources that are valuable, inimitable, rare, and non-substitutable (Barney, 1991), or, as argued by Grant (1991), firm resources must be characterised by transferability, durability, transparency, and replicability. Consequently, a firm's superior performance is explained by the possession of unique resources that create value in the marketplace (Barney, 1991). Both classifications of resources build on distinction between tangible and intangible assets. Intangible resources have more potential for leading to competitive advantages than the tangible resources due to the fact that they are socially complex, and thereby more difficult to capture and imitate (Peng, 2001). According to the resource-based view, international firms need to implement strategies that allow the exploration of internal capabilities and resources in the best possible way regarding external opportunities (Barney, 1991). According to this perspective, performance derives from the firm's resource endowments. Thus, in the context of SMEs engaging in digital internationalisation, traditional and digital capabilities residing with decision-makers (e.g., digital international competence proposed by Cahen and Borini (2020)) and within companies (e.g., digital networking capability investigated by Verhoef, Broekhuizen, Bart, Bhattacharya, Dong, Fabian, Haenlein, 2021) both represent important intangible organisational resources.

Dynamic capabilities are "higher-level competences that determine the firm's ability to integrate, build and reconfigure internal and external resources/competences to address, and possibly shape, rapidly changing business environments" (Teece, 2012, p. 1395). These types of capabilities may play an important role in the process of a firm's digital transformation. Teece, Pisano, and Shuen (1997) identified a dynamic capability as the company's ability to address rapidly changing situations, and, in consequence, the use (and usefulness) of dynamic capabilities is greater in fast-paced environments, such as those entered during foreign expansion or those influenced by digital technologies. Ordinary capabilities enable the company to perform operational tasks such as accounting, human resources management, logistics, and marketing, but they are easily replicable in a digital environment and no longer provide a sustainable competitive advantage. Conversely, dynamic capabilities, managing the change in a firm's ordinary capabilities, are harder to replicate (Teece, 2007). Following Pavlou and El Sawy (2011), who combined Teece *et al.* (1997) and Teece (2007) conceptualisations, the dynamic capabilities useful in the reconfiguration process can be divided into four clusters of activities:

- 1 Sensing: identify, develop, co-develop, and assess digitalisation trends and technological opportunities in relation to customer needs. Digital technologies

improve the gathering of relevant marketing intelligence information, which is a crucial action of the sensing capability.

- 2 Learning: renovation of existing capabilities with new knowledge once an opportunity is identified. As an example, a whole range of new capabilities is needed to assist the firm in facing the challenges of digitalisation, and the learning process is useful for addressing customer needs in new, foreign markets and opportunities emerging from digital transformation to capture value.
- 3 Integrating: integration of new knowledge “into a collective system to deploy the new configurations of operational capabilities” (Pavlou, El Sawy, 2011, p. 245).
- 4 Coordinating: asset “orchestration”; the ability to organise and deploy tasks, resources, and activities into new ordinary capabilities. Such transforming capabilities are crucial to realise the full potential of strategic change (Teece, 2012).

To sum up, each organisation has its own way to integrate the four dimensions and make dynamic capabilities unique, valuable, and recognisable for the customers. Managerial decisions determine how the firm “creates, shapes and deploys capabilities” (Teece, Peteraf, Leih, 2016, p. 19). Therefore, sensing, learning, integrating, and coordinating are the result of a process within a leadership executive team particularly in the case of SMEs, where the role of the owners-managers is key. Individual digital capabilities represent dynamic capabilities indispensable for SME internationalisation in the digitalised era, as argued by Das (2023) or Scuotto, Nicotra, Del Giudice, Krueger, and Gregori (2021).

The third theoretical approach that explains the relevance of digital capabilities to internationalisation is the micro-foundations perspective. Micro-foundations is a movement and method of thinking that has permeated a wide range of macro theories; it is not a theory in and of itself (Felin, Foss, Ployhart, 2015, p. 577). Micro-foundation research provides theoretical foundations for understanding the development of capabilities on the organisational level by mechanisms on the individual level. In the context of our scientific investigation, the micro-foundations perspective puts individual actors centre stage (including the competencies and skills of managers) and views them as drivers of SMEs’ digital internationalisation (Santangelo, Phene, Coviello, Tung, Felin, 2024). Micro-foundations approach is fruitfully applied by many studies at the intersection of digitalisation and internationalisation. For example, Scuotto *et al.* (2021) evaluates the relevance of dynamic digital capabilities in building value to the customers and Zahoor, Khan, Shamim, and Puthusserry (2023) shows how digital literacy and usage of digital technologies interact with each other to facilitate digital transformation at firms moderated by managerial characteristics. While not explicitly stated, Ratajczak-Mrozek, Wiczerzycki, and Hauke-Lopes (2021) also apply micro-foundations to their study of the impact

of digital and relational capabilities on the value creation at a digitalised small company in Poland.

9.3 Organisational digital capabilities

Digitalisation and specific technologies are innovating in particular SMEs, and operating in high-tech and digital industries as well as traditional ones. That is why digital competences are not a collection of enormously complex skills that are based on an expert knowledge of software creation or programming languages. Instead [Brown, Bessant, Jia \(2018, p. 84\)](#) define a company's digital competence as "the set of knowledge, skills, attitudes, abilities, strategies and awareness that is required when using ICT and digital media to perform tasks, solve problems, communicate, manage information, behave in an ethical and responsible way, collaborate, create and share content and knowledge for work, leisure, participation, learning, socializing, empowerment and consumerism". On the other hand, [Luu \(2023, p. 1436\)](#) understands firm digital capabilities as "a collection of capabilities that enhance an organisation's capacity to develop, mobilise and effectively utilise its organisational resources and processes, such as customer relationship management, product development, knowledge management and collaboration, by leveraging digital technologies". While [Bui and Le \(2023\)](#) emphasise that digital capability of a company is reflected in its ability to procure, use, combine, and reconfigure digital technology-related resources in support of its business operations and strategies.

Research by [Elia, Giuffrida, Mariani, and Bresciani \(2021\)](#) has been one of the first studies referring to the digital capabilities as driver of digital export via e-commerce rather than traditional export. Interestingly, according to this research, conducted among Italian SMEs, digital capabilities are brought to the company by e-commerce managers. Large amounts of digital data are generated by online clients daily, therefore for firms willing to harness market intelligence by means of data analytics recruiting employees with digital marketing capability and analytics skills translates to delivering exceptional online customer experience. These e-commerce managers (1) are able to integrate strategic knowledge with existing "conventional" marketing and communication tactics, while at the same time have a working understanding of digital technology, (2) have specific expertise of digital technology in their skill set, and (3) are able to measure and track online marketing activities. The digital marketing specialist is therefore seen as a key human resource to the firm and coordination of his knowledge with other resources and other digital experts allows for generation of distinctive firm digital capability, which fosters Internet-enabled internationalisation propensity.

Different kinds of digital competences are identified in the literature. [Bhandari, Zámorský, Ranta, and Salo \(2023\)](#), in the context of US manufacturing firms, introduced the concept of digital synchronisation capabilities,

i.e., higher level capabilities of orchestration which allow companies to realign and leverage their firm-specific digital resources and the digital networks resources embedded in the networks they function in, in order to reach higher levels of efficiency and innovation. According to [Bhandari et al. \(2023\)](#), the impact of a well-synchronised digitalisation on a company's performance is positively related to the firm degree of internationalisation (DOI). In practical terms, these scholars provide evidence that relatively less-internationalised firms should consider prioritising reaching high-level digitalisation before high-level internationalisation. Whereas highly internationalised firms may face more significant performance obstacles at medium-level digitalisation compared to less-internationalised firms. Confirming the assumption that digitalisation and internationalisation at companies, especially industrial companies, are interconnected processes ([Bhandari et al., 2023](#)).

Based on research conducted among Taiwanese SMEs, [Chen, Guo, and Huang \(2024\)](#) suggest that digital capability is significantly and positively correlated with the likelihood of internationalisation by SMEs to both more- and less-developed regions. The results of a study in Chinese SMEs shows that digital capability has a significant positive impact on reducing perceived uncertainty and transaction costs, thereby driving export market expansion and ultimately improving the Internet-enabled export performance ([Du, Huang, 2025](#)).

On the other hand, taking into account SMEs from Vietnam, [Bui and Le \(2023\)](#) suggest that digital capability is composed of three components: flexible digital infrastructure, digitalisation-related human capital, and high-quality partnerships. The ability of a business to quickly and easily supply and integrate a variety of communications, software, and hardware to deliver technical solutions is referred to as digital infrastructure flexibility. Digital human capital evaluates how well an organisation's information technology (IT) employees have the requisite technical, management, and business skills in addition to firm-specific information, such as a deep understanding of the company's customs, business processes, and culture. Digital partnership quality refers to how well the company's IT department collaborates with other business units, vendors, and digital service providers. [Bui and Le \(2023\)](#) confirm that digital competence is positively associated with firm performance. Moreover, [Luu \(2023\)](#), researching Vietnamese SMEs as well, finds that digital transformational leadership has a positive effect on firm digital transformation, which in turn positively influences firm export performance. Digital transformational leadership is crucial, especially for SMEs where top managers should play the role of agile leaders who create, communicate, and maintain an organisational vision related to digital transformation among their teams. Transformational leaders instil trust, aim at developing leadership in others, and demonstrate self-sacrifice. Thus, transformational leadership will allow for reconfiguring the existing business processes at the exporting company thanks to continued intellectual stimulation. Moreover, [Luu \(2023\)](#) concludes that the relationship

between digital transformational leadership and firm digital transformation is mediated by digital capabilities. Digital capabilities, which are understood as organisational capabilities composed of human, collaboration, technical, and innovation capabilities, can be employed to transition towards digitalisation, including application of digital internationalisation modes; hence it is crucial for companies to use them.

Anwar, Scheffler, and Clauss (2022) provide empirical evidence that firm digital capabilities do not directly foster internationalisation but indirectly boost internationalisation through business model innovation. Digital capabilities are also key to R&D internationalisation among SMEs. Research shows that the ability to utilise cloud technology improves knowledge exchange and collaboration in R&D internationalisation activities (Bouncken, Barwinski, 2021). Digital capabilities of local, small businesses, which are suppliers or cooperating partners to multinational corporations, can be reinforced due to knowledge spillovers that occur when highly digitalised MNEs transfer knowledge from their headquarters to their foreign subsidiaries (Jankowska, Goetz, Tarka, 2021). What is more, according to Bui and Le (2023), digital capabilities allow SMEs to formulate differentiated CSR-based strategies.

To sum up, diverging types of digital competences exist. Some scholars conceptualise digital capabilities on a firm level, whereas others argue that especially in case of SMEs, digital competence requires investigation on the individual level, pertaining to owner-managers. In addition to that, a lot of research was undertaken in the context of Asian SMEs, with European and American companies under-represented. With the exceptions of Elia *et al.* (2021), Du and Huang (2025), which are studies focused on CBEC, digital competence in the reviewed research is perceived as determinant of digitalisation or digital transformation that in turn positively influences firm internationalisation.

9.4 Managerial digital capabilities at traditional SMEs

While research on individual-level characteristics, abilities, and human capital has received attention in the strategy literature, more work is needed to explicitly define how individual digital capabilities affect growth and internationalisation of organisations. Pavlou and El Sawy (2006) confirm that individual digital capabilities are related to the ability of members in an organisation to effectively use IT capabilities, to be aware of what IT capabilities have to offer, to understand when to use them and when to decide to use them, and to do this effectively for the benefit of the entire company. Von Arnim and Mrozewski (2020) consider individual-level digital capabilities to be the cognitive abilities of decision-makers to effectively use IT for business. Digital capabilities allow the manager to easily and effectively access foreign market data and learn vital information about international markets. Additionally, they enable cross-border communication with suppliers and prospective customers and contribute

to establishing international networks, thus digital competences are vital to international opportunity discovery for entrepreneurial ventures.

Individual capabilities can be divided into four categories: information, communication, problem-solving, and software. As stated by Eurostat (2015, pp. 2–3), information capabilities aim to “identify, locate, retrieve, store, organize and analyse digital information, judging its relevance and purpose”; communication capabilities concern how to “communicate in digital environments, share resources through online tools, link with others and collaborate through digital tools, interact with and participate in communities and networks, cross-cultural awareness”; problem-solving capabilities mean to “identify digital needs and resources, make informed decisions as to which are the most appropriate digital tools according to the purpose or need, solve conceptual problems through digital means, creatively use technologies, solve technical problems, update one’s own and others’ skills”; and software capabilities refer to the way to “create and edit new content (from word processing to images and video), integrate and re-elaborate previous knowledge and content, produce creative expressions, media outputs and programming, deal with and apply intellectual property rights and licenses”. Scuotto *et al.* (2021) adopt the 2015 Eurostat definition of individual digital capabilities and in context of Italian SMEs evidence that individual digital capabilities leverage firm growth. The scholars observe that those competences support the development and the spread of information, communication, and software advancements (Eurostat, 2015). What is more, they show that the digital capabilities under research leverage innovations induce innovation activities and the formation of new collaborations to exploit existing innovations. In a similar vein, Matarazzo, Penco, Profumo, and Quaglia (2021), in a quantitative study of Italian family SMEs, identify distinct dynamic capabilities possessed by the owner-family members and hired managers, which allow the firms to create value for customers through effective use of digital technologies. Das (2023), on the other hand, investigates how managers develop dynamic digital capabilities and utilise digital platforms as effective vehicles during their Internet-enabled and Internet-based internationalisation efforts for expanding businesses globally. While von Arnim and Mrozewski (2020) claim that in an entrepreneurial context, it is mostly the individual decision-maker who is the key precursor to the company’s adoption of digital capabilities and the discovery of international opportunities.

9.5 International digital competences at digital firms

Cahen and Borini (2020) make a unique contribution by demonstrating the importance of acquiring international digital competence (IDC) in internationalising digital firms. Using a case study approach, the authors propose and develop the IDC construct, which combines four capabilities: cross-cultural programming skills, global virtual networks, cross-border digital monetising adaptability, and

international business model reconfiguration. It needs to be said that the scholars explicitly state which company type can be equipped with international digital competence. Digital companies are a subset of international ventures. Their engagement in digital marketplaces has allowed them to internationalise, with no FDI or with relatively limited foreign assets. Their internationalisation process is more characterised by digital sales, digital users, and digitally interconnected partnerships in foreign countries, and by non-equity entry modes, such as corporate offices (typically rented places), employees working in shared offices, data centre hubs, and international partnerships (Cahen and Borini, 2020). Autio (2017) have denominated this process as “lean internationalisation”, as these firms have a high international engagement in the digital dimension and reduced assets and physical location need in the internationalisation process. Therefore, digital firms, operating in this particular environment develop important distinctions regarding their capabilities, which support and explain their ‘lean’ internationalisation processes. Thus, Cahen and Borini (2020) venture to explore, in a multiple case study design, which specific firm capabilities facilitate the digital venture’s internationalisation and thereby identify international digital competence emergent at the company level. The researchers point out that digital firms must develop critical capabilities to capture and manage users over the Internet, be able to transfer their digital product internationally, and to adapt to whichever Internet technology or interface the foreign users are consuming (Brouthers, Geisser, Rothlauf, 2016). In this context, IDC combines four distinctive, firm-level capabilities: cross-cultural programming skills, global virtual networks, cross-border digital monetising adaptability, and international business model reconfiguration. However, the authors explicitly state that they believe their international digital competence construct could be extended to other types of companies which fully embrace digital internationalisation.

9.6 Virtual networking capabilities

Researchers also emphasise the role of networks and relationships in internationalisation, which are especially crucial for resource-constrained SMEs (e.g., Chetty, Blankenburg Holm, 2000; Kontinen, Ojala, 2011). Companies with extensive international networks are internationally more successful, and their foreign expansion process is accelerated as compared to other businesses (Mort, Weerawardena, 2006). Different types of networks, including social ties (Yang, Gabrielsson, Andersson, 2023), industrial networks (Chen *et al.*, 2024), networks with business-support organisations such as universities, research institutes, and techno-parks (Yoon, Kim, Dedahanov, 2018), were linked to enhanced firm internationalisation. Network relationships provide multiple benefits to internationalising SMEs: (1) a chance to obtain initial credibility in a foreign market, (2) access to local market knowledge, (3) minimise internationalisation risk, (4) trigger internationalisation intention in companies, (5) influence a

firm's market selection and entry mode choice decisions, and (6) provide access to additional relationships (Zain, Ng, 2006).

Based on two studies performed among Chilean SMEs and Australian SMEs, Bianchi, Glavas, and Mathews (2017a, 2017b) find that Internet-enabled or technology-related networks that they create are a manifestation of their virtual networking capabilities, which can be an example of firm-level dynamic capabilities. Virtual network capabilities justify the use of Internet for international communications, rather than relying on physical reactions between people, and therefore requiring different skills. These capabilities provide companies with novel ways to perform international activities, acquire knowledge and information, share opinions, and exchange information. What is more, companies with Internet-enabled networks undergo accelerated foreign expansion (Sigfusson, Chetty, 2013). Virtual networking capabilities were found to be conducive of firm international performance, in a Chilean sample (Bianchi, Glavas, Mathews, 2017a). While in the Australian context, Internet-enabled networks were neither related with international market performance or international opportunity recognition among entrepreneurial SMEs (Bianchi, Glavas, Mathews, 2017b). Thus, cultural differences for the results of technology-related networks can be observed.

In addition, Westerlund (2020) finds out that internationally oriented online SMEs have denser global value networks (i.e., more partners acquired via ICT) than domestically oriented enterprises. Through application programming interfaces (APIs), global value network partners offer third-party services, which digital technologies facilitate integration and connectivity with.

On the other hand, Verhoef *et al.* (2021) identify digital networking capability and big data analytics as indispensable strategic imperatives of the digital transformation of companies. The digital networking capability seems to have paramount importance in digital internationalisation. Firms have noticed that in the increasingly digitalised setting, value co-creation takes place with external partners such as suppliers, customers, or third parties, also international parties. Therefore, the ability to attract, select, and link and engage those value-creating stakeholders in foreign markets may become a vital digital internationalisation facilitator. Moreover, by allowing customers on digital platforms to co-create value by generating their own content, customising their products, and becoming brand ambassadors via the use of social media technologies, companies may accelerate their digital international growth.

9.7 Entrepreneurial orientation and SME digital internationalisation

Entrepreneurial orientation (EO) is one of the key concepts in international entrepreneurship and SME internationalisation research. This construct was first conceptualised by Miller (1983) and further developed by Covin and Slevin (1989). The framework that is most frequently applied for measurement of EO is

a composite construct that encompasses three dimensions: innovativeness, proactiveness, and risk-taking (Covin, Slevin, 1989). These elements act together to comprise a unidimensional “gestalt” and should be aggregated together when measuring EO. Another perspective treats EO as a multidimensional construct in which risk-taking, innovativeness, proactiveness, competitive aggressiveness, and autonomy are treated as independent behavioural dimensions that define EO’s conceptual space (Lumpkin, Dess, 1996). Freeman and Cavusgil (2007, p. 3) propose the following definition: “International entrepreneurial orientation refers to the behaviour elements of a global orientation and captures top management’s propensity for risk taking, innovativeness, and proactiveness”.

Overall, the scholarly community largely accepts that EO is a firm-level phenomenon and not an individual-level construct that describes the individual founding entrepreneur or a founding team (Wąsowska, Oblój, Ciszewska-Mlinarič, 2018). Generally, empirical evidence proves that EO is positively related with firm internationalisation (Górska Grginović, 2022). Ripollés-Meliá, Menguzzato-Boulard, and Sánchez-Peinado (2007) state that firms exhibiting EO notice new, international business opportunities quicker than their competitors, and their proactive character and willingness to take higher risks facilitate the exploitation of these opportunities before their competitors. The scholars, having conducted research on established, Spanish manufacturing firms, confirm that EO is positively related to internationalisation scope and scale. Moreover, an analysis of both Spanish and Italian SMEs by Fernandez-Mesa and Alegre (2015) revealed that entrepreneurial orientation increases the export intensity, however this relationship is moderated by organisational learning capacity and innovation. A study performed by Jantunen, Puumalainen, Saarenketo, and Kyläheiko (2005) in Finland proves that entrepreneurial orientation is related to subjective international performance and most notably satisfaction with international performance. In Central and Eastern European (CEE) transition economy context, a study by Davidkov and Yordanova (2015), taking into consideration family SMEs from both manufacturing and service sector in Bulgaria, proves a positive and significant relation of EO with the internationalisation propensity. Having investigated Slovenian SMEs, Celec, Globocnik, and Kruse (2014) provide evidence that EO positively influences export performance. Recent research undertaken in Poland has shown that EO is related to a firm’s scope of internationalisation. The larger the entrepreneurial orientation, the bigger the number of foreign markets in which the company operates (Głodowska, Maciejewski, Wach, 2019). A study by Yoon *et al.* (2018) on Korean tech-based SMEs also confirmed that international entrepreneurial orientation significantly impacts firm international performance and this relationship is positively moderated by networks created with techno-parks.

The application of digital technologies presents new opportunities to extend the current entrepreneurial orientation and prove it might also impact hypercustomisation, optimising processes, and managerial and strategic decisions

(market entry, customer targeting, partnership, pricing decisions) (Kraus, Palmer, Kailer, Kallinger, Spitzer, 2019), all of which are important factors of successful digital internationalisation of SMEs. Moreover, strong entrepreneurial orientation of owner-managers can be perceived as a facilitator of Industry 4.0 technologies among product-driven SMEs, such as big data analytics, the Internet of Things, additive manufacturing, system integration, cloud computing, autonomous robotics, simulation, augmented reality, and cybersecurity. Industry 4.0 emphasises the critical role of intelligent machines and smart automation of business activities as well as real-time data, all of which foster innovation and provide businesses, including SMEs, with competitive advantages against local and global competitors and may, albeit indirectly, positively influence international growth, including digital internationalisation (Sahoo, Kumar, Mukherjee, Kraus, Dabić, Mahto, 2024).

There is ample research confirming the positive impact of EO on traditional SME internationalisation, however its impact on SME digital foreign expansion is still missing, with several notable exceptions. Studying Swiss internationalised SMEs, Hervé *et al.* (2021) ventures to explore the relationships that link the concepts of firm digitalisation, entrepreneurial orientation, and several firm internationalisation dimensions. Their research provides support for the relationships examined, however its focus is not placed on digital internationalisation as such. Moreover, Ipsmiller *et al.* (2022) show that product-based Austrian SME exporters with an entrepreneurial orientation are more likely to tap into internationalisation opportunities with active internationalisation websites. Sinkovics, Sinkovics, and Jean (2013), in a research based on a sample of British SMEs, find that EO is the key organisational culture that allows companies to acquire better skills in international marketing, by positively influencing their application of the Internet as sales channel.

The widespread adoption of digital technologies has also changed the role of key SME decision-makers and their founders. Indeed, management becomes less centralised and thus more distributed between groups of actors that share value creation (Nambisan, 2017). Although research on international entrepreneurship has so far focused mainly on the entrepreneur as an individual who leads operations from the idea inception to its realisation, the use of digital technologies is extending this role by allowing a larger number of actors, with different goals, to participate in entrepreneurial initiatives, including internationalisation. As Nambisan (2017) highlighted, these new stakeholders, either individuals or ventures, are directly involved in opportunity recognition and processes by, for instance, the use of digital platforms, social media, or even crowdsourcing and crowdfunding systems. That is why an entrepreneurially orientated SME decision-maker needs to acknowledge and take advantage of the affordances of value co-creation and learn to apply and rely on big data analytics and artificial intelligence in strategic decision-making, also with regards to international growth strategies, including digital internationalisation. In the

fast-paced, digitalised world, even small business managers are no longer in a position to make fast decisions without up-to-date information; that is why they must build confidence in autonomous systems that involve international markets selection or customer screening for solvency.

9.8 Conclusions

In recent years, dynamic development of digital internationalisation among SMEs can be observed. Compared with time-consuming and cost-ineffective traditional exporting approaches through trade fair visits and personal interaction, Internet-based exporting incurs lower transaction costs in terms of customer search, global exposure, and immediate information transmission. Nevertheless, to be successful international market participants – Internet-based and Internet-enabled small businesses – more resource constrained than their larger counterparts and multinational enterprises, still need to bridge the liabilities of smallness, foreignness, and outsidership with intangible, internal resources such as their digital and traditional capabilities. Recently, research emphasises the role of digital capability as dynamic capability key to both traditional and digital internationalisation of SMEs, as it allows to procure, use, combine, and reconfigure digital technology-related resources available to the company in order to support its business operations and strategies. Some studies conceptualise digital capability as a firm-level phenomenon, others claim it is contingent upon e-commerce managers, and finally some conclude digital capability to thrive requires transformational leadership by key decision-makers at SMEs. In addition, researchers point out that virtual networking capabilities that allow SMEs to form Internet-enabled networks are conducive of accelerated internationalisation and higher international performance. These digital networking capabilities use the Internet for international communication instead of relying on physical reactions between people, and for this reason require a different skill set to realise their full potential. Moreover, value co-creation takes place online with external partners such as suppliers, customers, or third parties, also international parties. Thus, firms can accelerate their digital international growth by engaging value-creating stakeholders in foreign markets (e.g., brand ambassadors in social media). Despite the cost-efficiency of Internet-based internationalisation, the global environment may be dynamic and unpredictable, as the Covid-19 pandemic and Russian aggression on Ukraine have illustrated. That is why internationalised SMEs must be able to very rapidly adapt their business models to external challenges and disruptions, and this can be achieved due to the entrepreneurial orientation.

To sum up, by combining their traditional capabilities set with capabilities that emerged with the rise of digital technologies, SMEs can shape a new value proposition supported by the entrepreneurial orientation of their key decision-makers. Thus, some traditional internationalisation determinants distinguished in international business literature are still relevant and can be regarded as

mechanisms which enable the digital internationalisation process among the Internet-based and even more so at Internet-enabled SME companies.

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Part 3

**Legal Aspects of Digital
Internationalisation of
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10 The legal aspects of consumer protection in cross-border e-commerce

Bartosz Targański

10.1 Introduction

Expanding into foreign markets through e-commerce channels requires businesses to adapt to the legal conditions specific to cross-border sales. Failure to do so can result in costly disputes with foreign customers and hinder expansion. Owners of online stores are often not fully aware that they need to adapt their business models to foreign legal requirements when they reach out to foreign customers. Bearing in mind that ignorance of the law is harmful, this chapter aims to identify the key substantive and procedural legal aspect of consumer protection in cross-border e-commerce. The chapter takes the perspective of the European Union (EU) consumers and EU legal system. The significance of the reflections herein results from the compliance issues faced by online stores. Firstly, an online store should not only comply with the legal requirements of its domestic country but must be aware of the specific consumer protection and consumer-related procedures in the countries which it targets online. Secondly, there is no single treaty framework that comprehensively regulates the obligations of online retailers versus consumers. In particular, the legal framework applicable to cross-border sales is scattered over many legal acts covering substantive norms and complex procedural aspects, which hinders legal compliance. Thirdly, the studies on legal risks in international e-commerce are few and usually deal only with selected issues, whereas online stores need more comprehensive legal guidance. Fourthly, obtaining legal advice on foreign expansion is more difficult as most lawyers focus on domestic law aspects, even though cross-border sales are becoming more common.

The chapter presents three aspects of evolving international consumer law: (1) substantive norms of consumer protection in the EU, (2) major problems of consumer protection in e-commerce cases based on a review of the decision-making practice of the Office of Competition and Consumer Protection (OCCP¹) and the Court of Justice of the European Union (CJEU) rulings in recent years, and (3) currently existing methods of consumer dispute resolution in cross-border e-commerce. Based on an overview of these three areas, conclusions are offered on the prospects of consumer protection in cross-border e-commerce.

10.2 Prohibition of unfair commercial practices in the pre-contractual stage

Article 169(1) and point (a) of Article 169(2) of the Treaty on the Functioning of the European Union (TFEU) provide that the Union is to contribute to the attainment of a high level of consumer protection within the internal market through the measures it adopts under Article 114 TFEU. The internal market comprises an area without internal frontiers in which the free movement of goods and services and the freedom of establishment are ensured (Article 26(2) TFEU).

Consumer protection is a broad topic that covers various measures on the EU level aimed at protecting the health, safety, and economic and legal interests of consumers residing in the EU. In e-commerce, an EU consumer is protected at successive stages of commercial relations with a trader, i.e., at the pre-contractual stage, the contractual stage, and during the enforcement of the contract. The pre-contractual protection covers legal standards for commercial communication (advertising and promotion) targeting the consumer. It has been harmonised in the EU by Directive 2005/29/EC concerning unfair business-to-consumer commercial practices in the internal market (Unfair Commercial Practices Directive or UCPD). Any marketing communication from a business to EU-based consumers, regardless of the medium, should be analysed for compliance with the Unfair Commercial Practices Directive. The UCPD introduced a single criterion for assessing the fairness of marketing communication to protect the economic interest of consumers from being misled or put under pressure by sellers, including in online contracts.

The UCPD applies to a broad category of business-to-consumer commercial practices meaning any act, omission, course of conduct or representation, commercial communication including advertising and marketing, by a trader, directly connected with the promotion, sale, or supply of a product to consumers. The UCPD applies to unfair business-to-consumer commercial practices before, during, and after a commercial transaction. The relevance of the UCPD in practice is greatest in the pre-contractual stage when the consumer is attacked by multiple offers, particularly on the Internet. Assessment of commercial practices in the UCPD is based on a multi-stage analysis to determine whether a given commercial practice is unfair and should therefore be prohibited. According to Article 5(2), a commercial practice is unfair if (1) it is contrary to the requirements of professional diligence and (2) it materially distorts or is likely to materially distort the economic behaviour of the average consumer. As a general clause, Article 5(2) applies when a given practice cannot be classified as unfair based on more specific provisions, these being:

- Misleading action – a practice containing deceiving commercial information in terms of content or form concerning the main features of the product, its availability or consumer rights that causes the average consumer to take a transactional decision that he would not have taken otherwise (Article 6);

- Misleading omission – a practice that omits material information that causes the average consumer to take a transactional decision that he would not have taken otherwise (Article 7);
- Aggressive commercial practices – a practice involving harassment, coercion, the use of physical force, or undue influence, that significantly impairs consumer freedom of choice and thereby causes him to take a transactional decision that he would not have taken otherwise (Article 8); and
- Blacklisted practices – unfair commercial practices in all circumstances (Annex I of the UCPD).

10.3 Information requirements towards consumers in the contractual stage

Consumer protection in the contractual stage consists in legal standards for information requirements, withdrawal rights, and contractual provisions in online contracts between consumers and businesses. They have been harmonised in the EU by Directive 2011/83/EU on consumer rights (Consumer Rights Directive or CRD). The CRD contributes to the development of the EU internal market because consumers know that domestic and foreign sellers have the same obligations towards them as domestic sellers. The CRD sets also the standard of legal consumer protection for non-EU traders targeting EU customers.

The guiding principle of the CRD is that the trader should give the consumer clear and comprehensive information before the online contract conclusion. According to Article 6(1), consumers need to obtain information on the main characteristics of the goods or services, the identity of the trader, its address and contact data, the total price of the goods or services and taxes, details on payment and delivery, details of withdrawal right with a model withdrawal form, and details on the legal guarantee.

Furthermore, the procedure of online buying is likewise determined by the CRD. The consumer must know and acknowledge that placing an order entails an obligation to pay – he cannot be surprised by the payment. There should be buttons or similar functions clearly marked on the website, e.g., “order with obligation to pay”. Failure to clearly indicate the moment of payment has severe consequences for the trader, as the consumer is not bound by the contract and the order (Article 8 (1–2)).

The trader is also obliged to provide the consumer with the confirmation of the contract concluded at the latest at the time of the delivery of the goods or before the performance of the service begins. That confirmation should include all the information referred to in Article 6(1) unless the trader has already provided that information to the consumer on a durable medium before the conclusion of the distance contract (Article 8(7)).

As regards delivery, the trader should deliver the goods by transferring the physical possession or control of the goods to the consumer within 30 days from

the conclusion of the contract unless the parties agree otherwise (Article 18(1)). If the trader fails to deliver the goods within that period, the consumer should call upon him to deliver within an additional period. The consumer is entitled to terminate the contract if the trader fails to deliver the goods within that additional period (Article 18(2)). After termination of the contract, the trader should reimburse all sums paid under the contract. According to Article 20, the risk of loss of or damage to the goods passes to the consumer when he or a third party indicated by the consumer and other than the carrier has acquired the physical possession of the goods.

The right of withdrawal from online contracts is a key element of consumer protection in the EU. According to Article 9(1) of the CRD, consumers have the right of withdrawal within 14 days from a distance contract, without giving any reason, and without incurring any additional costs. In the case of sales contracts, the 14 days is calculated from the day when the consumer acquires physical possession of the goods. The trader is also required to instruct the consumer about said right and provide a model withdrawal form. The trader's failure to instruct the consumer on the right of withdrawal has momentous consequences for the consumer, as it extends consumers withdrawal period from 14 days to 12 months (Article 10 (1)).

After informing the trader about the withdrawal, the consumer should send back the goods or hand them over to the trader within 14 days from the day on which he communicated his decision to withdraw from the contract to the trader. It is sufficient to send back the goods before the period of 14 days has expired. The consumer covers only the direct cost of returning the goods, unless the trader has agreed to bear them, or the trader failed to inform the consumer that the consumer has to bear them (Article 14(1)).

The consumer is liable for any diminished value of the goods resulting from the handling of the goods other than what is necessary to establish the nature, characteristics and functioning of the goods. However, the consumer is not liable for the diminished value of the goods where the trader has failed to provide notice of the right of withdrawal (Article 14(2)).

In case of consumer withdrawal, the trader is obliged to reimburse all payments received from the consumer, including delivery costs, within 14 days from the day on which he is informed of the consumer's decision to withdraw from the contract (Article 13(1)). This covers only standard delivery costs; the trader is not required to reimburse costs of more expensive delivery types if they were expressly chosen by the consumer (Article 13(2)).

10.4 Identity and legal status of the seller in online transactions

The requirement to post detailed information on a trader's website should protect the model average consumer, who is attentive and reads with understanding the information provided. As a rule, the average Internet user browses simultaneously

through multiple websites and offers on online marketplaces and compares mainly prices. While for on-premises contracts the trader's identity is rather obvious, in the online environment such knowledge is generally impaired. Firstly, the online consumer should be aware, if the seller is a professional entity (trader), an intermediary or perhaps another consumer. If an e-commerce platform does not clearly communicate the identity of each trader, it may be falsely considered a trader itself and be liable for the trader's obligations. This position follows from the ruling in the *Wathelet* case (C-149/15 of 9 November 2016), where the CJEU dealt with the distinction between the concept of seller and intermediary under the Directive 1999/44/EC on certain aspects of the sale of consumer goods and associated guarantees (Court of Justice, 2016). The CJEU stated: "it is essential that consumers are aware of the identity of the seller, and in particular whether he is acting as a private individual or as a trader, so that they are able to benefit from the protection conferred on them by the directive". Analysing the actions taken by the intermediary on behalf of the seller, the CJEU found that the concept of "seller" "[...] can be interpreted as covering a trader who acts on behalf of a private individual where, from the point of view of the consumer, he presents himself as the seller of consumer goods under a contract in the course of his trade, business or profession. That trader could create confusion in the mind of the consumer by giving him the false impression that he is acting as the seller-owner of the goods".

An online consumer may also not be aware at all that he or she is conducting business with a foreign trader. The headquarters of the trader will determine the law applicable to the contract, i.e., also the scope of the consumer's protection unless the website was targeted at the consumer's country. A key issue in enforcing consumer rights in online transactions is the consumer's awareness of the identity and legal status of the seller. Without knowing who the seller is, the consumer does not know from whom and where he or she can seek redress in the event of a dispute. Secondly, without knowing whether the seller is acting as a trader or as a consumer, the purchaser does not know the extent of the seller's pre-contractual information obligations and whether he can exercise his right of withdrawal from the contract concluded online, and whether a guarantee covers the goods.

The identity and legal status of the seller can elude consumers, especially on e-commerce platforms, where the seller has access to a very large number of offers and the main criterion for searching for offers is price. As a rule, traders on platforms are independent from platforms, but a platform operator can be a trader as well (e.g., Amazon or Allegro) and there are platforms where consumers may sell goods (e.g., second-hand goods on Vinted).

10.5 Is the online platform liable towards the consumer for the seller's failure to perform (*Tiketa* case)?

Determining the party responsible for performance towards the consumer can sometimes be problematic when purchasing on an online platform, because the

consumer acts within the platform domain but transacts with a seller that is formally independent from the platform. He may therefore not be aware of whether both the platform and the seller, or only the seller are responsible for the contractual performance. This lack of awareness translates into the consumer's ability to effectively enforce his rights. The *Tiketa* case (C-536/20 of 24 February 2022) provides some guidance on the issue of determining the party responsible for the fulfilment of the consumer's claims in online context (Court of Justice, 2022).

Tiketa is a Lithuanian online service (www.tiketa.lt) selling tickets for cultural events organised by third parties. On 7 December 2017, a consumer purchased a ticket from *Tiketa* for an event on 20 January 2018, organised by the company *Baltic Music*. The name of the organiser, a telephone number, and its website where detailed information could be obtained were indicated on *Tiketa*'s website. There was also a notice redacted in red font stating that the event organiser bears full responsibility for the event and its quality and content, as well as for any information provided with regard to the event. *Tiketa* is the ticket distributor and is acting as a disclosed agent. The ticket had a section of those general terms and conditions stating that tickets were neither exchanged nor refunded and in the event of cancellation or postponement of the event, the event organiser was fully liable for the reimbursement of the ticket price and that *Tiketa* was acting as the ticket distributor. The concert was cancelled, which the consumer found out after arriving at the venue on the day of the event on 20 January 2018. On 22 January 2018, *Baltic Music* informed *Tiketa* that the event had been cancelled and that those who had purchased tickets would be eligible for a refund of the amount paid. *Tiketa* informed the consumer of the option to obtain a refund for the ticket price either at the point of purchase or online for online purchases. The consumer demanded a refund, travel expenses, and compensation from *Tiketa*, but *Tiketa* refused, insisting it was only the distributor. The Vilnius District Court then ordered *Tiketa* and *Baltic Music* jointly and severally to pay the consumer the sums claimed for material damage and part of the sums claimed for non-material damage, together with interest. After the appeal was dismissed, the case went to the Lithuanian Supreme Court, which referred two questions to the CJEU for a preliminary ruling. The first question was whether an online intermediary in connection with the purchase by a consumer of a ticket for a performance may be regarded as a trader within the meaning of Article 2(2) of the CRD, who is subject to the obligations provided for in the CRD, and in effect, against whom the consumer may raise claims or bring an action. The second question was whether the requirement to provide information and to make that information available to the consumer in plain and intelligible language is fulfilled where such information is provided in the intermediary's rules on the provision of services, made available to the consumer on the website tiketa.lt before the consumer makes the payment confirming that he or she has become acquainted with the intermediary's terms and conditions by actively ticking a specific box in the online system and clicking on a specific link?

The CJEU stated that the concept of “trader” within the meaning of Article 2(2) of the CRD includes a natural or legal person acting as an intermediary, in the name of or on behalf of a trader. In response to the second question, the requirement to provide information and make the information available to the consumer in a plain and intelligible language prior to the conclusion of the contract is met when this information is available only in the general terms and conditions for the provision of services on the intermediary’s website, which that consumer actively accepts by ticking the box provided for that purpose, if that information is brought to the consumer’s attention in a clear and comprehensible manner. However, such means of providing information cannot act as a substitute for providing the consumer with the confirmation of the contract on a durable medium, within the meaning of Article 8(7) of the CRD. According to this provision, the trader should present the consumer with the confirmation of the contract concluded, on a durable medium within a reasonable time after the conclusion of the distance contract, and at the latest at the time of the delivery of the goods or before the performance of the service begins. In practice, *Tiketa* acted in compliance with the law by stating in its terms and conditions that Baltic Music was responsible for the event and any refunds because the consumer was made aware of this condition and has actively agreed to it.

In light of the *Tiketa* ruling it is sufficient for the platform to demonstrate that it has obtained confirmation from the consumer that he or she has read the terms and conditions. Considering this ruling, consumers using platforms should be more cautious when accepting any statements.

10.6 Consumer as seller (*Kamenova* case)

Doubts about the status of a seller arise also in relation to consumers who carry out numerous transactions on an online platform. In the *Kamenova* case (Case C-105/17 of 4 October 2018), the CJEU analysed whether a consumer who sells things online becomes a trader and is liable to the buyer as a trader (Court of Justice, 2018). The case concerned a consumer who bought a watch on the OLX platform (<http://olx.bg>) from a seller nicknamed “eveto-ZZ”. The seller, Ms Evelina Kamenova, a Bulgarian national, posted seven other advertisements on OLX for other products. The buyer found that the watch did not have the characteristics stated in the ad and decided to return it. However, the seller did not accept the return. The Bulgarian consumer protection authority found that the seller breached her information obligations under the UCPD by failing to provide a range of information about her business: the name and address, email address, the total price including all duties and taxes, the terms of payment and delivery, the consumer’s right of withdrawal, and information about the guarantee of the conformity of the products with the sales contract. As a result of Ms Kamenova’s appeals, the Varna Administrative Court made a preliminary reference to the CJEU as to whether a natural person who sells a relatively large number of goods

of significant value on the Internet is a trader within the meaning of the UCPD. The Court held that the mere fact that the sale is carried out for profit or that an individual simultaneously publishes a certain number of advertisements for the sale of new and used goods on an online platform are not sufficient in themselves to qualify that person as a trader. The CJEU stated that the recognition of a seller as a trader requires an assessment of all the relevant circumstances of the case, inter alia, whether the sale via the online platform was carried out in an organised manner, whether it had a profit-making purpose, whether the seller has knowledge and technical skills regarding the products offered, which the consumer does not necessarily have, whether the seller has legal status to carry out commercial activities, and to what extent the online sale is connected to the seller's commercial activities, whether the seller is a VAT payer, whether the seller is acting in the name of or on behalf of a particular trader or through another person acting in the name of and on behalf of the trader and has received remuneration or a share in the profits of that trader, whether the seller has purchased the goods new or second-hand for the purpose of resale thereby giving an organised, frequent, or simultaneous character to his professional activity, whether the products offered for sale are of the same type and value, in particular – whether the offer concerns a limited number of products. The referring Bulgarian court was supposed to make additional factual findings in this case.

In light of the *Kamenova* ruling, the additional criteria for considering the seller in question as a trader were not apparent to the other party to the transaction before it took place, so that the buyer of the watch could not independently determine before the transaction whether or not he would be entitled to withdraw from the contract. The conclusion of the ruling is unfortunate for consumers buying on the platform – they may not be able to determine for themselves whether the seller is a professional or a consumer, which is crucial to the scope of the buyer's rights.

10.7 New information standards in the Omnibus Directive

The rulings in the *Kamenova* case resolved the doubts for an individual case, but they did not establish clear standards on how to determine whether the seller is a professional or a consumer, which is crucial to the scope of the buyer's rights. The systemic solution to these problems was to be the Directive (EU) 2019/2161 of 27 November 2019 (Omnibus Directive), which the Member States were obliged to bring into force until 28 May 2022. The Omnibus Directive imposed an obligation on e-commerce platforms to indicate (1) whether the seller on the platform acts as a trader or natural person, based on the declaration of that seller, (2) that the consumer rights stemming from EU consumer protection law does not apply to the contract with non-traders, and (3) how obligations related to the contract are shared between the seller and the platform. This information helps consumers to determine if they are buying from a trader or another consumer,

which is necessary to file a complaint. However, it needs to be pointed out that the platform operator only receives the statement from the seller but is not obliged to verify its credibility by checking the additional criteria of the trader identified in the *Kamenova* case. This means that the Omnibus Directive does not fully eliminate the risk of misleading the consumer about the identity of the seller. For example, the OCCP found at least 19 cases of violations concerning major online platforms such as Zalando, Glovo, Uber Eats, [Pyszne.pl](#), Wolt, Bolt Food, Aliexpress, [Wakacje.pl](#), FREE NOW, Uber, Bolt, Facebook, Morele.net, Empik, [Triverna.pl](#), Amazon, and Allegro. For the most part, online platforms did not clearly and comprehensibly inform that the party selling on the platform is a trader (e.g., such information was only present in the platform's terms and conditions), and information about the division of responsibilities between the platform and sellers was scattered across several documents (OCCP, 2023). In most cases, platform operators amended their policies following the OCCP's requests, but in the case of Zalando and Travelist, the OCCP issued a formal decision requiring changes to informing consumers and imposed financial compensation to consumers.

In Decision RKR-3/2024 of 18 July 2024 concerning Zalando, the OCCP stated, firstly, that the requirement of clear and comprehensible communication was not fulfilled by providing only the name of the seller on the product card, as this information neither indicated that the seller was a trader, nor included a legal form that could indicate this. It was also deemed insufficient to include the following information in the terms and conditions: "All Zalando partners are traders", as the customer was not obliged to read the terms and conditions at purchase (OCCP, 2024). The standard of clear and comprehensive communication to the consumer was also not met by the linking information on the withdrawal procedure with the name of the Zalando partner, because consumers may not have a detailed knowledge of the provisions on distance contracts under the Consumer Rights Directive.

Secondly, on Zalando customers may have found it difficult to know to whom to address a complaint, whom to inform about a withdrawal from a purchase, or to whom to send returned goods. The OCCP considered that the requirement to provide information in a clear and comprehensible manner in accordance with the Omnibus Directive is not fulfilled when information about the division of obligations between Zalando and entities cooperating with it (Zalando Partners) related to the contract is only contained in standard contractual terms and conditions or other similar contractual documents (i.e., regulations or general terms and conditions). The OCCP pointed out that the information on this subject was not isolated to one place in the terms and conditions; rather, the information was scattered across many points in the terms and conditions, which made it difficult for the consumer to determine to whom they should direct their complaints. It is worth noting at this point that the CJEU in the *Tiketa* case remarked that the inclusion of information on the liability of a third party in the platform's terms

and conditions is allowed under the condition that the consumer confirms having read the terms and conditions.

Charges analogous to those levelled at Zalando were made by the OCCP against the travel platform Travelist. The platform did not directly and conspicuously state that it was presenting offers from traders, nor how the contractual obligations were divided between the platform and the issuer of the offer. The OCCP obligated the company to change the place of publication and the content of the messages, so that it would be clear right from the homepage that the offers on Travelist come from external traders, who are the actual party to the contract with the customer and are responsible for its execution, while the platform is responsible for the functionality of the [Travelist.pl](https://www.travelist.pl) service, including the possibility of making bookings and payments and giving opinions on the service (OCCP, 2024a).

10.8 Dark patterns in digital economy

In the digital economy, the risk of subjecting website users to manipulative practices known as dark patterns has emerged. These involve programming application interfaces, platform pages, or websites in an opaque way, or hiding certain information or choices, thus causing the user to act in an unfavourable way (European Commission, 2021). They consist in the manipulation of consumer decisional process through a lack of information, incomplete or delayed information (e.g., after the user has decided to start using the platform) about specific features, highlighting paid services and hiding free services that the consumer would likely have chosen if they had been presented transparently. Dark patterns are a significant problem, as they limit common benefits of e-commerce for consumers, e.g., lower prices and greater choice of products as they force consumers to pay additional fees (BEUC, 2022). The risk of confusion also arises from the fact that consumers even with due care cannot be reasonably expected to carefully read the often multi-page terms and conditions before using an everyday service (e.g., ordering food delivery or renting scooters). As a result, the consequences of the non-transparent presentation of information in the service are passed on to the consumer (Chróstny, 2022).

Misleading and deceptive commercial practices constitute an unfair market practice referred to in the UCPD. An example of such misleading commercial practice is the OCCP decision of 26 February 2024 against one of the most popular shopping platforms in Poland, OLX. According to the OCCP, OLX was misleading its users by way of sorting offers on the website. Buyers could choose between offers with additional shipping and payment service or without it. When sorting the offers by the price (from the cheapest), the OLX search algorithm did not present the “service fee” for offers to which the service fee was added. The fee was only visible after clicking on the offer. According to the OCCP, this distorted the sorting results, as goods with a higher final price

(including the service fee) were presented as cheaper than products to which the service fee was not added. In effect, search results may have been misleading for consumers. The terms and conditions were also unclear for buyers on the possibility of avoiding the service fee. Another infringement related to the so-called protection package. According to the platform's official information, a buyer, in case of receiving an empty package or receiving an item other than the one ordered, can withhold payment to the seller within 24 hours of receipt. The OCCP found out that the buyer's protection was illusory due to the number of exclusions. The mechanism that was supposed to protect buyers was more favourable to the seller (OCCP, 2024b).

A global review of the Internet conducted between 29 January and 2 February 2024 by 26 institutions affiliated with the International Consumer Protection Network (ICPEN)) found that, out of 642 websites and apps, 75.7% used at least one dark pattern manipulative practice, and 66.8% of them used two or more (ICPEN, 2024). One of the most frequent practices was *sneaking*, which consists of additional fees to the price right before placing an order (also known as drip-pricing) and automatic renewal of subscription after a free trial without consent (i.e., subscription traps). Another common practice, called *interface interference*, steers consumers towards decisions that are more favourable options for website owners, by pre-selecting by default a more expensive subscription or a longer subscription period, or by presenting the allegedly more favourable options more prominently (false hierarchy). *Confirm shaming* manipulates consumers' decision-making by using language that evokes a specific emotion of the consumer. *Urgency practices* create a sense of urgency for the consumer to buy the product by specifying time or quantitative limits (e.g., only one room available on our website), whereas *social proof* involves suggesting to the consumer a particular purchase decision by providing information on the alleged behavioural statistics of other consumers (e.g., *150 customers have bought this product in the last hour*).

10.9 Applicable law in cross-border consumer protection

Enforcement of legal protection in cross-border contracts involves determining (1) the law applicable to the legal relationship between the parties related to the two legal systems and (2) the method and country of dispute resolution. Until the spread of e-commerce, conflict of laws rules were the domain of contracts between large companies, conflict of laws rules were mainly dealt with by a small group of lawyers handling transactions between large companies, and the average small and medium companies, much less the consumer, were not familiar with them. Nowadays, the possibility to conclude international transactions means that each trader using the Internet for international expansion should not only comply with his obligations under national law but should recognise the circumstances in which the requirements of foreign law apply to him. Also,

prudent consumers should be aware of the circumstances under which they venture beyond their home legal system when shopping online.

As regards laws applicable to cross-border contracts concluded between companies and consumers, according to the Consumer Rights Directive, the legal position of the consumer is basically the same in transactions with all traders based in the EU. However, the Internet extends beyond the EU internal market, and customers residing in the EU are increasingly being reached by offers from non-EU traders.

Non-EU traders can conclude e-commerce contracts with EU consumers in the same way as EU traders. However, they may not be fully aware of their obligations towards EU consumers. The provision safeguarding the interests of the consumer in international online transactions is Article 25 of the Consumer Rights Directive, according to which, if the law applicable to the contract is the law of an EU member state, consumers may not waive the rights conferred on them by the national measures transposing the CRD.

Consumer protection in cross-border cases (both within the EU and with non-EU traders) covers two legal areas. Firstly, disputes arising out of concluded contracts (e.g., consistence of goods with the contract, withdrawals, and product returns) are governed by Regulation (EC) No 593/2008 on the law applicable to contractual obligations (Rome I Regulation). Secondly, irrespective of whether a contract has been concluded, disputes could result from unfair commercial practices (e.g., missing information or misleading marketing). The law applicable to such disputes will be governed by Regulation (EC) No 864/2007 on the law applicable to non-contractual obligations (Rome II Regulation). Unfair commercial practices under the UCPD constitute non-contractual obligations. According to Article 6(1) of Rome II Regulation, the law applicable to a non-contractual obligation arising out of an act of unfair competition is the law of the country where competitive relations or the collective interests of consumers are, or are likely to be, affected. Thus, if misleading online advertising targets EU consumers and harms the collective interests of consumers in EU member states, the Unfair Commercial Practices Directive will be applicable, regardless of whether the trader is from the EU or from outside the EU. The law applicable under Article 6(1) may not be derogated from by a choice-of-law agreement (Article 6(4)).

As regards online contracts with foreign consumers, the choice of applicable law is subject to some limitations. According to Article 6(1)(b) of Rome I Regulation, where a consumer concludes a contract with a trader in another country who, by any means, directs his commercial activities to the consumer's country of residence, the law of the country where the consumer has his or her habitual residence generally governs the contract. The concept of "directing" one's commercial or professional activities to the country of the consumer was addressed in joined cases *Peter Pammer* and *Hotel Alpenhof GmbH* (C-585/08 and C-144/09 of 7 December 2010) (Court of Justice, 2010). The CJEU stated that, in order to determine whether a trader, whose activity is presented on its

website or on that of an intermediary, can be considered to be “directing” its activity to the EU member state of the consumer’s domicile, it should be ascertained whether, before the conclusion of any contract with the consumer, it is apparent from those websites and the trader’s overall activity that the trader was envisaging doing business with consumers domiciled in one or more member states, including the member state of that consumer’s domicile, in the sense that it was minded to conclude a contract with them. According to the Court, the following matters, the list of which is not exhaustive, are capable of constituting evidence from which it may be concluded that the trader’s activity is directed to the member state of the consumer’s domicile, namely: the international nature of the activity; mention of itineraries from other member states for going to the place where the trader is established; use of a language or a currency other than the language or currency generally used in the member state in which the trader is established with the possibility of making and confirming the reservation in that other language; mention of telephone numbers with an international code; outlay of expenditure on an Internet referencing service in order to facilitate access to the trader’s site or that of its intermediary by consumers domiciled in other member states; use of a top-level domain name other than that of the member state in which the trader is established; and mention of an international clientele composed of customers domiciled in various member states. Other factors indicating the targeting of “directing” online activities to the countries of foreign consumers could be information about shipping goods to that country and offering a call centre in the language of that country.

According to Article 6(2) of the Rome I Regulation, traders selling to foreign customers can choose a law for contracts other than that of the consumer’s country. Such a choice, however, cannot deprive the consumer of the protection afforded by the legal provisions of the country of the consumer’s habitual residence. In effect, traders cannot derogate from contracts with EU-based consumers legal protection granted to them by the Consumer Rights Directive. The choice of a law other than the law of the consumer’s country of residence may only lead to a law that gives the EU consumer more or the same rights as they benefit in the EU.

10.10 Different national laws in different scenarios

Against these rules, there may be several scenarios of cross-border online transactions where different legal regimes will apply. The first situation is that the participants in the transaction are a consumer and a trader who are habitually resident in two EU countries. Let us suppose the transaction is initiated as a result of the party being “directed” to the consumer’s country. In such a case, the transaction will be governed by the law of the consumer’s country (Article 6(1) (b) Rome I Regulation), unless the trader has specified a different applicable law in the party’s terms and conditions (Article 6(2) Rome I Regulation). However,

the trader's choice of another law may not deprive the consumer of the protection in the country of the consumer's habitual residence.

The second situation is analogous to the first, except that the party initiating the transaction is the consumer. The law of the consumer's country does not apply in this case due to the lack of "directing", but the general conflict of law rules of the Rome I Regulation. For example, the law chosen by the parties (according to Article 3(1) of the Rome I Regulation) will apply to the sales contract, and if no choice of law has been made, the law applicable to the sales contract will be the law of the country in which the seller has his habitual residence according to Article 4(1)(b). In both situations, the consumer's situation is in principle secure, as whether the law of the consumer's country or the law of the trader's country applies, it will in principle be the law of an EU member state and the CRD will therefore apply. The law of an EU country will fail to apply only if the trader has not directed the party to the consumer's country and has chosen the law of a non-EU country, e.g., Switzerland or the UK.

The third and fourth situation concerns transactions between a consumer from an EU country and a trader from outside the EU, e.g., the US. If a US trader directs his website to EU-based consumers then the consumers are protected by EU law, i.e., the US trader should comply with the same requirements when dealing with EU consumers as the EU trader (information requirements, rights of withdrawal, withdrawal instructions). However, he does not have to behave like an EU trader if he has not taken any action towards EU consumers on his website and the transaction was initiated by an EU consumer. In this case, the EU consumer should be aware of the risk that federal rules in the United States do not grant consumers the same withdrawal right for goods purchased online as in the EU. The return policy and deadline for returns in the US could be subject to limitations under local laws of a particular state or determined independently by each online shop. US online shops have to offer consumers the same right to return as in the EU, only if they actively target EU consumers. For this reason, EU consumer who enter websites of US online stores without prior contact or targeted advertising from this shop, should pay attention to whether this shop offers the possibility to return goods. A similar situation will be faced by an EU consumer when purchasing from an online shop based in Australia. If the shop does not direct sales to EU customers, then it is only obliged to accept a return if the product is faulty or damaged.

The fifth and sixth situations concern transactions between an EU trader and a non-EU consumer. An EU trader should carefully consider what laws protect consumers in that particular country (and state or province) before targeting customers from a particular non-EU country. However, from an international perspective, it can be assumed that consumers in the EU enjoy greater freedom in terms of returning goods. This means that an EU trader targeting customers in a non-EU country where there is no right of withdrawal from a distance contract does not have to grant such a right to non-EU consumers.

10.11 Dispute resolution methods in cross-border e-commerce

Disputes between consumers and traders in cross-border e-commerce could relate to contractual breaches (e.g., product defects and returns) or non-contractual breaches (e.g., misleading commercials targeting foreign customers). They can be resolved in court or amicably or through the intervention or cooperation of state authorities responsible for consumer protection in specific countries. Private cross-border enforcement of consumer cases in the EU is regulated by Regulation (EU) No 1215/2012 of 12 December 2012 on jurisdiction and the recognition and enforcement of judgments in civil and commercial matters (Brussels I Regulation). Consumers are advantaged by being able to sue foreign traders either in the courts of the member state in which that trader is domiciled or in the courts of the member state in which the consumer is domiciled. Traders may bring lawsuits against a consumer only in member state in which the consumer is domiciled (Article 18(1)–(2)). The possibility for a consumer to sue a foreign trader appears rather theoretical due to the formal requirements of initiating proceedings (knowledge of the local procedure), the costs of litigation, and its length. An additional factor demotivating consumers to sue traders, especially abroad, is usually the relatively low value of the objects in dispute. Moreover, when the consumer sues the trader through the court of his or her domicile, this judgment requires enforcement in the trader's country. While the Brussels I Regulation ensures that judgments are recognised and enforced in another EU country, this does not apply to judgments against businesses from countries outside the EU. In effect, in the digital economy courts have by and large lost their ability to assist consumers in a meaningful way (Riefa, 2022, p. 24).

As a result of the ineffectiveness of the judicial way, when a foreign seller declines to repair the product or issue a refund, consumers may attempt to resolve the dispute through alternative dispute resolution methods (ADR). ADR involve neutral non-judicial bodies, such as a conciliator, mediator, arbitrator, ombudsman, or special committee. These bodies can propose or impose a solution in a dispute between a trader established in the EU and a consumer resident in the EU. ADR bodies must meet strict EU quality criteria guaranteeing the effectiveness, fairness, independence, and transparency as laid down in the Directive 2013/11/EU on consumer ADR of 21 May 2013. For online contracts, consumers and traders established in the EU may resolve their dispute through the online dispute resolution platform created by the European Commission (Regulation (EU) No 524/2013 on consumer ODR). Amicable settlement methods could be effective in the case of contractual disputes. In contrast, consumer redress for unfair market practices is already problematic within a single country, not to mention claims against traders from other EU or non-EU countries.

New forms of international cooperation to protect consumer rights are therefore emerging. A real impact on the elimination of unfair market practices in e-commerce and, in particular, in international e-commerce can result from cooperation between national authorities responsible for the enforcement of

consumer protection laws based on Regulation (EU) 2017/2394 of 12 December 2017. One such example of cooperation between administrative bodies is the international Internet and mobile application search campaign (Sweep Days). In 2024, 26 institutions took part in it, and the event was coordinated for the first time by Global Privacy Enforcement Network (GPEN). An interesting element is that regulators responsible for different areas, i.e., consumer protection and data protection, cooperated in the event. Many practices that infringe consumers' interests relate to access to their personal data collected by the website operator. In nearly 40% of recorded cases, GPEN sweepers found examples of obstruction in making privacy choices, finding privacy settings or deleting their accounts (GPEN, 2024). Without easy access to personal data, the consumer cannot change the scope of consents given, cannot verify that the trader's marketing activities towards him/her are in line with the scope of consents previously given, and cannot exercise the right to be forgotten. This action is a regulatory experiment as it connects regulators from different fields (data protection and consumer protection) and coordinates efforts internationally.

10.12 Towards AI-based (cross-border) consumer protection

New tools are being developed using artificial intelligence (AI) solutions to assist officials in identifying and assessing unfair market practices in e-commerce. For example, the OCCP is developing an AI-powered tool for detecting unfair contractual terms called ARBUZ. The system assesses the semantic similarity between fragments of the contract under examination and clauses previously identified by the OCCP as abusive or non-abusive. The training database for ARBUZ contained tagged excerpts from court rulings, the OCCP's decisions, and letters to traders requesting amending contractual clauses. ARBUZ has the potential to be used internationally but requires new crawling mechanisms to accommodate languages beyond Polish and a database of clauses in foreign languages (OCCP, 2024c, p. 9). The Authority for Consumers and Markets (ACM) in the Netherlands develops AI tools for (1) scanning spoken telemarketing for infringements, (2) identifying infringements around reference pricing (what is the lowest price in the previous 30 days, when discounts are presented), and (3) detecting fake countdown timers (Coll, Riefa, 2024a, pp. 40–41). EU eLab develops two types of software for case handlers: (1) software for detecting artificially inflated prices and fake discounts concerning the obligation introduced by the Omnibus Directive to indicate the lowest price over 30 days as a prior price and (2) a fake review detector that uses natural language processing to signal reviews coming from review farms (Tuch, 2023, p. 6).

Enforcement technology tools make better use of the know-how of consumer protection authorities. However, to ensure the effective use of these tools in international enforcement, these tools need to also be developed internationally (OECD, 2019, p. 29). To make this possible, the quality and format of the input

data (sets of decisions, national court judgements, guidelines) used for training AI tools should be developed and harmonised internationally to ensure cross-border compatibility on enforcement tools (Coll, Riefa, 2024b, p. 367).

10.13 Conclusions

The dynamic growth of e-commerce is creating enormous commercial opportunities. For these to be exploited, existing forms of consumer protection must be modernised and adapted to emerging risks. This process implies the development of a new area of law – international consumer law. In material terms, this area of law is already largely represented by the Unfair Commercial Practices Directive and the Consumer Rights Directive. However, the substantive provisions need to be supplemented by new enforcement procedures.

The obligations of traders towards consumers in distance contracts are harmonised within the EU, which means legal certainty for both consumers and traders when trading within the EU. As the Internet extends beyond the EU internal market, non-EU traders reaching out to EU customers should apply consumer protection rules provided in the Consumer Rights Directive (information requirements, rights of withdrawal, withdrawal instructions) and the Unfair Commercial Practices Directive (prohibition of unfair commercial practices). The consumer should be vigilant on the Internet, which can be difficult, as a consumer searching many sites on the Internet does not habitually verify which sites target his/her country and which do not. In Google's organic search results, the consumer may receive both websites directed to the consumer's country and websites not directed to the consumer's country. This means that, despite the protections in the CRD, the consumer needs to be sensitive to whether he or she is transacting on a CRD-compliant site.

On the other hand, EU traders reaching out to non-EU customers should make sure to check whether the country in question imposes requirements for pre-contractual marketing activities and consumer contractual rights that differ from EU law and, if so, adapt the website's provisions and procedures for contacting consumers.

In the digital world, a consumer should get to know if the supplier is a trader, intermediary, or other consumer and where he is based. If the trader targets EU consumers, he needs to respect the protection provided in the Consumer Rights Directive and the Unfair Commercial Practices Directive. Despite the imposition of significant information requirements and the right of withdrawal, enforcing them by individual consumers seems ineffective in the face of a deluge of commercial offers. Even an informed and attentive consumer may not be able to find out that certain information is missing from the trader's website or was presented misleadingly.

Administrative proceedings following the implementation of the Omnibus Directive show that the ease and speed with which contracts can be concluded online is still often at the cost of consumers not knowing with whom they are

contracting online (trader or consumer, platform operator, or platform vendor), even when we are talking about contracts within a single country. In cross-border perspective, the consumer has very limited chances of enforcing his or her rights, despite existing legal provisions. However, this can be changed through cooperation between regulators in different countries and through the use of AI-based enforcement tools. In fact, such forms of cooperation and AI tools are already emerging, although they seem to be still in early stages of development.

Note

1 In Polish: *Urząd Ochrony Konkurencji i Konsumentów*.

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11 Cross-border e-commerce – tax and customs aspects

Piotr Karwat and Aleksander Werner

11.1 Introduction

The e-commerce economy poses new challenges to the tax system and taxpayers (by which we also mean customs system and customs duty payers). It is about both the tax system as such and the way tax is collected (the latter is crucial for taxpayers). International trade is associated with an increased risk of turnover tax evasion compared to domestic trade due to, among other things, non-disclosure. On the other hand, participants in international e-commerce are more vulnerable to unfounded allegations of involvement in tax fraud. Regarding income taxation, international trade raises different challenges related to tax avoidance due to, among other things, international tax competition and the lack of tools explicitly binding the taxation of income where value is created. For taxpayers, this means legal uncertainty and an increased risk of tax avoidance charges. The impact of e-commerce on this risk is complex. On the one hand, it is linked to the intensification and acceleration of international trade. On the other hand, however, its very nature (electronic means of contact between trading participants, cashless payments, use of specialised shipping and transport companies) makes it easier for tax authorities to collect and process the necessary data, if they have adequate tools at their disposal. The chapter focuses on identifying the e-commerce challenges for tax authorities and taxpayers and analysing the tools that tax authorities have or should have at their disposal.

The analysis is based on a review of e-commerce data from Organisation of Economic Cooperation and Development (OECD) documents, especially the BEPS Project; European Commission documents, in particular the VAT in the Digital Age project; and a meta-analysis of the literature. The analysis focuses on the substance of the various tools (existing and proposed) and their compliance with the basic tax principles and the principles of the particular taxes. The chapter includes an assessment of the analysed tools for protection against tax avoidance and evasion in e-commerce (both implemented and designed) from the point of view of the principles of proportionality and certainty and budgetary efficiency.

11.2 Tax and digitalisation and e-commerce: origins

The history of changes in European legislation shows that the problems posed by the digitalisation of the economy have long been recognised, and efforts have been made to overcome them. On the other hand, digitalisation has proven to offer opportunities to improve the efficiency of the VAT system, and these opportunities have not been missed. Attempts prior to the “VAT in the Digital Age” (ViDA) initiative (we discuss it in the following section) seem piecemeal, perhaps even chaotic, but they certainly cannot be discarded. The history of VAT changes driven by digitalisation was described by Papis-Almansa (2019). It was the experience with the implementation of the existing solutions that gave rise to the creation of a more holistic vision, which found its expression in the ViDA initiative. These “fragmentary”, but undoubtedly important changes, taking into account developments in digitalisation and e-commerce, include changes primarily in the following areas:

- The issue and storage of invoices in electronic form (Council Directive 2001/115/EC of 20 December 2001 amending Directive 77/388/EEC with a view to simplifying, modernising, and harmonising the conditions laid down for invoicing in respect of value added tax).
- The place of supply of electronically supplied services and a special scheme for non-established taxable persons supplying electronic services to non-taxable persons (Council Directive 2002/38/EC of 7 May 2002 amending and amending temporarily Directive 77/388/EEC as regards the value added tax arrangements applicable to radio and television broadcasting services and certain electronically supplied services).
- From 2010 – the place of supply of services, and from 2015 – the Mini One Stop Shop (MOSS) procedure for, among others, electronic services (Council Directive 2008/8/EC of 12 February 2008 amending Directive 2006/112/EC as regards the place of supply of services).
- From 2021 – the taxation of cross-border distance sales, including through operators of electronic platforms enabling distance sales, through the implementation of *the One Stop Shop* (OSS) procedure (Council Directive (EU) 2017/2455 of 5 December 2017 amending Directive 2006/112/EC and Directive 2009/132/EC as regards certain value added tax obligations on the supply of services and on the distance marketing of goods).

Digitalisation, as can be seen even from the preceding story, has significantly affected turnover taxes. As far as income taxes are concerned, however, the need to adapt taxation to the growing role of e-commerce was recognised at virtually the same time as income taxes. In June 1996, the Committee on Fiscal Affairs (CFA), began to discuss the tax implications of the development of communications technology. Consequently, a conference on the taxation of e-commerce

was held in Ottawa in October 1998, which resulted in the report “Taxation and Electronic Commerce. Implementing the Ottawa Taxation Framework Conditions” (OECD, 2001). According to the report, the main conclusions of the Taxation Framework Conditions were that:

- The taxation principles that guide governments in relation to conventional commerce should also guide them in relation to electronic commerce.
- Existing taxation rules can implement these principles. This approach does not preclude new administrative or legislative measures, or changes to existing measures relating to electronic commerce, provided that those measures are intended to assist in the application of existing taxation principles and are not intended to impose a discriminatory tax treatment of electronic commerce transactions.
- The application of these principles to electronic commerce should be structured to maintain the fiscal sovereignty of countries, to achieve a fair sharing of the tax base from electronic commerce between countries, and to avoid double taxation and unintentional non-taxation.
- The process of implementing these principles should involve an intensified dialogue with business and with non-member economies.

The report assumes that the following generally accepted tax principles should apply in the taxation of e-commerce:

- **Neutrality:** Taxation should seek to be neutral and equitable between forms of electronic commerce and between conventional and electronic forms of commerce. Business decisions should be motivated by economic rather than tax considerations. Taxpayers in similar situations carrying out similar transactions should be subject to similar levels of taxation.
- **Efficiency:** Compliance costs for taxpayers and administrative costs for the tax authorities should be minimised as far as possible.
- **Certainty and Simplicity:** The tax rules should be clear and simple to understand so that taxpayers can anticipate the tax consequences in advance of a transaction, including knowing when, where, and how the tax is to be accounted.
- **Effectiveness and Fairness:** Taxation should produce the right amount of tax at the right time. The potential for tax evasion and avoidance should be minimised while keeping counteracting measures proportionate to the risks involved.
- **Flexibility:** The systems for taxation should be flexible and dynamic to ensure that they keep pace with technological and commercial developments (OECD, 2001, pp. 17–18).

Another milestone in the development of the concept of e-commerce taxation turned out to be another OECD project, i.e., Base Erosion and Profit Shifting

(BEPS), with its Action 1: Addressing the Tax Challenges of the Digital Economy (OECD, 2015). The conclusions define the main features of the digital economy that should determine its tax treatment:

- The digital economy is the result of a transformative process brought by information and communication technology (ICT). The ICT revolution has made technologies cheaper, more powerful, and widely standardised, improving business processes and bolstering innovation across all sectors of the economy.
- Because the digital economy is increasingly becoming the economy itself, it would be difficult, if not impossible, to ring-fence the digital economy from the rest of the economy for tax purposes.
- The digital economy is in a continuous state of evolution and developments need to be monitored to evaluate their impact on tax systems. The rapid technological progress that has characterised the digital economy has led to a number of emerging trends and potential developments.
- The digital economy and its business models present some key features which are potentially relevant from a tax perspective. These features include mobility, with respect to (1) the intangibles on which the digital economy relies heavily, (2) users, and (3) business functions; reliance on data; network effects; the spread of multi-sided business models, in which multiple distinct groups of persons interact through an intermediary or platform, and the decisions of each group of persons affect the outcome for the other groups of persons through a positive or negative externality; tendency towards monopoly or oligopoly in certain business models relying heavily on network effects; and volatility due to lower barriers to entry into markets and rapidly evolving technology, as well as the speed with which customers can choose to adopt new products and services at the expense of older ones.
- The digital economy has also accelerated and changed the spread of global value chains in which multinational enterprises (MNEs) integrate their worldwide operations. This integration has made it easier for business to adopt global business models that centralise functions at a regional or global level, rather than at a country-by-country level (OECD, 2015, pp. 142–143).

The Action 1 Report notes that the preceding features of e-commerce are conducive to tax avoidance due to “a number of tax and legal structures that can be used to implement business models in the digital economy. These structures highlight existing opportunities to achieve BEPS to reduce or eliminate tax in jurisdictions across the whole supply chain, including both market and residence countries. For example, the importance of intangibles in the context of the digital economy, combined with the mobility of intangibles for tax purposes under existing tax rules, generates substantial BEPS opportunities in the area of direct taxes. Further, the ability to centralise infrastructure at a distance from a market

jurisdiction and conduct substantial sales of goods and services into that market from a remote location, combined with increasing ability to conduct substantial activity with minimal use of personnel, generates potential opportunities to achieve BEPS by fragmenting physical operations to avoid taxation. Some of the key characteristics of the digital economy also exacerbate risks of BEPS in the context of indirect taxation, in particular in relation to businesses that perform value added tax (VAT) exempt activities (exempt businesses)” (OECD, 2015, p. 144).

The observations made in the Action 1 Report have provided the basis for concrete legal solutions, some of which have been implemented while others are still in draft form. These are discussed in the following section.

11.3 Is value added tax ready for the digital age?

The most important recent event “in the world of taxation” related to e-commerce is the publication of the European Commission’s 2022 call for evidence for an impact assessment of the ViDA initiative (European Commission, 2022). According to the Commission, “The objective of the initiative is to ensure the proper functioning of the single market, to reduce compliance costs for businesses and to protect the financial and economic interests of the EU and its Member States by combating VAT fraud and ensuring tax equality and neutrality”. This will, according to Call for Evidence (European Commission, 2022), involve:

- Making compliance with VAT rules easier for EU businesses, particularly those working in the digital economy and those carrying out cross-border trade;
- Laying down a framework which helps tax administrations to fight VAT fraud, in particular MTIC fraud;
- Preventing regulatory failure and market fragmentation; and
- Ensuring fairer treatment of both traditional and platform economies.

It started the process of drafting a directive amending Directive 2006/112/EC, the basic VAT harmonisation directive (ViDA Directive). The latest version of ViDA Directive was published on 5 November 2024 (European Commission, 2024). The ViDA Directive will be discussed in more detail later, but it is worth noting at the outset that the impact of digitalisation and e-commerce on taxation and the resulting need for changes to the system have long been recognised. A good example is the so-called Interim Report of April 1998 on the effects of e-commerce on VAT and customs, working paper XXI/98/0359 (European Commission, 1999).

Apart from the obvious rooting of this initiative in the BEPS Project (Action 1) discussed earlier, its origins can also be traced to the European

Commission’s announced Action Plan for fair and simple taxation supporting the recovery ([European Commission, 2020](#)). The implementation of the plan involves developing measures to, among other things, help Member States to enforce existing tax rules and improve tax compliance. This ensures reliable tax revenues and helps tax authorities make better use of existing data. In addition, it is intended to foster more effective sharing of new data in a way that will improve tax enforcement and help combat tax fraud and evasion more effectively.

The ViDA project is intended to address the new challenges of the digital economy and the development of new business models, in three areas:

- VAT reporting obligations and e-invoicing,
- VAT treatment of the platform economy, and
- Single EU VAT registration.

The next sections will focus on the first two areas of the ViDA Directive. Regarding the single VAT registration, an interesting analysis was made by [Merckx, Gruson, Verbaan, van der Doef, \(2023\)](#).

11.4 VAT reporting obligations and e-invoicing

According to recital 4 of the ViDA Directive, “In order to increase the collection of taxes on cross-border transactions and to put an end to the existing fragmentation resulting from the implementation of divergent reporting systems by Member States, rules on EU digital reporting requirements should be established. These rules should provide tax authorities with transaction-by-transaction information to enable cross-analysis of data, increase the audit capacity of tax authorities and create a deterrent effect on non-compliance, while reducing compliance costs for businesses operating in different Member States and eliminating barriers to the internal market”. According to recital 5, “To facilitate the automation of the reporting process for both taxable persons and tax authorities, transactions to be reported to the tax authorities should be documented electronically. Electronic invoicing should become the default system for issuing invoices. However, Member States should have the option to allow the use of other invoices for domestic supplies of goods or services”.

Provisions in this regard are to come into force from 2030 (Article 4 of the ViDA Directive). A key change is to take place with regard to the right to deduct input tax. In addition to the existing ones, an additional condition for the acquisition of this right is to be the possession of an electronic invoice issued in accordance with the requirements introduced by the ViDA Directive (amended Article 168 of the VAT Directive). However, this is optional, as Member States are free to introduce such a requirement under the conditions they lay down.

An electronic invoice must be issued, sent, and received in a structured electronic format that allows it to be processed automatically and electronically

(Article 217 of the VAT Directive). The pan-European standard (the only one allowed for intra-Community supplies) in this respect is to be electronic invoicing in accordance with the Directive on electronic invoicing in public procurement (Directive 2014/55/EU of the European Parliament and of the Council of 16 April 2014 on electronic invoicing in public procurement, while Member States may allow other standards for domestic supplies (Article 218(3) of the VAT Directive).

The rule is to be that an electronic invoice issued to a taxable person or a non-taxable legal person does not have to be accepted if it is issued in accordance with a European standard. Invoices issued in a different format are subject to such acceptance, unless otherwise provided by the Member State (Article 232 of the VAT Directive).

In addition to electronic invoicing, digital reporting requirements for intra-Community transactions are to take effect from 2030, which will be combined with the abandonment of recapitulative statements. The principle adopted is that these requirements are to be the necessary standard for cross-border transactions. On the other hand, the digital reporting standards already in place in some Member States (including Poland) for domestic transactions and captive supplies should be aligned with the anticipated requirements of the VAT Directive from 2030. Similarly, Member States which, despite not being required to do so, opt for digital reporting for domestic transactions should retain the standards provided for by the VAT Directive for cross-border transactions (recitals 17 and 18). The principle is also to be that, while retaining the right for Member States to “continue to take other measures to ensure the correct collection of VAT and prevent tax evasion”, they should not “escalate” their recording and reporting tools beyond the requirements provided for in the Directive. Member States should therefore not “be allowed to impose additional general transaction-based reporting obligations on transactions covered by digital reporting requirements, unless required at national level for the preparation and submission of VAT returns or for auditing purposes. This means that Member States may retain – in addition to the real-time reporting obligations provided for in the Directive – their national reporting tools based, for example, on SAF-T, as well as reporting obligations that are not general, such as cash registers” (recital 20 and Article 273 of the VAT Directive).

The primary tool against tax evasion, with a relatively long history for modern taxation dating back to the early 20th century, is the international exchange of information (Oberson, 2018; Wöhler, 2018). The OECD International VAT Guidelines also identify this function of information exchange as one of the most important (OECD, 2017). The most extensive international application for tax information exchange (not only for VAT) is the OECD Convention on Mutual Administrative Assistance in Tax Matters, developed jointly with the European Council in 1988 and amended in 2010. Within the EU, the legal basis for VAT information exchange is Council Regulation (EU) No 904/2010 of

7 October 2010 on administrative cooperation and combating fraud in the field of value added tax. The main recital of the regulation is that “tax evasion and tax avoidance extending across Member State borders lead to budget losses and violations of the principle of fair taxation. They can also cause distortions in capital movements and competitive conditions. In this way they affect the functioning of the internal market” (recital 3). The exchange concerns “any information which may help to effect a correct assessment of VAT, monitor the correct application of VAT, particularly on intra-Community transactions, and combat VAT fraud” (Article 1).

The most advanced and effective tool is the exchange of information, particularly automatic and spontaneous information. Developments in information technology (big data, data analytics, and artificial intelligence) potentially make the automatic exchange of information a fast, effective, and relatively inexpensive tool for identifying potential tax fraud. The main problem, however, is not the data analytics itself (indeed, increasingly easier thanks to the aforementioned technologies), but the fact that the only data that can be analysed is the data that the tax administration has at its disposal at any given time and that it can provide through the exchange of information. The primary source of this data, on the other hand, is the traders (taxpayers). The speed, efficiency, and quality of the exchange of information is therefore clearly dependent on the timeliness and reliability of the data received from this primary source.

The development of information technology has made it possible to implement tools based on the rapid transfer and processing of data, not only between tax administrations but also in the relationship between the tax administration and the taxpayer (Cockfield, 2019). Among the currently functioning or “almost implemented” tools of this type are the electronic submission of tax returns and records and the so-called “central register of invoices”.

The electronic collection and transmission of data by taxpayers to the tax authorities was the subject of a document developed by the OECD in 2005, *Guidance on Tax Compliance for Business and Accounting Software* (Karwat, 2021). The purpose of the document, according to its title, was mainly to facilitate *tax compliance* procedures and reduce costs, both for tax authorities and taxpayers, by implementing electronic reporting. What may have seemed at the beginning of the 21st century to be merely a compliance and cost reduction tool is nowadays becoming an increasingly urgent basic technical need, without the satisfaction of which not only the fight against tax fraud but any verification of the correctness of VAT collection will become illusory. This was noted as early as the beginning of the century: “The traditional approach of physically reviewing a document with transaction details and control information is no longer feasible with fully electronic e-commerce systems, leading to increased substantive testing of transaction information, often using computer-assisted control. The use of these techniques can also provide greater efficiency and effectiveness for both businesses and controllers, and a key enabler of this process is the integration

of a standard control file into software packages and ERP systems. This would enable controllers to easily access data, thereby increasing control coverage and productivity, while reducing compliance costs for businesses that would otherwise have to devote resources to creating data in a readable format. The method of data production, whether at the time of each transaction or at the request of the auditor, will be up to each tax authority” (OECD, 2001a).

To date, the VAT Directive does not impose an obligation on Member States to require only electronic filing of returns or to transmit VAT records electronically to the tax authorities. There is only an obligation to allow taxable persons to submit returns in this form and an option for a Member State to impose an obligation to submit returns exclusively in this form (Article 250 of the VAT Directive). An exception is made for activities covered from 1 July 2021 by the so-called *e-commerce* package, where taxpayers making supplies of goods and services under the procedure provided for in this package are required, at the request of the tax authority, to submit documentation only in electronic form. The same obligation applies to a taxable person who facilitates, by means of an electronic interface such as a marketplace, platform, portal, or similar means, the supply of goods or services by means of e-commerce (Article 242a of the VAT Directive). Another group is payment service providers (Articles 243a–243d of the VAT Directive).

Despite the freedom that the VAT Directive currently leaves in this respect, most Member States, including Poland, have introduced a requirement to keep electronic records and report VAT. Some countries have introduced a specific format for such reporting (Czech Republic, France, Greece, Italy, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Slovakia, Slovenia, and Spain). Most of them (France, Lithuania, Luxembourg, the Netherlands, Poland, and Slovenia) use the Standard Audit File for Tax (SAF-T) format developed by the OECD Forum on Tax Administration. In most cases, this is periodic electronic reporting, but Hungary, Italy, and Spain, for example, require real-time transmission (OECD, 2020).

The importance of information exchange for the implementation of the principle of tax fairness (non-distortion of competition) can be illustrated by the example of e-commerce services provided from third countries to consumers resident in an EU Member State. The nature of these services is such that their flow cannot be verified at the EU border and the jurisdiction of any Member State does not extend beyond the EU. These are the reasons for the relatively modest results of the MOSS (*mini one-stop-shop*) system for electronic services provided by third-country operators. The failure to ensure the exchange of information between EU and non-EU countries results in a *de facto* distortion of competition in favour of non-EU suppliers due to the *de facto* possibility for them to avoid VAT (Lamensch, 2017). Thus, if the exchange of information is able to increase the efficiency of tax collection, then, by reducing the distortion of competition, it enhances the fairness of taxation. Of course, going back to the

example of electronic services provided from third countries to consumers, it cannot be concluded that e-invoicing or digital reporting will alone increase the efficiency of VAT collection. The example merely shows how the lack of effective information exchange poses a threat to tax fairness. A prerequisite for effective information exchange is that the tax authorities have reliable and up-to-date data on the transactions carried out by taxpayers. It is difficult to imagine more up-to-date data than that provided in real time, i.e., at the time the transaction is documented by an invoice (e-invoice). As far as the reliability (veracity) of the data is concerned, although the real-time flow of data does not in itself guarantee it, real-time data on serial (chain) transactions, when subjected to modern IT analytical tools, will enable faster detection of criminal chains of transactions (Pieter, 2023). If we realise that the condition for the “success” of most VAT frauds is the issuing of an invoice, we can notice what a powerful anti-fraud tool the e-invoice will be, one that the tax authority (or rather the tax administration’s analytical system) will already know about when it is issued, at the same time as the recipient of the invoice. Of course, many details still need to be clarified prior to the implementation of the ViDA Directive, such as whether the system will work through (centralised) third-party service providers without reporting invoices to the tax authorities, or whether electronic invoices will go directly to the tax authorities. If so, will it be possible for the tax authorities or the recipient to validate the invoices? And what impact, if any, will this have on issuers of electronic invoices that have been rejected after issue (Merkx, Gruson, Verbaan, van der Doef, 2023a)? Nevertheless, this scope of the ViDA Directive should be assessed as the most necessary to realise the principle of fair taxation of e-commerce.

Today, virtually the entire economy is increasingly based on the rapid exchange and analysis of large amounts of data. Even in industries where the movement of goods or the “physical” performance of a service play key roles, we are seeing faster turnaround times for these transactions, and counterparties are more anonymous to each other. These very features of modern trade have underpinned the growth within the EU of tax crime, a key element of which is the “missing trader”: a trader who declares VAT due, issues an invoice thereby giving the purchaser a formal right to deduct input VAT, and then disappears without paying his tax liability. Traditional VAT reporting gives enough time to “disappear”. Real-time electronic transaction reporting gives the tax authorities detailed and electronically processable information on individual supplies, eliminating the problem of the lapse of time between the transaction taking place and its showing in the return.

To be effective, a tax that is chargeable on turnover must rely on tools that are compatible with that turnover. The speed of the exchange and processing of information in circulation “forces” the VAT system, if it is to be effective (i.e., fair!), to conform to the quality standards of information exchange in circulation.

11.5 VAT treatment of the platform economy

According to recital 21 and 22 of the ViDA Directive: “The platform economy has raised certain difficulties for the application of VAT rules, in particular the establishment of the taxable status of the provider of the service and the level playing field between small- and medium-sized enterprises (SMEs) and other businesses”; “The platform economy has led to an unjustified distortion of competition between supplies performed through online platforms that escape VAT taxation, and supplies performed in the traditional economy that are subject to VAT. The distortion has been most acute in the two largest sectors of the platform economy behind e-commerce, namely the short-term accommodation rental sector and the sector of passenger transport by road. It is recognised, however, that this disparity may be more apparent in some Member States than in others”.

The changes in question, according to the plan, would come into effect between 1 January 2026 and 1 July 2027.

At first glance, the ViDA Directive therefore focuses not so much on e-commerce as on the short-term accommodation rental sector and the sector of passenger transport by road. In fact, however, the Directive addresses the “platform economy” in its entirety, including the typical e-commerce. Recital 28 states: “Council Directives (EU) 2017/24552 and 2019/19953 amended Directive 2006/112/EC as regards the VAT rules governing the taxation of business-to-consumer cross-border e-commerce activity in the Union. Those amending Directives reduced distortions of competition, improved administrative cooperation and introduced a number of simplifications. Whilst the amendments introduced by those Directives that apply since 1 July 2021 have been largely successful, the need for certain improvements have nevertheless been identified”. We can, moreover, observe a similar trend in the customs system. According to the Commission’s 2023 reform proposal, online platforms will become key players in ensuring that goods sold online in the EU comply with all customs obligations. Platforms will be responsible for paying customs duties (together with VAT) at the time of purchase. At the same time, the reform will remove the current threshold where goods worth less than 150 euro are exempt from customs duty, which is often exploited by fraudsters. Currently, up to 65% of shipments entering the EU are undervalued to avoid import duties ([European Commission, 2023](#)).

As we can therefore see, the ViDA Directive is, in terms of the taxation of e-commerce, a continuation of earlier legislative initiatives to adapt the VAT system to the digitalised economy. The first step on this path was Council Directive (EU) 2017/2455, which was implemented in Poland on 1 July 2021. Its main purpose was better implementation of the principle of taxation at destination, equal conditions of competition, a minimum burden on undertakings, and protection of Member States’ tax revenue in cross-border distance sales to consumers (B2C). Before the implementation of the e-commerce Directive

there was an option for providers of cross-border B2C services provided by electronic means, called mini-one-stop-shop (MOSS). The taxpayer could declare in one Member State (his home country or, in the case of a non-EU entity, in a selected Member State) that he wanted to account to the tax administration of that country for VAT due on sales of B2C electronic services in all Member States where his clients were based. VAT was then declared on turnover in each Member State at the VAT rate applicable in each country, but it was accounted for to a single tax authority. The e-commerce Directive extended this model, called since that time one-stop-shop (OSS), as obligatory for cross-border B2C trade in goods. Its official name is “intra-Community distance sales of goods” and “distance sales of goods imported from third territories or third countries”. The e-commerce Directive’s aim was to address the two fundamental problems of taxation of B2C transactions identified in the BEPS Project Action 1 (OECD, 2015) and it was basically consistent with the solutions proposed in the International VAT/GST Guidelines (OECD, 2017).

In the e-commerce Directive and in its continuation ViDA Directive, the operator of an electronic platform which enables distance selling plays a special role: “Where a taxable person facilitates, through the use of an electronic interface such as a marketplace, platform, portal or similar means, the supply of goods within the Community by a taxable person not established within the Community to a non-taxable person, the taxable person who facilitates the supply shall be deemed to have received and supplied those goods himself” (Article 14a(2) of the Directive). Similar regulation concerns the sales of goods imported in consignments of an intrinsic value not exceeding 150 euro (Article 14a(1) of the Directive).

In the ViDA Directive, the exchange of information is strengthened through the electronic invoicing and reporting discussed earlier. Such exchange of information is a key factor for the effectiveness of taxation in the country of destination. In the case of electronic services, it is even difficult to imagine effective taxation without such exchange since their movement cannot be verified at the EU border. The lack of such exchange has resulted in unsatisfactory performance of the MOSS scheme for electronic services provided by third country operators. Lack of exchange of information between EU and non-EU countries creates a *de facto* distortion of competition in favour of suppliers from non-EU countries due to the *de facto* possibility for the latter to evade VAT (Lamensch, 2017).

The key features of the digital economy formulated in Action 1 BEPS report in 2015 are now even more evident. These include: mobility, reliance on data (in particular big data), network effects, use of multi-sided business models in which the two sides of the market may be in different jurisdictions, tendency towards monopoly or oligopoly in certain business models relying heavily on network effects, volatility due to low barriers to entry, and rapidly evolving technology (OECD, 2015). The BEPS Project Action 1 focuses primarily on the challenges posed by e-commerce in relation to income taxes and, in the case of

VAT, the abuse of law as regards deduction of input VAT by undertakings that conduct VAT-exempt activities. However, these features of the digital economy also have an impact on tax fraud. Increased mobility, lack of cross-border barriers, low barriers to entry mean, among other things, that undertakings, even in the SMEs, are more inclined to operate in a cross-border mode (Karwat, 2021).

11.6 Corporate income tax and e-commerce: a long way to systemic solutions?

As we presented at the beginning of the chapter, the CIT is far from being systematically adapted to the challenges of the digital economy. Although the challenge as such was noted at around the same time as for VAT, ideas for concrete solutions only emerged at the stage of the BEPS Project (OECD, 2015).

The main challenge in international income taxation arising from the growth of the digital economy is, as we recall, the ability to easily structure business models in such a way that most income is “decoupled” from both the jurisdiction in which it actually arises from the sale of goods and services (market jurisdiction, jurisdiction where value is created) and the jurisdiction of residence. Instead, income is “allocated” to low tax jurisdictions. As noted by the authors of the Action 1 Report, “the ability to centralise infrastructure at a distance from a market jurisdiction and conduct substantial sales of goods and services into that market from a remote location, combined with increasing ability to conduct substantial activity with minimal use of personnel, generates potential opportunities to achieve BEPS by fragmenting physical operations to avoid taxation”.

There is therefore a need to find solutions to tax economic activities and value creation. The basic response to this challenge in the Action 1 report was to say that “structures aimed at artificially shifting profits to locations where they are taxed at more favourable rates, or not taxed at all, are expected to be addressed by the different measures developed in the context of the BEPS Project. This will help address BEPS issues and restore taxing rights at the level of both the market jurisdiction and the jurisdiction of the ultimate parent company. BEPS issues in the market jurisdiction are expected to be addressed by preventing treaty abuse (Action 6) and by preventing the artificial avoidance of permanent establishment (PE) status (Action 7). BEPS issues in the ultimate residence jurisdiction are expected to be addressed by strengthening controlled foreign company (CFC) rules (Action 3). BEPS issues in both market and residence jurisdictions are expected to be addressed by neutralising the effects of hybrid mismatch arrangements (Action 2), by limiting the base erosion via interest deductions and other financial payments (Action 4), by countering harmful tax practices more effectively (Action 5), and by assuring that transfer pricing outcomes are in line with value creation (Actions 8–10). In addition, risk assessment processes at the level of the competent tax administration will be enhanced by measures such as the mandatory disclosure of aggressive tax planning arrangements (Action 12)

and standardised transfer pricing documentation requirements coupled with a template for country-by-country reporting (Action 13)” (OECD, 2015, p. 144).

It is true, of course, that the structure of an e-commerce business may turn out to be an abuse of treaties, the creation of a foreign controlled company or hybrid structures. It may also involve the use of debt financing for the purpose of charging interest as an expense or violating the arm’s-length principle in transfer pricing. This will give rise to the use of the anti-abuse instruments provided for in Actions 6, 3, 2, 4, or 8–10, respectively. None of these instruments, however, are designed with e-commerce in mind, but are of general application.

The question therefore arises as to whether instruments existed before BEPS or exist or are being designed under BEPS, with a view to widespread international application, that would address the income taxation problem arising from the immanent feature of e-commerce, namely the lack of a “point of contact” between supplier and recipient and the consequent lack of need to build structures at the place of supply that would formally justify taxation of the income in the jurisdiction where the income is actually generated.

11.7 Electronic commerce in OECD Model Tax Convention

Even long before BEPS, in 2003, there were amendments to the commentary to Article 5 of the OECD Model Tax Convention concerning the permanent establishment (PE) (OECD, 2019). They were the result of the aforementioned report: *Taxation and Electronic Commerce. Implementing the Ottawa Taxation Framework Conditions* (OECD, 2001). The traditional concept is that the existence of a PE (and consequently the taxation of income at its location) cannot be determined by an infrastructure that serves only the preparatory or auxiliary activities covered by paragraph 4 of Article 5. According to the commentary, “the question of whether particular activities performed at such a location fall within paragraph 4 needs to be examined on a case-by-case basis having regard to the various functions performed by the enterprise through that equipment”. The typical preparatory or auxiliary activities are: providing a communications link between suppliers and customers, advertising of goods or services, relaying information through a mirror server for security and efficiency purposes, gathering market data for the enterprise, and supplying information. However, if “such functions form in themselves an essential and significant part of the business activity of the enterprise as a whole, or where other core functions of the enterprise are carried on through the computer equipment, these would go beyond the activities covered by paragraph 4 and if the equipment constituted a fixed place of business of the enterprise (...), there would be a permanent establishment” (paragraph 129 of the commentary).

It is important to note, however, that regardless of the changes made to the Article 5 commentary in relation to the digital economy, they do not change the paradigm of the PE, which is still the physical presence of the business in

the jurisdiction (in the case of e-commerce, this must be at least a server). Over time, this physical presence has less and less impact on the ability of a business to create value in a market jurisdiction and, consequently, begins to have less and less to do with the fairness of income taxation (OECD, 2015, p. 147). This is prompting various countries to take unilateral initiatives such as the concept of virtual EP, reclassifying certain e-commerce revenues as royalties and applying a withholding tax to them, or introducing an additional “digital tax” (Lee, Yoon, 2018, pp. 250–251).

Another important change related to e-commerce concerned the commentary to Article 12 on, among others, royalties. The change was the result of report: Treaty Characterisation Issues Arising from E-commerce, adopted by the OECD Committee on Fiscal Affairs on 7 November 2002 (OECD, 2019a). The essence of the amendment to the commentary was to “make more realistic” the approach to the use of copyright by customers acquiring digital products (software, images, sounds, or text). The customer’s intention is generally to acquire digitally transmitted data for their own use or use by the purchaser. Even if the customer, according to the rules of copyright law, exercises the copyright in this data, this “is only an incidental part of the process of capturing and storing the digital signal”. It is irrelevant to the classification of the income as a royalty, since the customer’s purpose is not to acquire rights, but to access the data.

As can be seen, the comments to the OECD Model Convention relating to e-commerce are very limited and do not delve into the concept of taxation in a market jurisdiction.

11.8 BEPS 2.0 Pillar One

An attempt to provide a comprehensive response to the income tax problems arising from the development of the digital economy is the BEPS 2.0 Project, in particular Pillar One. The assumptions behind this concept are presented in the report titled *Tax Challenges Arising from Digitalisation – Report on Pillar One Blueprint: Inclusive Framework on BEPS* (OECD, 2020a). One of the primary justifications for the First Pillar is to reduce the relevance of long-standing treaty standards for international taxation, primarily the requirement of physical presence to enable source taxation or the arm’s-length principle as a profit allocation mechanism (Navarro, 2021).

As envisaged, the solution consists of two pillars. We omit the considerations on the GLoBE global minimum tax (Pillar Two), as the solution focuses on bringing taxation to a minimum level of 15% of MNE income globally, and the question of allocating this taxation to a specific jurisdiction is secondary. Pillar One, on the other hand, deals with nexus and profit allocation, the issue that poses the greatest challenge to fair income taxation in the digital economy.

Pillar One is to consist of three components. The first is Amount A, which is the taxing right for market jurisdictions to share in the residual profit calculated

for MNEs. The second, Amount B, which is a fixed return for certain core marketing and distribution activities taking place physically in the market jurisdiction, in accordance with the arm's-length principle. The third component is to be the processes to improve tax certainty through effective dispute prevention and resolution mechanisms (OECD, 2020a, p. 11).

The scope of taxation for the purposes of Amount A has been defined in isolation from the existing paradigm of physical presence in a jurisdiction. In the digital economy, such physical presence is not necessary to operate in a market jurisdiction. It is proposed to introduce a so-called activity test. It will be differentiated according to the types of activities, which are grouped into Automated Digital Services (ADS) and Consumer-facing Businesses (CFB). For the latter, manifestations of physical presence in the market jurisdiction may be relevant.

It is anticipated that the introduction of Pillar One will require the adoption of a multilateral tax convention. Unfortunately, as the authors of the report acknowledge, “[w]hile the technical work on the Pillar One building blocks is very advanced, Inclusive Framework members recognise that there are a number of open issues on key features of the solution that can only be resolved through political decisions” (OECD, 2020a, p. 11). In this situation, especially when many of the relevant elements are still undefined, success will be determined by the agreement between the MNEs’ countries of residence and the largest market countries, which in many cases overlap. If the US does not adopt the first pillar, the project will apparently collapse (Navarro, 2021, p. 18).

The main objective of Pillar One is to respond to the challenges posed by the digitalisation and globalisation of the economy, to stabilise the international tax system, and to reduce the risk of uncertainty and tax disputes. Digitisation and globalisation have highlighted the weaknesses of the existing rules for the allocation of taxing rights (physical presence in a market jurisdiction). Amount A would provide market jurisdictions with the right to tax a portion of MNEs’ e-commerce profits. At the same time, however, Pillar One would allow disputes arising from the proliferation of new unilateral measures, including taxes on digital services and aggressive audits by tax administrations around the world, to evade. According to OECD research, the proliferation of these uncoordinated measures and the likely tax and trade disputes resulting from them could reduce global GDP by up to 1% (Delpuech, Hanappi, Hugger, O’Reilly, Whyman, 2023).

11.9 Conclusions

Two obvious conclusions may be drawn from the review. Firstly, e-commerce needed to be “noticed” by the tax system and the decision-making bodies both for quantitative reasons (dramatically increasing market share and international turnover) and qualitative reasons (different nature compared to the traditional

economy, consisting in a decreasing link between physical presence in a given market and its intensity on the one hand, and the turnover and revenues generated in this market on the other). Secondly, e-commerce was “noticed” and even quite early, as early as the second half of the 1990s.

The basic conclusion was that e-commerce could, in the absence of a proper adaptation of the tax system, lead to more tax avoidance and evasion, especially in international trade, especially since e-commerce was indeed contributing to the growth of international trade.

However, this has led to quite different effects in terms of turnover taxation (VAT) on the one hand and income taxation (CIT) on the other.

As far as VAT is concerned as well as customs duties, we have been observing, at least since the early 2000s, gradual efforts to adapt the system to the requirements of the digital economy. The initial steps appear to be “tentative” and concern the issue of transaction documentation and, more specifically, the abandonment of the paper requirement. Far more momentous (and positive) is the change, first regarding electronic services, and then to a much broader extent, of the rules for determining the place of supply of services. The increasing role of the exchange of information between tax administrations and the standardisation of this exchange should also not be forgotten. Finally, from the early 2020s, we can see a move towards full digitalisation of VAT documentation and reporting, at least for international transactions.

This is accompanied by the introduction of a special scheme for the taxation of B2C international trade in goods and services (initially MOSS, now OSS), aimed at “making life easier” for both taxpayers and tax authorities. This scheme, incidentally, can also be adapted to international B2B trade, which will hopefully happen in the near future.

It is no less important that the solutions introduced first of all contribute to making the VAT system more immune to tax fraud that results in budget losses and, secondly, make the VAT system fairer. Thanks to these changes, honest taxpayers are less exposed to “competition” with tax evaders and, because of fewer administrative barriers, have easier access to the international market (which is particularly important for the SME sector).

The situation is completely different in income taxation. Although we called the BEPS project a “milestone”, it is an exaggeration, partly because it also identified e-commerce issues in VAT. A concrete solution to these issues was partly reached in the e-commerce Directive (from July 2021) and they have been partly dealt with by the ViDA Directive (draft). As for CIT, the BEPS project (Action 1) merely named and catalogued the problems. As far as solution to these problems is concerned, it was only hoped that other actions (e.g., CFC, abuse of treaties, abuse of PE, transfer pricing, and others) would contribute.

The fundamental problem of international income taxation of e-commerce, which is the paradigm of physical presence in a market jurisdiction, has not been dealt with. It continues to operate in double taxation treaties and the OECD

Model Convention. Without moving away from it, it is difficult to imagine an equitable allocation of e-commerce income taxation according to the principle of place of value creation.

Pillar One (BEPS 2.0) is an attempt to change this paradigm. It is difficult to assess the chances of this attempt at the moment due to the not very advanced nature of the project. Certainly, its basic assumptions allowing the allocation of income to the market jurisdiction can be considered valid. For its effective implementation, however, a multilateral treaty is necessary, which is undoubtedly a political and organisational challenge. It is to be hoped that, in an era of an increasingly dominant digital economy, most governments will realise how archaic and long out of touch with economic reality is the concept of income taxation based on the physical presence of a business in a market jurisdiction.

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12 Intellectual property considerations in the internationalisation of e-commerce platforms for Poland-based brands

A case study of a fashion retailer*

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12.1 Introduction

The rise of e-commerce has fundamentally transformed the global retail landscape, offering unprecedented opportunities for fashion brands to reach international markets with relative ease. The e-commerce sector is marked by swift growth and a strong embrace of technological innovations. Its ingenuity is evident in offerings such as virtual fitting rooms, packshots, tools for scanning interior spaces, and systems that suggest cosmetics based on customer-uploaded photos (Werdayani, Widiaty, 2021; Fernandes, Morais, 2021). These initiatives illustrate how the industry is satisfying consumer expectations by providing interactive and immersive experiences. Furthermore, the market is rapidly adopting cutting-edge technologies, including chatbots and voice assistants, along with sophisticated platforms that consolidate customer data to assess needs in real time and deliver customised solutions (Varese, Pellicelli, 2019).

For Poland-based fashion retailers, the digital marketplace provides a gateway to the expansive European Union (EU) market and beyond, facilitating increased brand visibility and revenue growth (Jankowska, Kania, Pawełczyk, 2024). However, this international expansion is not without its challenges, particularly in the realm of intellectual property (IP) protection. The fashion industry, characterised by its reliance on brand identity, design originality, and rapid product turnover, is especially vulnerable to IP infringements such as counterfeiting and unauthorised use of trademarks and designs. As brands extend their e-commerce operations across diverse jurisdictions, they encounter a complex mosaic of IP laws and enforcement mechanisms that can significantly impact their ability to

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safeguard their assets (Guo, Yan, Zhang, 2015) and maintain a competitive advantage (Rakoto, 2018; Retnaningdiah, Resmi, Kurniawati, Winarso, 2020).

In addition to traditional IP challenges, emerging technologies like the Internet of Things (IoT), blockchain, radio-frequency identification (RFID), and especially artificial intelligence (AI) are reshaping the landscape of IP protection in the digital realm. These technologies offer innovative solutions for streamlining supply chain management, enhancing brand authentication, and improving anti-counterfeiting measures (Tuyls, Batina, 2006). For instance, blockchain can provide immutable records of product provenance, while AI-driven tools can detect and mitigate counterfeit activities more efficiently (Daoud, Vu, Nguyen, Gaedke, 2020; Fronzetti Colladon, Grippa, Segneri, 2021). However, the integration of these technologies also introduces new legal frameworks and strategic considerations for IP enforcement, necessitating a nuanced approach to IP management during internationalisation.

The primary research problem addressed in this chapter is the identification and analysis of the IP challenges that arise during the internationalisation of e-commerce platforms for Poland-based fashion brands. Moreover, it explores how emerging technologies such as fashion retail technologies, IoT, blockchain, RFID, and AI present both opportunities and challenges for IP protection in the digital landscape. The objectives of this research are threefold: first, to elucidate the various IP issues that fashion brands face when expanding their e-commerce operations internationally; second, to analyse how these IP challenges and technological advancements differ across major markets such as the EU, the United States, and China; and third, to develop strategic recommendations for effectively managing IP protection to enhance brand equity and support successful international growth. By addressing these objectives, we aim to provide a comprehensive framework that EU-based fashion retailers can utilise to navigate the complexities of global IP protection in an increasingly digital and technologically advanced marketplace.

This chapter is structured to systematically explore the intersection of intellectual property and international e-commerce expansion for Poland-based fashion brands. The first part delves into existing research on IP in the fashion industry, and the role of emerging technologies in IP protection. The case study section provides an in-depth analysis of the hypothetical Poland-based fashion brand, highlighting its strategies, the integration of emerging technologies, and the IP challenges encountered. The chapter then offers strategies for effective IP management, translating theoretical insights and technological advancements into practical solutions.

12.2 Importance of intellectual property strategy for fashion brands

Intellectual property strategy is essential for the competitive differentiation and profitability of fashion brands in the global marketplace. Fashion brands employ a diverse array of IP rights, including copyrights, trademarks, design rights, patents, and trade secrets (Jankowska, 2024). Trademarks, as demonstrated in

the *Louboutin v. Van Haren Schoenen BV* (C-163/16 of 12 June 2018) (Geerts, Torenbosch, 2019), establish brand identity and prevent consumer confusion by protecting distinctive marks like red soles (Court of Justice, 2018). Design rights, highlighted in the *Christian Louboutin SA v. Yves Saint Laurent America, Inc.* (No. 11-3303, 2d Cir. 2012) (Metzgar-Schall, 2015), safeguard aesthetic elements, ensuring design exclusivity and fostering innovation.

IP protection for both trademarks and designs is structured into national, regional, and international systems. National protection involves registering trademarks and designs with a country's specific office, such as the Patent Office of the Republic of Poland. At the regional level, registration follows the procedures of major continental organisations like the European Union Intellectual Property Office (EUIPO), the Eurasian Patent Organisation (EAPO), the African Intellectual Property Organisation (ARIPO), and the Benelux Office for Intellectual Property (BOIP). The EU provides the most advanced model of IP harmonisation, underpinned by a suite of regulations and directives that minimise fragmentation among Member States. The key instruments include the European Union Trade Mark Regulation (Regulation (EU) 2017/1001, EUTMR), which creates a unitary trademark title valid across all 27 Member States, and the Community Design Regulation (Regulation (EC) No 6/2002, CDR), establishing a unified regime for registered and unregistered community designs. Both EUTMR and CDR interact with directives such as the Trade Mark Directive (Directive (EU) 2015/2436) and the Design Directive (Directive 98/71/EC) to ensure consistent national implementation (Shuy, 2002; Michaels, Norris, 2002; Trzebiatowski, 2010; Fryer, 2002). African regional organisations like ARIPO (African Regional Intellectual Property Organisation) and OAPI (Organisation Africaine de la Propriété Intellectuelle) centralise filings for multiple Member States, reducing fragmentation. Yet on-the-ground enforcement may be hampered by limited resources, unclear evidentiary standards, and insufficient adoption of digital authentication methods. Similar conditions exist in parts of Latin America, where administrative IP registries follow Andean Community or MERCOSUR guidelines, but enforcement efficacy varies.

On the international stage, the World Intellectual Property Organisation (WIPO) in Geneva oversees the protection of trademarks through the Madrid System and designs via the Hague System, allowing for comprehensive protection across multiple countries through single applications. This integrated framework ensures that both trademarks and designs receive robust protection at every level, leveraging specialised systems and regulations to provide extensive intellectual property safeguards.

In contrast, national frameworks such as the USPTO (United States Patent and Trademark Office) in the United States and the CNIPA (China National Intellectual Property Administration) in China introduce specific legal nuances and enforcement practices requiring tailored IP strategies. Emerging markets in Southeast Asia and Latin America demand localised IP approaches, engaging with local legal experts to effectively navigate disparate regulatory landscapes (Campi, Dueñas, 2019).

Copyrights, extended by international conventions, safeguard original sketches and marketing materials against unauthorised use (Barrère, Delabruyère, 2011). Patents, governed by the European Patent Convention (EPC), protect novel materials and manufacturing techniques, offering competitive differentiation. Major corporations, such as Nike, actively secure patents for their apparel innovations. For example, Nike holds US Patent No. US 8769844B2 for its adjustable footwear straps and US Patent No. US 696853S1 for the Flyknit technology. Similarly, Patagonia has registered patents like US Patent No. US 20160029725A1 for methods for stabilising and garments including stabilised quilted insulation. In contrast, smaller brands typically lack the financial and legal resources to register such patents, limiting their ability to protect unique designs and technologies. Trade secrets, protected by the EU Trade Secrets Directive (2016/943), encompass proprietary manufacturing processes and business practices, maintaining competitive advantage (Tuyls, Batina, 2006).

On 1 August 2024, the European Artificial Intelligence Act (AI Act) came into force, establishing the first comprehensive legal framework for AI globally. This regulation profoundly impacts the fashion sector, where AI is integral to design, supply chain optimisation, personalised marketing, and anti-counterfeiting measures. The AI Act categorises AI applications by risk, imposing stringent requirements on high-risk systems, including robust risk management, stringent data governance to prevent biases, mandatory transparency in AI decision-making, and ensuring human oversight to avert autonomous operations in critical areas. For Poland-based fashion brands expanding within the EU, compliance with the AI Act is essential not only to avoid significant penalties but also to protect intellectual property through regulated AI technologies. Adhering to these regulations enhances consumer trust by ensuring ethical AI use, safeguards proprietary innovations, and aligns with harmonised EU standards, thereby facilitating smoother internationalisation and providing a competitive advantage in the global market.

Anti-counterfeiting measures, reinforced by the U.S. Trademark Counterfeiting Act of 1984 and the EU Anti-Counterfeiting Directive (2019/771), are critical in maintaining brand integrity and combating economic losses from counterfeit goods. Enforcement within the EU is guided by the Enforcement Directive (Directive 2004/48/EC), mandating minimum standards for civil remedies, evidentiary measures, and injunctive relief. Customs enforcement is addressed through Regulation (EU) No 608/2013, which works in tandem with the provisions of Directive (EU) No 2019/771 by empowering customs authorities to detain suspected infringing products at the Union's borders, thereby fortifying the EU's capacity to curtail counterfeiting and preserve consumer confidence. The interplay between IP and digital commerce is governed by the E-Commerce Directive (Directive 2000/31/EC) and, prospectively, the Digital Services Act (Regulation (EU) 2022/2065), which impose notice-and-takedown procedures and clarify intermediaries' responsibilities. Brands can further rely

on the Brussels I bis Regulation (Regulation (EU) No 1215/2012) for cross-border jurisdiction and the Rome II Regulation (Regulation (EC) No 864/2007) for choice-of-law in IP disputes.

Enforcement mechanisms within the EU, notably [Directive 2004/48/EC](#) on the enforcement of intellectual property rights (IPRED), establish comprehensive legal frameworks enabling rights holders to effectively combat unauthorised use and counterfeiting of their trademarks and industrial designs. [Directive 2004/48/EC](#) harmonises national IP enforcement laws across Member States, ensuring the consistent application of measures such as injunctions, damages, and the destruction of infringing goods. [Directive 2008/95/EC](#) (later replaced by Directive (EU) 2015/2436) specifically addresses the harmonisation of substantive trade mark law across Member States. Directive (EU) 2015/2436 modernised trademark law further by eliminating the graphical representation requirement, thereby enhancing trademark protection in the digital age. Notably, Article 9 of [Directive 2004/48/EC](#) mandates the availability of provisional and precautionary measures, such as preliminary injunctions, to prevent infringement activities. Article 10 of the same directive outlines provisions for corrective measures, including the recall and destruction of infringing items. Additionally, Regulation (EU) No 608/2013 specifically governs customs enforcement of intellectual property rights, addressing challenges posed by digital trade and cross-border e-commerce through provisions on border seizures and the destruction of counterfeit goods.

The *Qualitex Co. v. Jacobson Products Co., Inc.* (1995) case, although adjudicated under US law, has had a significant impact on European IP jurisprudence by reinforcing the principle that non-traditional trademarks, such as colours, can attain trademark status if they acquire distinctiveness through use. This precedent has influenced the European Court of Justice (ECJ) by affirming that colours, when used in a manner that consumers associate with a specific brand, meet the criteria for trademark protection under the EUTMR. Consequently, European courts have increasingly recognised colour as a valid trademark element, provided it demonstrates acquired distinctiveness and does not serve a purely functional purpose. This expansion of protectable trademark elements underlines the necessity for fashion e-commerce brands to strategically utilise distinctive colours in their branding to enhance market differentiation and consumer recognition.

Furthermore, the *L'Oréal SA v. Bellure NV* (C-487/07 of 18 June 2009) case serves as a pivotal reference in EU trademark law, emphasising the imperative of maintaining trademark distinctiveness to prevent dilution and consumer confusion ([Court of Justice, 2009](#)). In this case, the ECJ held that mere similarity between trademarks does not constitute infringement unless there is a likelihood of confusion among the public regarding the origin of the goods. The decision underscored the importance of distinctiveness and the protection of trademarks against dilution through imitation or association with inferior goods. For fashion

e-commerce brands, this case reinforces the need to maintain clear and distinctive branding elements to safeguard against unauthorised use that could erode brand identity and consumer trust. The ruling also highlights the importance of proactive IP protection strategies, including vigilant monitoring of the market and swift legal action against infringers to preserve the exclusivity and integrity of the brand's trademarks.

Moreover, the ECJ's jurisprudence has consistently emphasised the need for harmonised IP protection standards to address the challenges posed by the digital transformation of the fashion industry. Cases such as *Interflora Inc. v. Marks & Spencer plc* (C-323/09 of 22 September 2011) have demonstrated the ECJ's approach to balancing trademark protection with fair use provisions, ensuring that IP laws adapt to evolving market dynamics without stifling legitimate competition (Court of Justice, 2011). This adaptability is crucial for fashion e-commerce brands operating in a highly dynamic and technologically driven environment, where the rapid introduction of new products and digital marketing strategies necessitates robust and flexible IP protection mechanisms.

In the seminal 2016 UK High Court case *Cartier International AG & Others v. BSKyB & Others*, the court issued its first order to block websites based on trademark infringement to reduce the sale of fake products online. This decision provided brand owners with legal options similar to those available to copyright holders under the Copyright Designs and Patents Act 1988. The ruling was influenced by European Union laws, especially the EU Trademark Directives and the E-Commerce Directive. By following these EU guidelines, the UK High Court ensured that the website blocks met European standards for protecting intellectual property and managing online responsibilities. Later, in February 2016, Cartier obtained another website-blocking order against five Internet service providers, targeting additional websites that sold counterfeit goods. Judge Hacon based this decision on the legal principles established by Mr. Justice Arnold in the first Cartier case, confirming that trademark owners can obtain such court orders to protect their brands.

12.3 Integrating intellectual property considerations into international strategy

Effective IP management is intrinsically linked to the enhancement of brand equity, serving as a pivotal mechanism for sustaining a competitive advantage and fostering consumer loyalty. Brand Equity Theory, as articulated by Aaker (1991), underscores the value derived from brand recognition, perceived quality, and brand associations, all of which are significantly bolstered by robust IP protections. Trademarks and design rights function as tangible assets that encapsulate a brand's identity and distinguish its products in the marketplace, thereby enhancing consumer trust and facilitating premium pricing strategies. The legal safeguarding of these IP assets ensures that brand equity is not diluted

through counterfeiting or unauthorised use, maintaining the exclusivity and perceived value of the brand. Furthermore, Resource-Based View (RBV) posits that unique, non-substitutable resources, including IP rights, are critical for achieving sustained competitive advantage (Barney, 1991). In the context of fashion brands, IP management not only protects creative innovations but also serves as a strategic lever for market differentiation and value creation, thereby directly contributing to the augmentation of brand equity.

Integrating IP considerations into international strategy is paramount for fashion brands seeking to optimise their global operations and safeguard their intellectual assets. The Strategic Management Framework emphasises that by embedding IP considerations into their international strategy, fashion brands can effectively navigate the complexities of global markets, ensuring that their creative and commercial interests are legally protected and strategically aligned with their expansion objectives (Porter, 1985).

12.4 Impact of emerging technologies on intellectual property theories

Emerging technologies, notably the IoT, blockchain, RFID, and AI, are reshaping the theoretical landscape of IP protection in the fashion industry. Technological Convergence Theory posits that the integration of multiple technologies creates synergistic effects that enhance IP enforcement capabilities and redefine the boundaries of IP management (Nambisan, Lyytinen, Majchrzak, Song, 2017). IoT facilitates real-time monitoring and data collection, enabling fashion brands to implement sophisticated tracking systems that verify product authenticity and provenance, thereby strengthening IP protections. Blockchain technology, with its immutable ledger system, provides secure and transparent records of IP ownership and product life cycle, enhancing the reliability of IP enforcement and dispute resolution processes. RFID technology enhances anti-counterfeiting measures by enabling precise tracking and verification of products throughout the supply chain, aligning with Transaction Cost Economics by reducing the costs associated with IP infringement and counterfeit activities (Williamson, 1981). AI, through machine learning and natural language processing, automates the detection of IP infringements and optimises IP management practices, thereby increasing the efficiency and effectiveness of IP enforcement. The integration of these technologies necessitates a re-evaluation of existing IP theories, emphasising the need for dynamic and adaptive IP frameworks that can accommodate technological advancements and their legal implications. Internationalisation poses significant legal challenges for fashion brands, exemplified by Gucci's AI-driven anti-counterfeiting strategy. To combat pervasive counterfeiting across online marketplaces and social media, Gucci leverages machine learning for image recognition, enabling the detection of subtle discrepancies in design elements, stitching, and logo placement unique to its products. Concurrently,

natural language processing (NLP) analyses product descriptions and user comments to identify deceptive language patterns associated with counterfeit listings (Fronzetti Colladon, Grippa, Segneri, 2021). In a notable case, Gucci's AI system identified a surge of fake handbags by detecting inconsistencies not immediately apparent to human reviewers, leading to automated takedown notices and subsequent legal actions against persistent infringers (Kurtzke, 2023). This integration of AI has significantly increased the efficiency and accuracy of Gucci's IP enforcement, reducing the need for extensive manual monitoring and optimising resource allocation. Additionally, the adoption of these technologies necessitates a re-evaluation of existing IP frameworks, highlighting the need for dynamic and adaptive legal structures that accommodate advancements in AI and ensure compliance with data protection regulations like the General Data Protection Regulation (GDPR) (Rathore, 2017). Gucci's strategic use of AI not only enhances its ability to protect intellectual property but also sets a precedent for the fashion industry, demonstrating how advanced technologies can effectively address complex legal challenges in global markets (Luce, 2019).

Consequently, the theoretical discourse on IP protection is evolving to incorporate the transformative impacts of emerging technologies, highlighting the interplay between technological innovation and legal frameworks in enhancing IP management and enforcement.

12.5 Case study: Poland-based fashion brand

12.5.1 Overview

This case study examines the intellectual property (IP) considerations and strategic implementations of a hypothetical Poland-based fashion retailer, herein referred to as PolModa, within the framework of internationalising its e-commerce platform. PolModa exemplifies the intricate interplay between Polish IP law, European Union (EU) regulatory frameworks, and emerging digital technologies in navigating the complexities of transborder e-commerce. The analysis underscores the critical role of smart IP management and technological integration in sustaining competitive advantage and ensuring legal compliance in global markets (Shuy, 2002; Barrère, Delabruyère, 2011; Campi, Dueñas, 2019). PolModa operates within Poland's dynamic fashion industry, which has experienced significant growth driven by Poland's strategic membership in the EU. The company specialises in high-end apparel, accessories, and footwear, characterised by innovative designs and sustainable practices. Leveraging Poland's advanced digital infrastructure and supportive regulatory environment, PolModa has established a strong domestic presence while strategically targeting international markets through its sophisticated e-commerce platform. PolModa's IP assets – comprising registered trademarks, design rights, copyrights, patents, and trade secrets – are strategically managed to support global expansion (Trzebiatowski,

2010). Effective IP asset management involves the strategic registration, protection, and enforcement of these assets to navigate international markets with legal assurance. The Polish legal framework, particularly the Act on Copyright Law and Neighbouring Rights of 4 February 1994 and the Act on Industrial Property of 30 June 2000, aligns with EU directives to provide comprehensive IP protection, facilitating seamless international expansion. Poland's participation in international IP treaties, such as the Madrid Protocol and the Hague Agreement, further enhances PolModa's ability to efficiently secure IP protections across multiple jurisdictions.

It allows PolModa to protect its trademarks and unique product designs in selected countries without the need for separate national filings. This approach reduces administrative burdens and ensures uniform protection standards, thereby mitigating risks associated with counterfeiting and unauthorised use in foreign markets (Jankowska, 2024).

PolModa's creative works, including marketing campaigns, product images, and promotional materials, benefit from the automatic copyright protection conferred by the Berne Convention for the Protection of Literary and Artistic Works (1886), ensuring that any unauthorised reproduction, distribution, or communication to the public constitutes infringement. This baseline of international copyright protection is buttressed by the harmonised rules of EU Directives such as the Copyright Directive (Directive 2001/29/EC), as implemented in Poland, enabling the brand to seek civil remedies and injunctive relief against digital content pirates, infringers on user-generated platforms, and entities engaging in the unauthorised commercial exploitation of PolModa's creations.

In the domain of patents, PolModa pursues the European Patent Convention (EPC) route for protection within Member States of the European Patent Organisation, leveraging the rigorous examination standards of the European Patent Office (EPO) to secure exclusive rights over its inventive materials and sustainable manufacturing processes. To extend these protections beyond Europe, PolModa avails itself of the Patent Cooperation Treaty (PCT, 1970), administered by WIPO, to streamline international patent filings.

On a more confidential level, PolModa safeguards its non-public commercial knowhow and proprietary business strategies under the auspices of the EU Trade Secrets Directive (Directive (EU) 2016/943), which Poland and other EU Member States have transposed into national law.

12.5.2 International strategy

PolModa's internationalisation strategy is intricately linked to comprehensive IP management, ensuring legal compliance and strong protection of its brand and designs across diverse jurisdictions. The strategy encompasses market selection and entry modes, IP registration and protection, compliance with local regulations, and brand localisation.

PolModa leverages specialised IP management software, such as Anaqua and PatSnap (Benke, Heđi, Ćiriković, 2023), to efficiently oversee its trademarks, designs, and patents across diverse jurisdictions. This strategic implementation ensures timely renewals, maintains precise records, and supports informed decision-making regarding IP assets, thereby strengthening PolModa's overall intellectual property protection and facilitating seamless international expansion (Tandri, Kasmin, Abidin, Vasudavan, 2022; Mezzogori, Rizzi, Romagnoli, Rosa, 2024).

Adapting brand elements to resonate with regional cultural preferences while ensuring that trademarks and designs do not infringe on existing local IP rights is essential. PolModa implements localised marketing strategies and culturally sensitive product modifications to enhance market acceptance and mitigate IP infringement risks. This involves translating trademarks and marketing materials appropriately and ensuring that localised brand elements comply with regional advertising and labelling regulations.

12.5.3 Integration of fashion retail technologies

In the rapidly evolving landscape of e-commerce fashion retail, PolModa increasingly leverages advanced technological solutions to enhance customer experiences and maintain competitive advantage. Technologies such as virtual fitting rooms, high-resolution packshots, interior space scanning tools, and personalised cosmetics recommendation systems are pivotal in creating immersive and interactive shopping environments. However, the integration of these innovations introduces a complex array of IP challenges that require careful navigation to protect the brand's assets and mitigate legal risks. Unlike larger enterprises that may invest heavily in their own research and development (R&D) to create proprietary technologies, PolModa, just as many fashion e-commerce brands, finds it more practical and cost-effective to license these advanced solutions from specialised providers. This strategic decision to license rather than develop in-house necessitates a thorough understanding of IP rights, licensing agreements, and the potential legal ramifications associated with third-party technologies (Esposito, Mezzogori, Neroni, Rizzi, Romagnoli, 2021).

Licensing technological solutions enables fashion e-commerce brands to implement sophisticated features without the significant investment and time associated with in-house development. However, this approach demands a comprehensive evaluation of licensing agreements to ensure that the rights granted align with the brand's operational needs and strategic objectives. Licensing agreements typically delineate the scope of usage, including limitations on modification, distribution, and sublicensing of the technology. For instance, when licensing a virtual fitting room technology, the agreement must clearly specify whether the brand can customise the user interface to reflect its unique aesthetic, how the technology can be branded to maintain brand identity, and any

restrictions on sub-licensing or transferring the technology to third-party partners. The clarity and specificity of these terms are paramount to avoid potential disputes and ensure seamless integration into the brand's existing infrastructure (Daoud *et al.*, 2020).

A pertinent legal case that underscores the importance of clear licensing terms is the *Oracle America, Inc. v. Google LLC* (2021). In this landmark case, Oracle sued Google for allegedly infringing on its Java APIs in the development of the Android operating system. The ambiguity surrounding the usage rights of the APIs led to protracted litigation, highlighting the critical need for precise and unambiguous terms in licensing agreements. For fashion e-commerce brands, this case serves as a cautionary tale, emphasising the necessity of seeking explicit terms in licensing contracts to prevent costly legal disputes and ensure the lawful use of licensed technologies.

In the realm of data management, fashion e-commerce brands like PolModa must navigate the delicate balance between proprietary and open data (Jankowska, 2017). Proprietary data, derived from unique customer interactions and business processes, is a critical asset that underpins personalised shopping experiences and drives competitive differentiation. Licensing agreements must incorporate robust data ownership clauses to safeguard proprietary data from unauthorised access or exploitation by technology providers (Cho, 2007). For example, if a fashion brand employs a proprietary algorithm to analyse customer-uploaded photos for personalised cosmetics recommendations, the licensing agreement should explicitly prohibit the technology provider from accessing or utilising this data beyond the agreed scope of service. This protection is essential to maintain the brand's competitive edge and prevent the commoditisation of its unique data assets.

Conversely, open data plays a significant role in enhancing the functionalities of licensed technologies. Many advanced e-commerce solutions integrate open data sources to refine personalisation and recommendation algorithms, thereby improving the overall customer experience. However, the utilisation of open data must comply with relevant licensing terms to avoid legal infringements. For instance, incorporating open-source libraries under the GNU General Public License (GPL) necessitates adherence to specific obligations, such as the disclosure of source code if modifications are made. The *Jacobsen v. Katzer* (2008) case, where the improper use of open-source software licenses led to legal action, illustrates the potential repercussions of non-compliance. Fashion e-commerce brands must implement strict compliance protocols to manage open-source components effectively, ensuring that all licensing requirements are met and that the use of open data aligns with legal and ethical standards. Protection of proprietary technologies and content remains a cornerstone of IP strategy for fashion e-commerce brands, even when utilising third-party licensed solutions (Fernandes, Morais, 2021). Securing copyrights for unique software code, user interfaces, and multimedia assets is essential to prevent unauthorised

replication and distribution. For example, a fashion brand's unique method for analysing customer-uploaded photos to recommend cosmetics must be safeguarded through appropriate copyright protections and trade secret measures. Implementing non-disclosure agreements (NDAs) and restricting access to sensitive information are critical steps in preventing the inadvertent disclosure of proprietary knowledge to technology providers or other third parties. The *Apple Inc. v. Samsung Electronics Co., Ltd.* (2012) case, where Apple successfully defended its design patents and trade dress against Samsung's imitations, underscores the importance of actively protecting proprietary technologies to preserve brand uniqueness and competitive advantage (Guo *et al.*, 2015). Managing trademarks and branding within licensed solutions is another critical aspect for PolModa. Ensuring that brand trademarks are consistently and prominently displayed within integrated technologies, such as chatbots or voice assistants, is vital for maintaining brand integrity and customer recognition. Licensing agreements should negotiate specific branding guidelines to dictate how trademarks are used and represented in conjunction with third-party technologies. For instance, if a fashion brand licenses a chatbot solution, the agreement should mandate that the chatbot interface adheres to the brand's logo, colour scheme, and overall aesthetic.

Compliance with open-source licensing is paramount for fashion e-commerce brands that incorporate open-source software into their platforms. Different open-source licenses, such as the MIT License, Apache License 2.0, and GPL, impose varying requirements regarding the use, modification, and distribution of software. For example, the GPL license mandates that any derivative work must also be distributed under the GPL, which can impose restrictions on how the e-commerce platform can be commercialised (Cho, 2007; Jankowska, 2017). In contrast, the MIT License offers greater flexibility, allowing for the incorporation of open-source components into proprietary systems without stringent obligations. The *Free Software Foundation v. Cisco Systems, Inc.* (2008) case, where Cisco was found to be in violation of the GPL by not releasing the source code for modified open-source components, serves as a stark reminder of the consequences of non-compliance. Fashion e-commerce brands must meticulously review and adhere to the terms of each open-source license to avoid legal infringements and ensure the lawful use of open-source components within their platforms.

Due diligence and the assessment of IP infringement risks may be critical steps for fashion e-commerce brands when licensing third-party technologies. Even when licensing, there exists the potential that the technology provider may not have secured all necessary IP rights, thereby exposing the brand to legal liabilities. Conducting thorough due diligence involves verifying the provider's IP ownership, reviewing the provider's IP portfolio, and ensuring that the licensed technology does not infringe on existing patents or copyrights. This process may include seeking warranties and indemnities within the licensing agreement

and consulting with legal experts to evaluate the risks involved. The *ZeniMax Media Inc. v. Oculus VR, LLC* (2018) case, where ZeniMax alleged that Oculus infringed on its patents related to virtual reality technologies, illustrates the potential legal risks associated with licensing third-party technologies. Although Oculus ultimately prevailed, the case highlights the importance of comprehensive IP due diligence to mitigate the risk of litigation and ensure the lawful use of licensed technologies.

Balancing IP protection with ethical considerations and user privacy is strategic for PolModa, especially when handling personal data to deliver personalised experiences. Technologies like personalised recommendation systems require stringent adherence to data protection regulations such as the GDPR and other relevant privacy laws. Licensing agreements should incorporate provisions that ensure both proprietary and licensed technologies comply with these regulations, including implementing robust data security measures, obtaining necessary consents from users, and maintaining transparency about data usage practices. The *Google LLC v. Equustek Solutions Inc.* (2017) case, where the Supreme Court of Canada ruled that global injunctions could be used to enforce IP rights and ensure compliance with local laws, emphasises the importance of adhering to international data protection standards and ethical practices when managing licensed technologies that handle user data (Jankowska, 2017; Rakoto, 2018).

Ethical use of proprietary technologies further reinforces the need for responsible management of IP within fashion e-commerce platforms. Deploying advanced technologies must align with ethical standards to maintain consumer trust and uphold the brand's reputation. This includes transparent communication about how proprietary systems operate, safeguarding against biases in recommendation algorithms, and ensuring that technologies like virtual fitting rooms do not exploit user data inappropriately. For instance, a cosmetics recommendation system must be designed to avoid reinforcing harmful stereotypes or biases, necessitating continuous monitoring and refinement of the underlying algorithms. Ethical lapses in technology deployment can lead to significant reputational damage and loss of customer trust, as evidenced by instances where brands have faced backlash for perceived misuse of customer data or biased AI systems.

12.5.4 Integration of emerging technologies to maintain IP protection

The integration of emerging technologies (IoT, blockchain, RFID, and AI) is fundamental to enhancing IP protection, streamlining operations, and fortifying brand authenticity for PolModa in the international e-commerce landscape (Jankowska, 2017; Varese, Pellicelli, 2019).

IoT devices embedded in PolModa's products facilitate real-time tracking and monitoring, providing critical data on product authenticity and distribution channels. Legally, the deployment of IoT must comply with GDPR, ensuring that

any personal data collected is processed lawfully, transparently, and securely. IoT enhances IP protection by monitoring product movements from manufacturing to retail, deterring counterfeiting and unauthorised distribution. The granular data generated serves as verifiable evidence in IP infringement cases, supporting claims under the EUTMR and the Polish Act on Industrial Property.

Blockchain technology provides a decentralised and immutable ledger for recording IP registrations, transactions, and ownership details, ensuring the integrity and traceability of PolModa's IP assets. This immutability mitigates risks associated with data tampering and unauthorised alterations, providing definitive proof of ownership and provenance in legal disputes. Blockchain-enabled smart contracts automate licensing agreements and royalty distributions, ensuring compliance with contractual obligations and reducing the potential for breaches. The integration of blockchain aligns with the TRIPS Agreement (TRIPS, 1994), which mandates secure and reliable documentation for IP enforcement, thereby enhancing PolModa's legal safeguards.

RFID technology is pivotal for combating counterfeiting and managing inventory across international markets. Compliance with the Radio Equipment Directive ([Directive 2014/53/EU](#)) ensures that RFID systems operate safely and efficiently within the EU. RFID contributes to IP protection by embedding unique identifiers within products that can be verified against blockchain records, ensuring authenticity ([Jankowska, 2017](#)). Real-time inventory management enables PolModa to track product distribution, prevent unauthorised sales, and identify potential IP infringements promptly. RFID data supports legal enforcement by providing concrete evidence for claims under the EUTMR.

AI technologies automate the detection and enforcement of IP rights, enhancing PolModa's capacity to manage and protect its IP assets effectively. AI-driven monitoring systems scan online marketplaces and social media for unauthorised use of trademarks and designs, facilitating immediate takedown actions. Predictive analytics assess the likelihood of success in IP litigation by analysing historical legal data and case precedents, informing strategic legal decisions. Natural Language Processing (NLP) enables sentiment analysis and identification of instances of trademark dilution or consumer confusion, enabling proactive legal and marketing interventions. Compliance with the Artificial Intelligence Act (AIA) (Regulation (EU) 2024/1689) ensures that AI integration adheres to transparency, accountability, and risk management standards.

12.5.5 Smart IP portfolio management

PolModa employs PatSnap and Anaqua, two leading-edge IP management platforms, to architect a smart and dynamic intellectual property strategy that underpins its international expansion. PatSnap is leveraged for its advanced patent analytics and comprehensive intellectual property intelligence capabilities. By utilising PatSnap's sophisticated data visualisation tools and machine learning

algorithms, PolModa conducts in-depth analyses of global patent landscapes, enabling the identification of emerging trends and potential white spaces for innovation. This analytical prowess facilitates strategic decision-making regarding the allocation of IP resources, ensuring that PolModa not only safeguards its existing assets but also proactively identifies and capitalises on new opportunities for design and trademark registrations. Additionally, PatSnap's automated renewal reminders and docketing functionalities mitigate the risk of inadvertent lapses in IP protection across multiple jurisdictions, thereby maintaining continuous and enforceable rights (Esposito *et al.*, 2021; Benke *et al.*, 2023).

Complementing PatSnap, Anaqua is integral to PolModa's comprehensive IP life cycle management framework. Anaqua's unified platform integrates seamlessly with PolModa's enterprise resource planning (ERP) and customer relationship management (CRM) systems, providing a centralised repository for all intellectual property assets. This integration facilitates real-time tracking of IP statuses, from initial application through to maintenance and enforcement, ensuring meticulous oversight and compliance with diverse regional regulatory requirements. Anaqua's robust workflow automation capabilities streamline the administrative processes associated with trademark and design filings, reducing manual intervention and enhancing operational efficiency. Furthermore, Anaqua's sophisticated reporting and dashboard features offer PolModa executive leadership granular visibility into the performance and strategic alignment of their IP portfolio, enabling data-driven decisions that reinforce competitive advantage. The platform's collaborative tools also enhance cross-functional coordination between legal, marketing, and product development teams, fostering a cohesive approach to intellectual property management that aligns with PolModa's overarching business objectives (Tandri *et al.*, 2022; Mezzogori *et al.*, 2024).

By integrating PatSnap and Anaqua into its IP management ecosystem, PolModa ensures a harmonised and scalable approach to intellectual property protection. Consequently, PolModa can effectively mitigate risks associated with counterfeiting and unauthorised use, while simultaneously leveraging its intellectual assets to drive sustained growth and innovation in both EU and non-EU markets.

12.6 Anti-counterfeiting measures and emerging technologies in IP protection

Counterfeiting poses an existential threat to brand equity and consumer trust. The EU legal framework, including the Enforcement Directive (Directive 2004/48/EC) and the Sale of Goods Directive (Directive (EU) 2019/771), mandates effective remedies, but the practicality of enforcement often depends on rapid detection, evidentiary clarity, and strong cross-border cooperation. Poland-based brands, operating in a digital environment where counterfeit products proliferate

on global marketplaces and social media platforms, must adopt proactive and technologically enhanced anti-counterfeiting strategies.

Emerging technologies have redefined the anti-counterfeiting arsenal. AI can autonomously detect patterns indicative of IP infringement, scanning product listings, user-generated content, and peer-to-peer trading platforms. AI's ability to analyse visual cues – comparing product images, logos, and packaging designs – enables real-time identification of infringing listings. NLP algorithms can monitor user reviews and online chatter to detect subtle indications of counterfeit distribution or trademark dilution.

Blockchain technology strengthens IP protection by serving as an immutable ledger that records every transaction and ownership detail of IP assets, thus providing incontrovertible provenance evidence. Smart contracts codify licensing agreements and royalty distributions, ensuring transparency and automated execution. Integrated into supply chain management, blockchain systems can link IoT-enabled product tags or RFID chips to verify authenticity and track goods from production facilities in Poland to distribution centres worldwide. By creating a “digital twin” of each product, these technologies provide immediate proof of authenticity, reduce the reliance on complex evidence-gathering procedures, and simplify cross-border enforcement.

The IoT and RFID tags further reinforce anti-counterfeiting measures. IoT sensors embedded in garments or accessories monitor environmental conditions, usage patterns, and geographic movements, generating granular data on product life cycles. This data, securely stored on a blockchain, can alert brand owners to unauthorised distribution channels, highlight suspicious inventory fluctuations, or identify surges in counterfeit sales corresponding to particular markets. By integrating IoT with AI-driven analytics and blockchain-based records, brand owners create a robust triad of detection, verification, and enforcement capabilities that extend beyond traditional legal mechanisms, enhancing the credibility and efficacy of IP protection strategies. Digital fingerprinting and AI-driven content recognition can track copyrighted materials across vast online networks. Automated detection tools integrated into major e-commerce marketplaces can issue immediate takedown notices under frameworks aligned with the E-Commerce Directive (Directive 2000/31/EC), thereby safeguarding the integrity and economic value of copyrighted assets.

The deployment of these emerging technologies also interacts with broader EU digital strategies, such as the Digital Single Market (DSM) initiative, which encourages a frictionless digital environment conducive to cross-border trade and innovation. The interplay between technological measures and established IP laws sets a precedent for more agile, data-driven enforcement methods that respond to the fluidity of digital commerce. Furthermore, industry-led coalitions, multi-stakeholder forums supported by the EUIPO Observatory on Infringements of Intellectual Property Rights, and collaborative enforcement initiatives between brand owners, intermediaries, and platform operators amplify the

impact of these technologies. They foster shared intelligence, pooling resources, and knowledge to pre-empt large-scale infringement networks and ultimately reduce the prevalence of counterfeiting in international e-commerce.

For a fashion brand, leveraging cutting-edge software solutions can significantly enhance IP protection and streamline operations. To monitor and protect the brand online, BrandShield utilises AI-driven technologies to detect and address IP infringements across digital platforms, ensuring brand's designs and trademarks remain secure (Tandri *et al.*, 2022; Mezzogori *et al.*, 2024). VeChain offers a robust blockchain platform that ensures product authenticity and traceability throughout the supply chain, effectively combating counterfeit goods – a critical concern in the fashion industry. Implementing Zebra RFID Software can enable precise tracking of garments from production to retail, providing real-time visibility and inventory management while safeguarding against unauthorised distribution (Esposito *et al.*, 2021; Benke *et al.*, 2023). Additionally, OneTrust is essential for managing data privacy and ensuring compliance with GDPR and the EU's Artificial Intelligence Act, which is particularly important for maintaining customer trust and adhering to European regulations.

This confluence of legal standards, international treaties (TRIPS, Madrid Protocol, Hague Agreement), and technological sophistication underscores a new paradigm in IP management. The challenge lies not in the absence of protective tools but in skilfully integrating legal provisions, strategic registrations, proactive enforcement, and digital solutions. By embracing AI-enabled monitoring systems, blockchain-authenticated supply chains, IoT-based authentication mechanisms, and RFID-enhanced provenance tracking, these brands transcend the limitations of traditional IP frameworks. They evolve into agile participants in a global marketplace where IP protection is as much an operational imperative as it is a legal one.

In addition, institutional tools offered by bodies like EUIPO and WIPO provide structured avenues for registering and verifying IP-related data. The EUIPO's Enforcement Database (EDB), for instance, allows rights holders to centralise product information, technical specifications, and authentication details, thereby assisting customs and enforcement authorities in promptly identifying infringing goods. Similarly, WIPO's WIPO PROOF service creates tamper-proof digital fingerprints of files, establishing verifiable evidence of the existence and provenance of creative works at a specific point in time. By complementing private-sector innovations, these authoritative registries and verification systems enhance the evidentiary strength of IP claims, facilitate cross-border cooperation, and foster greater legal certainty in a fragmented digital marketplace.

12.7 European Union: harmonised IP laws and enforcement mechanisms

Even optimal registration strategies mean little without effective cross-border enforcement mechanisms. Brands must cultivate networks of specialised

counsel familiar with local procedural subtleties, evidentiary thresholds, and judicial attitudes. In the EU, reciprocal recognition of judgments under Brussels I bis Regulation expedites enforcement of IP decisions. In the US, federal courts allow discovery tools (Fed. R. Civ. P. 26–37) that can uncover infringing networks, albeit at cost. In China, specialised IP courts and administrative enforcement through CNIPA or SAMR (State Administration for Market Regulation) offices can deliver swift remedies if guided by experienced counsel.

Europe-based brands may enter into co-enforcement agreements with other European rights holders or participate in EUIPO's Anti-Counterfeiting Intelligence Support Tool (ACIST). Coordinated approaches encourage platforms to adopt uniform standards, integrate AI-based counterfeit detection systems, and verify brand authenticity via blockchain registries. Policy reforms could mandate that large e-commerce intermediaries cooperate with regional IP bodies, share data on suspicious listings, and accept automated IoT-based alerts as grounds for immediate takedown – an evolution beyond mere voluntary codes of conduct. Adopting the principles of the Memorandum of Understanding on the Sale of Counterfeit Goods via the Internet (facilitated by the European Commission) and extending it to new technologies would amplify these efforts.

12.8 Cross-border enforcement: integration of emerging technologies for intellectual property protection

In light of the complex comparative landscape, Poland-based fashion brands must adopt holistic, technology-enhanced, and legally sophisticated strategies for managing IP in global e-commerce. The key is to unify international treaty-based frameworks, cross-border enforcement alliances, and cutting-edge digital tools into a coherent approach that transcends reactive enforcement and embraces proactive, data-driven governance of IP rights.

Technological solutions are not ancillary but central to modern IP enforcement, bridging the gap between legal norms and practical outcomes. Blockchain records can lock in priority dates and licensing terms, converting intangible rights into verifiable digital assets. The EU AI Act does not specifically address the probative value of blockchain-stored metadata or AI-generated similarity assessments. However, its emphasis on transparency and accountability in AI systems can indirectly influence the use of such data and assessments in legal contexts.

AI tools, trained on extensive image libraries and brand guidelines, can autonomously patrol online marketplaces – ranging from Amazon in the US to AliExpress in China and Jumia in African markets – flagging suspicious products and producing standardised infringement reports admissible as evidence under harmonised evidentiary rules. Courts or administrative bodies might introduce guidance documents (e.g., by the EUIPO or WIPO Arbitration and Mediation Center) on best practices for interpreting AI-generated evidence,

granting it a rebuttable presumption of reliability if the tool meets certain certification standards.

IoT and RFID empower a product-centric enforcement model. Embedding unique identifiers in garments or accessories, connecting them to blockchain-based supply chain ledgers, and integrating these datasets with customs databases (e.g., under Regulation (EU) No 608/2013 on customs enforcement) would allow border officials to verify authenticity instantly. African regional IP bodies (e.g., ARIPO, OAPI) or ASEAN IP cooperation frameworks could adapt similar digital protocols to secure compliance by local distributors and assist in swiftly identifying non-conforming goods. If legislators in emerging economies provided for statutory presumptions that IoT-tracked products deviating from recorded supply chains are presumptively infringing, brands would gain a powerful legal weapon against counterfeit infiltration.

Furthermore, revisiting the DMCA in the US or the E-Commerce Directive and the Digital Services Act in the EU, legislators could incorporate “trusted notifier” regimes where brand owners employing certified AI and blockchain systems receive expedited enforcement actions from platforms. This would reduce repetitive notice-and-takedown cycles and encourage intermediaries to rely on standardised, technologically authenticated evidence.

12.9 Conclusions

This comparative examination of global IP frameworks and enforcement practices demonstrates that Poland-based fashion brands operating in transnational e-commerce environments must adopt more agile, technology-oriented strategies to protect their IP rights. The EU’s relatively harmonised systems, despite their procedural variances, offer a stable reference point. The United States provides substantial remedies but remains litigation-heavy and slow to formally incorporate emerging evidentiary technologies. China’s incremental reforms and new IP courts show promise but still require vigilant local engagement and proactive technological interventions. In emerging markets, legal fragmentation and limited institutional capacities compel strategic market selection, partnerships with local counsel, and early adoption of digital authentication tools.

The path forward involves a recalibration of both law and practice. International treaties and regulatory frameworks should explicitly acknowledge and validate new technologies – blockchain for immutably recording priority and licensing chains, AI for identifying infringements across vast digital networks, and IoT for ensuring product authenticity and traceability. Courts, administrative bodies, and enforcement authorities must formalise evidentiary standards that admit blockchain timestamps, AI-generated infringement reports, and IoT-derived data as presumptively reliable. Such normative evolutions would reduce legal uncertainties and enhance deterrence against sophisticated infringers who exploit anonymity and cross-border gaps.

Furthermore, collaborative engagement between industry players, enforcement agencies, and IP offices should yield best-practice guidelines for integrating digital tools into IP management. Poland-based fashion brands can leverage their EU foothold to advocate for amendments to existing directives and regulations that confer greater legal weight on technology-assisted evidence, ensure interoperability of digital registries, and incentivise intermediaries to adopt automated screening systems. By actively participating in international IP discourse, investing in cutting-edge solutions, and pressuring legislators and adjudicators to modernise evidentiary frameworks, these brands can move beyond reactive enforcement. They can instead inaugurate a proactive, data-driven, and innovation-friendly environment in which IP rights are not only legally recognised but efficiently upheld, aligning IP governance with the realities of contemporary digital commerce. Integrating these solutions not only fortifies the IP protection mechanisms but also enhances operational efficiency, helping the European fashion brand maintain its competitive edge in a dynamic market.

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