

Article

Impact of Regional Public Agencies on Firms' Internationalization Processes: Evidence from Case Studies

Stephane Ruiz-Coupeau ¹, Jaime Rodas-Monge ², Raquel Florez-Lopez ^{2,*}  and Juan Manuel Ramon-Jeronimo ² 

¹ Department of Accounting and Financial Economics, University of Seville, Calle San Fernando 4, 41004 Seville, Spain; steruicou@alum.us.es

² Department of Financial Economics and Accounting, Pablo de Olavide University, Carretera de Utrera Km 1, 41013 Sevilla, Spain; j.rodas.monge@gmail.com (J.R.-M.); jmramjer@upo.es (J.M.R.-J.)

* Correspondence: rflorez@upo.es; Tel.: +34-954-349-177

Received: 8 April 2019; Accepted: 13 May 2019; Published: 16 May 2019



Abstract: To achieve the United Nations' Sustainable Development Goals (SDGs), the support for the internationalization of micro, small and medium-sized enterprises (MSME) for inclusive and sustainable growth needs improvement. Decided to accomplish these global goals, many regional governments have established regional public agencies aiming at increasing MSME competitiveness. In the area of internationalization, regional governments have created Regional Export Promotion Agencies (REPA), which are a type of Trade Promotion Organization (TPO) that has been implemented, for instance, in all Spanish regions. However, we found a gap in the literature since there is not enough evidence on the utility of the services provided by TPOs. Thus, the aim of this paper is to explore how a REPA interacts with firms when they internationalize and cooperates with the corresponding Regional Development Agency (RDA) during this process. The preliminary findings suggest that a better coordination between both Regional Agencies is required. In addition, further financial measures to support firms in the first stages of the internationalization processes as well as an improvement of communication activities to increase awareness of the services offered are demanded by the firms.

Keywords: internationalization process; trade promotion organizations; export promotion agencies

1. Introduction

Sustainable Development Goals (SDGs) represent a universal, global development agenda for all United Nations member states and development actors until 2030. They consist of an interlinked set of 17 goals supported by 169 targets in economic, social and environmental development dimensions. TPOs should support firms' international competitiveness for inclusive and sustainable growth through value addition, trade, investment and global partnerships; therefore, they ought to contribute to many of these global goals [1].

Enterprises with or without a global presence are exposed to the competition of external markets [2]. Moreover, most of the literature sees internationalization as an opportunity for companies to increase their chances of surviving by expanding to different markets and it is proved that it creates jobs and value for the economy [3]. However, there are market failures as coordination costs, information asymmetry and risks involved [4,5] so governments have created Trade Promotion Organizations (TPOs) in order to help companies, mitigate those barriers [6].

Recently, some authors have written about the impact of TPOs on the internationalization of companies [3,4,7–10]. However, previous research has shown mixed results about the relationships

between TPOs and export performance [10]. At this point, we started to explore the different agencies that are involved in internationalization policies and programs at the national and regional level. We found out that at the regional level in Spain, there were many different Regional Export Promotion Agencies and we decided to focus on the region of Andalusia (Spain), which REPA will name REPA1 [6]. Furthermore, in order to understand how the public sector helps companies from the start-up phase, we decide to explore how this REPA collaborates with the regional development agency of Andalusia, named RDA1.

Several authors, such as Alvarez et al. [7] and Wilkinson and Brouthers [5], studied the sources of export success in small and medium-sized enterprises regarding the impact of public programs and their results suggested that the use of export promotion programs contribute positively to export performance in small and medium-sized enterprises (SMEs). Moreover, results from Freixanet [8] suggest that on average TPOs have a positive and statistically significant impact on national exports. Belloc and Di Maio [5] writes about successful practices for export promotion in developing countries. Regarding regional TPOs, Gil-Pareja et al. [6] study the effect of regional export promotion offices on trade margins and conclude that the use of TPOs increase the total exports of a region. Torres et al. [9] analyzed the link between awareness and use of public support design to support outward internationalization. Along these lines, Lederman et al. [11] describe what works and what does not in terms of export promotion agencies. However, we found a gap in the literature since there is not enough evidence either on how they interact with companies implementing internationalization strategies, or on their relationship with other regional agencies.

The aim of this paper is to explore how firms internationalize and how a REPA interacts with these firms and cooperates with the corresponding Regional Development Agency (RDA) during this process. The methodology used for this research is founded on exploratory case studies based on four semi-structured interviews (two directors of export firms and two officers of the agencies studied) and literature review [12]. This is mainly due to the lack of literature on the specific issue. Eisenhardt stated that the use of case studies is a good way of building up theory when a lack of previous literature is faced [13,14].

The findings first allow considering a better coordination between the studied REPA and RDA is required in terms of helping companies to internationally expand their operations. Secondly, the biggest problem for companies in order to expand internationally is in terms of financial capabilities and as REPA1 provides only consultancy services in this regard, further measures could be implemented in order to improve exports performance [10]. Thirdly, we find evidence that export firms perceive better the quality of the services and hence are more implicated when those services are not provided for free by TPOs. Along the same lines of the results of Torres et al. [9], we conclude that an increase in the communication efforts of the REPA would benefit international activities and SMEs of the region as large companies are the ones receiving the biggest share of the services and budget of the Agency and smaller companies are in some cases not aware of the services provided. Lastly, our results agree with Freixanet [8] in that although the greatest impact by TPOs are seen in companies that initiate and develop their internationalization process, the consolidated exporters were the ones that knew and therefore used more export promotion programs (EPPs).

The paper is divided into five sections. The first one includes the introduction of the study. The background literature section follows which includes the extant literature describing the concepts from the most general such as the internationalization strategies to the most specific about regional trade promotion agencies. The third section explains the methodology used in this study as well as research strategy, techniques and approach. After, the fourth section is composed by the analysis of four case studies and the findings made through their analysis. Finally, there is the discussion where we expose our main conclusions and suggestions.

2. Background Literature

2.1. Internationalization Strategy and Process

In recent decades, the study of company's internationalization has become one of the most researched topics and, as a consequence, several definitions of the concept have appeared and evolved [15]. Considering the analysis of Ferreira de Almeida, it could be concluded that as Ruzzier et al. [16] explain in their work, the internationalization process of firms is based on three different aspects: (1) process/operations, (2) networks/relationships and (3) resources. Thus, there are three main definitions of internationalization that are related to these aspects. Firstly, as Calof and Beamish [17] stated internationalization is the process of increasing involvement in international operations, while adapting firms' operations, strategy, structure, resources etc., to international environments. Secondly, Johanson and Mattsson [18] stated that internationalization could be seen as the development of networks of business relationships in other countries through extension, penetration and integration. Thirdly, regarding the resources, Ahokangas [19] defined it as the process of mobilizing, accumulating and developing resource stocks for international activities.

Different types of internationalization strategies are mentioned by the extant literature. Among them, it is worth highlighting some entry modes that companies could use to join foreign markets. According to Azuayi [20] all these strategies could be categorized in two broad branches. While the first one is the non-equity mode and it comprises export and contractual agreements, the second mode is referred to equity mode of entry, which comprises wholly owned subsidiaries and joint ventures. The one that offers less risks and lowest market control is the export and import strategies. On the contrary, the strategy with the highest risk level but greatest market control is known to be the hierarchical entry mode. Moreover, the hierarchical entry mode is mainly connected with a direct investment such as Greenfield investments as well as acquisitions. Furthermore, it is not surprising that exporting and importing are the most common strategies that most small and medium enterprises use to pursue internationalization. The former is considered to be the process of selling goods and services to countries other than the domestic one while the latter consists on buying goods or services from foreign countries. The company could directly be involved in the export or depend on an agent. Lastly, it worth mentioning a direct investment strategy that could be considered to be an arrangement that involves one hundred percent ownership. This could be realized through the direct acquisition of the host market firm or through owning facilities, this strategy is known as Greenfield investment.

With its roots in economic theory, the eclectic (OLI) paradigm [21] has been the preeminent theoretical framework for International Business (IB) academics. It primarily aimed at explaining the structure of an economic system and not the organization and activities at individual firm level as it is based on assumptions not applicable in studies of individual firms [22]. Therefore, other theories to explain internationalization processes and models are explored in this study.

Companies could follow different options to implement the process of internationalization. If a firm internationalizes its business practically from the start, then it is an international new venture or a born global company [23]. Contrarily, the Uppsala model defines internationalization as a long-term process [24,25] where firms traditionally construct their solid base in their own domestic markets before stepping to the international stage [2]. This process starts with the company lacking the market knowledge but during its development uncertainty is transformed into an experiential learning process. The strength of Uppsala is based on the knowledge of how business could be conducted in the best way in the foreign markets. Without that knowledge, the enterprise intending to go international will not be able to achieve its goal.

We consider that among the most important theories of internationalization processes of MSMEs are the Uppsala international model, the network theory and the international entrepreneurship theory as similarly Rexhepi et al. [26] state for family businesses. To face the process of internationalization, companies should regard the completion of three phases: preparation for the foreign market while operating in the national market; selecting the appropriate model and implementing the right strategy.

Firstly, the Uppsala model is known as a progressive model of internationalization [25,27] and reveals that the internationalization process relies on learning and knowledge so that the lack of knowledge of a company is the main obstacle. Therefore, companies that are bigger and possess more knowledge have an advantage in this process. According to this model, enterprises firstly need to obtain knowledge in their domestic markets to then apply it to other markets. Additionally, the process should start by entering neighbor countries that tend to have similar behaviors. The more knowledge a firm possesses about a market, the lower the risk and the greater its commitment towards foreign markets.

Secondly, the Network Theory was developed by the detractors of the Uppsala model positioning it as one of the newest theories about the internationalization of firms. This theory highlights the importance of relationships and networks in the internationalization process, especially with suppliers, customers, partners and competitors. Networks are exemplified as webs of connected relationships or interlinked relationships, at the individual and the organizational level meaning that companies engage with each other through the exchange of goods, ideas and information [18,28]. This theory proposes a step-by-step process where the company starts to expand its operations where it has the stronger network, i.e., the most information available and the ability to reach mobile resources [29].

After the revision of Uppsala internationalization process model by its authors to include the business network view [22,30–32], new version of Uppsala model and Network Theory seems to have converged. However, in our study we maintain both theories separately as we consider that the original version of Uppsala's model is still valid in many cases to explain internationalization processes.

Finally, the International entrepreneurship theory (IET) states that entrepreneurs naturally seek and exploit opportunities in other countries [33]. The IET was introduced by McDougall and Oviatt [34] and considers that entrepreneurial opportunity is created by innovators and visionaries through different applications of a single technology. This theory is about identification and exploitation of opportunities in foreign markets. It is described as a combination of innovative and risk-seeking behavior that goes beyond national borders and intends to create value [34].

Notwithstanding the previous theories, it is worth mentioning the study carried out by Sarasvathy [35]. It states that in order to explain the new order of factors in internationalization, effectuation and internationalization have recently emerged to explain the processes carried out by young and small enterprises. Furthermore, the literature provides evidence that entrepreneurship processes could be characterized by an effectual paradigm [36,37], and internationalization processes are entrepreneurship processes. Unlike causal logic, effectuation is defined as a process where the entrepreneur takes a set of means and focuses on choosing between possible effects that could be created with those means [35]. Sarasvathy et al. [38] identify three characteristics, international uncertainty, limited resources and network dynamics, which make effective logic appropriate for internationalization processes. The importance of personal networks emerges as important evidence in the literature of international entrepreneurship [39,40]. The decision-making process is not linear, but the result of interactions with others, outside and inside the company. Sarasvathy [35] argues that new markets, or new contacts or new clients, are not the result of previous design but rather the result of interaction with the environment.

Over the past two decades, the trade landscape has evolved dramatically. The costs of trade, transport and communications have plummeted. Moreover, the process of digitization has disrupted previous ways of doing business [41]. Most studies indicate that the main advantage for exporters has been the reduction of search costs, which has facilitated pairing with potential customers all over the world [41]. Trade Promotion Organizations (TPOs) were seen at first as an important ingredient in the successful export-led growth experience of East Asian countries [42]. However, in the most recent reviews, the rationale for TPOs has focused on mitigating market failures like coordination costs, information asymmetry, and the risks involved [43]. Thus, presently, in an ideal scenario, TPOs help companies to gain international visibility and increase their exports, providing excellent technical assistance in a very efficient manner.

2.2. Trade Promotion Organizations

TPOs are intended, on the one hand, to provide local exporters and potential exporters with the necessary information to identify the foreign markets in which they could sell their products and, on the other hand, to improve the knowledge of potential foreign customers about domestic products and enterprises. Market failures that justify TPOs' activities relate mainly to information dissemination and coordination failures, such as imperfect information by domestic producers on foreign sales prospects, asymmetric information problems between domestic producers and foreign consumers, difficulties in assessing costs and risks by exporters, barriers to entry into foreign markets due to lack of knowledge or coordination (among suppliers, or between suppliers and buyers). More specifically, companies at different levels of their internationalization process face different barriers in their exporting operations and accordingly have different needs in terms of assistance [43].

Activities of the TPOs relate to image creation, advertising, promotion; marketing of domestic products, through trade missions, trade fairs, trade exhibitions and dissemination of information; providing support services to local exporters in planning and preparing for international participation, stimulating export interest in the business community, acquiring the necessary experience and know-how to enter export markets, providing organizational assistance and cost-sharing programs; developing market research to raise awareness of export opportunities and identify targets and potential trading partners [43].

Results from a study using data from more than 270 Chilean firms [7] show that different instruments implemented by TPOs have contrasting results. As suggested by the results, trade shows and trade mission do not raise the chances of becoming a successful exporter. However, participation in exporters committees of TPOs does have an important impact on increasing the probability of becoming a permanent exporter.

Wang et al. [10] prove that financial programs have an important role for countries which aim to increase their international presence. They imply that TPOs that offer financial help as well as other information and consultancy services perform better because exporters need that aid in their first steps of internationalization. Additionally, they argue that financial aid-related programs moderate the relationship between information related programs and marketing activities, such as information services, have a greater impact on marketing capabilities when higher levels of financial aid were adopted.

Today, TPOs are widespread in both developed and developing countries, with diversified experiences. The main cause for this significant increase in the number of TPOs, which has tripled in the last twenty years [11], is twofold. Firstly, changes in the regulatory environment—especially World Trade Organization (WTO) regulations—have led, in recent decades, to vast restrictions on export promotion activities (subsidies and other trade policies) and have consequently induced governments to seek new measures to circumvent those restrictions. Secondly, other dramatic changes are taking place in the international trade environment, such as the increasing liberalization of markets for goods, services and factors, the redesign of regional agreements and the rebalancing of power, advances in information technologies, communications and transport.

On the one hand, those changes have permitted new profitable opportunities for exporters and investors around the world. However, on the other hand, uncertainty has also increased on the globalized international stage. Consequently, potentially successful opportunities may remain untapped due to limited information and lack of adequate assessment of the associated risks. The objective of TPOs is to help domestic and foreign entities involved internationally to combine potential opportunities with profitable experiences.

Wilkinson and Brouters [4] point out that although smaller firms are often resource poor and may not have the resources to surpass successful international corporations, the services provided by TPOs could complement internal firm resources thereby allowing enterprises to become more effective in international markets. They also suggest that companies with technological capacity have an advantage in order to success in international markets. Moreover, opposing to the results of

Alvarez et al. [7] they state that trade shows sponsored by public institutions are likely to have positive trade performance outcomes as well as the positive association between developing international trade relationships and the use of agents and distributors. Finally, they suggest that state government officials should consider placing greater resources into trade shows activities and the connection to international distributors and agents as they both show a positive relation with the increase in sales by local companies and as it is of great importance to identify potential international partners for the creation of successful trade ventures.

2.3. The Justification of Trade Promotion Organizations

The two main reasons for Government intervention in the export domain according to the study of Belloc Di-Maio [5] are to increase export flows and to select the sectors in which the nation wish to specialize. In the views of the later, a vast literature suggests that not only exporting but also what is exported matters as country could exploit its competitive advantages. Thus, the reason Governments need to intervene is justified by the economists on the fact of market failures. Governments' intervention is justified to correct good and factor markets' distortions, by involving directly in the market where the failure has occurred [4,5].

Gil-Pareja et al. [6] agree and state that the economic justification for public intervention in the field of Promotion Agencies lies on the existence of market failures that affect companies in the pursue of international markets like asymmetric information or externalities. Information failures in national and international markets may result in the lack of sectorial profitability even if production is efficient. In the same manner, firms may be unable to select the appropriate level of quality to expand to foreign markets. Accordingly, recommended government policies involve public information supplies such as activities like identification of potential partners and the assessments of their reliability, trustworthiness, timeliness and capabilities rather than export or production subsidies. Moreover, this public intervention is justifiable as their benefits are public.

In the last decade, there has been an intense debate about the convenience of spending part of public budgets on regional offices due to the economic recession. However, several studies have proved the positive return on investment of these policies, which help national firms continue its operations bringing wealth to the national economy. This new trend of studies has shown that not only diplomatic representations but also export credit and promotion agencies have a positive effect on bilateral trade [6,8,10].

Most of the Spanish regional promotion offices (REPO) abroad focus on activities directed exclusively to new trade relationships and in hardly ever to reinforce established relationships. Along with the finding of the research of Gil-Pareja et al. [44], they state that reviewing data over the period 1995–2011, they found that REPOs abroad have a significant effect on aggregate exports and that effect takes mostly through the increase in the total number of products and the average number of company transactions per product. Furthermore, they found that the significance of the effect of REPOs abroad on exports is larger when agencies are located outside the European Economic Area and that their effects on trade increase with time. Finally, they found a bigger impact on differentiated goods rather than generic products.

A study carried out by the International Trade Center (ITC) a joint agency of the World Trade Organization and the United Nations, shows that an increase in one dollar on the amount spent on helping companies to develop and improve their export activities and trade could generate an increase of US\$ 384 in a country's gross domestic product (GDP) and US\$ 87 worth of additional exports [45]. This study is based on data from 94 countries, with a particular focus on 14 countries that are members of the European Trade Promotion Organizations (ETPOs) network assessing the impact of the work of TPOs on national trade performance. TPOs and, increasingly, Trade and Investment Support Institutions (TISIs) are active in most countries providing vital services and expertise, including market intelligence, financial assistance, such as credit and insurance, and assistance with transport logistics, product certification and participation in trade promotion events. The results of the study show that

that a 1% increase in export promotion budgets increases exports by 0.074%, and 0.065% increase in GDP per capita, generating very large GDP per capita gains. In addition, the study shows that successful export promotion has positive spin-off effects on the national economy by increasing the productivity and competitiveness of non-exporting sectors. Furthermore, it found that the way a TPO runs also makes a substantial difference. Some practices translate into faster and higher export growth than others, such as private sector representation on TPOs boards, charging fees for services, targeting a few sectors and countries, and concentration on established exporters. The results also show that investment in national branding and focus on small and medium-sized enterprises could help GDP per capita grow faster.

The concentration of TPOs activities in a small number of sectors or markets produces greater benefits than the distribution of existing and limited resources to cover all sectors and markets. Also, the survey explored whether charging for services has an impact. In the analysis of the 14 European TPOs, the charging of fees for services provided to clients has a positive impact on export earnings that could be explained by the fact that tariffs filter applications from companies that do not have a real commitment to export. Moreover, companies that pay for services demand more quality from TPOs. In addition, it shows better results for executive boards of TPOs with a higher proportion of seats in the private sector. This is true because of the increase of credibility by the involvement of the private sector in the management of TPOs.

2.4. Effectiveness Improvement of Trade Promotion Organizations

According to the study carried out by Freixanet [8] in 2012, firms in the initial phase of export could be more competitive by using the services provided by the TPOs available. Thus, managers of firms in these stages should be especially active in gathering information about the programs and increasing their participation in them. In his study, the greatest impact was found for companies that initiate and develop their internationalization process, but paradoxically the consolidated exporters were the ones that knew and therefore used more programs. At the same time, novice exporters have a high Usage Effectiveness Index for their programs, since most of those who know these programs use them. Consequently, TPOs should make communication efforts, specifically targeted at beginning exporters, and should give priority to their participation of beginning exporters over that of more experienced exporters. Additionally, publicity for programs that are not well known should be especially increased: export support, consultancy, foreign trade offices and investment support. In any case, in order to be more efficient and effective, communication should be carried out in a segmented way, informing each company about the programs appropriate to its stage of internationalization. Moreover, resources should be allocated preferably to the programs with the greatest impact, i.e., sponsored international fairs, trade missions and information programs. Other improvements identified by this author were to reduce bureaucracy, increase flexibility and strengthen coordination between the different TPOs. As a conclusion, the author states that although programs have a positive effect, it could be stronger and extended to more enterprises if communication were improved, programs better adapted to the needs of enterprises and program management was more flexible and efficient.

Furthermore, Torres et al. [9] defend the same argument stating that the firms with the greatest resources and capabilities are the ones that predominate in the application of public incentives, affirming that those recipients pursue riskier modes of entry, or selects locations with higher levels of risk, due to the availability of public support. Moreover, their results suggest that there is an existence of inefficiency within the procedure of application for internationalization services, particularly regarding the relationship between awareness and use of these services.

Lederman et al. [11] showed certain factors that worked for TPOs in order to increase effectiveness. Their results suggested that a large percentage of the executive board of TPOs in hands of the private sector as well as a large percentage of public sector funding increased performance. Also, a single strong TPO was preferred to the sometimes-observed proliferation of organizations in countries. Moreover, results recommend TPOs to focus on non-traditional exports or have a broad orientation towards

different sectors, rather than try to increase the overall amount of exports. It also suggests focusing on bigger companies that are not yet exporters rather than smaller firms or established companies.

According to the Organization for Economic Co-operation and Development OECD [46] the main barriers reported by SMEs are the availability of adequate financing at reasonable prices without having to provide disproportionate guarantees as the main obstacle to start international operations. Also, they point out as necessary for export the support in promotion abroad, information and training. Furthermore, companies find it helpful the existence of trade agreements and appropriate political-diplomatic relations. Therefore, the services provided by the State through Export Promotion Agencies help companies settle abroad.

Despite the findings of prior research, literature aiming at understanding whether the services of regional agencies were properly adapted to the real needs of firms that are internationalizing is still scarce. Therefore, we propose as research questions to explore what and how services are provided by regional agencies to firms during their internalization process and how these agencies coordinate among themselves to improve the efficiency and impact of the services provided. We are also interested in exploring how firms are using those services and what kind of new services are needed from their point of view.

3. Methodology

The approach followed in this study is the case study research. This methodology concentrates on one or a few examples of a particular circumstance and evaluates the aspects, relationships, processes and experiences involved in the process from the particular to the general (inductive reasoning) taking a holistic view of the scope [47]. Blaxter et al. [48] states that case studies are intended to be centered on special cases that can serve as a base for generalizations. It is an appropriate approach to build up new theory from specific cases by an inductive approach and the best way to construct theory when there is not enough previous literature on the matter [12–14].

The methodology is mainly qualitative as the research is based on collecting and analyzing information in as many forms, mostly non numeric; and fieldwork as part of the data has been obtained through interviews to different institutions [48]. We have chosen to focus on building case studies through the analysis of academic literature and a mix of documentary and fieldwork research. Case studies research through interviews adds value to this study, despite being easily biased and difficult to collect.

The way of carrying out the research was based on four interviews, two of them to Directors of MSMEs with different internationalization strategy and to officers of two public agencies (REPA and RDA). Furthermore, the research included the analysis of documents such as previous literature and official statements or reports of the agencies studied.

The cases analyzed are representative cases of the Andalusian context as they characterize the main institutions helping companies to gain competitiveness through internationalization and innovation and a practical example of firms that should be targeted by their services. The Spanish trade promotion organization at national level is the *Instituto de Comercio Exterior* (ICEX), but at the regional level other agencies belonging to regional autonomous Governments were established. This context is ideal for understanding whether the services are properly set up for the real needs of internationalizing firms.

According to DataComex, the official Spanish national statistic portal, exports in Andalusia reached in 2017 a record 30,913 million euros, an increase of 15.3% compared to 2016, placing this region as the second greatest exporter in Spain. In less than a decade, Andalusian exports have doubled, with a strength based on diversification that makes this region national leaders in agri-food and aeronautics.

The questionnaire was defined after the literature review and has been used to guide the development of the interviews. With a short duration of around thirty minutes, the interviews were recorded in audiotapes and then transcribed. In Table 1 there is a summary of the research characteristics of the four cases.

Table 1. General information about the interviews.

Type of Organization	Name of the Organization	Position of the Interviewee	Internationalization Strategy
Regional Export Promotion Agency (REPA)	REPA1	Officer from the department of planning and studies	Does not apply
Regional development Agency (RDA)	RDA1	Officer from the communication department	Does not apply
Firm in retail sector	Toyretail (fictitious name)	Director and founder	Import/export
Firm in Agro-industry sector	Agrotech (fictitious name)	Business development manager and co-founder	Born Global firm

Source: Own elaboration.

A short description of the two agencies and companies analyzed in this paper is provided in the following paragraphs:

Regional Export Promotion Agency (REPA): REPA1

The REPA1 is a state-owned company of the Regional Government of Andalusia, funded partially by the Andalusian Chambers of Commerce and attached to the Regional Ministry of Economy and Knowledge. The agency, as an instrument of the Andalusian Government for the execution of its internationalization policy and with the consensus of the different institutions and economic and social agents, has as its main mission to work to support Andalusian companies in their internationalization process, offering the necessary services for export and facilitating the promotion of foreign investment and the attraction of foreign investment. REPA1 offers a wide range of programs and services with the aim of increasing the number of Andalusian companies in the process of internationalization, improving the international positioning of Andalusian companies that are already active in this process and increasing Andalusian investment abroad. Finally, REPA1's services and programs are grouped into four major areas: information, consultancy, training and promotion.

Regional Development Agency (RDA): RDA1

The RDA1, in addition to the financial incentives it manages, provides to Andalusian companies a set of services aimed at promoting entrepreneurship, innovation, cooperation in the science-technology-business system and the competitiveness for the productive structure in Andalusia. The main areas of action of the agency are "financing and business development", "innovation areas and strategic sectors/clusters" and "attracting investments and advanced services". Moreover, through its international action, the RDA1 aims to achieve the following goals: "To position Andalusia and its firms as active actors at international level and to be recognized as a reference for regional innovation systems; to foster the active participation of Andalusia and its companies in the European debate on the next standard of regional development; to promote the active participation of Andalusia and its firms in European and international networks." Therefore, RDA1 participates in European programs and projects, providing international technical assistance and participating in forums and events on innovation and regional development, being an active member of international networks of Regional Agencies such as the European Association of Development Agencies (EURADA) and the coordinator of the Andalusian node of the Enterprise Europe Network, the world's largest support network for MSMEs with international ambitions launched by the European Commission. Specifically, RDA1's services and programs are grouped into 6 major areas: "general information", "business cooperation and technology transfer", "industrial property rights and technology watch", "Information and advice on R&D&I funding" and "attracting foreign investments and aftercare services".

Toyretail

Toyretail (fictitious name) operates in the retail sector, trading mainly with toys. The company is based in Andalusia where it has five workers in its main offices as well as a large warehouse where the

stock is stored. In addition, they operate with sellers in other regions in Spain and Portugal. They work with toy manufacturers all over the world, but they mainly distribute toys from countries such as England, Turkey, China and Germany. Its main activity consists on the purchase and sale of toy products for children that are in the form of stock of the main manufacturers and its subsequent distribution through different establishments in Spain and Portugal.

Agrotech

Agrotech (fictitious name) is a company that provides a comprehensive solution to farmers to control crops using wireless sensors by measuring temperature and humidity of air and soil. By means of software that applies artificial intelligence all the information is treated to give the optimum solution for the crop. The value proposition provides a comprehensive solution to farmers, helping to optimize the resources used in the field, in addition to a system based on real-time data for decision making and optimization of both resources and production. The firm is a small company founded by three partners with only 1 employee. The company is born directly international because the partners are based in Spain, United States and Singapore and address customers in those markets.

4. Results

This section is devoted to the analysis of the information gathered through the interview process. We will start analyzing the most important services provided by the regional agencies and then we will compare the results to assess the common elements and differences of the agencies and companies studied.

With reference to the most important services provided by REPA1, the interviewee answered that it is probably the actions that are carried out abroad, such as commercial management actions consisting mainly on preparation of lists of potential partners, prospective surveys and individual agendas of prearranged meeting the list of potential partners is prepared by REPA1 through the selection of potential partners that potentially match with the companies' offer and entry strategy. Prospective surveys consist on working on this list: first by making a mailing informing about the product or service that the company wants to internationalize and then, a follow up by phone calling one by one with all those who have received the information: importers, distributors, etc. If the survey is positive, in the sense that there are an interesting number of interested parties, the agency can continue organizing an "Individual Agenda" which consists of preparing several bilateral meetings with potential clients in order to reach commercial or distribution agreement. Apart from this, promotional actions such as participation in fairs, trade missions, promotions at points of sale and show rooms are also very numerous.

Regarding the fastest growing service of the Agency in the recent years, the officer stated that it depends fundamentally on the phase of internationalization in which the company is. There are companies that arrive to the agency with very limited experience or no experience regarding the commercialization of their products abroad, and in that case, they usually ask for primary or basic information related to export procedures such as customs and documentary requirements. In the case of companies that approach the Agency with some experience in exporting, they demand more promotional tools, i.e., tools that allow them to publicize their products abroad, such as fairs or individual projects. Analyzing the REPA1 Annual report, the most popular service is the "promotional" type with 983 requests followed by "implementations in foreign market" type with 221 requests.

In relation to the most important service provided RDA1, the interviewee stated that the Agency offers an integral set of services to Andalusian, national and foreign investors who want to settle in Andalusia by offering first class financing, a network of innovation spaces, infrastructures and advanced services. The officer cannot highlight any in particular because they are part of an indivisible whole. In addition, she answered that the most demanded service were financial services and the one that grew the most in the recent years is the provision of information and advice on Research, Development and Innovation (R&D&I) funding. That is an important part of the Agency as one of the main reasons for its creation was to improve the technological development of the region. To achieve it, the Agency

provides services to finance innovation projects and provides public spaces and infrastructures to allow companies to grow in a framework of the clusters of the Andalusian economy.

Comparative Analysis

The four organizations are located in Andalusia as the main focus of the research is in the internationalization of Andalusian companies and the support of trade promotion agencies at regional level. The two public entities belong to the Regional Government of Andalusia and are both funded with public resources, REPA1 as the Regional Export Promotion Agency and RDA1 as the Development Agency of the Region. Moreover, the two private companies interviewed implement international strategies and are present in several countries.

The main difference is on the focus of these two agencies, as RDA1 focuses on the development of companies within regional borders and the increase of innovation in the region and REPA1 is oriented towards providing access to international markets for companies that already have a presence in the national scenario.

Both agencies interact with other national agencies in order to provide effective services although the integration of services between REPA1 and RDA1 are not clearly established. RDA1 mentioned in the interview that both agencies cooperate to attract foreign direct investment to the region and to foster firms' internationalization. Indeed, while both Agencies actively collaborate in a well-known joint initiative to attract foreign investments, in terms of internationalization, there is not such a clear coordination, mainly since RDA1 does not have among its specific competences to encourage export activities.

The main difference among both Agencies in terms of importance for private companies is the financial support. REPA1 does not provide financial instruments to companies whereas RDA1 does. However, REPA1 provides a consultancy service that helps companies access the most interesting financial instruments and it has had some financial rewards in the past. Currently, RDA1 manages several funds to support companies' development in their early or advance stages coming from European Funds, national or regional government.

Ending with this part of the analysis, we move now to the data provided by the two companies analyzed in relation to their internationalization strategies and their interactions with regional public agencies.

Firstly, both companies analyzed are micro-enterprises according to the European standards, both with less than 10 employees. Also, they are both Limited Liability Companies, the most common configuration for companies (not counting self-employed individuals) in Andalusia according to the Regional Institute of Statistics.

Secondly, they have different internationalization strategies as Toyretail is an importer, distributor and exporter of products whereas Agrotech is a born global firm that operates within the agro-industry business. In terms of the internationalization model, Toyretail's process could be explained by the Network theory as it has expanded through partners and business connections while Agrotech's process is characterized by the International Entrepreneurship theory as they have established a global perspective since the company's conception thanks to the partnership of three entrepreneurs settled in different countries.

Thirdly, regarding the interactions with the two agencies, Toyretail has not used the services of REPA1 as this Agency is not conceived for helping companies importing and distributing goods in Spain. Agrotech has not used the services either, as it is still at a startup phase but is planning to contract REPA1's services to enter Latin American markets. Regarding RDA1, Toyretail knows its services but has not yet approach the agency for requesting support and Agrotech has reached the agency to obtain financial support such as convertible or participative loans. Moreover, Agrotech benefits from a start-up incubator program jointly managed by the Government of Andalusia and a telecommunication operator.

Finally, in relation to the services that the companies would recommend adding to the portfolio of the regional agencies, both companies gave a different approach in accordance to their personal stand. On the one hand, Toyretail would like that REPA1 also helps importers and distributors by providing list of importers and other services in relation to other business-like trade fairs. On the other hand, Agrotech expresses the need to provide financial incentives and support businesses in their initial stages as they perceive that there are not enough tax and financial instruments to alleviate the typical problems of liquidity when companies are in start-up phase. A summary of the data collected during the interviews is shown in Table 2.

Table 2. Summary of information gathered through the interview process.

	Toyretail	Agrotech
Staff Number	MSME (less than 10 employees).	MSME (less than 10 employees).
Legal Status	Limited Liability Company	Limited Liability Company
Business Sector	Distribution and retailing of consumer goods	Agro-industry sector
Internationalization strategy	Import/Export	Born global firm
Internationalization model	International Network Theory	International Entrepreneurship Theory
Knowledge/use of REPA1 or RDA1 services	Services are known but not exploited yet	Too early stage for using REPA1's services/Use of RDA1's financial instruments.
Way to gather information of international markets	By relationships and internet research	Contacts, databases, specialized social networks, specific magazines
Benefiting from Regional Government support	No	Financial and incubation services
Possible service by public sector to increase performance	Create lists of importers to Spain. Trade shows for Toys distributors.	Increase financial benefits as tax benefits or reduction in hiring costs.

Source: Authors.

5. Discussion

The aim of this study was to explore the influence of a regional public agencies in the internationalization process of Andalusian companies based on the analysis of four case studies. Specifically, this study focuses on the analysis of the services provided to Andalusian companies by two agencies and deals with the improvable coordination among them. The findings show there was not a special coordination program between both agencies in terms of internationalization. Evidence from cases studies also show that further financial measures are needed to support firms in the first stages of accessing international markets as well as an improvement of communication to increase awareness of the services provided.

The results of the study are coherent with several theories and results analyzed in the literature. Firstly, regarding to the most common problems that companies face in order to internationalize, both companies interview coincide in that the main problem does not have enough working capital to finance exports which is totally coherent with the results from the European Commission [49] and OECD [46].

Secondly, both companies interviewed follow internationalization models provided by literature. Toyretail has an import/export strategy, and its internationalization process is characterized by Network Theory as the director highlighted the importance of relationships and networks in the internationalization process, especially with suppliers, customers, partners and competitors. The other company, Agrotech, is Born Global firm following an International Entrepreneurship model as the

partners are entrepreneurs that combine innovative and risk-seeking behavior that go beyond national borders and intend to create value [34].

Thirdly, the results obtained through interviews coincide with the findings of Wang et al. [10] as the financial aid to companies in the process of internationalization has a positive result on the effectiveness of other information and marketing services. Moreover, the authors recommend Governments to implement financial programs and that is also seen as very necessary for the interviewee in order to take the first steps towards internationalization.

Fourthly, as Wilkinson and Brouthers [4] stated, although smaller firms have fewer resources, the services provided by TPOs could complement internal firm capacities thereby allowing enterprises to become more effective in international markets. The same authors place great importance on sponsored trade shows and on the search of foreign agents and distributors because they are likely to have positive trade performance outcomes. Evidence from Toyretail case is coherent with these authors.

Furthermore, the results of the study carried out by the International Trade Center [1,45] are coherent with the answers provided by the REPA1's officer. The interviewee assures that when services provided by the public agency have a fee, companies perceive them with a higher quality and more useful for their business compare to when they are provided for free. That is the main reason REPA1 charge a small fee for some of its services and the results have been positive since they started doing it.

Along the same lines as Torres et al. [9], we have found that firms with greater resources are the ones that demand the most the services of Export Promotion Agencies. Moreover, evidence have been found from the data gathered that the typical recipient of TPO services pursues more risky entry modes in foreign markets and selects riskier markets because they mitigate the risks involved in the operation thanks to the assistance received. Furthermore, the cases show that there is an inefficiency in terms of awareness as MSMEs interviewed are not informed of all the services provided by these public agencies, so more actions related of communication is needed.

Concerning the results provided by Freixanet [8], by which the greatest impact of Export Promotion Agencies was found for companies that initiate and develop their internationalization process, but paradoxically the consolidated exporters were the ones that knew and therefore used more programs are also highlighted by REPA1 interviewee. He stated that the most advanced companies in terms of internationalization were the ones requesting to most REPA1's services and therefore, benefiting to the most part of the budget.

Moreover, Leaderman et al. [11] suggest that TPOs should focus on non-traditional exports or have a broad orientation towards different sectors, rather than try to increase the overall amount of exports. This recommendation is partially followed by REPA1, as it aims to diversify its services to different spectrum of companies but eventually offer services to the most common sectors in the region such as the agro-food industry. The same paper also suggests focusing on bigger companies that are not exporters yet rather than smaller firms or established companies; evidence from case studies does not confirm that this is followed by REPA1.

Finally, in line with the insights provided by Freixanet [8] an issue that must be improved by TPOs is to make greater communication efforts, specifically targeted at beginning exporters, giving more priority to them compare to more experienced exporters. This is seen as one of the companies interviewed was not aware to all the services provided by the Agencies thus there is a possibility that an increase in the visibility of those services could improve the participation of MSME's in internationalization program. Furthermore, the second company pointed out a lack of services targeted to start-ups was as most of the services offered by REPA1 target companies already established in Spain and with a significant size.

Based on our results, companies should consider using effective trade promotion programs offered by REPAs as a means of supplementing their company internal resources [4]. In an increasingly competitive world, the ability to access external resources to the company represents an opportunity for local firms to increase sales, expand into new countries, encounter new partners and create competitive advantage. In addition, reaching the resources offered by RDAs might be of great importance in order

to develop innovative products that could be introduced to other markets and create a greater export success. However, these findings should be further validated with quantitative studies and checked for consistency with a larger sample.

Based on the studies of the impact of REPAs on exports by Spanish region carried out by Gil-Pareja et al. [6,44], further research could be done on exploring how and why some coordination practices between REPAs and RDAs are more efficient than others. More studies could also be done on the coordination between regional and national export promotion agencies, as some evidence emerged on the strong ties existing between REPA1 and ICEX (they share members of their boards) and how their services could be complementary for export firms. These results would add more insights on how to improve export policies and instruments at regional and national level.

Another line of future research could be to explore, through comparative case studies research and/or quantitative research, the practices and effectiveness of TPOs depending how their portfolio of services are designed and provided. From our study, we have seen evidence that REPA1 segments their services based on the phase of internationalization of the companies [24,25]; however it would be interesting to conduct a comparative analysis with TPOs that design their portfolio of services according to the internationalization model and strategy followed by companies.

Author Contributions: All authors contributed equally to this work. All authors wrote, reviewed and commented on the manuscript. All authors have read and approved the final manuscript.

Funding: This research was funded by Andalusia Regional Government (projects SEJ111, SEJ1933) and the Spanish Ministry of Education and Science (project ECO2014-57023-P).

Acknowledgments: The authors would like to thank the academic editor and the anonymous referees for their constructive and helpful suggestions on early versions of the paper.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. International Trade Center. *Annual Report 2017*; International Trade Center: Geneva, Switzerland, 2018; Available online: <http://www.intracen.org>. (accessed on 1 February 2019).
2. Nagy, S.G. The internationalization of the Spanish SME sector. *Soc. Econ.* **2013**, *35*, 71–86. [CrossRef]
3. Lederman, D.; Olarreaga, M.; Rubiano, E. Trade specialization in Latin America: The impact of China and India. *Rev. World Econ.* **2008**, *144*, 248–271. [CrossRef]
4. Wilkinson, T.; Brouthers, L.E. Trade promotion and SME export performance. *Int. Bus. Rev.* **2006**, *15*, 233–252. [CrossRef]
5. Belloc, M.; Di Maio, M. *Survey of the Literature on Successful Strategies and Practices for Export Promotion by Developing Countries*; Working Paper; International Growth Centre: London, UK, 2011.
6. Gil-Pareja, S.; Llorca-Vivero, R.; Martínez-Serrano, J.A. Do nonreciprocal preferential trade agreements increase beneficiaries' exports? *J. Dev. Econ.* **2014**, *107*, 291–304. [CrossRef]
7. Alvarez, R. Sources of export success in small-and medium-sized enterprises: The impact of public programs. *Int. Bus. Rev.* **2004**, *13*, 383–400. [CrossRef]
8. Freixanet, J. Export promotion programs: Their impact on companies' internationalization performance and competitiveness. *Int. Bus. Rev.* **2012**, *21*, 1065–1086. [CrossRef]
9. Torres, M.M.; Clegg, L.J.; Varum, C.A. The missing link between awareness and use in the uptake of pro-internationalization incentives. *Int. Bus. Rev.* **2016**, *25*, 495–510. [CrossRef]
10. Wang, X.; Chen, A.; Wang, H.; Li, S. Effect of export promotion programs on export performance: Evidence from manufacturing SMEs. *J. Bus. Econ. Manag.* **2017**, *18*, 131–145. [CrossRef]
11. Lederman, D.; Olarreaga, M.; Payton, L. Export promotion agencies: Do they work? *J. Dev. Econ.* **2010**, *91*, 257–265. [CrossRef]
12. Yin, R.K. *Case Study Research and Applications*; Sage Publications: Thousand Oaks, CA, USA, 2018.
13. Eisenhardt, K.M. Building Theories from Case Study Research. *Acad. Manag. Rev.* **1989**, *14*, 532–550. [CrossRef]
14. Eisenhardt, K.M.; Graebner, M.E. Theory building from cases: Opportunities and challenges. *Acad. Manag. J.* **2007**, *50*, 25–32. [CrossRef]

15. Ferreira de Almeida, S. *Strategy for SME's International Expansion—Selection and Penetration of Foreign Markets*; University of Porto: Porto, Portugal, 2015.
16. Ruzzier, M.; Hisrich, R.D.; Antoncic, B. SME internationalization research: Past, present, and future. *J. Small Bus. Enterp. Dev.* **2006**, *13*, 476–497. [[CrossRef](#)]
17. Calof, J.; Beamish, P. Adapting to foreign markets: Explaining internationalization. *Int. Bus. Rev.* **1995**, *4*, 115–131. [[CrossRef](#)]
18. Johanson, J.; Mattsson, L.G. Internationalization in industrial systems—A network approach. *Knowl. Netw. Power* **2015**, 111–132. [[CrossRef](#)]
19. Ahokangas, P. Internationalization and Resources: An Analysis of Processes in Nordic SMSs. Ph.D. Thesis, Universitas Wasaensis, Vaasa, Finland, 1998.
20. Azuayi, R. Internationalization Strategies for Global Companies: A Case Study of Arla Foods, Denmark. *J. Account. Mark.* **2016**, *5*. [[CrossRef](#)]
21. Dunning, J.H. A professional autobiography: Fifty years researching and teaching international business. *J. Int. Bus. Stud.* **2002**, *33*, 817–835. [[CrossRef](#)]
22. Vahlne, J.E.; Johanson, J. The Uppsala model on evolution of the multinational business enterprise—from internalization to coordination of networks. *Int. Mark. Rev.* **2013**, *30*, 189–210. [[CrossRef](#)]
23. Rialp, A.; Rialp, J.; Knight, G.A. La vocación global de los nuevos modelos de PYMES—el caso de las empresas Born Globals. *Econ. Ind.* **2010**, *375*, 171–190.
24. Johanson, J.; Vahlne, J.E. The Internationalization Process of the Firm: A Model of Knowledge Development and Increasing Foreign Market Commitments. *J. Int. Bus. Stud.* **1977**, *8*, 23–32. [[CrossRef](#)]
25. Johanson, J.; Vahlne, J.E. The mechanism of internationalization. *Int. Mark. Rev.* **1990**, *7*, 11–24. [[CrossRef](#)]
26. Rexhepi, G.; Ramadani, V.; Rahdari, A.; Anggadwita, G. Models and strategies of family businesses internationalization. *Rev. Int. Bus. Strategy* **2017**, *27*, 248–260. [[CrossRef](#)]
27. Caputo, A.; Pellegrini, M.M.; Dabic, M.; Dana, L.P. Internationalisation of firms from Central and Eastern Europe. *Eur. Bus. Rev.* **2016**, *28*, 630–651. [[CrossRef](#)]
28. Durrieu, F.; Solberg, C.A. Access to networks and commitment to internationalization as precursors to marketing strategies in international markets. *Manag. Int. Rev.* **2006**, *46*, 57–83. [[CrossRef](#)]
29. Martin, X.; Swaminathan, A.; Mitchell, W. Organizational evolution in the interorganizational environment: Incentives and constraints on international expansion strategy. *Adm. Sci. Q.* **1998**, *3*, 566–601. [[CrossRef](#)]
30. Johanson, J.; Vahlne, J.E. Business relationship learning and commitment in the internationalization process. *J. Int. Entrep.* **2003**, *1*, 83–101. [[CrossRef](#)]
31. Johanson, J.; Vahlne, J.E. Commitment and opportunity development in the internationalization process: A note on the Uppsala internationalization process model. *Manag. Int. Rev.* **2006**, *46*, 165–178. [[CrossRef](#)]
32. Johanson, J.; Vahlne, J.E. The Uppsala internationalization process model revisited: From liability of foreignness to liability of outsidership. *J. Int. Bus. Stud.* **2009**, *40*, 1411–1431. [[CrossRef](#)]
33. Sauvart, K.; Mendoza, K.; Irmak, I. *The Rise of Transnational Corporations From Emerging Markets: Threat or Opportunity?* Edward Elgar Publishing: Cheltenham, UK, 2008.
34. McDougall, P.; Oviatt, B. Defining international entrepreneurship and modeling the speed of internationalization. *Entrep. Theory Pract.* **2005**, *29*, 537–553. [[CrossRef](#)]
35. Sarasvathy, S. *Effectuation—Elements of Entrepreneurial Expertise*; Edward Elgar: Cheltenham, UK, 2008.
36. Baker, T.; Miner, S.; Eesley, Y.D.T. Improvising firms: Bricolage, account giving and improvisational competencies in the founding process. *Res. Policy* **2003**, *32*, 255–276. [[CrossRef](#)]
37. Dew, N.; Read, S.; Sarasvathy, S.D.; Wiltbank, R. Effectual versus predictive logics in entrepreneurial decision making: Differences between experts and novices. *J. Bus. Ventur.* **2009**, *24*, 287–309. [[CrossRef](#)]
38. Sarasvathy, S.; Kumar, K.; York, J.G.; Bhagavatula, S. An effectual approach to international entrepreneurship: Overlaps, challenges, and provocative possibilities. *Entrep. Theory Pract.* **2014**, *38*, 71–93. [[CrossRef](#)]
39. Andersson, S.; Wictor, I. Innovative internationalisation in new firms—Born globals: The Swedish case. *J. Int. Entrep.* **2003**, *1*, 249–276. [[CrossRef](#)]
40. Coviello, N.E. The network dynamics of international new ventures. *J. Int. Bus. Stud.* **2006**, *37*, 713–731. [[CrossRef](#)]
41. Sharma, V.M.; Taiani, V.P.; Sariteke, A.A. Impact of e-business on the exporting services of export management companies. *Int. J. Commer. Manag.* **2006**, *16*, 29–40. [[CrossRef](#)]

42. Shamsuddoha, A.K.; Ali, M.Y.; Ndubisi, N.O. Impact of Government Export Assistance on Internationalization of SMEs from Developing Nations. *J. Enterp. Inf. Manag.* **2009**, *22*, 408–422. [[CrossRef](#)]
43. Martincus, C.V.; Carballo, J. Beyond the average effects: The distributional impacts of export promotion programs in developing countries. *J. Dev. Econ.* **2010**, *92*, 201–214. [[CrossRef](#)]
44. Gil-Pareja, S.; Llorca-Vivero, R.; Martinez-Serrano, J.; Requena-Silvente, F. Regional export promotion offices and trade margins. *Rev. World Econ.* **2015**, *151*, 145–167. [[CrossRef](#)]
45. International Trade Centre. *Investing in Trade Promotion Generates Revenue—A Study of Trade Promotion Organizations*; International Trade Centre: Geneva, Switzerland, 2016; Available online: <http://www.intracen.org>. (accessed on 2 February 2019).
46. OECD. *Removing Barriers to SME Access to International Markets*; OECD Publishing: Paris, France, 2008.
47. Denscombe, M. *The Good Research Guide: For Small-Scale Social Research Projects*; McGraw-Hill Education: Maidenhead, UK, 2014.
48. Blaxter, L.; Hughes, C.; Tight, M. *How to Research*; Open University Press: Berkshire, UK, 2006.
49. European Commission. *Supporting the Internationalization of SMEs*; European Commission: Brussels, Belgium, 2014.



© 2019 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).