INTERNATIONALISATION STRATEGY AND MANAGEMENT ACCOUNTING AND CONTROL SYSTEMS: A NETWORK APPROACH

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ABSTRACT

Internationalisation has become crucial to economic development, especially for companies that are more technological and scientific. These companies arouse curiosity, as they quickly begin their internationalisation process (IP), adopting the Born Global model shortly after its creation. It has also been noted that, when they seek to benefit from mutual flexibility, the opportunity to use technical and economic knowledge, and even the collective assumption of costs and risks, it is common for them to resort to the internationalisation model based on Network Theory. Considering that internationalisation is part of the company's growth strategy, and that this may require an adjustment of the information structure, namely the Management Accounting and Control System (MACS), it becomes relevant to understand how IP affects MACS. In this way, our study aims to respond to how MACS adjusts to Born Global internationalisation model (BGIM) and Network Model of Internationalisation (NMI) for a successful internationalisation strategy? In this study, we evaluate how MACS is adjusted in order to become a tool capable of collecting and processing the set of useful information necessary for the implementation of the internationalisation strategy. We conducted a single case study in a Portuguese health-sector company. Our results show that MACS needs to be adjusted to facilitate the implementation of IP.

Keywords: Born Global, Internationalisation, Management Accounting and Control System, Network, Strategy

INTRODUCTION

Considering the growing pressure on SMEs, to improve competitiveness, productivity and flexibility levels, and the increasingly active presence of companies in global markets, the study of internationalisation has been gaining relevance (Ribau et al., 2018; McAuley, 2010; Kuivalainen et al., 2012; Clarinha et al., 2023). According to the literature, the internationalisation process (IP) may occur in several ways, implying changes at the company's internal organisation level, and requiring a deep knowledge of the market's functioning (Freeman & Cavusgil, 2007; Chetty & Campbell-Hunt, 2004; Reuber & Fischer, 1997; Kontinen & Ojala, 2010; Roque & Alves, 2023).

Traditionally, IP has developed in stages; however, recently, several authors (Coviello, 2006; Oviatt & McDougall, 2005; Zahra, 2005) have identified companies that contradict this traditional view, since they are actively linked to the international market since birth (Ribau et al., 2018). These companies follow the Born Global Internationalisation Model (BGIM), as they have a predefined projection towards the international market and their goal is to provide a faster and more adjusted response to changes in consumer desires (Rennie, 1993; Igor & Cipriano, 2012; Pinto & Rua, 2023). Therefore, these companies follow strategic development regardless of their age or size (Oviatt & McDougall, 1997).

On the other hand, when entering a network, establish relationships that become true "*bridges to foreign markets*, providing firms with the opportunity and motivation to internationalise" (Coviello & Munro, 1997: 365). In this sense, the association of networked companies is seen as a solution and assumed to be a Network Model of Internationalisation (NMI) (Johanson & Mattsson, 1988; Hadley & Wilson, 2003). The interaction of different actors in a networked structure is based on trust and common long-term interests (Johanson & Mattsson, 1988). The network allows these companies to develop activities and control resources (Hallén et al., 1991), simultaneously inducing development and change at the network level (Johanson & Mattsson, 1988). Thus, the adaptation process is eminent and necessary (Hallén et al., 1991), mutual and iterative, as the company's results are interconnected with the results of the companies with which it interacts. As the company evolves, whether in terms of product/service diversity or even expanding into new markets, informative needs change, becoming increasingly more aggregated and integrated. These changes are reflected in the information needed to support decision-making. We know that organisations can be influenced by various pressures, resulting from the external or internal environment (Roque et al., 2019a). Institutional theory emerges as a theory that allows an analysis of the institution's corporate behaviour (DiMaggio & Powell, 1983).

Management Accounting and Control System's (MACS) information systems by nature, may be affected by these changes. The design of MACS is therefore essential to provide managers with knowledge and information that allows them to assess the implementation of the strategy and make the necessary adjustments to achieve the organisation's goals (Gomez-Conde et al., 2013). It seems that "assessing the appropriate information mix to monitor the achievement of strategic intent is a relevant line of inquiry, but it is also important to understand the associations between information type and the development and implementation of strategy" (Bhimani & Langfield-Smith, 2007: 4).

However, little is known about the effects of accounting (Skaerbaek & Tryggestad, 2010) or management control (Frigotto et al., 2013) on the implementation of the strategy, in particular that of internationalisation strategy. Some authors (Tessier & Otley, 2012; Ismail, 2013; Puck & Filatotchev, 2020; Cumming et al., 2017; Roque et al., 2020) have drawn attention to the need for further studies that seek to understand how MACS can help companies implement their strategy. Therefore, this study is part of a traditional line of research that focuses on the relationship between the strategy and structure of organisations (Chandler, 1962). However, contrary to this classic approach that analyses this relationship in a static way (Henri, 2006), a dynamic approach (Bhimani & Langfield-Smith, 2007) is used to analyse the relationship between the internationalisation strategy and the MACS as a company's information system, similar to other approaches adopted in management accounting studies (Carr et al., 2010; Bisbe & Malagueño, 2012). That is, the goal is to analyse how MACS should be designed and used to guarantee the information necessary for the development of a successful IP, represented in this case by NMI and BGIM, which are the internationalisation models adopted by the company under study.

Hence, this research question arises: How should the MACS adjust to the BGIM and NMI for a successful Internationalisation strategy?

To answer this question, a single case study was conducted in a Portuguese company in the health sector. This company was chosen for its international relevance and for having developed its IP through the simultaneous adoption of two international models: the NMI and BGIM.

The remainder of this paper is structured as follows. We begin by reviewing the NMI and BGIM. We then analyse and define MACS and present a theoretical framework that supports the empirical study. The following section describes the study design and methodology and discusses the results. Some considerations and suggestions for future research are presented.

THEORETICAL FRAMEWORK

Networks and Born Global Models of Internationalisation

The importance of relationships between companies for international expansion has been highlighted in recent years (Ratajczak-Mrozek, 2017; Ciravegna et al., 2014; Seifriz et al., 2014; Kyriakou & Tsogas, 2022; Bolivar et al., 2023; Al-Tabbaa & Zahoor, 2023). Some researchers have focused on the importance of network cooperation to achieve greater performance and profitability (Smith et al., 1995; Gulati et al., 2000; Seifriz et al., 2014; Barbosa et al., 2016), as it has been proven that the association of network companies fosters the potential of IP (Johanson & Mattsson, 1988; Sharma & Johanson, 1987). Internationalisation is promoted by the gradual acquisition of new knowledge through commercial relationships between the actors of the network (Johanson & Vahlne, 2009; Johanson & Mattsson, 1988), and it is no longer a sequential process, but it now occurs in "leaps" through the network interconnection, depending on the company's positioning in the network (Hertz, 1996). A network encompasses two or more institutions, allowing interconnected exchanges (Axelsson & Easton, 1992; Sharma, 1993). Hence, companies develop relationships that allow them to access resources and sell their products and services (Johanson & Mattsson, 1988). Thus, companies that belong to a network benefit from mutual flexibility, the opportunity to use a set of technical and economic knowledge, and even from a collective assumption of costs and risks (Bachmann, 1999).

Network Theory, in addition to being considered a theoretical approach, is simultaneously defined in the literature as one of several internationalisation models (Sharma & Johanson, 1987; Welch & Welch, 1996; Zarei et al., 2011; Roque et al., 2019b, Aldibiki & El Ebrashi, 2023).

This theory considers "Internationalisation" as a process in which continuous relationships are established that may be maintained, developed, or terminated, according to a company's goals (Johanson & Mattsson, 1988). Therefore, what determines a company's success in new markets is its position in the established network of relationships, and the greater the degree of international penetration and integration, the greater the number of relationships.

Some studies (Coviello & Munro, 1997; Zain & Ng, 2006; Johanson & Vahlne, 2009) indicate that the company's network strongly influences the market's choice and the way of entry, and that "the greatest function of a network is to provide contacts that can be used when necessary for the company, such as when you want to enter an external market" (Freeman & Cavusgil, 2007: 7).

However, a company may also use a network to learn from mistakes and successes and thus follow in the footsteps of its partners and even competitors. In this respect, Bonaccorsi (1992) found that some small companies accelerate their IP by obtaining information through the network and imitating other organisations. In this context, we can understand that the BGIM may result from NMI.

According to Bell et al. (2003), companies that follow the BGIM can be classified as "knowledge-intensive companies" (that use new technologies and scientific knowledge to increase their competitive advantage by increasing productivity, new offers to the market, and introducing new distributing channels) and as "knowledge-based companies" (that bet on the creation of new technologies, assuming this creation as the basis for the development of products and services).

Born Global is defined as companies that, since their creation, aim to become global (Gabrielsson & Kirpalani, 2004; Persinger et al., 2007; Roque et al., 2019a; 2020). Over time, Born Global companies have contributed to the growth and economic development of many countries (Ahlstrom & Ding, 2014). These companies are born with an outward orientation, assuming an international posture (Knight & Cavusgil, 2004; Rialp et al., 2005; Roque et al., 2019a; 2018), and internationalise very quickly without any performance period in the national market (Oviatt & McDougall, 1994; Bell et al., 2003; Gabrielsson & Kirpalani, 2004; Roque et al., 2019a; 2020).

However, there is no consensus on the definition of this type of company (Rasmussen & Madsen, 2002; Rialp-Criado et al., 2002). Some authors (Knight & Cavusgil, 1996; Knight, 1997; Moen & Servais, 2002) state that Born Globals are small, technologically oriented companies that have been operating in international markets since their creation, in which the IP is developed very quickly, with sales to the foreign market reaching 25% in the first three years of activity. For others, Born Globals are companies that simultaneously adopt an international vision and strategy, practically since its creation (Rennie, 1993; Knight & Cavusgil, 1996; Oviatt & McDougall, 1994; Bell, 1995), seeking to obtain significant competitive advantages from the use of resources and the sale of outputs in several countries (Oviatt & McDougall, 1994).

Role and Structure of the MACS

MACS are part of the organisation's structure and may be defined as tools that managers use to maintain or change organisational activity patterns and implement strategies (Anthony & Govindarajan, 2007). They are simultaneous control mechanisms (Malmi & Brown, 2008; Burns et al., 2013) that systematically use management accounting information to achieve goals (Chenhall, 2003). They can

be considered fundamental tools to provide managers with essential information to assess the implementation of the strategy and make the necessary adjustments to achieve the goals of the organisation (Gomez-Conde et al., 2013; Davila et al., 2023).

In this study, we focused on the control and influence of MACS in this strategy, with no tool being privileged.

In this respect, and similar to other studies (Roque et al., 2019b; 2020), and to operationalise the MACS study, we will resort to the Novas et al. (2017) framework. These authors classified the MACS into three categories and six dimensions. For category (1): "Information use style" provided by MACS, a category that groups diagnostic and interactive dimensions, Novas et al. (2017) were based on the framework of Simons (1991). A system is classified as diagnostic use when the top manager only reports a small personal involvement, delegating communication and subsystem operations to his subordinates. An interactive system is one in which the top manager actively participates and reports information personally and frequently to his subordinates (Novas et al., 2017; Roque et al., 2018).

For category (2): "nature of information" provided by MACS, the category that considers the dimensions of aggregation and integration, Novas et al. (2017) were based on the framework adopted by Chenhall and Morris (1986), Chia (1995), Bouwens and Abernethy (2000), and Moores and Yuen (2001). The aggregation of information is recorded by systems that allow the processing of a large volume of information within a certain period of time (Bouwens & Abernethy, 2000).

The integration of information is recorded by systems that allow understanding the cause-effect relationships between the structure and strategy, and the objectives. There is a concern with financial aspects where the operational side is integrated with the strategic side (Chenhall, 2005).

Category (3): "type of decision supported" by MACS, which covers the dimensions of performance evaluation and resource allocation.

Systems where the type of decision is oriented towards performance evaluation, aim to support the monitoring and control of organisational objectives, and control of managers' performance (Silvi, 2012; Novas et al., 2012; Naranjo-Gil & Hartmann, 2006). Systems where the type of decision is oriented towards resource management aim to assist in the management and distribution of financial

and non-financial assets (Naranjo-Gil & Hartmann, 2006), which will result in a better application of information resources (Baines & Langfield-Smith, 2003).

Novas et al. (2017) built a framework that they validated through their study. These dimensions can be considered isolated or complementary. The importance attributed to the various dimensions may vary according to the moment or context in which the company is located (Bouwens & Abernethy, 2000; Bedford & Sandelin, 2015), and may therefore depend on the degree of the IP's development. Hence, the MACS design is not standardised (Novas et al. 2012), and each system is comprised of unique characteristics, according to the company's specificities and the importance of each of its dimensions at a given moment.

The Relationship between the Internationalisation Models and the MACS

As we saw before, NMI involves two or more institutions that permit interconnected exchanges (Axelsson & Easton, 1992) between them. This situation allows the exchange of resources (Sharma, 1993), greater mutual flexibility from institutions, cooperation versus the opportunity to use a set of technical and economic knowledge, and simultaneously the collective assumption and sharing of costs and risks (Bachmann, 1999). Such relationships must be supported by a wide range of knowledge and information.

Similarly, through knowledge, BGIM also seeks a way to improve the managerial ability to deal with the costs and risks associated with the rapid development of the IP (Braunerhjelm & Halldin, 2019).

Institutional theory can support all these adaptations. Recently, Rahman and Islam (2023) showed that institutional theory suggests that organisations are influenced by the political, social and economic context in which they operate. According to the theory, the external environment, which includes norms, values and expectations of stakeholders, can influence the behaviour and practices of organisations. From this perspective, it is understood that the IP influences institutional behaviour (Roque et al., 2019a) which necessarily requires the adjustment of the MACS (Lueg & Borisov, 2014; Davila et al., 2023).

The development of BGIM seeks support for a MACS that provides adequate information to mitigate managerial difficulties, allowing adequate information flow for diagnostic purposes and/or more interactive management of the decision-making process (Simons, 1991). It also seeks to create a best practices codification system, to stabilise and disseminate the organisation's capabilities (Novas et al., 2017).

The NMI, in turn, is developed, seeking support in a MACS that provides information for interactive use to foster innovation, learning, and the search for new solutions, which triggers the emergence of new networks, as their participants interact and respond to the opportunities and threats that arise (Bachmann, 1999; Kaufmann, 1994; Belso-Martínez, 2006; Sharma & Blomstermo, 2013; Davila & Ditillo, 2017; Leppäaho, et al., 2018; Andersson & Sundermeier, 2019; Henderson & Graebner, 2020; Biswas & Akroyd, 2022). It is a model in which a more interactive use of information is expected given the characteristics of Network Theory and the fact that the interactive use of MACS is flexible enough to absorb novelty and adapt to unexpected events (Gomez-Conde & Lopez-Valeiras, 2018).

Regarding the nature of the information provided by MACS, the NMI relies on increasingly aggregated and integrated information as the company evolves, whether in terms of product/service diversity or expansion into new markets. Informative needs tend to adapt and, therefore, change, becoming more aggregated and integrated, compared to the initial stage of the company. The integration of information is especially relevant as interdependence increases between organisations (Chia, 1995) since integrated information allows a broad and complete view of the whole and means of coordination between different organisational units. Thus, the characteristics, integration, and aggregation of information are contingently considered. Roseira and Brito (2007) highlight the knowledge and information that companies receive through their network of suppliers; these authors draw attention to the fact that it is not only a problem of quantity, but also a problem of the "nature" of the information. Thus, adaptation is a need (Hállen et al., 1991), which is a mutual and iterative process in which the results of a company are interconnected with the results of the companies with which it interacts (Kronen, 1995).

In BGIM, the information derived from the system tends to assume a more aggregated nature. Given the characteristics of the model, the aggregation of information allows the processing of a large volume of information in a given period, and it is useful for various domains of business reality (Bouwens & Abernethy, 2000). Born Globals are companies with a great technological and scientific orientation that rely on a large set of information to prepare for their expansion. Therefore, there is a tendency for information to be more aggregated over time or during the life cycle. However, during IP, these companies also seek integrated information to coordinate and control the different subsidiaries (Chia, 1995), consequently establishing a cause-and-effect relationship between the operational structure and strategy (Chenhall, 2005).

Regarding the type of decision supported by the MACS, both internationalisation models use the system as an information provider to support resource management decisions, plan and coordinate activities, and evaluate and control performance to control and monitor the goals and performance of participating in the network (Bisbe & Malagueño, 2015; Bisbe & Otley, 2004; Henri, 2006; Gómez-Conde et al., 2013; Chenhall, 2007; Langfield-Smith, 2007; Sharma & Blomstermo, 2013; Leppäaho, et al., 2018; Roque et al., 2019b; 2020).

Research Model

Following the literature review and following the same line of other studies (Simons, 1990; Roberts, 1990; Archer & Otley, 1991; Roque et al., 2020) as this work, and from the conceptual model portrayed in Figure 1, we sought to understand how the MACS should adjust to the BGIM and NMI for a successful internationalisation strategy, to the extent that it becomes a tool capable of collecting and processing the set of information necessary for the implementation of internationalisation.
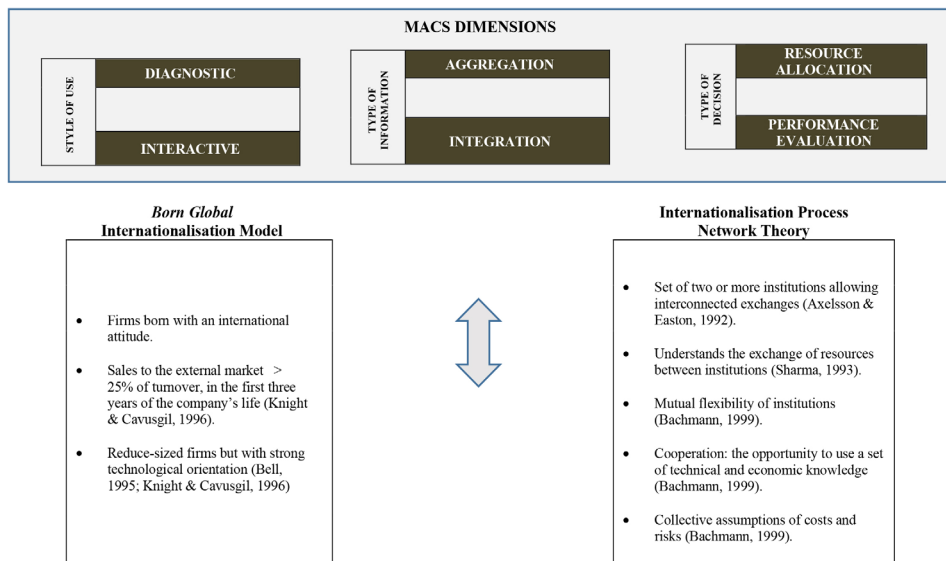

Figure 1: Research Model

METHOD OF RESEARCH

Research Design

To answer our research question, a single case study was developed according to Yin's (1993; 2005) approach. Due to limited prior knowledge, we felt the need to use a qualitative approach (Ahrens & Chapman, 2006; Dzikowski, 2018), since it allows us to record more information, in more detail, and to perceive reactions more intimately (Dana & Dumez, 2015). This qualitative empirical research allows an in-depth investigation of a contemporary phenomenon within its real-life context (Yin, 1993; 2005).

Multiple sources of data collection were used to provide triangulation. And, data were collected through documentary analysis and three semi-structured interviews, in which the interview guide (see Appendix) had been adapted from other studies (Burns et al., 2003; Major et al., 2010; Novas et al., 2017).

The interview content was analysed using the NVIVO 12 software. To answer the research question, the information was collected and analysed around three themes:

1. The characteristics of the Internationalisation Model.
2. The characteristics of the MACS.
3. The relationship between the Internationalisation Model and the MACS.

Selecting The Company and The Key Informants

Usually, cases are selected because they are particularly suitable for illuminating a phenomenon (Eisenhardt, 1989), and offer opportunities for unusual research access. In this case, our contact was first established at a Postgraduate Seminar at Coimbra Business School (ISCAC), on the theme "Digital Branding Beyond Borders", which took place on 27 September 2018. This company was represented by the Marketing and Communication Director. After a small informal conversation, we decided that the company would be an interesting case to explore and an invitation to participate in this study was made.

This company aroused some curiosity, for being a company in the health sector. The literature has shown in some studies (Turner, 2012; Connell, 2013) a growing interest in analysing the IP of this sector of activity. Furthermore, the brand associated with the company brand is rising internationally, and where an IP with appropriate characteristics for the study was pre-diagnosed.

After informing the company of the scope of the study, three key informants were self-selected by the company, because it considers that they are figures that dominate the IP and its management control (see Table 1). For this selection, we used the *Snowball* methodology, which is appropriate for this type of study (Biernacki & Waldorf, 1981).

Table 1
Characteristics of key informants

Respondents' names	Code	Respondent's position	Interview date and duration	Place
Dr. Mónica Brito	INT.1	Chief Operating Officer (COO), and administrator responsible for the internationalisation operation in the Swiss market.	October 2018; 100 minutes	Company headquarters
Dr. Pedro Sá	INT.2	Controller, and International Markets Manager	October 2018; 95 minutes	Company headquarters
Dr. Ana Canha	INT.3	Marketing and Communication Director	October 2018; 90 minutes	Company headquarters

CASE STUDY

Company Description

Stemlab, S. A. was founded in 2003, in Cantanhede (headquarters), Portugal, by a group of professionals in the life sciences field. This company was a pioneer and leader, in Portugal, in the isolation and cryopreservation of stem cells from blood and umbilical cord tissue. Crioestaminal was the first cryopreservation laboratory authorised by the Ministry of Health, through the Authority for Blood and Transplantation Services, and it is one of the European banks to be accredited by the American Association of Blood Banks in Portugal.

This company seeks to actively participate in the development and provision of the most advanced technologies of preventive and personalised medicine:

1. Enabling access to personalised therapies based on stem cells.

2. Developing research and development (R&D) projects aiming to discover new cell therapies.

3. Providing advanced diagnostic technologies.

As a result of its core business and an innovative path, internationalisation has naturally emerged as the way forward. The company (at the date of the interview) had three subsidiaries, Celvitae in Spain, Stemlab in Switzerland and Crioestaminal in Portugal, and exports its services.

Analysis and Discussion of Results

The internationalisation process (IP)

Internationalisation was vital for Stemlab, S. A. The foundation of the business is science and naturally borders could not constitute barriers to development. The IP was imminent and has naturally developed and progressively adapted over the years (Figure 2).

In 2006, a partnership was established with an Italian company, Hematos (online sale of medical products in the gynecological field). Stemlab, S. A. took advantage of Hematos' market knowledge, which facilitated its insertion in the market and involved lower costs than creating a new company. The files of every customer were recorded in an information system, accessible in every country where it operates, which ensured great control over the status of each customer's process.

Responding to the need for further expansion, in 2008, it entered the Spanish market, establishing a company in Barcelona, Crioestaminal Spain SL. In the relationship with the Spanish customer, the samples are collected in Spain and sent to Portugal, via a road carrier, to be processed and stored in the group's laboratory in Cantanhede. It was at that time that Stemlab, S. A. established itself as the largest company in the industry in the Iberian Peninsula and the third in the European Union. Finally, in 2010, and the same strategic line, a company was bought in Madrid, Celvitae. After six months, a merger between the two Spanish units occurred, and the headquarters remained in Madrid.

Over the years, the Swiss market started gaining the company's attention, and, in 2015, through a project submitted to Portugal in 2020, a company was created in Switzerland, and a brand: *Stemlab – Science for Life*.
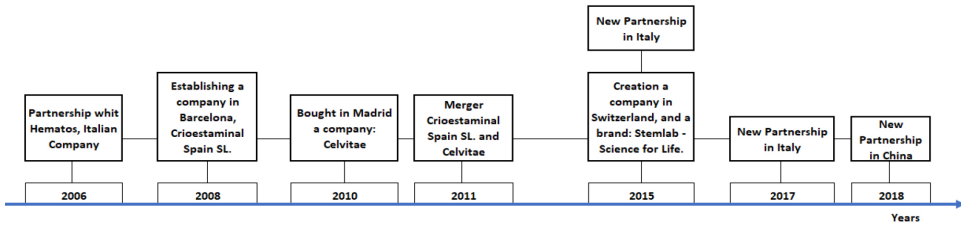
Figure 2: Internationalisation process timeline

According to INT.1, in addition to the maturity of the market, there was little knowledge in Switzerland about the possibility and importance of storing stem cells. Hence, the market was naturally receptive and not saturated.

> This was a market which was observed for a long time and was receptive to consumption.
>
> (INT.1)

Still, in 2015, Stemlab, S. A. returned to Italy with the same approach as in 2006 (commercial partnership). It established a new partnership with a new "player", and later, in 2017, another one. Both partnerships remain today. Being companies in the same field, they therefore established B2B relationships.

However, the company's geographical expansion does not stop there. In China, it has a small representation through a partner that invests in medical clinics, and in nuclear medicine, whose goal is to implement a stem cell bank with European regulations (because the country does not host non-national laboratories). These partners are associated with the ideal partner that is Stemlab, S. A. since they have the necessary know-how for undertaking this project.

In Portugal, the umbilical cord stem cell cryopreservation market fell 20% between 2011 and 2012, due to a decrease in the birth rate and purchasing power, which led Stemlab, S. A. to seriously invest in the IP. However, during the IP, some difficulties were encountered:

> Although Portugal has been seen favourably in the tourism sector, in recent years, in the health sector, the effort of being interpreted this way is a great challenge. Internationally Portugal is seen as a more "backward" country in terms of health and science, which often makes relationships difficult.
>
> (INT.1)

On the other hand, INT.2 says that "The Portuguese market was small and a large investment had been made in the area, requiring some return, that is, making this investment in Portugal profitable." Therefore, that "was the solution for the development and growth of our product," says INT.3.

After characterising the IP, the interviewees were asked about the most important criteria in choosing the first foreign market. From their answers, we could conclude that geographical proximity came first. The reason is that, in this sector of activity, the time variable, associated with logistical conditions, such as transportation, is vital for the development and growth of the activity.

> The conditions of transport and timing are not trivial in guaranteeing storage in perfect conditions, they are decisive variables in the choice of the market.
>
> (INT.1)

Customs and tradition came in second, and in third, the linguistic variable.

Having highlighted the most important criteria for choosing the first market, we asked the respondents about the main motivations for this process. The interviewees emphasised:

> The limitations of the domestic market, the need to follow customers and partners, and also the access to new markets with growth potential.
>
> (INT.1)

> In Portugal, we were very restrained and we tried to approach and win the market through our partners.
>
> (INT.3)

Next, we inquired the interviewees about the main obstacles faced during the IP. They unanimously underlined the challenges in human resources management, the legal aspects, and the associated bureaucracy.

To further explore the process, we invited the interviewees to comment on the main changes and the importance of internationalisation. Analysing the responses obtained allowed us to recognise some of the changes introduced:

> The internationalisation process naturally enhances productivity. The workload is increasing and the challenge of performing most efficiently and effectively possible increases productivity considerably.
>
> (INT.1)

Thus, according to the interviewees, internationalisation is an extremely important process for the development of the company. "It contributes to a significant increase in market share," says INT.2, "and to the company's success," says INT.3.

Nevertheless, it also requires some wear and tear on resources.

> In general, it contributed to some wear and increased the demand and the need for availability of the entire team.
>
> (INT.1)

Currently, the strategic goals of internationalisation involve increasing the penetration of the cryopreservation service in Portugal, increasing the market share, and stabilising the international markets: Spain, Switzerland and Italy.

Analysing the results using the NVIVO 12 software, namely the analysis of the entry modes, the application "text search" and the "tree diagram" output, we found that there were two ways of entry and establishment used in the IP:

1. The direct opening of subsidiaries, such as the case of Spain (Barcelona, right at the beginning of the process, and then Madrid, by acquiring a company), and Switzerland, which contributes to the validation of the adoption of the BGIM model.

2. The establishment of partnerships, such as the cases of Italy and China, which lead us to conclude that another of the adopted models is the NMI.

The management accounting and control system

Having such an active and dynamic IP, meeting the information needs to assist control and management is crucial. To understand the evolution of the MACS' design, we asked the interviewees which were the changes, in terms of the techniques used in the MACS.

Through the content analysis of the responses, we found that the *Balanced Scorecard* is the adopted control tool, which is highlighted, especially at Celvitae in Madrid and at Stemlab, S. A. and Crioestaminal in Portugal. Strategic Management

Accounting and some non-financial Performance Measures are other auxiliary control tools adopted by the company. The adoption of these tools allowed to answer to the increase in information needs, resulting from the evolution of the IP.

To analyse the situation, and to evaluate the first dimension of framework proposed by Novas et al. (2017), the respondents were asked about the use of the information provided by the MACS. In their opinion, the system is used in an active way providing regular information, through monthly *Reporting*, allowing the control to be streamlined. There is a diagnostic use of the information provided by MACS, which is aggregated information (synthesis) and also integrated information since it allows the management of the various business units.

> The information from the Business Units is monthly transferred to the company's Directors, thus, the information is shared with Accounting through the Cost Centres, and therefore the Heads of Departments are informed.
>
> (INT.1)

The generation and integration of information, however, raised some difficulties that have been resolved over time.

> There is software that allows us to connect the Spanish and Portuguese accounts. Since the accounting of the Spanish company is performed in Portugal, by myself. However, initially, it was necessary to turn to outsourcing because it was very difficult to adapt the software. In the case of Switzerland, as there are very specific rules and regulations, today, we use and keep an outsourcing firm that provides accounting services. The accounting control is assured through many face-to-face meetings and also in a virtual way (Skype), as the goal is to systematically audit the accounts.
>
> (INT.2)

As the system evolved, there were "more activity and less bureaucracy. There is an increase in information that is undoubtedly more objective and synthetic, very well oriented to help us respond to what we want," says INT.3.

Thus, over time, MACS has been developed through a less restricted, more superficial, and at the same time more informal control, focused on communication and cooperation, which allows the flow of information and fosters debate and dialogue within the organisation itself, thus constituting the fundamental mechanisms for the creation and integration of knowledge (Agbejule,

2006). On the other hand, it enables an integration of the operational side with the strategic side, which management accounting systems usually do not provide (Chenhall, 2005).

This evolution allows a broad and complete vision of the set and means of coordination between the different organisational units (Chia, 1995).

To understand how the MACS is used, and resorting to the framework proposed by Novas et al. (2017) based on the Simons (1991) framework – Second dimension, we asked respondents to identify how they use the information provided by MACS. Their responses reveal a more interactive use, as they state that:

> The MACS allows reading information in a very practical way. The information allows us to understand which activities are programmed and processed in each subsidiary, or a certain partnership, and thus it becomes easier to control the goals and establish cooperation between subsidiaries or in the network.
>
> (INT. 2)

> The system allows filtering information so we can use it to formulate our interpretations. It is very important to keep us aligned with the strategy or else to evaluate and adjust it. It allows us to control people, to establish our goals and hence it helps us along the way.
>
> (INT. 3)

Since 2006, when the first partnership was established with Italy, every customer's files have been recorded in an information system, available and accessible in the countries where it operated, thus ensuring great control over the process status and tasks' execution. Regarding the nature of the information, aggregated and/or integrated (Novas et al., 2017; Chenhall & Morris, 1986; Chia, 1995; Bouwens & Abernethy, 2000; Moores & Yuen, 2001), the interviewees claimed that the information provided by MACS was highly important, namely the one that is related to studies on the effect of certain events in concrete periods; the information that is prepared to allow the construction of scenarios; and the information that shows how different functions (e.g., production, marketing) are specifically affected by the occurrence of certain events (cultural events for example).

Considering the third dimension of the MACS framework (Novas et al., 2017), we asked the interviewees to comment on the type of decision supported by the MACS, distinguishing the decisions related to the distribution of financial and non-financial resources (e.g., materials, human resources, time), from the decisions related to the monitoring and control of the execution of goals and objectives by the units or services under their supervision. The interviewees attributed high importance to formal information, represented by the monthly reports between the subsidiaries.

They classified the informal system's information as very important "mainly for commercial activity, internal communication, and knowledge management" (INT.3). As well as all the financial information, non-financial quantitative information, and qualitative information that the system reports.

Finally, we directly asked the respondents about their perceptions of the impact of the IP on the MACS' design. The interviewees' responses suggest that the impact works in both ways, that is, the IP influences the MACS, and, in turn, it also influences the IP (Bisbe & Malagueño, 2015; Bisbe & Otley, 2004; Henri, 2006; Gómez-Conde et al., 2013; Chenhall, 2007; Langfield-Smith, 2007; Roque et al., 2019b; 2020).

The information collected in the interviews and in the documental analysis of the internal control management reports of the different markets (which made it possible to analyse the evolution and performance of the IP), was analysed through the full transcription of the interviews for NVIVO. In this software, the option NVIVO 12 "text search" the expression "impact" and the option "word tree" were used. The results show that the system is strongly influenced by IP.

Relationship between the internationalisation model and the management accounting and control system

From the analysis performed on the information collected, using documentary analysis and interviews, we found that the models that describe the company's path are two and they correspond to NMI and BGIM.

The NMI is identifiable, as already mentioned, through the establishment of partnerships that Stemlab, S. A. maintains with Italy and China. The establishment of these partnerships is supported by a relationship that allows them to have access to resources and promote their products and services (Johanson & Mattsson, 1988), which would be conditioned by legal regulations, for example, if these partnerships did not exist, thus conditioning the success of the company.

Regarding BGIM it is in fact, the international model that most drives internationalisation, as it is a model adopted by companies that, since its creation, have followed the vision of becoming global (Roque et al., 2020a; Persinger et al., 2007; Knight & Cavusgil, 1996; Bell, 1995; Gabrielsson & Kirpalani, 2004), as is the case of Stemlab, S. A.

The adoption of this model naturally imposes practical challenges in operationalisation since the company is forced to deal with several changes and consequently finds itself forced to organise its activities to implement its strategy. It is in this operationalisation that, in practical terms, the MACS emerges as a tool capable of guaranteeing sustainability to the BGIM (Anthony & Govindarajan, 2007; Gomez-Conde et al., 2013), as it is a structure that provides vital information for the success of international operations of Stemlab, S. A.

The fact that BGIM is the preferred model for highly technologically oriented companies that are created with the immediate objective of internationalisation and that simultaneously establish international partnerships (NMI), implies that they adapt the MACS structure to respond to their information needs.

Concerning the MACS' design, we showed that the system follows the assumptions by Novas et al. (2017) and Simons (1991). It is a complete system in which the information has a predominantly interactive use, either because of the establishment of partnerships (NMI) or by the adoption of the BGIM. A diagnostic style of use of information provided by MACS would not adjust to the company's model, especially the NMI, since it confers a more superficial and discontinuous, less dynamic and with little involvement information output (Simons, 1990; Vaivio, 2004), when the results obtained, suggest the existence of a great involvement. Innovation is part of the process and learning is naturally stimulated (Novas et al., 2017). There are mechanisms for integrating information and knowledge (Agbejule, 2006) throughout the organisational structure and thus in the relationship between the IP, namely its models, and the MACS, the information is mostly intended for an integrated use of knowledge.

Regarding the nature of information, it is assumed in both models in an aggregated way. However, the aggregation of information is mostly highlighted in the BGIM, since it is necessary to process a large volume of information (Bouwens & Abernethy, 2000). The information is also used in an integrated way, in both models, to coordinate, control, and make decisions in each subsidiary (Chia, 1995), thus simplifying the decision-making process at various levels.

Stemlab, S. A. relies on a MACS which allows to obtain information to support both resource management and performance assessment decisions, in both models (Novas et al., 2017; Sharma, 1993; Gabrielsson & Kirpalani, 2004; Leppäaho et al., 2018).

Hence, when assessing the relationship between the internationalisation models and MACS, our results suggest that the style of use of MACS information is essentially interactive, the information can be both aggregated and integrated, and it is used to support resource management and performance assessment decisions. Additionally, the adopted models (NMI and BGIM) implied changes in the MACS, defining its configuration. We show that accounting and control tools have been adopted and that information sharing has been adapted to the various requirements.

Therefore, we conclude that the MACS structure adjusts to the different models (NMI and BGIM) so that the IP develops successfully (Davila & Foster, 2007; Sharma & Blomstermo, 2013; Bisbe & Malagueño, 2015; Bisbe & Otley, 2004; Henri, 2006, Gómez-Conde et al., 2013; Lueg & Borisov, 2014; Lin et al., 2017).

FINAL CONSIDERATIONS AND FUTURE RESEARCH LINES

In the developed study, we can verify that the IP was adopted practically since the creation of Stemlab, S. A. Initially, this company started by strategically adopting the establishment of partnerships and, later, it opted to create subsidiaries in unknown markets and in which partnerships had not been explored. This entire course indicates that there are two IMs adopted and configured by Stemlab, S. A.: NMI and BGIM.

Having established the relationship between the IM and the MACS, we conclude that this company uses the MACS according to its information needs, which are highlighted according to the adopted internationalisation strategy: BGIM and NMI. The configuration of the MACS accompanies the internationalisation's evolution, progressively adapting itself to the process' needs. In both adopted models, the MACS' style of using information is mainly interactive, regarding its nature, the information may be aggregated and/or integrated, and the information output allows to support decisions at the resource management level, as well as performance assessment, thus we verify a passive role of the system (evidenced in the characteristics of the information provided) and an active role during the IP (evidenced in how the information is used).

Thereby, we conclude that the internationalisation models imply adjustments in the MACS and the latter provides the necessary information to develop the knowledge and successfully consolidate the internationalisation strategy, and in this way, we were able to answer our research question: How should the MACS adjust to the BGIM and NMI for a successful internationalisation strategy?

This study presents several scientific contributions, at its origin. On one hand, it is an innovative work as it relates the MACS and two specific internationalisation models (NMI and BGIM), emphasising the existence of several MACS' roles (passive and active) in the IP (Naranjo-Gil, 2016; Coller et al., 2018). It also enabled us to analyse the characteristics of the information originating in the MACS and the type of decisions supported in each IM. A dynamic "inside-out" approach (Chenhall, 2005) was introduced which allowed us to analyse the MACS' adjustment to each IM. On the other hand, this study helped to increase knowledge of the accounting literature which examines the *Framework Levers of Control* (Kruis et al., 2016; Asiaei et al., 2018) and the relationship between MACS–Internationalisation Strategy (Gomez-Conde & Lopez-Valeiras, 2018; Vélez et al., 2014; 2015; Araujo et al., 2011; Florez et al., 2012; Davila et al., 2023).

In short, this study thus contributed to a better understanding of the relationship between the identified IP and the MACS and constituted a tool to help companies adjust their MACS to the development of the internationalisation model.

In addition to the academic contribution, this research contributes to the business sector as it exemplifies how this company adjusted its MACS to the Internationalisation Model.

For purposes of future research, and aware of the limitation caused by the fact that it is a single case study, we suggest the replication of this study in other companies, to extend the study to other internationalisation models. In the same research stream, we suggest a comparative analysis with a multiple-cases study to compare different internationalisation models and to study patterns common to cases and theory (Eisenhardt, 1989). And, another suggestion, could be, performing a quantitative study applied to companies, in specific sectors, to deepen the analysis of the predominant internationalisation models, in this sector (Sharma & Blomstermo, 2013; Leppäaho et al., 2018).

However, it would also be interesting to carry out this study again in the future, at the same company, to update the framework, and find out whether the

identified shortcomings have been resolved and thus provide a more comprehensive conclusion.

Finally, and considering the global business environment and how it affects international ventures, we also highlight the approach to COVID-19 disease for study in the future. According to recent data (Wright, 2020; Zahra, 2021), the changes COVID-19 has made in the global business environment have been deep, profound and lasting. However, these changes present a multitude of challenges and opportunities for international entrepreneurs and their ventures. In the pre-COVID-19 era, some authors have already awakened us to the complex systems of internationalisation (Chandra & Wilkinson, 2017) and visualisation (Schotter et al., 2018), and now there is finally the opportunity to develop more creative studies, which allow the construction of a support tool for the survival of companies in the international market (Zahra, 2021), and which mitigate the negative impact of COVID-19 (Gomez-Conde, et al., 2020).

ACKNOWLEDGEMENTS

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APPENDIX

Interview Guide

This interview guide aims ascertaining how the MACS should adjust to the IM for a successful Internationalisation strategy.

1. QUESTIONS ABOUT THE ORGANISATION
1.1. What is the respondent's role in the company?
1.2. Which is the SIC?
1.3. What is the Number of People employed?
1.4. What is the Turnover/Millions?
1.5. Does the company belong to an economic group?
1.6. Where is the Group's headquarters located?
1.7. How many subsidiaries does the group have?
1.8. Is it listed on the Stock Exchange?
1.9. How many countries do the organisations export to?

2. INTERNATIONALISATION PROCESS (IP)
2.1. Were you responsible for the company's IP or were you supported by other staff and/or the implementation company?
2.2. Which markets/countries do you operate in?
2.3. What was the reason for the IP?
2.4. How do you rate the team's involvement in the IP?

2.5. What are the ways of entry and establishment used by the company?

2.6. What were the main obstacles to internationalisation?

2.7. Which are the most important criteria when choosing the first addressed foreign market?

2.8. What are the main motivations for the IP?

2.9. Has turnover increased after the IP?

2.10. In your opinion, is the cost-benefit relationship worthwhile?

2.11. Do you establish partnerships abroad? What is the profit of those partnerships?

2.12. What are the potential markets for future investments?

3. MANAGEMENT AND ACCOUNTING CONTROL SYSTEM (MACS) IN THE ORGANISATION

3.1. Has your organisation's MACS changed in the past decade? How?

3.2. How would you describe the degree of change in the MACS in your organisation? List the Management Control techniques adopted by your organisation during the last decade.

3.3. Indicate how and for what purposes the MACS implemented in your company provides information.

3.4. Characterise the MACS implemented in your company, regarding the nature of information provided.

3.5. In your opinion, how important is the MACS in terms of providing the information needed for the decision-making, regarding the distribution of financial and non-financial resources?

3.6. In our opinion, what is the importance of the MACS in terms of providing the information needed for the decision-making, regarding the monitoring and control of the execution of goals and objectives by the units or services under your supervision?

4. RELATIONSHIP BETWEEN THE IM AND THE MACS

4.1. Do you consider that Internationalisation has an impact on the MACS?

4.2. In your opinion, how do you evaluate the relationship between the MACS and the IP?

4.3. Finally, if there were questions that have not been addressed and that you consider relevant to understanding: the nature of the changes that have occurred in the MACS, and the relationship between the MACS and the IP, please state them.

Thank you!