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COOPERATION STRATEGIES IN THE INTERNATIONALIZATION PROCESS: A REASSESSMENT OF THE UPPSALA MODEL

Estratégias de cooperação no processo de internacionalização: revisitando o modelo de Uppsala

Estrategias de cooperación en el proceso de internacionalización: revisitando el modelo de Uppsala

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ABSTRACT

This article reassesses the Uppsala model nearly fifty years after its formulation by Johanson and Vahlne (1977), showing the effect of cooperation among firms in their internationalization process through a graphical analysis of the internationalization mechanism's risk formula. This research contributes to the field of international business by extending the explanatory power of the Uppsala model to the scope of international alliances and joint ventures, with practical implications for decision-making between these two modes of cooperation, particularly in terms of the leveraging effects of knowledge and resources, either through contractual agreements or by establishing third-party's autonomous vehicles to the partnering firms.

Keywords: Uppsala model, internationalization process, cooperation, alliances, joint-ventures.

RESUMO

Este artigo revisita o modelo de Uppsala quase 50 anos após sua formulação por Johanson e Vahlne em 1977, demonstrando o efeito da cooperação entre empresas no seu processo de internacionalização por via da análise gráfica da fórmula de risco do mecanismo de internacionalização. Esta pesquisa contribui para o campo de conhecimento da gestão internacional estendendo o poder explicativo do modelo de Uppsala para o âmbito das alianças e joint-ventures internacionais, com implicações práticas na tomada de decisão entre esses dois modos de cooperação, designadamente quanto aos efeitos de alavancagem de conhecimento e recursos, quer por entendimentos contratuais, quer pela constituição de veículos terceiros autônomos às empresas parceiras.

Palavras-chave: modelo de Uppsala, processo de internacionalização, cooperação, alianças, joint-ventures.

RESUMEN

Este artículo revisita el modelo de Uppsala casi cincuenta años después de su formulación por Johanson y Vahlne (1977), demostrando a través del análisis gráfico de la fórmula de riesgo del mecanismo de internacionalización el efecto de la cooperación entre empresas en su proceso de internacionalización. Esta investigación contribuye al campo del conocimiento de la gestión internacional extendiendo el poder explicativo del modelo de Uppsala al ámbito de las alianzas y joint-ventures internacionales, con implicaciones prácticas en la toma de decisiones entre estos dos modos de cooperación, especialmente en cuanto a los efectos de apalancamiento de conocimiento y recursos, tanto por acuerdos contractuales como por la constitución de vehículos autónomos de terceros para las empresas asociadas.

Palabras-clave: modelo de Uppsala, proceso de internacionalización, cooperación, alianzas, joint-ventures.

INTRODUCTION

Nearly 50 years after the formulation of the Uppsala model (Johanson & Vahlne, 1977), and despite the significant changes in the economic landscape since then, the core premise of the model – the incremental cycle between knowledge and commitment – remains a critical element in explaining the actual international development of the firm. Based on the internationalization mechanism, this model illustrates how the growth of the firm's commitment to foreign markets depends on the knowledge accumulated from its international activities and *vice-versa*. The conceptual resilience of the Uppsala model is due to the notion that the internationalization mechanism reflects entrepreneurial behavior, placing the entrepreneur at the firm's essence. While a collective “intelligentsia” of connections between individuals, the firm establishes its foreign operations through social and business networks (Johanson & Vahlne, 2009; Vahlne & Johanson, 2017, 2020).

Furthermore, assuming that cooperative strategies emerge from relationships between individuals, groups, or organizations to reach mutual gains (Bicen, Hunt & Madhavaram, 2021; Haati, Madupu, Yavas & Babakus, 2005), cooperation becomes not merely an instrument for business arrangements but as an intrinsic characteristic of human nature and, consequently, of the entrepreneur's actions. Hence, the assertion that cooperative strategies have a conceptual place in the Uppsala model and, more specifically, in its internationalization mechanism. Two fundamental propositions stem from this assertion. The first is that the model, as a widely accepted interpreter of the interaction between knowledge and commitment, is an appropriate paradigm for explaining the effect that cooperation may have on the international development of firms' operations. The second proposition lies in the idea that cooperative strategies, as effective means of complementing resources and knowledge, are fundamental for achieving larger-scale internationalization compared to what firms would accomplish if they went abroad alone.

In this study, we develop a graphical-analytical demonstration of cooperative arrangements – specifically international alliances and *joint ventures* – with the internationalization mechanism proposed by Johanson and Vahlne (1977, 1990) and its risk formula as developed by Figueira-de-Lemos, Johanson and Vahlne (2011). The internationalization mechanism, considered the theoretical core of the model (Forsgren, 2002), has not yet received much attention from academic research to confirm its empirical value. In fact, much of the scientific community insists on merely using the establishment chain concept (see Johanson & Wiedersheim-Paul, 1975) as a validation of the Uppsala model (Figueira-de-Lemos & Hadjikhani, 2014; Hadjikhani, 1997). Thus, positioning the present study within the scope of the internationalization mechanism while distinguishing it from the establishment chain would be reason enough to undertake this research. Besides, extending the Uppsala model to explain international cooperation between firms enhances the scientific relevance of this paper.

The present research provides pertinent contributions to the field of knowledge of the internationalization process of firms. The conceptual scope addresses the lack of any theoretical or empirical application of the Uppsala model's risk formula to cooperative strategies between

firms. In a more practical sense, it offers a framework to evaluate cooperative arrangements between firms as strategic instruments in the internationalization process, particularly concerning their leveraging effects on knowledge and resources, whether through contractual engagements, such as international alliances, or through the establishment of third-party vehicles with their own resources, such as international joint ventures.

This article comprises five sections. The introductory section above presents the authors' perspective on the research subject and outlines their objectives. The following section contains a reflection on the methodological development, given the conceptual nature of the study. The third section encompasses the literature review, covering contemporary relevant literature on the Uppsala model and its subsequent developments. The fourth section conceptualizes the effects of cooperation in a graphical-analytical demonstration of the internationalization mechanism. The final section, final considerations, articulates the model's conceptualization with other foundational concepts – alliances and business networks and knowledge – and conclusions that emerged from the discussion, projecting some exploratory directions for empirical confirmation of the formulated conceptualization.

METHODOLOGICAL DEVELOPMENT

As a conceptual study, the adopted methodology is qualitative and supports itself on deductive reasoning. The foundational theories for constructing the hypothetical-deductive process include the Uppsala internationalization model (Johanson & Vahlne, 1977) and its developments, notably the integration of the network perspective in the internationalization process (Johanson & Vahlne, 2009) and the graphical explanation of the internationalization mechanism (Figueira-de-Lemos et al., 2011).

Contrary to inductive reasoning, whose scope is the generation of theory from the results obtained in the investigation, in deductive logic the researcher starts from existing theory and known information about a particular subject to explain the formulated propositions (Marconi & Lakatos, 1990). This deductive reasoning in research, at first glance, seems associated with the positivist paradigm. However, our research starts from an assertion opposed to the base theoretical models, meaning that it does not confirm them but uses their assumptions to discover a new perspective that does not alter the core of the models. It should, therefore, be considered an interpretive paradigm, while this research aims to better understand how firms internationalize when they use cooperative strategies rather than how firms are organizationally structured or behave in specific situations. Nevertheless, either paradigm, inductive or deductive, could serve as the basis for a qualitative research methodology.

According to Cassell et al. (2006), the focus of the qualitative methodology is to understand and explain the meaning of a social phenomenon. Sociologically, this research method is based on the assumption that human beings create reality according to how they interact with their social environment. Qualitative research substantially differs from quantitative research. While

qualitative research tries to reveal and explain something done by people, quantitative research tries to circumscribe a phenomenon and examine its various components. These components are then used as variables in the study. The objective of the quantitative methodology is to measure and quantify a particular phenomenon rather than offering explanations about reality (Cassell & Symon, 1994; Cassell et al., 2006).

The internationalization processes of firms are certainly social constructions controlled and developed by human beings. Thus, understanding how they work in a specific context is a complex matter that deserves a thorough investigation of the entire process. It would be possible to conduct a quantitative study of firms' internationalization processes, which is common. However, the goal of this research is not to quantify the number of occurrences of a particular phenomenon within firms' international processes, for instance, the type of alliances used. Instead, this study aims to explain the circumstances under which some cooperative strategies are adopted, indicating the preference and suitability of qualitative research methodology over quantitative one.

Moreover, since our research is qualitative but not empirical, we start with the hypothetical-deductive logic, meaning theories are not considered true but, at most, not disproved (Marconi & Lakatos, 1990). While it is true that qualitative research, when empirical, usually follows inductive logic (Cassell et al., 2006; Marconi & Lakatos, 1990), it is generally used when there is a lack of theoretical framework or when no theories explain a particular phenomenon. Whereas inductive logic starts from specific observations' results for theory generalization and construction, deductive logic develops from the general to the specific. The latter starts with the perspective of constructing a theory about any subject and then narrows the scope by formulating hypotheses or propositions, and even further when collecting information for their formulation, which ultimately leads to testing the hypotheses with other data, confirming or not our original theory. In the present study, all data are qualitative, and the strategy consists of triangulating various conclusions drawn from different scientific publications, known as literature analysis (Cassell et al., 2006; Yin, 1994). This research strategy is consistent with the content of our assumptions. The proposed study, characterized as exploratory and descriptive, is suitable for the premises of applying the method in question, especially since it aims to support the generalization of a theory stemming from two broadly studied areas, namely the internationalization process of firms and the cooperative strategies adopted in this process.

Therefore, focusing this research on the reassessment of the Johanson and Vahlne (1977) model, our intention is not to extend the literature review to the detail of historical sources or the state of the art but to ensure the emphasis of this review with contemporary contributions to the Uppsala model, including the most relevant scientific developments of this model (Figueira-de-Lemos et al., 2011; Johanson & Vahlne, 2009), as well as to create a sufficient knowledge base that allows an integrated understanding of the model's application to international cooperation strategies (Autio, Sapienza & Almeida, 2000; Blomstermo, Eriksson & Sharma, 2004; Chetty, Eriksson & Lindberg, 2006; Eriksson, Johanson, Majkgård & Sharma, 2000; Petersen, Pedersen & Sharma, 2003; Rumyantseva & Welch, 2023).

INTERNATIONAL COOPERATION BETWEEN FIRMS

In the extant literature, the word cooperation has gained consensus in the definition given as the process by which individuals, groups, and organizations come together, interact, and create relationships with the objective of obtaining mutual gains and benefits (Haahhti et al., 2005). Cooperation introduces a strategic option to the internationalization process of firms and encompasses a wide range of choices and forms that vary from purely organizational scope models to models that assume asset ownership (Bicen et al., 2021; Todeva, 2005). In a comparative study, Koleva et al. (2002) identify and relate three forms of cooperation: alliances, joint ventures, and business networks. According to those researchers, while networks aggregate the resources of various members, whose use, being multidirectional, is oriented according to the needs of these members, alliances suggest the purpose of achieving common goals of a restricted number of firms with close affinity, similarity, and parallel interests, where proximity implies the exclusion of others. Alliances are formed to unite specific resources to achieve a particular goal, while networks group various entities around a common activity. Joint ventures, on the other hand, consist of a subgroup of alliances as they are connoted as a “child” created by independent “parents.” This connotation is explicitly stated by Todeva (2005), who summarizes joint ventures as a form of alliance between two independent firms that intend to increase their individual capacities through cooperation and have management separate and autonomous from the firms that create them.

Despite the notion of joint ventures as a subgroup of alliances, in this study, we follow Nippa and Reuer (2019) in distinguishing International Alliances (IAs) and International Joint Ventures (IJVs) as forms of cooperation at the same level but forming extremes of a spectrum that varies with the intensity of equity capital. To this end, we define IAs as a contractual agreement between firms without equity integration, while IJVs consist of a third-party vehicle with an organizational structure and autonomous resources, whose equity capital was realized by the partner firms.

IAs and IJVs have not always been an option for entering foreign markets. For a long time, they were the only means of accessing markets whose government regulations required forming partnerships between entering firms and local firms or entities (Contractor & Lorange, 1988). However, it is not just market liberalization that drives firms to form alliances. For example, the need for rapid integration into global value chains is one of the fundamental advantages over the option of individual internationalization (Contractor & Lorange, 1988; Nippa & Reuer, 2019).

International Alliances and International Joint Ventures

As IAs and IJVs, we include all forms of agreements between firms and/or entities, forming a set in which at least one firm and/or entity originates from a different country (Contractor & Lorange, 2002). However, the differences concerning a non-international partnership are not limited to the different nationalities of at least one of the firms. The main difference lies in

the very purpose of the IA or IJV. While domestic cooperation aims to reduce competition and facilitate technology exchange, in international cooperation firms seek a means to implement their internationalization strategies, specifically selecting a partner who knows well and/or facilitates operations in the chosen country for international business expansion (Bicen et al., 2021; Contractor & Lorange, 1988; García-Canal, Duarte, Criado & Valdéz-Llaneza, 2002; Hennart, Roehl & Hagen, 1999; Nippa & Reuer, 2019; Todeva & Knoke, 2005; Valdéz-Llaneza & García-Canal, 1998).

Thus, it is not surprising that much of the literature on international partnerships focuses on this last form of cooperation, that is, international partnerships where one of the firms is local to the target market (Valdéz-Llaneza & García-Canal, 1998). Within this type of cooperation, Beamish (1998) identified the choice of partners according to whether the destination country is developed or not, emphasizing, respectively for each, that the main characteristic is local market knowledge or partners who facilitate access to regulatory or institutionally closed markets (Todeva & Knoke, 2005). Again, the reason for such division substantiates the form of cooperation and choice of partner as a function of the objective the firm aims to achieve. However, firms cannot view the initial architecture of IAs or IJVs as an immutable fact; on the contrary, for the cooperative arrangement not to become a constraint, firms must have the ambition to analyze the partnership's development and review what is necessary for it to continue creating value (Bicen et al., 2021; Doz & Hamel, 2001; Krishnan et al., 2016).

The achievement of local knowledge is not the only reason for forming an IA or IJV with a local partner. Despite noting the relevance of partnerships with a local operator in the target market, García-Canal et al. (2002) emphasize international cooperation as an accelerator of firms' international growth. They distinguish four internationalization strategies supported by forming partnerships, identified according to the goal the firm aims to achieve – local, global, multi-regional, and competence-building. They conclude that firms' internationalization, when supported by partnerships, follows a sequential pattern, starting with seeking local partners, moving to multi-regional or competence-building partnerships, culminating in global alliances. Recent studies confirm that this formation and consolidation of cooperative strategies is a gradual process and develops by capitalizing on previous levels of trust (Krishnan et al., 2016; Oliveira, Lumineau & Ariño, 2023).

In what concerns the cooperation model, complexity and uncertainty are factors that favor forming joint ventures over another contractual form of alliance. Valdéz-Llaneza and García-Canal (1998) justify that firms would not incur the costs that IJVs entail if they had unequivocal knowledge of business development. In that case, they would opt for a contractual IA, whilst simplicity or profound knowledge of the business or market would make it possible to articulate the firms' operations without resorting to creating another entity (Krishnan et al., 2016; Nippa & Reuer, 2019).

On the opposite, in a seminal study, Doz and Hamel (2001) argue that IJVs are the most appropriate form of cooperation compared to IAs when risks and strategic objectives are clearly known. Using various examples, they support their reasoning with five differentiating motives:

1) JVs are established with objectives that are not the core objectives of the partner firms; 2) JVs combine known resources and risks; 3) JVs are typically bilateral; 4) IAs aim at a broader scope than simply manufacturing a product; and 5) given the market uncertainty, IAs are more suitable but more challenging to manage than IJVs.

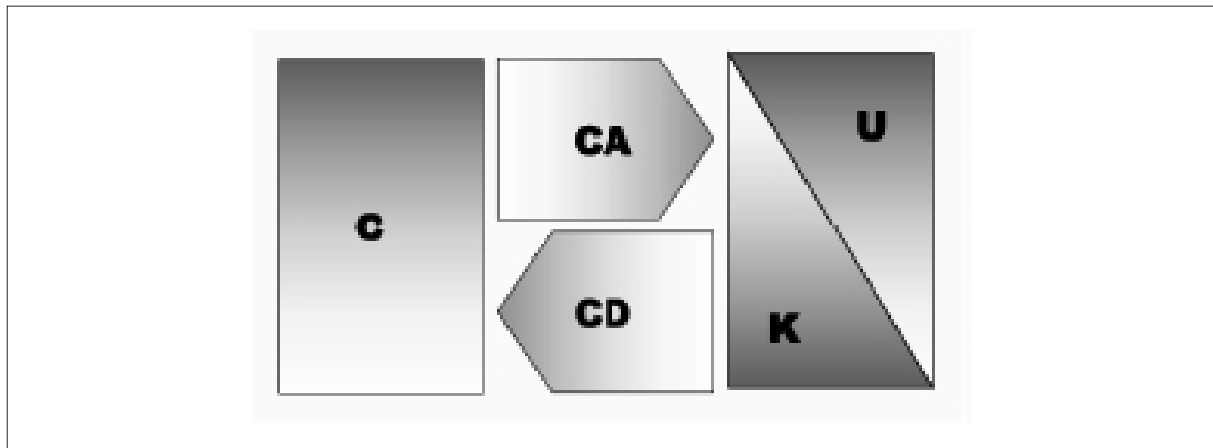
Todeva (2005) specifies that the choice between an IA and an IJV depends on access to capital and internal capabilities, as well as an attempt to balance the destination country's uncertainty and risk conditions. While in IJVs, the complexity involving knowledge transfer is the main reason for their establishment, in domestic joint ventures, it is the organizational complexity that determines their creation (Bicen et al., 2021; Krishnan et al., 2016; Oliveira et al., 2023; Valdéz-Llaneza & García-Canal, 1998).

CONCEPTUALIZING FIRM COOPERATION IN THE UPPSALA MODEL

Although the Uppsala model is widely recognized in the internationalization process field, few studies have used its risk conceptualization (Figueira-de-Lemos et al., 2011; Trappey, Shih & Trappey, 2007). This study shares the same principle while exploring the distinction between risk and uncertainty. In the Uppsala model, risk is quantifiable and based on explicit knowledge, different from uncertainty, which is unquantifiable and rooted in implicit knowledge. The approach postulates that risk arises from a “set of uncertainties” but is not interchangeable with uncertainty. This aligns with March, and Shapira's (1987) view that taking risks is synonymous with decision-making under uncertainty, emphasizing that the presence of risk indicates underlying uncertainty but without direct substitutability between the two. Moreover, the Uppsala model illustrates how firms evaluate and plan potential risks through a learning process and identification of decision alternatives, highlighting that while knowledge can reduce contingent uncertainty, it cannot affect the uncertainty related to ignorance and the future.

In summary, the risk management perspective on the internationalization process (Figueira-de-Lemos et al., 2011) emphasizes the interaction between knowledge and commitment, as depicted in the risk formula (Johanson & Vahlne, 1977). Firms gain experience through their involvement in international operations, and perceived uncertainty is reduced by accumulating market knowledge. This increase in market knowledge creates conditions for firms to proportionally increase their investment in each market. The cycle between knowledge and commitment is then established through the internationalization mechanism.

As the firm learns more about the market, perceived uncertainty and risk perception decrease, leading to a higher level of investment (Forsgren, 2002). In the firms' internationalization, this incremental cycle generated by the interaction between knowledge and commitment, as shown in Figure 1, begins with the firm's current activities (CA) in the market, realizing them as the basis for knowledge acquisition. The acquired knowledge (K) reduces the perceived uncertainty (U) of the foreign market, creating conditions to increase commitment (C), forming a cycle that translates into a growing spiral between knowledge and commitment.

Figure 1. Knowledge/Commitment cycle

Johanson and Vahlne (1977, p. 30) reflected this cycle in a simple mathematical expression, capturing the essence of the Uppsala model:

$$R_i = C_i \times U_i$$

where R_i is the risk of market i ; C_i is the firm's commitment to market i ; and, U_i is the uncertainty of market i .

The formula aligns with the assumptions of the firms' internationalization process, being incremental, risk-averse, and resilient to both environmental and internal changes (Johanson & Vahlne, 1977, 1990; Oviatt & McDougall, 1994; Petersen et al., 2003), as well as with the firms' internationalization mechanism. Since our perspective is limited to a single foreign market, we also restrict the equation system to one market only, i.e., the explanation of the basic formula:

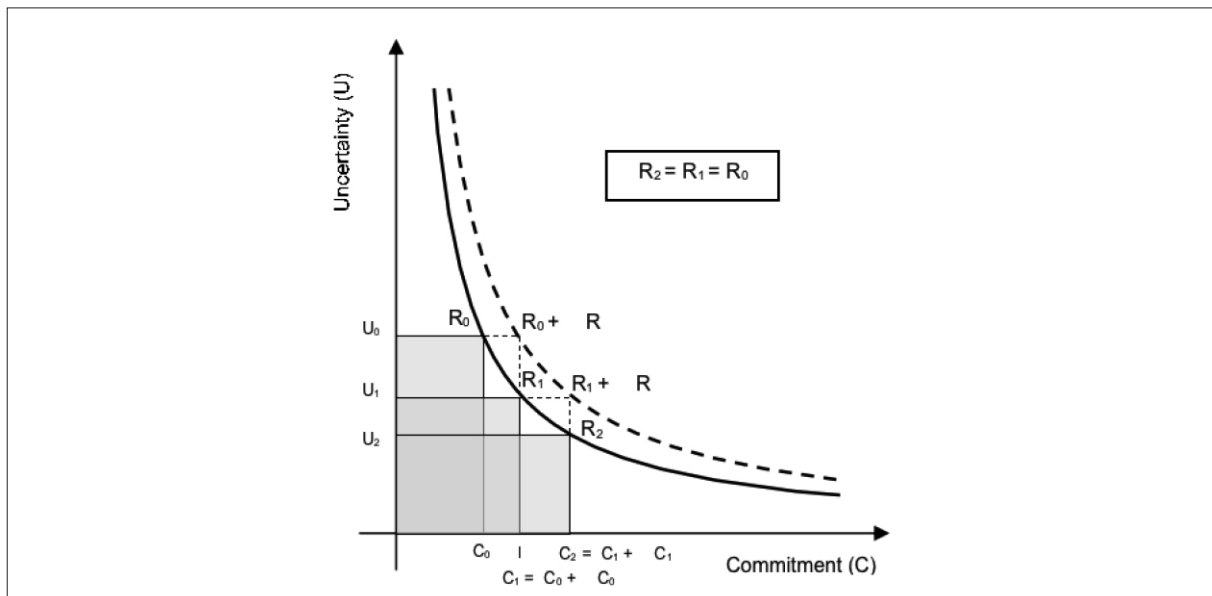
$$R = C \times U$$

To make the approach easier, we use a graphical analysis of the formula's set of equations that translates the functioning of the internationalization mechanism. Risk (R), as a product function of two variables, follows a hyperbolic convex function to the origin, with the two extremes extrapolated by the subsidiarity relationship established between commitment and uncertainty: when the firm's commitment tends to zero, uncertainty tends to infinity, and *vice-versa*. This subsidiarity relationship is well illustrated in the risk curve, reflecting an imperfect substitution process between C and U , as shown in Figure 2.

This interaction between commitment and knowledge/uncertainty reflects what Johanson and Vahlne (1977, p. 28) define as a direct relation. International involvement, dubbed into resource commitment, increases with knowledge acquisition (Johanson & Vahlne, 1977, 2009; Petersen et al., 2003; Figueira-de-Lemos et al., 2011; Vahlne & Johanson, 2017, 2020). In this sense, the risk accepted by the firm when entering the market will have an initial value of R_0 , which is a

function of the initial amount of resources C_0 that the firm allocates to the market operation and the level U_0 of market uncertainty. The risk function, represented in the graph by the R_0 curve, is quantified by the shaded rectangle area. Since the R_0 curve is an iso-risk curve, phenomena causing an increase or decrease in this risk situation will result in curves positioned respectively to the right or left of it.

Figure 2. Risk mechanism (Uppsala model)



For example, increasing the scale of operations has the immediate consequence of increasing risk. The risk increment ΔR is represented in the shaded area and is shown in this graph in direct correlation with the commitment increase. This risk increment is easily grabbed given that, at the zero moment, spontaneous knowledge accumulation is impossible, and uncertainty will also remain unchanged. Uncertainty, on the other hand, is a variable whose alteration is more complex and not as immediate, basically because its variability is inversely correlated with acquired knowledge (Forsgren, 2002) or contingent uncertainty (Figueira-de-Lemos et al., 2011). Invested resources will provide knowledge acquisition, reducing uncertainty until risk returns to the initial level.

The risk level reduction to the initial value, provided by the reduction of uncertainty, places the firm in a favorable position to proceed with a new resource increment, in other words, a new investment phase in the foreign market. The firm will only take another step in a certain market when the risk of an additional investment is lower than the market's tolerable risk (Figueira-de-Lemos et al., 2011; Hadjikhani, 1997; Johanson & Vahlne, 1977). This increase in commitment will result in further uncertainty reduction and, consequently, the reduction of risk to its initial level. This cycle shows a market involvement strategy with a risk level maintenance perspective. The dashed line $R + \Delta R$, formed by the product of the variables $C + \Delta C$ and U , forms an iso-risk curve translating the risk the firm tolerates in that

market. This sequence parallels the internationalization mechanism of the model, i.e., an increase in market knowledge reduces uncertainty and increases commitment (Figueira-de-Lemos et al., 2011; Vahlne & Johanson, 2017, 2020).

Spontaneous increases or reductions in uncertainty are mainly due to exogenous factors to firms, such as changes in political regimes or legislative rules, but their correction can be carried out by endogenous factors, such as the amount of resources, closely related to market commitment (Johanson & Vahlne, 1977). Contrary to one of Anderson's (1993) major criticisms, this conceptual perspective of risk-managed internationalization demonstrates the connection between the operational level and the theoretical level of the Uppsala model, a link also supported by Shrader et al. (2000). Interpreting the Uppsala model as a risk mitigation model is not absurd; on the contrary, Johanson and Vahlne (2009) admit this synthesis as correct, even extending it to the risk management domain (Figueira-de-Lemos et al., 2011).

Cooperation in the Uppsala model

From the literature review, we deduce that cooperation leverages firms' international growth, originating from two main factors: resources and knowledge. Resources are all tangible and intangible assets that the firm allocates specifically to the market targeted by the firm's international strategy, which in Johanson and Vahlne's (1977) definition places the firm's market commitment close to the investment's size in the market (see also Figueira-de-Lemos & Hadjikhani, 2014). As for knowledge, we did not distinguish the type but it comes near to the knowledge originating from international operations experience or recruiting market-experienced human resources, consistent with Johanson and Vahlne's (1977) concept of experiential knowledge. This latter form of knowledge acquisition is strongly underlined by not excluding other types of knowledge, such as that obtained from allied firms in networks (Autio et al., 2000; Eriksson et al., 2000; Petersen et al., 2003; Oviatt & McDougall, 1994; Rumyantseva & Welch, 2023).

Extrapolating the basic formula of the internationalization mechanism to the scope of cooperative strategies, we find that these variables, C and U, produce effects at the risk level that align with business network concepts, either by reducing perceived market uncertainty or combining resources (Figueira-de-Lemos et al., 2011; Shrader et al., 2000; Vahlne & Johanson, 2017, 2020). The following graphical-analytical analyses aim to demonstrate the beneficial effects of cooperation in the firms' internationalization process, considering the market entry moment to better expose the evolution of C and U variables. Thus, finding ourselves within the scope of mathematical abstraction, a certain degree of simplification of cooperation advantages is assumed, which necessarily consists of an approximation to factual reality. However, in another scope, less analytical and more subjective, such as organizational relationships between firms, it would be important to recognize the disadvantages that international partnerships entail, among others, higher coordination costs, cultural and communication challenges between partners, inertia due to strategic and operational divergences, and the risk of transferring knowledge and technology to third parties (Harris & Wheeler, 2005; Krishnan et al., 2016).

The effect of International Alliances

International business literature has consistently shown that entering an international market requires a learning period that firms self-establish (Johanson & Vahlne, 1997, 2009; Woodcock, Beamish & Makino, 1994). In this entry phase, performance is weak because firms try to penetrate the market and achieve economies of scale and scope. Financial performance is also weak and unstable, mainly because firms need time to adjust to the market and new organizational processes, or simply because they entered the market in an incorrect mode and need time to correct it (Oliveira et al., 2023; Woodcock et al., 1994).

The initial underperformance is largely due to the fact that firms, when internationalizing to a new market, do not possess the knowledge of their local rivals (Coviello & Cox, 2006; Johanson & Vahlne, 1977; Knight & Cavusgil, 2004; Oviatt & McDougall, 1994; Shrader et al., 2000; Valdéz-Llaneza & García-Canal, 1998), so when firms seek partnerships, before any complementarity, they seek knowledge (Arenius & Autio, 2002; Coviello & Munro, 1995; Hennart et al., 1999; Shrader et al., 2000; Valdéz-Llaneza & García-Canal, 1998).

The fact that firms, when starting their internationalization process, do not know how to operate in foreign markets highlights international partnerships, particularly with local firms, as a privileged vehicle for obtaining knowledge of the target market (Hennart et al., 1999; Shrader et al., 2000; Valdéz-Llaneza & García-Canal, 1998). Nevertheless, as the partnership implies profit-sharing, when opting to internationalize through an alliance, the firm is implicitly considering that the amount of profit it will have to share is less than the cost of individually obtaining the necessary knowledge to keep its perceived risk below the risk it is willing to accept to operate in that market.

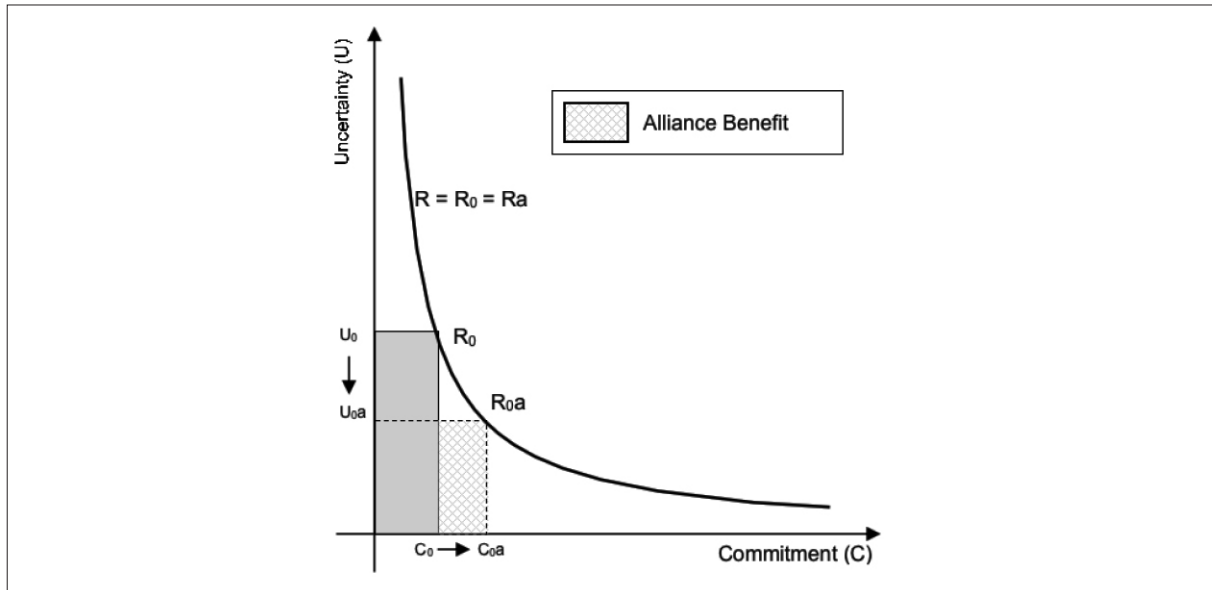
Excluding countries where entry is subject to regulatory and political barriers, the local partner primarily provides market knowledge. When a firm decides to enter a market through an alliance with a local partner, the primary objective is the immediate acquisition of knowledge, allowing it to face an unknown market with less uncertainty than going alone (Shrader et al., 2000). Using this partnership serves as a guarantee of its initial credibility and enhances the reduction of market entry costs, time, and risk (Coviello & Munro, 1995), an effect demonstrable in the graphical modeling of the internationalization mechanism (Figure 3).

Similar to what happens with firms that use the networks they are part of to gather information about potential markets in order to reduce perceived uncertainty about these markets (Coviello & Munro, 1995, 1997; Ellis, 2000; Harris & Wheeler, 2005; Johanson & Mattsson, 1988), the IA effect is immediate and characterized by uncertainty decrease (Figueira-de-Lemos et al., 2011; Vahlne & Johanson, 2017, 2020).

The consequent risk reduction allows the firm to make a higher commitment to the market, allocating more resources until reaching the risk level it proposed to accept in the market entry phase. The graphical application suggests the alliance with a local partner based on Hennart et al. (1999), who highlight that knowledge is processed faster in the case of an alliance with a local firm, which, by the essence of the internationalization mechanism (Johanson & Vahlne, 1990),

develops the expansion of operations in that market more rapidly. Autio et al. (2000) reinforce this perspective when they infer that growth is faster with greater knowledge intensity.

Figure 3. Effect of the International Alliance



The downside of this initial benefit is that market control tends to remain under the local partner's range provided that, by the essence of the local alliance, it is the one responsible for market intelligence, though a sort of control that the entering firm can counter by diversifying markets or starting marketing actions in those markets (Coviello & Munro, 1995). Firms are often anxious to regain control of operations in the initial phase of internationalization in a given market, namely marketing operations, which naturally occurs when the firm gains sufficient market knowledge to make such an investment (Figueira-de-Lemos et al., 2011; Vahlne & Johanson, 2017, 2020).

The effect of International Joint Ventures

It is widely suggested that different modes of operation require different levels of commitment from firms, which endorses contingency to the internationalization process. Applying resources is a way to overcome constraints and reduce the contingency degree of the international process, so firms always seek to exert maximum control over the process. However, a firm without resources but willing to share the risks associated with owning those resources is compelled to enter markets through joint ventures (Nippa & Reuer, 2019).

Analogous to what was done for IAs, where immediate market knowledge acquisition is the primary objective, in IJVs, where the most pertinent goal is to gather resources, we extrapolate the analysis of these variables' comportment to the Uppsala model. To isolate the resources' effect, local partnerships are excluded, eliminating the asymmetry of market knowledge

between them, and for better understanding, some considerations are pushed to the extreme: i) cooperation occurs between two organizationally and culturally equal firms (a and b); ii) knowledge acquisition proceeds equally in both firms; iii) knowledge absorption capacity between firms is total; iv) knowledge is indivisible and has no losses between firms' structures. Under these assumptions, at the initial cooperation moment (period 0), market risk is expressed by:

$$R_0c = C_0c * U_0$$

where $C_0c = C_0a + C_0b$, meaning the joint venture's commitment translates the sum of both firms' market commitment.

Uncertainty, U , is intrinsic to each market and varies inversely with firms' market knowledge (Forsgren, 2002), meaning firms' perceived uncertainty decreases as their market knowledge increases. In the case of cooperation between two firms, both will have the same market uncertainty perception, as at the initial moment and for a low knowledge level (mainly institutional at the entry moment), uncertainty remains unchanged by the firms' initial commitment increase (Figueira-de-Lemos et al., 2011; Rumyantseva & Welch, 2023; Shrader et al., 2000; Vahlne & Johanson, 2020).

Without the time needed for learning and consequent knowledge acquisition, there is no uncertainty reduction. However, for the initial market entry moment, the joint firms' resource commitment provides a risk level acceptance higher than what they would accept separately. As explained earlier, since uncertainty remains at moment 0, by direct application of the formula, the joint firms' commitment, being twice what each was willing to allocate to the market, will double the risk, meaning the joint venture's risk acceptance level is double what firms would accept individually.

With market operations' progress, the higher commitment scale will induce knowledge acquisition in greater quantity than firms would achieve individually. Thus, considering both optimal knowledge transfer and full knowledge absorption capacity between organizations, the individual market uncertainty perception will be the same for both and directly reflects the jointly acquired knowledge. The IJV's consequence impacts firms' individual international development, which is better understood in their separation scenario.

At the firms' separation moment (period 1), they will have individual knowledge equal to the jointly acquired knowledge, but each firm's market commitment, being divisible, will correspond to half of the cooperation, i.e., $C_1 = C_1c / 2$, as demonstrated,

$$R_1 = R_0 \Leftrightarrow R_1 = R_1c / 2 \Leftrightarrow R_1 * 2 = R_1c \Leftrightarrow C_1 * U_1 * 2 = C_1c * U_1c$$

as $U_1 = U_1c$ given that market uncertainty U remains unchanged with firms' separation;

$$C_1 * 2 = C_1c \Leftrightarrow C_1 = C_1c / 2$$

This fact, translated into firms' individual risk formula, results in the reduction of the firms' individual risk by half, as the individual uncertainty perception remained unchanged with separation. Thus, rationally, with risk positioned lower than what firms proposed to accept jointly, they will individually resort to the tool allowing them to correct the risk level, i.e., they will double their market commitment:

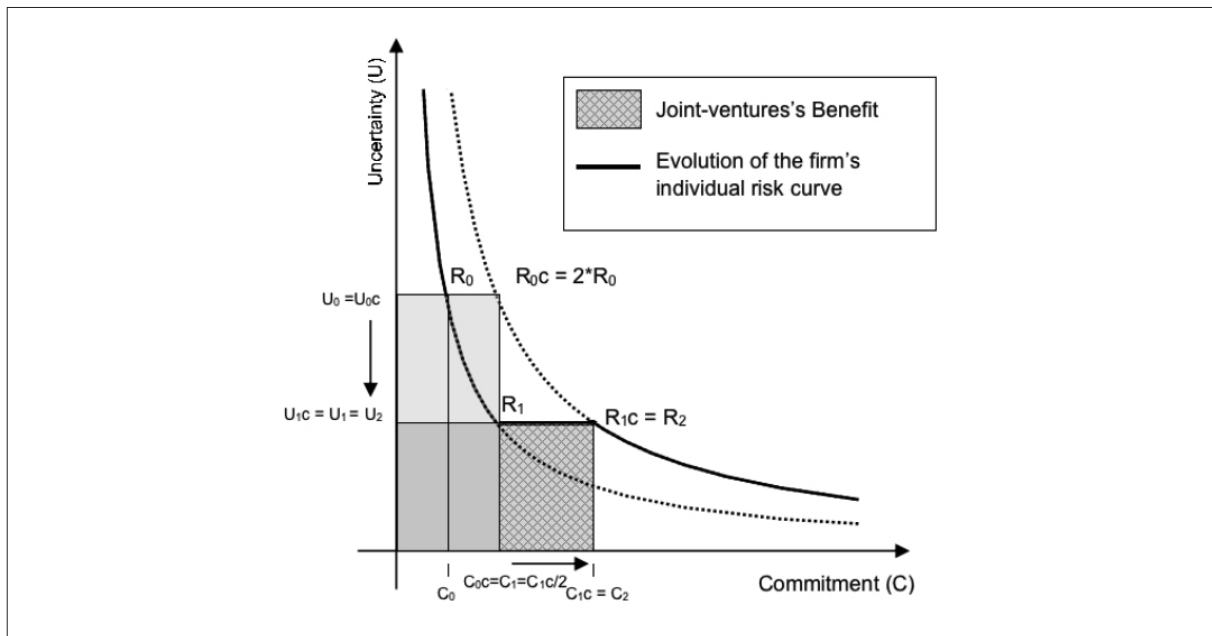
$$R_2 = R_{1c} \Leftrightarrow C_2 * U_2 = C_{1c} * U_{1c}$$

as $U_2 = U_{1c}$ given that market uncertainty U remains unchanged with firms' separation;

$$C_2 = C_{1c} = 2 * C_1$$

The individual commitment/investment firms achieve through cooperation is double to what they would achieve individually, demonstrating cooperation's leveraging effect in Figure 4.

Figure 4. Effect of the International Joint Venture



The joint internationalization strategy allows doubling the operations scale, increasing the commitment a firm would make individually by double. This increase causes market risk to rise to a higher level, and in this specific case to the double. This market risk is the level that firms are willing to accept to enter the market, but current operations development requires an additional commitment increment, which we conveniently call the operational commitment. The risk resulting from the initial commitment plus the operational commitment rises to a slightly higher level, consisting of the joint venture's tolerable risk level, i.e., $R_0c + \Delta R_c$.

The Uppsala model's internationalization mechanism (Johanson & Vahlne, 1977, 1990) relates market commitment to market knowledge, "there is a direct relationship between market knowledge and commitment in that market" (Johanson & Vahlne, 1977, p. 28). However, it does not explicitly explain the potential that a partnership between firms can represent in the internationalization effort, particularly in efficient knowledge acquisition or joint resource commitment. Therefore, the integrated approach of business networks or partnerships, commitment, knowledge, risk, and market uncertainty makes sense, though only partially materialized in later articles by the original model's authors (Figueira-de-Lemos et al., 2011; Johanson & Vahlne, 2009; Vahlne & Johanson, 2017, 2020).

FINAL CONSIDERATIONS

We have demonstrated that the Uppsala model, particularly through the internationalization mechanism's risk formula, can be a conceptual tool for explaining cooperation as a leveraging factor for firms' internationalization. Among the two cooperation modes, IA and IJV, we have analytically depicted the contribution of each variable, knowledge, and resources, to firms' international growth. Cooperation as the mobilizing and simultaneously protective element of catalyzing these variables emerges as the accelerating factor of firms' international growth.

With the graphical-analytical illustration of the risk formula, it was possible to demonstrate these variables' behavior and how they produce effects in IAs and IJVs. These cooperative arrangements could take many forms; however, our specification, circumscribing cooperation arrangements to IAs with a local partner and IJVs without local partners, aimed at the isolated interpretation of knowledge and resource effects in international cooperation, consequently demonstrating the two propositions of this study, i.e., that 1) the Uppsala model, as an interpreter of the interaction between knowledge and commitment, is an explanatory model of cooperation's effect on firms' internationalization process development, and 2) that cooperative strategies, as effective means of resource and knowledge complementarity, support firms' larger-scale internationalization.

As with most academic studies, the analytical modeling of real phenomena, due to their complexity, always involves the simplification, restriction, or intentional elimination of some variables. Our study is no exception, and we also had to restrict variables to demonstrate the model's applicability to firms' international growth leveraging effects. Thus, we considered cooperation between two equal firms, processing knowledge acquisition and absorption capacity equally in both firms, and indivisible knowledge without losses between firms after separation.

We now consider it pertinent to clarify and highlight what led us to list these assumptions. The first restriction, firms' equality, is unavoidable in our demonstration or any similar one given the impossibility of two identical individuals' existence, which, among other factors, confers natural heterogeneity among organizations. Regarding the second, knowledge indivisibility,

the restriction is not so obvious and can take various interpretations. At the firms' separation moment, the first conjecture that emerges is considering knowledge loss, particularly the implicit knowledge built up during the joint foreign operations period. In developing our Uppsala model perspective, we considered that the subsidiary's market commitment, including human resources, is equally divided between firms, so the tacit knowledge built by the team assigned to the IJV will undoubtedly be lost with its dismantling. However, it is necessary to discern whether this knowledge fraction is relevant to firms' international growth. The Uppsala model authors, [Johanson and Vahlne \(1977\)](#), do not specify the model firm's organizational structure type. However, it can be inferred that, being experiential knowledge acquired in the market, the subsidiary enjoys autonomy to make market commitment investments without the headquarters significantly intervening in the local operations decision-making process. We support this extrapolation because market commitment in the Uppsala model reflects the amount of specific knowledge the subsidiary acquires in the local market and *vice-versa* ([Figueira-de-Lemos et al., 2011](#); [Forsgren, 2002](#); [Vahlne & Johanson, 2017](#)).

Future perspectives

The qualitative confirmation of the formulated propositions did not eliminate the announced set of restrictions, leaving open the opportunity of empirical confirmation, namely in what concerns the quantification of the cooperative strategies' leveraging effect compared to what would be expected in a firm's isolated internationalization. The starting point for such materialization could be the development of an accounting database of various IAs and IJVs, whose potential, we believe, may go beyond merely quantifying that leveraging effect. One of the basic restrictions lies in applying the internationalization mechanism's formula to a single market. Indeed, the psychic distance concept did not gain relevance in the context of our research; however, in an empirical research context, comparing a single IJV's performance in various countries could contribute significantly to the field of international cooperation between firms, particularly in the case of global or multi-regional alliances.

For the already stated reasons, our analysis was limited to only two firms. But analyzing three or more firms would gain increased interest, resulting from intrinsic network characteristics such as density, centrality, or symmetry. In this cooperation configuration between three or more firms, the information asymmetry resulting from the strength of centrality, absent in the studied dyadic context, will undoubtedly benefit the firm positioned nearer to the cooperation-established network center. Predictably, this phenomenon will also result in differences in international growth leveraging effects among allied firms, whose quantification is as complex as it is interesting to evaluate.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

AUTHOR CONTRIBUTIONS

Francisco Figueira-de-Lemos: Conceptualization, formal analysis; Investigation; Methodology; Resources; Supervision; Validation; Visualization; Writing – original draft; Writing – review & editing.

Paul Ferreira: Investigation; Methodology; Validation; Visualization; Writing – review & editing.