

Protecting Intellectual Property in International Expansion: Preparing an Innovation-Based SME

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A key concern among innovation-based SMEs is to protect their intellectual property (IP) as they grow internationally. To explore the challenges such resource-constrained firms face, we conducted action research at a technology-based SME that aspired to expand internationally. Through collaborative and periodic interventions, we sought to help managers of the organization work around the issues that surfaced while preparing to internationalize further. Our collaboration led us to examine isolating mechanisms, such as rapid international expansion, that the SME could deploy to pre-empt competitive imitation of their innovative products and processes, especially as their IP is not protected legally (e.g., by patents). Results point to inevitable identified tensions and paradoxes, leading us to approaches and practices the firm can adopt.

Keywords: SME internationalization, intellectual property protection, paradoxes

INTRODUCTION

Small and medium-sized enterprises (SMEs) face unusual constraints when pursuing international expansion. These constraints can exert pressure on firms and impact their intent to internationalize and their consequent choices. Our research mainly looks at SMEs whose core competitive advantage is technology. Such innovation-based firms face a unique challenge in protecting their intellectual property (IP) while expanding globally. Firms may be able to protect themselves from competitive imitation with enforceable intellectual property rights (Clarysse et al., 2011). However, enforcing property rights is not straightforward and requires abundant resources. Moreover, even if patents cover a firm's products or processes, they can still be susceptible to leakage (Baughn et al., 1997). SMEs inherently lack resources (Li et al., 2015; Knight & Liesch, 2016) and, as such, are bound to struggle with these issues, which can result in apprehensions about choosing to internationalize and bereft the world of the value they could provide. Hence, it is essential to study and find solutions to help such firms better determine their options for expansion.

Entry mode is one critical factor to consider when firms decide to internationalize. SMEs have to make an essential choice between preferring either an equity mode of entry or a non-equity mode of entry (Hollender et al., 2017). Each entry mode has benefits and drawbacks and requires much deliberation to arrive at the best solution. For innovation-based SMEs, protecting their IP can drive entry mode choice. It is suggested that, for a firm to protect itself from opportunistic behaviour, it may have to choose an equity

mode of entry (Beamish & Banks, 1987; Lu & Beamish, 2001). However, this may be a farfetched reality for resource-constrained SMEs (Burgel & Murray, 2000). Burgel and Murray (2000) explored the entry mode decisions of innovation-based SMEs. However, they were focused on direct exporting and using a distributor. In our research, we, jointly with a resource-constrained innovation-based SME, contemplate all the different entry modes and the best choice it could make to help the firm expand internationally while protecting its IP.

Our focused research on such firms, factoring in their crucial decisions, helps fill a research gap in the internationalization of innovation-based SMEs. This area of research was still expected to gain momentum only twenty years ago (Lu and Beamish, 2001). We believe that a further understanding the process that such firms go through when aspiring to grow globally would be an essential addition. To be successful internationally, technology-based firms also need to be wary of the business model they choose (Bohnsack et al., 2020). Bohnsack et al. (2014) highlight the importance of business models for sustainable technologies to create economic value through market penetration. In our research, we also explore the choices that innovation-based SMEs deal with when deciding on a business model considering their primary concern of protecting their IP.

One phenomenon of interest in international business literature is related to rapid internationalization, which has been the focus of various research (Knight & Cavusgil, 2004; Gassmann & Keupp, 2007). These studies discuss smaller firms that follow a rapid path in their development and internationalization. Gassmann and Keupp (2007) provide managers of SMEs with suggestions to protect their intellectual property in the face of resource limitations. However, they acknowledge that research exploring the IPR protection strategies of smaller firms is clearly lacking (Gassmann & Keupp, 2007). Our research builds on this concept of rapid internationalization, considering the perspective of speedy expansion in different target markets globally. We find rapid internationalization to be an essential solution for innovation-based SMEs looking to expand internationally while protecting their intellectual property, primarily when they cannot formally protect their IP. We base our idea on firms requiring moving quickly to gain a first-mover advantage to prevent the inevitable imitation of their unique innovations (Bloodgood et al., 1997). We further explore how choosing rapid internationalization as a solution relates to the critical choices of entry mode and business model for an innovation-based SME.

In our study, we conducted action research at MPC Recycling, a young innovation-based SME whose objective was to provide sustainability to the global market. Action research is basically described as a methodology where researchers are “involved with members of an organization over a matter which is of genuine concern to them” (Eden & Huxham, 1996, p. 75). We adopted a paradoxical lens that allowed us to identify some actionable solutions to manage better the complexities of the unique situation that the company was facing on their road to international expansion. Our study contributes to practical strategy building for the global expansion of such firms. We add to the international business literature that discusses organizations’ different paradoxes (Rodrigues & Dieleman, 2018; Tippmann et al., 2022) by identifying inevitable tensions faced by an innovation-based SME while aspiring to expand internationally. We find interdependencies between the paradoxes and detail how the crucial decisions such a firm makes in this situation are related to each other. We hope our research can inspire managers of innovation-based SMEs to a thought process where they are confident in confronting and resolving the tensions so that the value these firms create can be experienced worldwide.

In the following section, we review the literature upon which we build our ideas. We then describe our method, explicating action research and our research process and design. Next, we move to the findings, detailing the paradoxes we identified through our collaborative study specific to innovation-based SMEs aspiring to internationalize. Finally, we conclude by presenting some limitations and implications of our action research.

LITERATURE REVIEW

International expansion presents a challenge for all organizations and specifically for resource-constrained small to medium-sized enterprises (SMEs). As Lu and Beamish (2001) explained, SMEs face

specific challenges when internationalizing, such as acquiring new knowledge and capabilities, building new business relationships, and hiring and training new personnel. Overcoming such challenges for an organization inherently constrained by human and financial resources (Li et al., 2015) is a tall order. Coeurderoy and Murray (2008) point out that young technology-based firms are particularly vulnerable to appropriating their intellectual property (IP). As such, IP protection is an essential factor even when such companies look to decide on their target locations. Maekelburger et al. (2012) showed that SMEs feel significantly more comfortable in countries with strong property rights protection. Hence, IP protection, especially for an innovation-based SME, is essential to consider when aspiring to expand internationally.

Protecting IP, however, is a complex issue when you have certain resource constraints, and these factors factor into a firm's entry mode selection. Nakos and Brouthers (2002) proposed that SMEs that enjoy ownership advantages, such as being relatively more significant in firm size and having greater international experience, will decide on choosing equity modes of entry. This will, in turn, protect the firm's advantages from dissemination. They also suggest that SMEs prefer equity entry modes to protect their proprietary know-how from potential opportunistic behavior. However, this is not possible for SMEs with insufficient financial and human resources. Laufs and Christian (2014) discussed that the OLI (ownership, location, internalization) framework does not consider the financial constraints of SMEs. Hence, such SMEs must carve out ways to protect their IP with minimal resources and explore the global market.

In choosing an entry mode, there are inevitable tensions that resource-constrained SMEs have to deal with. Hollender et al. (2017) commented that equity entry modes provide greater market closeness and higher returns. It is also suggested that high-control modes, such as acquisitions, can help in better learning than low-control modes, such as licensing (Zahra et al., 2000). However, equity entry modes demand significant financial and managerial resources (Hollender et al., 2017; Brouthers & Nakos, 2004). Non-equity entry modes are more flexible but have a low potential for returns and a risk of opportunism (Hollender et al., 2017). SMEs could better employ inexpensive entry modes if they could legally protect their IP through patents or copyrights (Saarenketo et al., 2002). However, it is essential to consider the nature of patents, where a firm has to disclose its technology publicly. It may also be difficult for a resource-constrained firm to enforce a breach of contract.

For SMEs to succeed internationally, they must protect their vital assets, their know-how, products, or processes. However, appropriately protecting technology in foreign markets is one of the activities that require substantial resources (Preece et al., 1999). Mudambi and Zahra (2007) discussed that international new ventures suffer from such challenges and may need to rely on developing assets that are difficult to imitate. Kim (2013) discusses the creation of isolating mechanisms that are referred to as 'barriers to imitation' that sustain competitive advantage. However, unsophisticated technological processes can eventually be imitated. A phenomenon that can help overcome the challenge of protecting IP while expanding globally is rapid internationalization. Gassmann and Keupp (2007) discuss the competitive advantages of early and rapidly internationalizing technology-based SMEs in their study. They suggested that more research is needed to explore the IP protection strategies of an SME. Bloodgood et al. (1997) also suggested that a firm that uses innovations to gain a competitive advantage over its rivals often must move quickly as all innovations are susceptible to imitation eventually.

Another critical aspect of the internationalization of firms is choosing a suitable business model (Bohnsack et al., 2020). The authors explore the role that business model-related specific advantages play in the internationalization of firms. It is indicated that a technology-based firm needs to combine its technology with a suitable business model to be successful internationally. It is also found that business models mediate the link between technology and firm performance or economic value creation (Baden-Fuller & Haefliger, 2013; Chesbrough & Rosenbloom, 2002).

Further, with the ever-increasing technological changes and international competition, organizations have had to increasingly deal with contradictory yet interrelated elements that persist over time (Lewis, 2000). Paradox studies explore how organizations can manage competing demands simultaneously (Smith & Lewis, 2011). Paradox theory can play a crucial role in contributing to international business literature. Rodrigues and Dieleman (2018) investigated the internationalization of firms and explained a paradox concerning the existence or absence of firms' dependency on the government. Another study by Tippmann

et al. (2022) shows how digital multinational enterprises can navigate the paradoxical demands of global scaling. Considering and building on all these ideas, we now detail the methodology used in our research and how we develop our theory.

METHODS

About MCP Recycling

This study was set at an innovation-based SME, MPC Recycling, a platinum group metal (PGM) recycling company. MPC Recycling was launched just before Christmas in 2021 as a wholly owned subsidiary of its parent company, Green Technology Services. This brand of MPC Recycling was developed as a business unit specializing in precious metal recovery services on the back of an innovative technological process that took eight years to develop. Leveraging and commercializing their new and unique technology, MPC Recycling secured a 5-year contract with a local metal processing company to provide recycling of their anodes as a service.

With a focus on growth and market development, the firm aimed to target global customers who could benefit from its recovery process. The managers at MPC Recycling were determined to explore their options for international expansion. Their goal was to reach more applications and customers that used recyclable anodes to provide sustainability to the global market. As such, the team at MPC Recycling wanted to understand the pros and cons of the different entry modes and the strategies to overcome the obstacles a resource-constrained organization faces. Hollender et al. (2017) explained that SMEs face various challenges when internationalizing. Certain liabilities of smallness are inherent to SMEs, such as lack of resources and market know-how. The management at MPC Recycling sought to expand internationally, making all the right choices that made it most feasible for them with their resource limitations to tackle any stumbling blocks, such as protecting their technology while growing globally. It is important to note that since their innovative technology is not so sophisticated, it is only a matter of time before others imitate it. Furthermore, the company does not see value in patenting as it requires disclosure of information. Our study focuses on understanding the challenges faced by this young innovation-based SME who aspires to grow internationally, collaborate, and develop actionable solutions to help them better manage their situation.

Action Research

Reason and Bradbury (2008, p. 4) defined action research as “a participatory process concerned with developing practical knowledge to pursue worthwhile human purposes. It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people.”. Action research acknowledges researchers’ and managers’ aspirations to solve complex and critical issues in organizations creatively. It facilitates engagement and collaboration among people in which discourse and conversations can prosper. As those engaged in action research strengthen their understanding of the concerns that are to be addressed, the research process keeps changing and developing (Reason & Bradbury, 2008).

According to Eden and Huxham (1996), most users of action research would affirm that action research results are derived from an association with members of an organization over issues that are of genuine interest to them and that are a cause of valid concern. Action research involves intervention in organizations to bring about practical transformation and advance know-how of issues (Huxham & Vangen, 2003). Intervention sessions can provide rich data about people’s actions and comments and the theories to be used when there is a genuine requirement to act. Intervention can help gain a deeper understanding of issues an organization faces and get to possible solutions (Luscher and Lewis, 2008). Reflecting on the intervention sessions can enable participants to critically analyze the concerns discussed and accordingly manage and act upon them. The primary purpose of action research is to produce valuable practical knowledge that can help conduct everyday life better (Reason & Bradbury, 2008). It is about creating new forms of understanding. We will now describe our research purpose, researcher roles, and research design flexibility as Chisholm and Elden (1993) suggested for action researchers and implemented by Luscher and Lewis (2008) in their action research.

Research Purpose

According to Chisholm and Elden (1993), traditional action research was an effort to enhance performance and generate theory. Luscher and Lewis (2008, p. 224) explicate that, today, the purposes of action research “tend to be instrumental (ex. improving organizational systems), theoretical (ex. contributing to social science) and emancipatory (ex. empowering the oppressed).” In our case, we sought to help the management at MPC Recycling strategize around growing internationally and overcoming the challenges specific to innovation-based SMEs. The company management and we understood that working around selecting the suitable entry modes, business models, and target market locations and having tailored approaches to entice customers would form the base for future international performance. We also sought to expand research in the internationalization of innovation-based SMEs. The research process can be as valued as its results because it lays a groundwork that may help specific types of organizations develop the capacity for self-study and to manage international expansion.

Researcher Roles

Researcher engagement is present and apparent throughout action research (Reason & Bradbury, 2008). In conventional roles, such as those employed in Organizational Development (OD), researchers are positioned as experts, assuming primary oversight of research design, data collection, and analysis as they consult organizational participants (Chisholm & Elden, 1993). According to Ann Langley (Green Templeton, 2019), one way of thinking about process theorizing is ‘process as witness’, where researchers are also in the process alongside the researched. Action research is a methodology and a way of conducting ‘process as witness.’ As researchers, we consulted the MPC Recycling team in their international expansion. We sought to build trust with the managers at MPC Recycling through collaboration and thus tried to gain some insights into their concerns in determining their options for global expansion. They helped us with insights into their organization and their perceptions. From our side, we could contribute to understanding the different literature, theories, and methodologies. We consistently reviewed all the intervention session recordings and asked clarification questions through e-mails. Our periodic interventions that included presentations and discussions helped the managers to articulate their concerns and understandings of their unique situation. Our goal was to help them brainstorm and possibly apply their new informed options and alternatives going ahead to ease their transition into the global market.

Research Design Flexibility

Regarding research design flexibility, Chisholm and Elden (1993) explicated that action research is most open when specific study issues must be identified as part of the process. Such was the case at MPC Recycling, as we first sought to understand their vision, objectives, limitations, and resources and surface the challenges they could face in expanding internationally. Further, we helped the managers cope with these challenges so that they would be able to manage their expansion better. As such, our research design is highly flexible. We began by asking, “How could MPC Recycling expand internationally while protecting its intellectual property?” A collaborative research process addressed this question and developed actionable solutions. We conducted regular meetings as part of our interventions to dig into the company’s initial concerns and to examine the more specific issues. Throughout our action research, the managers participated with their feedback on the content of each meeting, which helped everyone evaluate and develop different options and strategies.

Research Process

Following the successful action research process explicated by Luscher and Lewis (2008), we divide our research into groundwork, intervention, and theory building. We involve triangulation of different data sources and varied perspectives through meetings, interviews, observations, company documents and archival data to check the validity of data in action research (Eden & Huxham, 1996). Using triangulation results in more reliable and creative results. Further, Eden & Huxham (1996) explain that action research provides a unique opportunity to seek triangulation between observations, the accounts of the different participants, and the changes in these accounts over time. Hence, we gathered data from multiple viewpoints

concerning the resources available at the company. All three stages of groundwork, intervention, and theory building were iterative and corresponded to each other.

Groundwork

This phase started in April 2022. MPC Recycling aspires to grow internationally and leverage its technology globally. They had started contacting companies in different locations, albeit not in the most organized manner. They had doubts about choosing the proper entry mode for their situation. They had some concerns about the challenges they were facing, particularly concerning protecting their technological know-how.

To build a foundation for research, we developed a work process that would clarify the mutual expectations of the managers and researchers. We earned the consent of the participants for our research. We sought to develop an understanding with the team at MPC Recycling. We explained to them the process of collecting some preliminary data. In this phase, data collection involved interviewing and collecting primary company data. We set up an introductory meeting with one of the managers, where we asked several questions about forming the organization and its objectives and goals. This interview was done through WebEx meeting application and was recorded. We also collected online information on MPC Recycling from their website and requested any reports to help us with the research.

As we analyzed this foundational data, it became evident that MPC Recycling, being an innovation-based SME with technological know-how as its core competitive advantage, had specific concerns about growing internationally. Most of the concern was surrounding their lack of resources and control over their technology. We decided that the best way to move forward would be to present the team at MPC Recycling with analysis and suggestions about the different aspects of internationalization, be it choosing the right location, the suitable business model, or the proper mode of entry. These meetings, where we presented our analysis and conducted discussions on these topics, formed our interventions.

Interventions

The intervention phase dominated our action research from June 2022 to December 2022. This marked a period of conducting various meetings where we prepared presentations and discussions on international expansion analysis with the MPC Recycling team. The managers in these sessions were able to express any concerns they had about expanding globally, the different target markets, their business models, and the different entry modes.

During this phase, we conducted about six sessions, averaging about 50 minutes each, where we conducted interviews, had discussions, and gave presentations. We had the president, the vice president, and a business development associate of the company always engaged with us during our sessions, and we also had available the support of their chief technology officer, whom we had met in one of our factory visits. Some sessions were conducted in person, and some were conducted online. In both cases, the sessions were recorded and transcribed with the manager's permission, who was very open to discussing all their concerns. After our factory visit, we took notes of the conversations that ensued. This visit also allowed us to observe the resources and processes of MPC Recycling first-hand.

Moreover, we also had access to a few company documents shared with us by MPC Recycling, explicating their core competitive advantages and ways of targeting customers. All these varied data sources, including interviews, discussions, company documents, archival data, and our observations during each meeting, aided in triangulation. We, as researchers, also had various meetings with each other to track the flow of the sessions and to document all transcriptions.

During the intervention phase, we evaluated an innovation-based resource-constrained SME's different choices when aspiring to expand internationally. With our semi-structured interviews, we could decipher the specific concerns and tensions that MPC Recycling faced. Their core competitive advantage being technology, we focused on protecting their intellectual property as they looked to leverage the same in the global market. The managers expressed their concern about losing control over their technology,

“We would rather keep our technology as a trade secret than go for formal protection such as patents that could expose our technology to everyone in a bid to protect it.”

“I know our technology is sound but someone with strong R&D budgets is going to figure it out someday.”

Asking questions about their resources and concerns and presenting them with analysis on the different location selection criteria and modes of entry facilitated their thought process about growing internationally while protecting their IP and gave rise to new ideas, such as,

“I am leaning more towards establishing sales representative offices and collection warehouses to start with. I think it kind of gives us a first-mover advantage without setting up our technology in a bunch of markets.”

With the interventions, we posed varied alternatives to the team at MPC Recycling. We pushed the participants to think more deeply about the best options to expand globally successfully.

Theory Building

Our interventions continued through the fall of 2022. However, we began seeking our understanding of the research and building theory in November 2022. We collected data throughout our interventions and identified the primary issues and concerns that had emerged during our presentations and discussions with the team at MPC Recycling. As we addressed the concerns of an innovation-based SME aspiring to internationalize, we encountered various tensions and contradictions throughout our action research process. We decided to turn to the paradox literature for insights. In a December intervention session, when we presented our analysis of the different entry modes, we explained theoretical understandings of paradox to the MPC team at recycling. We presented three different paradoxes we had identified related to the internationalization of MPC Recycling and discussed some actionable solutions.

These paradoxes became central to building our theory of how a vital paradox faced by an innovation-based SME and its tentative solution could lead to other tensions. All these tensions revolve around protecting the intellectual property of a technology-based firm aspiring to grow in various markets. Ultimately, all our interventions from the beginning can be surrounded by discussions dealing with the different tensions we could conceptualize, and finally, through the paradox literature (Lewis, 2000; Smith and Lewis, 2011). We could view our intervention sessions as a process of working through these paradoxes and trying to find solutions for MPC Recycling to be able to manage its expansion better.

FINDINGS

During our action research, interventions allowed us to collaboratively come up with a good understanding of the unique challenges faced by an innovation-based SME such as MPC Recycling. Our interviews and discussions with MPC Recycling’s team led everyone to learn the existing literature on international business and explore various actionable solutions that could help MPC Recycling tackle its unique situation and successfully expand globally.

Working Through Paradox: A Process

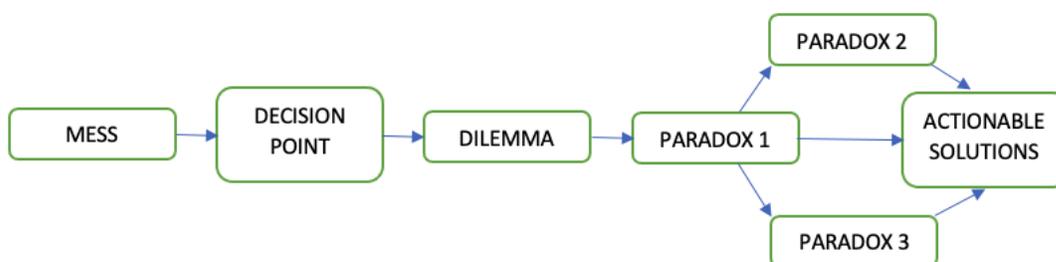
To work through paradox and help the team at MPC Recycling overcome their challenges, such as protecting their IP while expanding internationally, we followed a collaborative process, conducting regular interviews, meetings, and discussions with the team. As we progressed in our discussions, we continued to gain an intricate understanding of the specific situation at MPC Recycling. Figure 1 depicts the different stages we could identify that we went through with the MPC Recycling team to reach some actionable solutions. The team generally expressed their satisfaction with the actionable solutions we were reaching

and pointed out that our discussions were helping their thought process in deciding on the best options for expansion. The managers shared,

“I think you’re definitely helping my thought process in deciding what would be the best scenario for us.” “You’re certainly helping along our thought process. Thank you very much.”

We now detail each of the different stages we went through to identify certain paradoxes and develop solutions. Further, we also found essential interdependencies between the paradoxes faced by MPC Recycling, which we will explain and demonstrate later.

**FIGURE 1
WORKING THROUGH PARADOX: A PROCESS**



Mess

We began our interventions in the form of meetings, interviews, and discussions after MPC Recycling had raised a concern regarding their goal of international expansion. We depict his concern as our starting point in Figure 1. We build on the idea of a ‘messy issue’ from Luscher and Lewis (2008), from which a foundation can be created for collaboration. Our interventions were built from a messy issue, such as “What are our options to expand internationally and to target global customers?” and “What are the pros and cons of the different entry modes?”.

Problem/Decision Point

We had a base from this foundation, and with further questioning and discussions, we could identify specific problems/decision points. To encourage the managers to explain their unique situation thoroughly, we asked them questions about the history of the company, its goals and objectives, limitations, and resources. We also visited their facility to observe and understand more about the resources that they possess and their processes. We learned that MPC Recycling is very young and is a new entity of an older parent company with limited resources. They were, in fact, for sales outsourcing personnel to initiate contacts with clients in different countries (August 25 intervention).

“We currently have two market research personnel working on an on-demand/on-request basis – to date, they have each given us around 40 hours of research.”

Thus, with such interventions, we could dissect the company’s more intricate issues that must be worked around to successfully expand internationally.

For instance, since our first intervention, it became apparent that there was a need for MPC Recycling to work on finding a balance between commitment and control. Questions such as, “What are the obstacles you are facing with each of the entry modes?” encouraged the managers to articulate their concerns with respect to the resources they own. This, in turn, gave rise to a crucial decision point and moved us closer to our pathway to finding actionable solutions.

Dilemma

The decision points created a sense of either/or dilemma between the contradictory elements. According to Smith and Berg (1987), a dilemma creates a sense of paralysis, implying that a choice must be made between two elements. Further interventions in the form of presentations helped the managers explore different perspectives.

The dilemma, for example, with respect to the decision point of balancing commitment and control was, “Do we risk our resources and aim for high commitment for better control, OR do we risk our technology while expanding internationally and saving our resources.” Awareness of a dilemma can prove to be valuable as it contains the potential for resolution (Luscher & Lewis, 2008). However, each solution you use can have its benefits and limitations (Poole & Van de Ven, 1989). As in our example, if the company aims for high commitment, it will risk losing its resources, whereas if it chooses to save its resources, it will risk exposing its technology even more.

Paradox

Lewis (2000) explicated that recognizing a dilemma can lead to paradoxical thinking, as choosing one of the elements would not resolve the tension. A dilemma may become paradoxical when any choice between two elements is temporary (Smith & Lewis, 2011). The contradictions between the two elements are interrelated and persistent and may resurface over time. In their action research, Luscher and Lewis (2008) found that the opposite side gained more prominence as the managers stressed the positive side of one element.

For instance, in our research, the more the team at MPC Recycling stressed having control over their technology, the more they were required to spend a lot of resources, which is not ideal for an SME. Such an unsolvable conflict inspires a search for both/and options (Luscher & Lewis, 2008). Hence, it is crucial to seek a link between the contradictory elements. We achieved this with our interventions with MPC Recycling and found a link, for example, between minimizing commitment and maximizing the amount of control MPC Recycling can have over its process technology. With the understanding that this can be possible, we could better discuss the possible solutions to work through this paradox.

Actionable Solutions

Throughout our interventions with the team at MPC Recycling, we continued to move towards an understanding of coming up with actionable solutions. We moved through a mess to a problem/decision point, to a dilemma, to a paradox and finally to tentative solutions or suggestions. These solutions were not definitive but more of something that the team at MPC Recycling could use and explore to better manage their unique situation.

For instance, even in the example discussed here, the solution presented is not an endpoint but rather an idea that the team at MPC Recycling can explore and with which they can better manage their international expansion. The solutions can pave the way to more critical thinking amongst the managers at MPC Recycling, which could eventually lead to a steadier global expansion with a reduced chance of risking imitation and committing many resources. In working through the paradox of minimizing commitment and maximizing control, critical dialogue and discourse led to the researchers and managers collaboratively exploring the idea of expanding with a combination of licensing and joint venture entry modes.

Indeed, paradoxical understandings helped link two tensions, leading to critical discussions on possible solutions. We now elaborate on our process by examining the identified paradoxes in more detail in the following sections.

Paradoxes of MPC Recycling’s International Expansion

As we conducted our interventions in the form of meetings, discussions, and interviews with the team at MPC Recycling, we identified three crucial decision points: Expanding internationally while protecting their IP, finding a balance between the commitment of resources and their control over technology, and selecting the right business model that would help the company be profitable internationally and at the same

time reduce the risk of imitation. These issues were a common occurrence throughout our action research and became central to our research process. We analyzed and reviewed each issue in more detail over time and discussed them with the managers at MPC Recycling. Table 1 summarizes how we worked through paradoxes during our interventions. We focused on the common existing tensions and turned to the literature on paradox. We presented the existing paradoxes related to the three decision points to the team at MPC Recycling. We continued to examine and re-examine these issues to create a category to categorize the tensions identified at MPC Recycling. We now use our experiences during the meetings and existing paradox literature to explicate and analyze the contents of the paradoxes.

TABLE 1
WORKING THROUGH PARADOXES

Decision Point	Dilemma	Paradox	Actionable Solutions
How do we expand internationally while protecting our IP?	Do we explore formal ways of IP protection, OR do we risk our IP	Expand technology internationally AND have control over intellectual property	Use the concept of rapid internationalization, grow with speed, and gain first-mover advantage.
How do we create a balance between resource commitment and control over technology?	Do we risk our resources for better control OR, do we risk our technology	Minimize commitment AND Maximize control	Licensing can help in rapidly internationalizing as it would not require high commitment and major resources.
How do we select the most profitable international business model?	Do we target large companies and be service-based, OR do we target small companies and be purchase-based	Rapidly internationalize AND spend minimum resources	Contacting smaller companies can help in rapid internationalizing but would require greater resources than contacting larger companies.

Paradox 1 – Expanding Internationally While Protecting IP

According to Coeurderoy and Murray (2008), new technology-based firms are particularly vulnerable to appropriating intellectual property. SMEs are generally characterized by a lack of resources (Laufs & Christian, 2014). This was no different regarding MPC Recycling as an innovation-based SME. At MPC Recycling, the managers were exploring ways to enter new markets and expand internationally, considering their unique situation. They did not favour taking the route of formal protection for their technology while expanding internationally as they understood that patents were, in fact, like a double-edged sword for their situation (Introductory meeting intervention).

“If we patent our technology, then I think we make it really easy for people to enter our space.”

Hence, the initial decision point was formulated as, “How do we expand internationally while protecting our IP?”.

We analyzed that as MPC Recycling progressively expanded internationally into different markets and locations, it would risk exposing its core competitive advantage, which is its innovative technology. Hence,

a progressive international expansion, which was the goal, would only perpetuate the tension between expanding MPC Recycling's technology internationally and having control over their intellectual property. This became our first identified paradox. The managers identified their situation as unique in the sense that they had to choose a mode of entry to expand that could also help protect their IP as much as possible (Introductory meeting intervention). One manager expressed concerns regarding the protection of their technology by sharing an experience of partnering,

"We have had some negative experiences so far. One refinery that we had been working with, we have seen now that they are kind of competing with us a little bit." "It seems that we have educated a refinery enough that they can use this company to do business, so we kind of created a competitor."

Struggling with this concern, it was essential to work through the paradox.

It is vital to embrace paradoxical tensions via the "working through" strategy, as Smith and Lewis (2011) explained in their dynamic equilibrium model. Management could trigger the acceptance strategy by being aware that tensions exist and will persist. The dynamic equilibrium model illustrates a strategy of acceptance and resolution, with acceptance of tensions providing a pathway to confronting and critically exploring the relationship between the two contradictory yet interrelated elements.

Thus, having discussions with the team at MPC Recycling around the tension of expanding technology internationally and protecting their intellectual property, we worked towards finding actionable solutions to work through this paradox. We identified a solution using the concept of 'rapid internationalizing' that would allow the company to grow at speed (Gassmann & Keupp, 2007). The President of MPC Recycling also acknowledged that gaining a first-mover advantage would be necessary for their firm to reduce the risk of imitation (August 25 intervention).

"One of the things that I wrote down about is the first-mover's advantage; we need to be first movers." "Manufacturers in England that we kind of tipped off that this is what we do, they are not doing as good as we are, but they are able to do a fine job."

As such, we next moved towards identifying the best mode of entry that would complement rapid internationalization, subsequently leading us to identify another paradox.

Paradox 2 – Tension Between Resource Commitment and Control Over Technology

MPC Recycling, being an SME, has some constraints in terms of resources: financial and human. With our interventive discussions, we identified that MPC Recycling would benefit by keeping its resource commitment as low as possible, especially at the beginning of its international expansion. For example, when asked about the obstacles that they see with the different modes of entry, their manager responded, "Mostly, it is just high capital investment for us to go in somewhere on our own."

We observed that MPC Recycling as an entity was considerably new and clearly lacked enough human resources. However, it was vital for them to have control over their technology as they expanded internationally. This control is desired to be achieved with the minimum available resources. This led to us identifying a second paradox related to the international expansion of SMEs: having maximum control with minimum commitment.

The acceptance and resolution strategy explicated by Smith and Lewis (2011) led us to discussions concerning working out solutions for this paradox. The actionable solution of rapid internationalizing identified to meet the competing demands of the first paradox becomes interdependent with our second paradox. Our solution was to choose a particular entry mode that allowed MPC Recycling to grow fast, internationalize rapidly, and gain a first-mover advantage. This entry mode also must be associated with less investment risk and commitment regarding human and financial resources. As such, we identified licensing as a solution that could help work through this tension of commitment and control and allow the

SME to grow rapidly and gain global acceptance before the imitation even occurs. The managers were encouraged and were evidently content to explore this choice of entry mode further.

“I would lean more towards licensing.” “From the top of my mind, licensing makes the most sense.”

Upon further discussion of the pros and cons of licensing and the different entry modes, more ideas, such as using a combination of licensing and a joint venture, were also explored.

“I would give consideration to the idea of licensing with a joint venture laid over so we could find a joint venture partner in a particular area and take ownership into a new joint venture along with being the licensee.”

Hence, the interventions helped the team at MPC Recycling recognize the strengths and weaknesses of various alternatives and develop their thought process about choosing the suitable entry mode(s) for international expansion.

Paradox 3 – Business Model to Reduce the Risk of Imitation While Rapidly Internationalizing

Another essential decision point for the managers at MPC Recycling was to select the most suitable business model moving forward as an organization and to expand internationally successfully. At the time of the research, the company was in a 5-year contract with a large local metal processing company and worked with them as a service-based company, helping to recycle their product and giving back the proceeds. Upon our interventive discussions with them about the different business models, the managers raised concerns about the current model. They hoped to move towards a customer segment where they could explore the potential market of many smaller companies, buying their waste, recycling it, and keeping the proceeds for themselves. However, this led to a resource-based tension where contacting a large concentration of companies may require significant human resources. The President of MPC Recycling, though, pointed out an interesting aspect,

“Contacting smaller companies, in my experience, can be done faster as it is easier to reach the decision maker and finalize a deal, whereas the same is not the case when it comes to contacting larger companies.”

Thus, it can be said that selecting the business model of targeting smaller companies may help in facilitating the actionable solution identified for the first paradox, which was rapid internationalization. The lack of human resources creates another tension or paradox where the company would want to minimize the usage of human resources again and select a suitable business model to internationalize successfully. Accepting that this tension exists again helped us move towards exploring it further and carve out solutions to work through it.

DISCUSSION

As we advanced in our action research, we identified inevitable tensions and decided to take a paradoxical approach to our study. Hatch & Ehrlich (1993) commented in their study that in complex environments, there is a high likelihood of contradiction and recognition of paradox within organizations. International expansion, specifically for young organizations that lack resources, can create a unique and complex situation where the next steps can be unclear. This was the situation at MPC Recycling. This young SME has developed a unique process technology and is looking to expand globally in a bid to provide sustainability to the international market. To achieve this, the managers had to work towards determining successful options that would allow them to grow working around the obstacles at hand, majorly concerning their resource constraints.

Considering a paradoxical analysis can help immensely in contemplating different perspectives and altering our assumptions about the different issues that we face in fundamentally different ways (De Cock & Rickards, 1996). Our interventions helped the managers, and we became aware of the tensions MPC Recycling faced. As we confronted these persisting contradictions, we could generate specific, actionable solutions that could eventually help the MPC Recycling team better manage its international expansion. The solutions identified can help innovation-based SMEs protect their intellectual property from competitive imitation, which is a significant concern due to their inherent constraints. We now detail the different contributions stemming from the research, the solutions identified, and some of our research limitations and implications.

We contribute to the literature on the internationalization of SMEs and other types of resource-constrained young organizations (Lu & Beamish, 2001; Zahra et al., 2000; Burgel & Murray, 2000; Gassmann & Keupp, 2007). We collaborated with an innovation-based SME in real-time, understood their concerns and came up with insights on paradoxes that such firms need to confront: (1) Expand technology internationally and have control over intellectual property; (2) minimize commitment and maximize control; (3) rapidly internationalize, and spend minimum resources. We extend the discussions of prior research that examined the different forms of entry modes and the factors SMEs need to consider when making a sound choice (Hollender et al., 2017; Zahra et al., 2000). We theorize under what circumstances an organization can choose specific types of entry modes that could help it expand globally while reducing the risks it faces. While some of these tensions have been examined by previous research (Hollender et al., 2017; Brouthers & Nakos, 2004; Zahra et al., 2000), adopting a paradox lens was influential in proposing actionable solutions to address the paradoxes that would have otherwise been challenging to resolve.

We relate the concept of rapid internationalization and factor it into entry modes and business models. We bring forward these concepts that can be important precisely for technology-based SMEs looking to protect their intellectual property while expanding as solutions to working through persisting tensions. In the process, we contribute to the literature on rapid internationalization (Gassmann & Keupp, 2007) and the idea of moving quickly to gain a first-mover advantage (Bloodgood et al., 1997). With our actionable solutions, we have drawn out certain ways and means for a specific type of organization to facilitate rapid internationalization with all their liabilities of smallness (Hollender et al., 2017) and how that can help them better manage their international expansion. We contribute to finding solutions for innovation-based SMEs to protect their intellectual property while they grow globally, which is a significant concern due to their lack of resources.

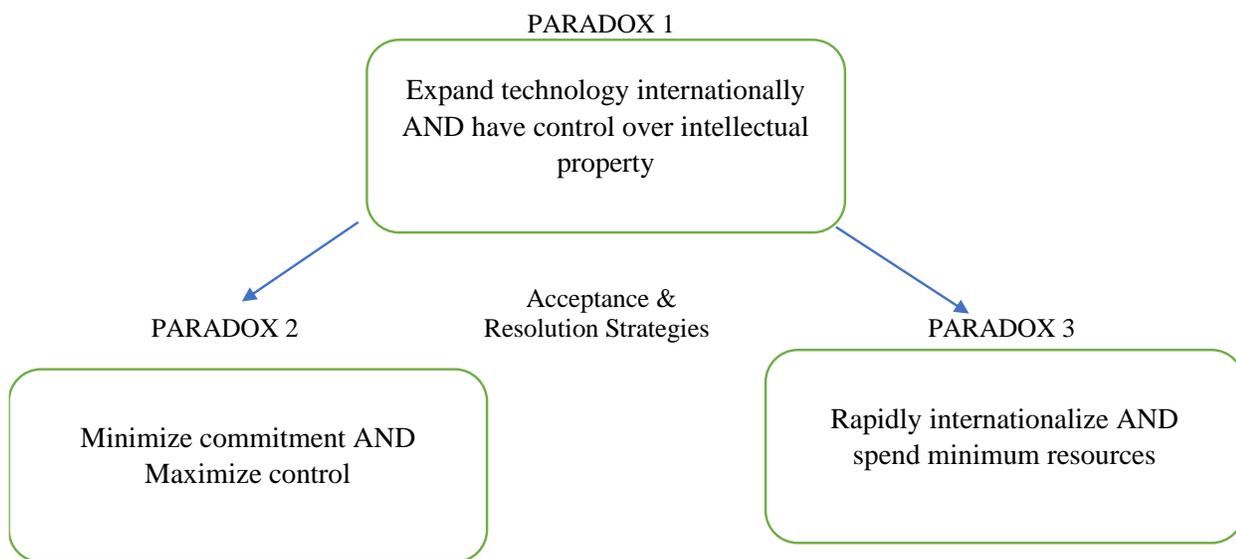
Furthermore, we were able to factor in the importance of business models in firm internationalization and build on the literature that explores its relevance and significance (Bohnsack et al., 2014; Bohnsack et al., 2020). We contribute to understanding the possible connection between choosing a business model and rapid internationalization, eventually reducing the risk of opportunism. This may be counted as building a complex core competency that results from a combination of business models and systems or processes surrounding them, which could eventually reduce the risk of imitation (Reed & Defillippi, 1990; Teece, 2010).

Some studies extend the understanding of interconnections between paradoxes in organizational research (Luscher & Lewis, 2008). Our action research contributes to understanding the interdependencies among paradoxes, specifically in international business. When we worked our way through discussing and finding actionable solutions for the paradox of expanding technology internationally and having control over intellectual property, we found other paradoxes and their solutions to be interrelated. We illustrate this in Figure 2, where we denote, with arrows, the interdependency of the first paradox with the other two paradoxes. Paradoxes 2 and 3 followed and depended on paradox 1, which is a distinctive feature of our research. This further explicates our contribution to the theory of rapid internationalization and the ways it is interrelated with solving the various contradictory elements that a firm aspiring to internationalize may face, be it resource-based or business models. We hope that paradox interdependency inspires researchers to explore further interrelated paradoxes, specifically in internationalization, that may help solve managerial problems in such situations. This, we hope, can add to the international business literature that discusses the different paradoxes involved (Rodrigues & Dieleman, 2018; Tippmann et al., 2022)

In our action research, we have also suggested that using acceptance as a coping strategy (Smith & Lewis, 2011) can be beneficial to working through the paradoxes of the international expansion of SMEs. Acceptance of contradictory elements can help reduce defensiveness and facilitate confronting the tensions, which can lead to better discussions and more productive outcomes (Luscher & Lewis, 2008). We can affirm this concept through our experience in our action research, as it led us to analyze the various actionable solutions to help MPC Recycling with its international expansion.

Certain limitations in our research are pertinent to the methodology used and our approach. Our research was not based on implementing any real-time resolutions but on what the firm could do in the future as it aspires to internationalize. We tried to help the MPC Recycling team understand some actionable solutions they could implement to work around the tensions they were facing. Upon the conclusion of our research, we do not necessarily know the lasting benefit of these solutions. Furthermore, being a small company, the team at MPC Recycling, who collaborated with us, comprised three to four personnel. The research could have benefitted more from some additional and varied perspectives.

FIGURE 2
INTERDEPENDENCY OF THE IDENTIFIED PARADOXES



MPC Recycling faced a situation where it aspired to expand globally with its innovative technology as its core competitive advantage that had to be protected. A common challenge faced by SMEs is that they are resource-constrained (Hessels & Parker, 2013; Oviatt and McDougall, 1994; Li et al., 2015). These challenges lead to difficulties in protecting their IP. We hope that our research can guide innovation-based SMEs to understand the tensions related to expanding internationally and protecting their IP that they must accept and confront. However, this issue that turned out to be of great importance for MPC Recycling may not be one for every innovation-based SME. MPC Recycling’s innovation is based on process technology, which is uniquely challenging to patent due to the difficulties of enforcing a breach for a technology of such nature. The chief technical officer confirmed this,

“It can be difficult to enforce a breach [because we have] process technology and not a physical product where one can show that the design has been copied.”

Regardless of the unique situation of MPC Recycling, we encourage future research to investigate various organizations for similar tensions and actionable solutions.

Conclusions and Implications

We hope that researchers can use our work when studying the international expansion of innovation-based SMEs and when practicing action research. We introduced a paradoxical lens to the idea of international business expansion of a particular type of organization. In their study, Eisenhardt (2000) claimed that in managing paradox, we benefit from an opportunity to explore the tensions and opposing views better. Our intervention sessions indeed helped managers surface their concerns and built a foundation for discussions, leading us to identify certain interdependent paradoxes and actionable solutions. The managers could build on their thought processes when it came to making decisions to expand internationally, considering their situation. The understanding of these paradoxes and solutions, we hope, can be of managerial importance for varied resource-constrained technology-based organizations that aspire to grow internationally.

We used the dynamic equilibrium model Smith and Lewis (2011) suggested that explicates acceptance and resolution strategies. We understand that accepting and confronting tensions rather than dismissing one of the contradictory elements can help organizations work around such tensions and find actionable solutions. This thought process can be replicated by other companies facing similar predicaments. This study cautions managers not to dismiss a paradoxical component as a trade-off and recognize that these components can persist and must be balanced. It is beneficial for managers to be aware and have their guard up about such tensions when making different choices leading up to internationalization, be it their strategy to expand, the entry modes or business models.

In conclusion, as Luscher and Lewis (2008) highlighted in their paradoxical inquiry, that paradox is not a cure-all. Instead, it offers a novel way of understanding the different tensions that managers face in organizations. Our action research helped the team at MPC Recycling assist their thought process and understanding to better manage international expansion in the face of specific limitations that could risk exposing their technology. The actionable solutions identified can be a means to enable MPC Recycling to create value in the global market. We hope our work can serve resource-constrained, innovation-based organizations and help them better understand and manage their unique reality.

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