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Business model innovation and internationalization: investigating the relationship through the dynamic states approach

Original

Availability:

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Publisher:

Published

DOI:10.1108/jsbed-06-2023-0247

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Journal:	<i>Journal of Small Business and Enterprise Development</i>
Manuscript ID	JSBED-06-2023-0247.R2
Manuscript Type:	Research Paper
Keywords:	Business Model Innovation, Internationalization, Incremental changes, Radical changes, Dynamic states approach



Business model innovation and internationalization:

Investigating the relationship through the dynamic states approach

Purpose: This empirical paper investigates how entrepreneurial firms change their business models in the context of internationalization by identifying different forms of business model innovation (BMI) and exploring the interrelationship between BMI and internationalization.

Design/methodology/approach: Based on the dynamic states approach of entrepreneurship (Levie and Lichtenstein, 2010), this paper analyses primary and secondary data from nine European firms following a multiple case study approach.

Findings: This paper presents four patterns of radical change and eight types of incremental adaption within business models in the context of internationalization. We describe these BMI patterns and types, and we also show how they contribute to increasing involvement in international business activities and the internationalization-related triggers that might cause them.

Originality/value: This paper contributes to a better understanding of the BMI process in the course of internationalization. It also highlights the complex interrelationship between BMI and internationalization by building on a progressive theoretical approach.

Keywords: business model innovation, internationalization, incremental changes, radical changes, dynamic states approach

Paper type: Research paper.

1. Introduction

Business models (BM) serve as a framework of analysis to explain and understand how firms create value (Saino *et al.*, 2011). BMs are not static but rather transformational (Demil and Lecocq, 2010; Spieth *et al.*, 2016). Firms reconsider and adapt their BMs in order to find a “strategic fit” with their environment (Evers *et al.*, 2023, p. 10), a process that is commonly referred to as business model innovation (BMI). The recent COVID-19 pandemic and global political turbulence have highlighted the need for flexibility and innovation in BMs.

Firms are also exposed to an environmental change when entering a foreign market (Teece, 2010). The firms will encounter different market conditions, including different legal frameworks, business practices, or customer requirements. If a company aims to be successful in a foreign market, its specific features must be analyzed. Companies should question whether their way of doing business can also work in foreign markets. Very often, certain aspects of business may remain unchanged, while others must be adapted to local contexts (Calof and Beamish, 1995). Thus, internationalization, as “the process of increasing involvement in international markets” (Welch and Luostarinen, 1988, p. 36), represents a form of volatility for companies and requires BMI in order “to suit local requirements” (Teece, 2018, p. 4).

Although regarded as a “common phenomenon” in business practice (Rask, 2014, p. 158), investigations into the interrelationship between BMI and internationalization are rare (Onetti *et al.*, 2012; Child *et al.*, 2017; Cavallo *et al.*, 2019). Saino *et al.* (2011) were among the first authors to introduce the BM concept to the research field of international entrepreneurship, using it as a framework to describe how firms exploit international opportunities.

Research on BMI and internationalization has focused on assessing whether volatile environments drive BMI or vice versa (Spieth *et al.*, 2014). It is not apparent in which cases internationalization triggers BMI and, conversely, in which cases BMI leads to internationalization. Few studies have recognized the complex and intertwined relationship between BMI and internationalization and contributed to a better understanding of the process. This can be traced back to a lack of theoretical explanations to help us understand how BMI can trigger internationalization and vice versa. Thus, approaches to further explore

the relationship between BMI and internationalization in both directions **are needed** (Cavallo *et al.*, 2019).

International BMI has recently been defined as the “process by which the firm actively makes nontrivial radical, modular or architectural changes in its BM to disrupt market conditions in response to foreign markets or global opportunities” (Evers *et al.*, 2023, p. 12). However, the exact steps taken by firms that change their BMs in response to internationalization are not clear. Understanding what exactly changes in the various dimensions of a BM and how the change occurs in the context of internationalization **would contribute to the** understanding of how companies can successfully establish a BM in international markets. Our paper aims to shed light on the black box of what happens during the BMI process that is either caused by or leads to internationalization. The **following questions guides the research:**

Which forms of business model innovation are caused by or lead to internationalization?

Our research question is explorative in nature, which is why an analysis of nine case studies of entrepreneurial firms that developed an innovative BM for international markets was employed. **We utilized** network analyses and qualitative content analysis procedures for this purpose.

This qualitative study advances research in several aspects. First, this paper enriches the novel field of BMI research by **examining** the relationship between BMI and internationalization. **Few studies have considered** BMI in an international context (Cao *et al.*, 2018). In their literature review, Evers *et al.* (2023) **called** for a better understanding of **this** phenomenon, **particularly** the “process of BMI during the internationalization process of firms” (p. 14). **In this study**, we explicitly address this gap. Second, this study is based on the theoretical framework of the dynamic states approach to entrepreneurial action (DSA). Existing empirical research on BMI and internationalization has failed to build on a proper process theory to better understand the interrelationship between BMI and internationalization. Through the lens of DSA, internationalization is viewed as a means of organizational growth, with BMI **representing** an integral part of the growth process. **This in turn supports the explanation and analysis of whether internationalization is either antecedent or outcome of the BMI process.** Further, our paper contributes to **the BMI literature by using** a progressive theoretical approach related to firm growth to

explain BMI in an international context. We respond to the call of Evers *et al.* (2023) to adopt a strategic entrepreneurship perspective, shedding light on the deliberate changes and adaptations made by the firm. Third, we develop and elaborate on a more comprehensive understanding of the role of internationalization in BMI and how firms realize international BMI. This exploration of the antecedents and outcomes of BMI in an international business context increases the current knowledge on how firms can use BMI in the course of their internationalization and vice versa.

The paper is organized as follows. We first explain the DSA as a theoretical basis for our study before reviewing the literature on the interrelationship between business model innovation and internationalization. Subsequently, we report on the research method and the findings of our qualitative study. Finally, we discuss the results and present the main contributions of our research.

2. Theoretical framework

2.1. Explaining BMI with the dynamic states approach

The strategic decision to internationalize offers firms a significant opportunity for growth (Buckley and Casson, 1976; Onetti *et al.*, 2012). To better understand organizational growth, Penrose (1959) proposed that businesses are dynamic and undergo a “process of development” (p. 1). The idea of a dynamic firm that develops incrementally is also an implicit assumption in the Uppsala model of internationalization (Johanson and Vahlne, 1990, p. 17).

While earlier authors who developed process models of firm growth assumed that organizations undergo several pre-defined stages, newer approaches acknowledge that firm development is not a linear process and is characterized by individual development patterns (Sternad and Mödritscher, 2022). Based on principles derived from complexity science, it can be assumed that firms are complex systems that interact with and adapt to their environment (Levie and Lichtenstein, 2010). In this tradition, our paper adheres to the DSA in order to describe and understand the nonlinear process of firm growth. The DSA proposes that firms are in a dynamic state for as long as their BM fits the market potential (Levie and Liechtenstein, 2010). Growth occurs when firms shift from one dynamic state to another as a way to better resonate with the environmental conditions (Sternad and Mödritscher, 2022).

The DSA seems suitable for the study of BMI, as it fits with previous theories regarding the flexibility and dynamism of BMI, drawing on the assumptions of Penrosian growth theory (Demil and Lecocq, 2010). Sternad and Mödritscher (2020) recently detected various growth patterns of companies over their lifetimes by positioning BMI as a core activity in the growth process. These “entrepreneurial leaps” emerge due to an internal and/or external trigger. A trigger helps the enterprise recognize a certain market potential, which subsequently motivates the firm to exploit that potential. Therefore, the firm performs “entrepreneurial actions” to better fit the market potential in an efficient and effective way. The actions of reconfiguring the BM constitute a shift between two dynamic states.

Within the context of this study, BMI is viewed as the central process that unfolds during the transition between two dynamic states. In this regard, DSA serves as a valuable tool for elucidating the intricate relationship between BMI and internationalization. First, international business activities can trigger BMI, as noted by Sternad and Mödritscher (2021). Second, internationalization can also be an outcome, as BMI unlocks new market potential (on an international stage), on which firms can then capitalize.

We further argue that firms can grow and enter a new dynamic state through either incremental adaptations or radical changes of their BM. In line with Balboni *et al.* (2019), we view BMI as a process of simultaneous and complementary exploration and exploitation of resources and capabilities. According to this perspective, BMI includes both adaptive as well as more complex changes (Foss and Saebi, 2017). Subsequently, we regard incremental adaptations as “modular” (p. 216). This means that incremental forms of BMI are related to continuous improvement (Taran *et al.*, 2015) and to a specific change in one component only. Radical changes, on the contrary, are large-scale architectural changes and imply a redefinition of the ways in which components are combined. Similar to Demil and Lecocq (2010), we define radical changes in a BM to be when the change in one component entails further changes in others. Radical changes constitute disruptive innovations of the BM (Taran *et al.*, 2015).

For the purpose of our study, we also consider the multidimensionality of BMI following the work of Clauss (2017), who identified 10 components that form three dimensions involved in BMI. The “value creation innovation” dimension consists of the constructs “new capabilities,” “new technology,” “new partnerships,” and “new processes.” Value proposition innovation is a dimension that builds on the sub-constructs of “new offerings,” “new customers,” “new channels,” and “new customer relationships.”

“New revenue models” and “new cost structures” are the two constructs that form the third dimension of value capture innovation.

When located within the context of internationalization, the principles of incremental adaption and radical change could manifest in several ways. Firms may identify potential in a new international market and innovate their BM to better suit the requirements of the foreign market environment, which serves as an example of incremental adaption. An instance of radical change could be a particular trigger leading to the development of an innovative BM that offers a new growth opportunity. Innovation of a BM can lead to internationalization or offer the possibility to exploit new market potential. As the concept of BMI helps us to better understand and describe entrepreneurial leaps, this framework can be used to explain how firms grow and internationalize through BMI.

Based on the evidence presented above, we can conclude that 1) internationalization is a form of firm growth, and 2) BMI is a core contributory process in firm growth. Therefore, BMI also serves as a critical business activity during internationalization. However, the BMI process, in the context of internationalization, remains obscure, especially regarding what exact changes are experienced and whether internationalization is an outcome or a trigger of BMI. In this paper, DSA serves as a theoretical basis and an analytical tool to better understand the relationship between internationalization and BMI.

2.2. The interrelationship between business model innovation and internationalization

Few studies have examined the ways in which BMI is connected to the internationalization process (Child *et al.*, 2017; Cavallo *et al.*, 2019). Research has shown that the relationship between internationalization and innovation is “positive and reciprocal” (Cao *et al.*, 2018, p. 553). Furthermore, internationalization has been found to be both an antecedent and a consequence of BMI. As an antecedent, firms respond to “changes in the business environment” (Bashir *et al.*, 2020, p. 458) by innovating their BMs. As an outcome of BMI, innovative BMs follow and develop alongside growth and can subsequently lead to international expansion.

Internationalization as an antecedent of business model innovation

One of the research directions in the literature on BMI involves identifying its different antecedents (Spieth *et al.*, 2014). From this perspective, internationalization may act as a trigger for BMI, as the

“circumstances of the environment” may force a company to reconsider its BM (Nunes and Steinbruch, 2019, p. 208). Azari et al. (2017) found that a firm’s growth ambitions (including the ambition to grow in international markets) is positively linked to BMI.

When internationalizing, firms are exposed to “changes in the business environment” (Bashir et al., 2020, p. 458). With this in mind, BMI is a response to changing sources of value creation in volatile environments (Chesbrough, 2007). This is especially the case in circumstances in which the environment forces the firm to rethink its way of doing business in order to fit the specific context of international markets. This includes particular adaptations to adapt to the economic, political, legal and cultural environment (Rask, 2014; Landau et al., 2016; Child et al., 2017).

When firms internationalize, they also gain better access to new resources and capabilities, which aids BMI. According to Hitt et al. (1997), companies undergoing internationalization enhance their knowledge base because they are “exposed to new and diverse ideas from multiple markets and cultural perspectives” (p. 770). Firms with a higher degree of internationalization can benefit from network mechanisms that offer them a continuous flow of information about changing customer needs, which consequently increases the quality of new products (Kafourous et al., 2008). Internationalization can improve firms’ ability to innovate by allowing them to hire better technologists and access skills and expertise (Cheng and Bolon, 1993). Geldres-Weiss et al. (2016) found that firms gain new knowledge about market needs and consumer preference through exporting, which, again, influences firm performance. The authors argued that the “introduction of new products is an illustration of such performance” (p. 5080). Subsequently, knowledge gained through exporting forms the basis for market innovation. Similarly, internationalization places firms into a “competitive environment,” which requires certain advantages to appeal to customers (Foss and Saebi, 2017, p. 217).

Internationalization as an outcome of business model innovation

Some research has investigated the effect BMI has on certain business outcomes (Foss and Saebi, 2017). BMI leads to improved organizational performance, which is why it seems to be an important predictor of a firm’s competitiveness (Zott and Amit, 2007). Cucculelli and Bettinelli (2015) observed that firms that changed their BMs innovatively over time exhibited positive changes in their venture performance.

If internationalization is positively correlated to the performance of a company (i.e., Schwens *et al.*, 2018), we can apply this association to internationalization, positioning it as a proxy of firm performance. In other words, BMI fosters internationalization.

Several authors have also investigated internationalization that results from BMI. For example, in his study on born-global firms, Hennart (2014) found that innovative BMs foster international expansion. Cavallo *et al.* (2019) argued that BMI fosters “internationalization to scale” (p. 20). Furthermore, organizational innovation drives export performance by facilitating technological innovation, and digitalization provides opportunities for firms to enter new markets (Azar and Ciabuschi, 2017). Schmitt and Baldegger (2020) noted that digital infrastructure is often required if firms want to succeed in foreign markets. Indeed, digitalization increases the rate of internationalization in born-global firms (i.e., Neubert, 2018) and fosters internationalization (Bergamaschi *et al.*, 2021). In conclusion, as digitalization plays an important role in BMI (Wu *et al.*, 2013; Zhang *et al.*, 2021), innovative digital BMs might stimulate international business endeavors.

One reasonable explanation for why BMI results in internationalization is that, once a firm has innovated its BM, the firm might be able to operate in volatile environments (Schneider and Spieth, 2013). Indeed, maintaining a flexible business strategy is important for firms (Schneider and Spieth, 2013). Once a firm has innovated its BM, it is also likely to undergo other innovative decision-making processes, including internationalization. Another reason BMI might lead to internationalization is the need to reduce the costs associated with innovation and research and development (R&D), which often occur before any sales are made. It has been suggested that firms must grow through internationalization in order to remain in the market and “cover their initial sunk expenses” (Kyläheiko *et al.*, 2011, p. 511).

In sum, the purpose of BMI is to drive firm growth. As internationalization is a type of firm growth, this means that BMI can lead to international success. Internationalization positions firms in a turbulent and competitive environment. To fit into this new environment, firms should change their BMs.

3. Methodology

We conducted an in-depth multiple-case study (Eisenhardt, 1989, 2021). A multi-case study approach is suitable for investigating the best BMI practices in an international context (Cao *et al.*, 2018).

Multiple-case studies help to explore processes in which the theory is not well developed (Yin, 2009), which is the case with our research question. Following this approach, we collected longitudinal data to better understand the dynamics and temporal development of BMI in an international context as well as to find similarities (patterns) and differences (Eisenhardt, 2021).

3.1. Sample selection

Three criteria were developed for theoretical sample selection. First, focus was placed on organizations with innovative BMs that contrast to those typically seen in various industries. By investigating established firms in mature industries that have developed an innovative BM, our study fills a gap in the literature, as previous research efforts have largely disregarded these organizations (Saebi *et al.*, 2017; Bashir *et al.*, 2020). Second, to be selected, businesses should be active in international markets. Third, they should have successfully innovated their BM (i.e., industry awards and/or economic success).

To represent a variety of industries, we contacted 123 experts on BM development in 18 European markets. Thirty-one experts suggested companies that, in their view, met the study's three pre-defined criteria. In total, 185 different companies were recommended. We eliminated certain companies in instances where it was found that the existing literature sufficiently illustrated their BMs. Applying desk research, two researchers independently assessed the remaining companies that met the inclusion criteria. As a result, 33 companies were selected for inclusion in this study, and contact was made with the managing directors. Of those companies, some did not want to participate or provide sufficient information. In total, nine agreed to fully participate in the study, all of which were B2B (business-to-business) operations, with one company offering both B2B and B2C (business-to-consumer) services. The number of companies in our sample lies within the ideal range for a multiple-case study according to Eisenhardt (1989). Table 1 displays the final participating businesses. Generic business names are used to ensure the anonymity of the participating interview partners.

<< Insert Table 1 approximately here >>

3.2. Data collection method

We followed a classic approach in terms of collecting qualitative data from multiple cases (Eisenhardt, 1989, 2021). We talked to three persons from each firm who had been engaged in the development

and/or international marketing of the firm’s BM. Talking to several persons helped to ensure the validity of the data (Hannah and Eisenhardt, 2018; Yin, 2009). We used a guideline (semi-structured interviews with in-between questions if necessary) to 1) fully understand the BMs, 2) find out to the extent to which firms made changes in their BMs when addressing new markets, and 3) to track the events that occurred step by step (Eisenhardt, 1989) in the course of BM development. Interviews were conducted remotely between May and November 2020. The total duration of all interviews was 25 hours and 59 minutes. Additionally, 3,597 pages of supplementary material (website data and PDFs) and video material were collected through an internet search using pre-defined keywords. This secondary data contributed to a better understanding of the development of BMs for international markets.

<< Insert Table 2 approximately here >>

3.3. Data analysis procedure

Interviews were coded using the MAXQDA software program, applying two different approaches. First, relevant text passages were coded to pre-defined categories of changes that were made and the reasons for those changes. Second, an open coding approach was used to understand the individual growth pathways of the companies. We summarized the coded information and case histories in case vignettes (Hannah and Eisenhardt, 2016), using content analysis procedures (Mayring, 2000). To ensure objectivity, the coding of text passages and development of the case vignettes was performed by one researcher, which were then reviewed by the second researcher.

To better understand the patterns of BMI, we then visualized the event history using network displays (Miles et al., 2014), building on a general process model of entrepreneurial leaps (Sternad and Mödritscher (2020). At this point, we realized a difference in terms of BMI types. While some changes in the business model were quite complex, others appeared to be simpler. We found that this observation matched the idea of incremental and radical innovation.

In contrast to incremental adaptations, radical changes were much more complex to describe, as they have consequences for other dimensions of the BM. A radical change triggers a chain of transformation in all dimensions of the BM by initiating adaptation of either its value proposition or value creation aspects. Radical changes reflect architectural transformations that had a major impact on the BM itself. These

changes bring about “further changes within that component or in others” (Demil and Lecocq, 2010, p. 235).

<< Insert Figure 1 approximately here >>

We broke down the first draft of the visualization of event history into smaller entities and went through the visualizations of the BMI processes several times to ensure reliability. In this part of the analysis, the DSA also played an important role (“entrepreneurial leaps”) as a basic model to test how BMI behaves in the context of internationalization using our empirical data. The visualization of the single events of radical changes (always building on the DSA) were then abstracted to find similarities between the radical changes. Again, we used the three BMI dimensions (Clauss, 2017) to abstract the patterns involved in radical change. Additionally, the triggers and outcomes of the process were described, providing insight into whether the process was triggered by internationalization or led to internationalization. All radical changes were then classified as either “internationalization as trigger” or “internationalization as outcome.” We also categorized the radical changes according to one of the three dimensions of BMI, depending on which seemed to be the primary BMI dimension that had been addressed during the process. For the incremental BMI, it was sufficient to describe and systematize them with the help of tables (Miles and Huberman, 1994). Figure 1 provides an example of the particular stage of analysis of the radical BMI.

4. Results

4.1. Patterns of radical changes

As far as radical changes, each company underwent between one and three radical innovations of their BMs. In total, 18 radical changes were observed. Five radical changes were triggered by internationalization, and in 13 examples the BMI stimulated international business activities.

In the following description, each radical change is categorized based on an assigned generic firm name (i.e., “E1”), with a number allocated to the radical change in parenthesis (i.e., “#2”).

In patterns A and B, internationalization is an outcome of BMI. Pattern A deals with the “improvement of internal processes” (two observations). In the case of E1 (#1), which was previously limited to a regional market in Germany, the founders demonstrated a deep fascination with digitization,

contemplating ways in which new technologies could be used to benefit their company. After identifying an analog process that seemed appropriate for the project in question, they commissioned a software developer to create an app. During the test phase, the solution developed for the employees appealed to customers. The customers requested an app they could use independently. As these B2B customers were internationally active, the app had to fulfill certain requirements to function in international markets.

Then customers came and said, but I want to do it myself. So, the 'do it yourself' option. Then customers came [and said]: That's good, but I have a factory in Slovenia, I have a factory in Italy. Could you make this international for us? [CEO/Founder, E1]

The outcome of the “exploiting new technologies” pattern manifested in “strengthening existing relationship with international customers.”

In Pattern B, the focus was on what we termed the “market position,” which relates to the proposition of new value. This could include instances in which firms were growing through a) offering additional value for existing customers, b) servitization, or c) gaining market know-how. A total of 11 observations were made that fell into this category, making it the predominant pattern among the radical changes identified. C2 developed a platform for existing B2B customers to enable them to rent out certain capacities of the machinery used for production, which allowed the company to generate revenue even during periods of reduced product demand. The technological infrastructure of this platform was developed with the help of a research network and strategic partnerships. The main benefit for the company was to offer additional value for existing customers, which simultaneously provided the possibility to strengthen its market position globally. In addition, the firm could address new customer segments.

And we said: Great, now we will go to our customers. You can also do something with our [products], which have now become incredibly digital. Your [products] start to communicate with each other [...] Then we had to find other markets and user areas that are more flexible and willing to join as beta testers in order to be able to present the 'proof of concept' in the network accordingly. [CEO, C2]

Growing through servitization was also a way for some firms to foster international business activity.

For example, F2 (#1) developed a servitization-based model to respond to customer demand and increase the firm's presence in the market.

The topic of [product as a service] goes back to 2014 for us. Interestingly enough, the trigger was a customer [...] who essentially confronted us with the idea: "Why can't I just get [the product] as a service right away?" [Vice President Sales & Business Development, F2]

Servitization as a BMI pattern was chosen by firms to intensify international market presence or to "develop towards a global company."

It was not easy for us to move from multinational to global, because at the beginning you put together companies. You just control the income statement, the cash flow. You are not able to change the product line too much in order to be able to adopt the same product line on a global scale. This business model transformation was also important to create a global company, not just a multinational company. [Chairman of Director's Board, C3]

H1 (#1) is an example of growing through gaining market know-how. The management team was aware of the fact that, if the firm entered international markets, it would be necessary to address different customers and identify who was paying for their services. Therefore, this organization had to develop profound know-how regarding its target markets. Based on research, the organization was able to address the right customers and, additionally, adapt the value capture mechanism for different markets.

What we do adapt is how we work with the payer side. Because one peculiarity about health care is the person paying the health care is usually not the person consuming. That's different from a lot of consumer branches industries. [...] the way the healthcare is paid is different, and that's the side we adapt country by country. And that really depends on how the local health care systems function and how they work. [Vice President Operations, H1]

The "gaining market know-how" BMI pattern helped to start international business activities as well as to intensify the organization's existing market presence.

We also identified two patterns in which internationalization was a trigger, rather than an outcome, of BMI. Pattern C refers to a type of change where the concept of "reorganization" is central (two

observations). One example is the case of C1 (#3). The firms's increasing growth in international markets led to internal restrictions, as the firm did not have sufficient resources to cope with all the requests received from both new and existing customers. In response, it built a platform to manage communication with global customers, which was then transformed into a crowdsourcing resource, through which all participants could share their knowledge. In summary, this offered new possibilities for generating revenue and, thus, a new BM.

We have noticed that if we want to scale the issue, we cannot continue to work like this. If we have 50 countries to look after, then we have a staff here that no one can afford. This means that we have tried to use certain automatic mechanisms, the platform, to set it up better, more effectively, more rationally. We have been working very hard on developing this for two years and are now at the first level, where we have published the platform once and put it online once.

[Market Coordinator, C1]

F2 (#2) initiated a change process of decentralization. The head company had first handled the sales function, which was then transferred to the respective subsidiaries in different countries following internationalization. Clear processes were necessary for this change. Until this point, the company had worked closely with and sold to electricians. Due to expansion, the central sales office could not manage the demand from international markets on its own. The electricians who had been selling their products thus far were no longer customers of the firm. In response, the company began to address new customer segments in the retail sector.

It is generally a change issue [...]. In the B2B sector, we are part of the construction industry. [...] from a commercial point of view, our customer is the wholesaler on the one hand and the specialist electrician on the other. [...] The [servitization business model] means that we work directly with the end customer. There is a direct relationship between the end customer and the manufacturer, where the customer, an electrician, suddenly becomes a subcontractor. [Vice President Sales & Business Development, F2]

Finally, Pattern D also featured internationalization acting as a trigger of BMI. This pattern is about offering "new goods and services," which involves the possibility of growing through a new value

proposition (i.e., through offering an intangible good, such as know-how; three observations). The case of F1 (#2) demonstrates how internationalization can trigger such a development. This Swiss firm gained international traction with its leasing and pay-per-use BM. Even overseas markets, such as Mexico, displayed interest in this concept. Although the firm faced limited resources, it committed to entering the market with the help of a partner. Specifically, the firm decided to sell the know-how captured in its BM by offering a license agreement to the interested partner in Mexico.

4.2. Types of incremental changes

A total of 31 incremental adaptations were examined. Each company demonstrated between two and eight incremental changes. In terms of the role of internationalization, internationalization triggered the BMI in all instances of incremental adaptation, but not the other way round.

We found several kinds of incremental adaptations. Notably, internationalization seemed to only trigger incremental adaptations; no cases of an incremental adaptation leading to internationalization were found. All companies adapted aspects of value creation. Adaptions that were allocated to the notion of value creation involved adapting structures (six observations), technological adaptations (four observations), and establishing partnerships (three observations). The adaptation of structures specifically relates to editing contracts, both in terms of content (C1, F2, E1, C2) and length (E1):

Another law firm [...] has completely revised this contract. It is now much leaner than before. It used to have 60 pages; now it has 20 pages, with the cover sheet. We've taken certain elements out of the contract and put them into appendices [...]. [Vice President, Sales and Business Development, F2]

C2, E2, and E1 experienced technical challenges, particularly highlighting that they made technical adaptations due to their internationalization endeavors. Similarly, F1 adapted individual components of the sensors that were integrated in its core products in some countries to demonstrate compliance with different technical standards. It also became necessary to incorporate multilingualism within some organizations' digital services or enable intercommunication between systems, regardless of the disparity between incorporated languages:

No, it's extremely difficult because you basically have to come up with a global user and role model. My dealer in China is allowed to access and use certain services, which are then logically displayed in Chinese. My retailer in Sweden may then see them in English or German. That really has a huge complexity. [Chief Technology Officer, E2]

For some companies, internationalization led to changes in how they worked with partners. For example, F2 and C3 had to establish partnerships abroad so that they could continue to focus on their own core business. For these companies, partnerships introduce the challenge of finding financing partners that can both manage leasing and are active in international markets. In-sourcing and out-sourcing in an international context also affected H1. Depending on the market conditions, contractors or employees provide the services. E2 also attempted to apply the BM to distributors, as on-site availability was often necessary, which was frequently easier to achieve via partners.

Another point entails adaptations of the value proposition. This involved communication with customers (six observations), adjusted (six observations) or additional offerings (three observations), and a change in the market coverage to scale the BM (one observation). Businesses adapted their customer approach, not only in terms of content but also in terms of intensity and mode. For C2, E2, E1, and H1, the differences in the respective countries had consequences for communication and explanatory work (i.e., information and explanation provided to convey the benefit to the customer). This is because these are digital BMs, and different customers require varying information, depending on the level of digital maturity in the markets, in order to be convinced of the solution. Due to cultural differences, the degree of the customer relationship for C1 differed in the various markets. As some customers demanded more communication, the business needed to adapt by intensifying cooperation. C3 also observed major differences in the customer relationship, alongside the processing of orders and purchasing, depending on the culture. Likewise, some companies stated that they had to adapt their customer communication and/or provide different information regarding the explanatory work (E2, C2). Thus, adjustments were necessary due to cultural differences and the openness of the respective markets. For example, C2 stated that people in the USA tended to be less open to technology than those in India, which affected communication. This also relates to the communication of the value proposition (C3).

1
2
3 *There are markets that need more support. Some prefer to run as independently as possible.*
4
5 *Some need to be taken proactively by the hand. And some ask you a lot of questions.” [Country*
6
7 *Coordinator, Architecture and Services, C1]*
8
9

10 The most frequently observed incremental changes in our data were additional or adjusted offerings,
11 *which related* to supplementary offerings or minor changes between services and not necessarily to the
12 core value proposition. For example, at C1, customers asked for certain additional services that give the
13 partner more security, such as marketing. Country-specific requirements due to legal differences also
14 triggered changes. For H1, a “customization” of *its* BM was necessary because of the different
15 infrastructure in the target markets, which is why they offer varying services in different countries,
16 depending on requirements. Similar to H1, legal conditions in some countries do not allow the same
17 offering as in the home country. F2 also offers additional services, such as applying for subsidies that
18 the customer can make use of. C4 adapts its consulting services to customer requirements, just as E2
19 sells different machines in some countries because of geographical characteristics or rents an additional
20 operator for the machine to ensure *the* correct usage of the machines. Customer demand for additional
21 services varies according to the legal situation *as well*, so services differ between markets. To mitigate
22 these differences, F2 had to set up a 24/7 call center to ensure a globally functional service:
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37 *We also learned that we have to position ourselves in the marketing field in such a way that we*
38 *can support business development in the respective country with our marketing services.*
39
40 *Initially, we said: ‘Working on your market, doing acquisition, doing marketing - that is your*
41 *job.’ We realized that we could not leave the partners alone in these topics. [CEO/CTO, C1]*
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46 Regarding the value capture mechanism, some companies *indicated that they* made adaptations in terms
47 of their revenue, especially pricing. Based on the gross domestic product (GDP) or other criteria, *firms*
48 *evaluate the market potential and may* adapt their license fees accordingly. In the course of
49 internationalization, C1 recognized that the market coverage of an exclusive license for a country had
50 to be changed in order to make the BM scalable. Regarding value capture, the license model of C1 had
51 to be adjusted in terms of royalties:
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If you take Iceland, for example, with 250,000 inhabitants, and now you take the Netherlands. Then it would be unfair if you charged the same royalty in Iceland as in the Netherlands.
[Director of Global Licensing, C1]

E1 had to consider different labor costs in the different markets, and E2 adjusted its prices for different markets. H1 also had different models for its profit formula because of the different payer profiles in each country's markets. The CEO of the company noted that countries in close geographical proximity do not necessarily have similar requirements:

For example, in terms of the payer infrastructure, there are more similarities between UK and Norway than between Norway and Sweden. So even nations that are very close, have very different payer infrastructures or set-ups, when it comes to health care. [CEO/Founder, H1]

Interestingly, we did not observe that firms adapted any element of their capabilities, their market channels, or their cost structures due to internationalization.

5. Discussion and conclusion

To compare radical changes and incremental adaptations, we matched the four patterns of radical changes and eight types of incremental adaptations to the four types of innovation processes (Tidd *et al.*, 2005; Figures 2 and 3). In this way, we positioned our results on forms of BMI related to internationalization in the existing context of general forms of innovation.

<< Insert Figure 2 approximately here >>

<< Insert Figure 3 approximately here >>

Figures 2 and 3 show how internationalization functions as either a trigger or outcome. Internationalization as an outcome may lead to the increasing involvement of a firm in international business (see outcome 1, 2a, 2b, 3 in figure 2). Internationalization as trigger can be classified into internal (I) or external-related (E) aspects.

Pattern A comprises radical changes related to the "improvement of internal processes." Tidd *et al.* (2005) regarded process innovation as changes in the creation and delivery of better products or services.

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3 In the context of this paper, process-related BMI focuses on using new technologies to improve value
4 creation.
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7 Pattern B comprises marketing-related BMI, including measures to broaden the firm's market position
8 by offering a servitization-oriented BM, supplying additional value for existing customers, or gaining
9 market know-how. Conversely, Tidd *et al.* (2005) emphasized "position innovation" (p. 10), which
10 refers to a switch of the context in which goods or services are introduced to the market and the re-
11 positioning of an existing product to a new context.
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15 Pattern C focuses on "reorganizing," thereby implying a type of organization-related BMI, with some
16 cases of radical changes occurring because of the need for reorganization. These radical organizational-
17 related changes are structural changes and contrast the understanding of paradigm innovation presented
18 by Tidd *et al.* (2005). Paradigm innovation focuses on the management of mental processes and refers
19 to changes in the underlying mental models that shape what the organization does.
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23 Pattern D comprises a shift to offering "new goods and services," thus relating to product-related BMI.
24 According to Tidd *et al.* (2005), product innovation implies changes in a product or service by using
25 new or existing technologies, including the development and marketing of new products and services.
26 The authors pointed out that, especially for service innovation, it might not always be clear whether it
27 is process or product innovation. In the present study, we observed six examples of servitization-related
28 BMI processes. Interestingly, our classification of "growing through servitization" does not match with
29 a process or product innovation type but rather with a marketing-related pattern, as the main outcome
30 for the firm was enhancing its (international) market position.
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34 The eight types of incremental adaptations match the typology described above. Process-related BMI
35 involves the adaption of technologies and structures (i.e., contracts) in certain markets. Marketing-
36 related BMI involves adjustments in the communication with customers, a change in the market
37 coverage to scale the BMI, and adaption of price conditions. Marketing-related BMI was also the most
38 frequently observed pattern within the identified incremental adaptations. Organization-related BMI
39 involves the establishment of partnerships. Changes in value creation are more likely to occur during
40 incremental changes. Meanwhile, product-related BMI involves additional and adapted offerings.
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5.1. Theoretical implications

Existing research on the nexus between BMI and internationalization is scarce. Cao *et al.* (2018) explained how firms adapt their BM in an international context but did not consider the various dimensions and components of a BM. Thus, the current paper enriches the literature by shedding light on the question of how BMI unfolds in an international context, considering the various BMI dimensions.

In order to understand the BMI process before or after internationalization, we considered the dimensions of BMI as defined by Clauss (2017). We did not observe any example of radical BMI that were initiated in the value capture mechanism, and it always marks the end of the BMI process. This finding is in line with Demil and Lecocq (2010, p. 241), who argued that “drastic changes in a BM’s revenue and/or cost structures occur because of radical BM changes.” Changes in the value capture mechanism should mark the end of the journey, not the beginning. Most radical changes were initiated in the dimension of value proposition innovation. These findings are important, indicating that firms must work on their value proposition first before moving onto other aspects of BM dimensions.

Furthermore, this paper augments the research relating to BMI and internationalization by providing insights into the question of whether BMI results from or leads to internationalization. We enrich the existing research by building our study on the theoretical foundation of the DSA to understand the requirements of the complex process of firm growth. Based on our observations, we offer the following contributions, to help to identify when internationalization is an antecedent or outcome of BMI.

As a first contribution, we can state that radical BMI patterns contribute to internationalization in terms of increasing involvement in international business rather than being triggered by internationalization. Conversely, incremental BMI is triggered by internationalization and does not lead directly to increasing involvement in international business. In fact, we found that radical changes are more likely to lead to internationalization than to be triggered by internationalization. Looking at internationalization as an outcome, BMI may contribute to increasing involvement in international business activities. In most cases, firms have already had a presence in international markets, and a radical BMI helped to foster that existing presence. According to our results, internationalization triggered all 31 incremental adaptations. We did not observe any incremental adaptations that resulted in internationalization.

Using radical BMI that leads to internationalization might be challenging, as radical changes are much more complex and require orchestration on both the individual and organizational levels (i.e., Ritala *et al.*, 2009). It seems that radical BMI serves as a tool for strengthening existing relationships with international customers or intensifying a firm's market presence (second level). Hence, as a second contribution, we can say that only a few radical BMI initiatives (offering new added value and gaining market know-how) serve to initiate international business activity. Most strengthen or intensify existing international operations.

Third, analogously to the internal or external triggers that precede entrepreneurial leaps (Sternad and Mödritscher, 2021), we also observed internal and external internationalization-related triggers of incremental and radical changes. This is similar to the classification of external and internal export stimuli (i.e., Morgan, 1997). However, based on our data, we suggest a difference between radical and incremental BMI. Importantly, incremental changes seem to be a reaction to external requirements. In fact, triggers of incremental BMI are usually external and relate to different cultural, legal, or market-related requirements. Furthermore, requirements may change due to internationalization, they can act as internal triggers both for radical and incremental BMI.

Finally, from the patterns and types of BMI that we have described, we can also observe a difference in terms of occurrence, indicating that the different types of BMI (radical and incremental) are used for different purposes: most radical adjustments aim to strengthen firms' market position, whereas they use incremental adjustments to improve processes as well as to pursue marketing- and product-related objectives.

5.2. Managerial implications

Our findings also have managerial implications. First, companies desiring to develop a new BM should consider the aspects involved in internationalization from the very beginning. For example, a firm that wants to use a new digital technology for an internal application should consider that this idea could inadvertently have positive side effects that benefit other stakeholders. Therefore, entrepreneurial ventures should also explore internationalization opportunities and related needs in terms of internal resources and capabilities when developing a new BM.

Second, our observations of incremental adaptations demonstrate that companies must inevitably manage the ways in which internationalization affects their BM. Therefore, a comprehensive look at a firm's own BM can aid in the development of an internationalization strategy to avoid expensive changes in the future. Firms that internationalize should also increase their knowledge on BMs and how to utilize the BM concept as a tool for analysis, as doing so could help to prevent unpleasant surprises. Incremental changes are a tool that support continuous learning and adaptation to the internationalization process. Specifically, managers can analytically assess the core functions of their businesses and consider which adaptations may need to be made. It also seems necessary to increase managers' awareness of the issue of BMI in the context of internationalization, as many interviewees noted that their mistakes were paid for dearly.

5.3. Limitations and future research

Apart from the limitations commonly attributed to qualitative studies, our sample mainly featured international entrepreneurial firms in the B2B context. It may be worth considering if circumstances and challenges are different for B2C organizations.

We did not explicitly ask the participating organizations which adaptations were made for each individual dimension and element of their BMs. It could be the case that these companies implemented some changes in the BM that remain hidden. We tried to counteract this limitation by speaking to three people in each company, but future research could highlight further aspects of BMI through a different study design.

It also remains unclear why there were no examples of incremental changes that resulted in internationalization in our data, which marks another element that is open to further discussion and research. Furthermore, it could be interesting to examine whether there are any differences by industry. While we looked at the dynamics and order of radical and incremental BMI, we could not observe any specific pattern among them. More in-depth research is needed to determine whether there is an interrelationship between incremental and radical BMI and how the dynamics between the two evolve in the context of internationalization.

Based on the results of our study, it is not possible to conclude that the degree of any specific factor (i.e., institutional and/or psychic distance) has an effect on international BMI. First, we must be cautious

when quantifying qualitative observations, as every case has unique circumstances. Second, we believe that while both aspects of international BMI (radical and incremental) help firms grow internationally, radical BMI will act as a “booster.” There are several factors to consider with regard to the intensity of BMI, including the industry or regulations within the industry as well as the maturity of the existing and new BM. Finally, our analysis does not provide information on how much time or resources were needed for the implementation of BMI.

To conclude, this study sheds light on what exactly changes in the BM related to internationalization. Our study is novel in its use of the DSA as its theoretical basis, making it possible to consider the complex interrelationship between BMI and internationalization. Overall, the study presents a detailed qualitative analysis of different patterns of radical and incremental BMI processes that are either triggered by or lead to internationalization.

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Tables

Firm	Industry	Location	Manager-owned	Spin-off	Internationalization strategy	Internationalization scope
C1	Construction	Austria	yes	yes	Licensing	Europe, Asia
C2	Plant construction	Austria	no	yes	Direct export	Europe, Asia
C3	Hardware & software	Italy	yes	no	Acquisitions	Europe, North-America, Asia
C4	Plant construction	Italy	no	no	Acquisitions	Europe, America, Asia
E1	Engineering	Germany	yes	yes	Direct export	Europe
Table 1: Sample description					Direct and indirect export	Europe, Afrika, America, Asia
E2	Engineering	Austria	yes	no	Subsidiaries (commercial)	Europe
H1	Digital health care	Sweden	yes	no	Direct export	Europe, Latin-America, Asia
F1	Furniture	Switzerland	yes	no	Subsidiaries (commercial)	Europe
F2	Electronica	Austria	no	no		

Firm	Date	Job position	Since	Duration	Transcription	Language	Additional material	Additional videos
C1	08/09/2020	Director of Global Licensing	2016	01:32:01	16	German		
	10/09/2020	CEO/CTO	2010	01:11:09	12	German	253	01:07:58
	01/10/2020	Market Coordinator	2016	00:47:21	10	German		
C2	13/11/2020	CEO	2020	01:02:01	11	German		
	26/11/2020	Customer relations	2018	01:05:08	9	German	16	-
	24/11/2020	CEO of partnering firm	N.A.	01:25:05	10	German		
C3	19/05/2020	Chairman of Directors' Board	1992	01:34:47	15	English		
	26/05/2020	Chief Strategy Officer	2010	01:23:52	16	German	500	01:17:51
	28/05/2020	Chief Financial Officer	2008	00:47:59	8	English		
C4	22/09/2020	Chief Operating Officer	2016	01:18:00	10	Italian		
	08/10/2020	Technical Coordinator	2016	01:05:00	9	Italian	368	-
	08/10/2020	Executive Vice President Sales	2014					
E1	04/11/2020	Head of Sales	2018	01:04:51	12	German		
	05/11/2020	CEO/Founder	2018	01:02:44	9	German	175	00:04:19
	10/11/2020	Technical Support	2020	00:54:07	8	German		
E2	15/07/2020	Chief Technology Officer	2019	01:06:29	12	German		
	29/07/2020	Chief Sales Officer	2019	00:44:36	8	German	188	00:02:11
	27/08/2020	Event & PR	2015	00:27:52	8	German		
H1	26/08/2020	CEO/Founder	2014	01:01:31	8	English		
	02/10/2020	Vice President of Business Development	2018	00:30:52	5	English	142	00:01:23
	23/10/2020	Vice President Operations	2020	00:24:38	4	English		
F1	12/05/2020	CEO	2006	01:04:37	12	English		
	25/05/2020	Sales Assistant	2018	01:09:30	14	German	308	00:15:09
	10/06/2020	Sales Deputy	2016	00:21:39	5	German		
F2	09/07/2020	Vice President Sales & Business Development	2017	01:01:42	11	German		
	28/07/2020	Senior Manager Business Development	2020	00:48:29	9	German	1.647	00:37:58
	16/07/2020	Vice President Services & Solutions	2018	01:03:01	13	German		
Total				25:59:01	264		3.597	03:26:49

Table 2: Overview of interviews and data material collection

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Figures

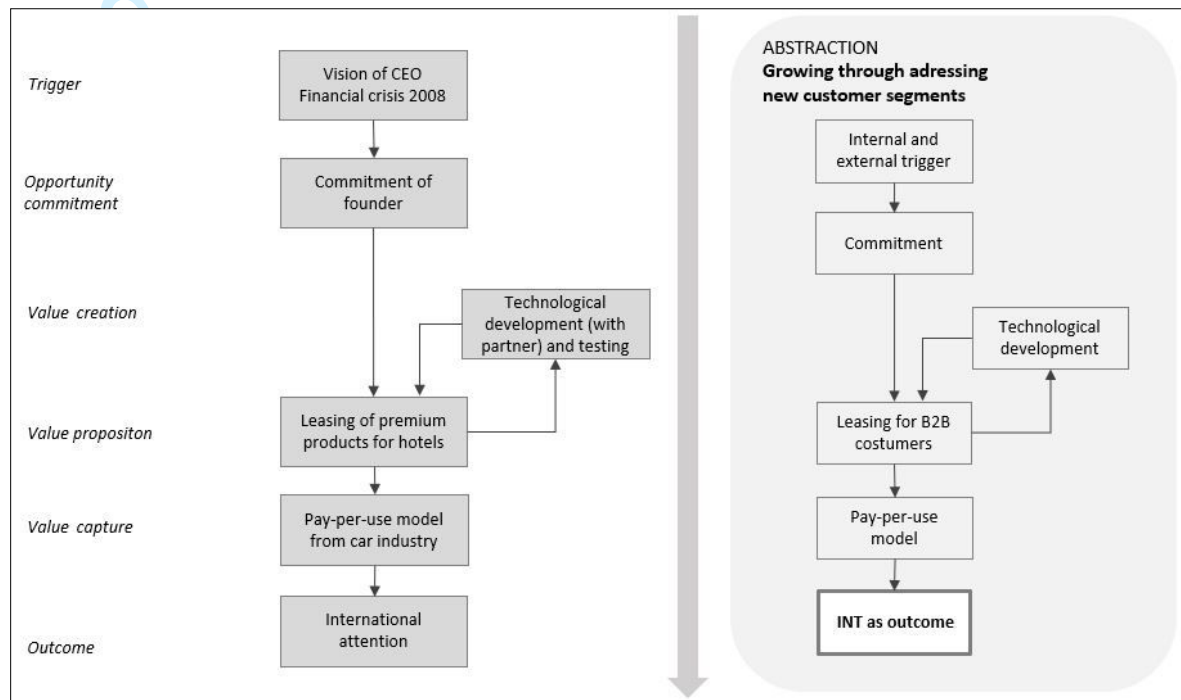


Figure 1: Example of network analysis method

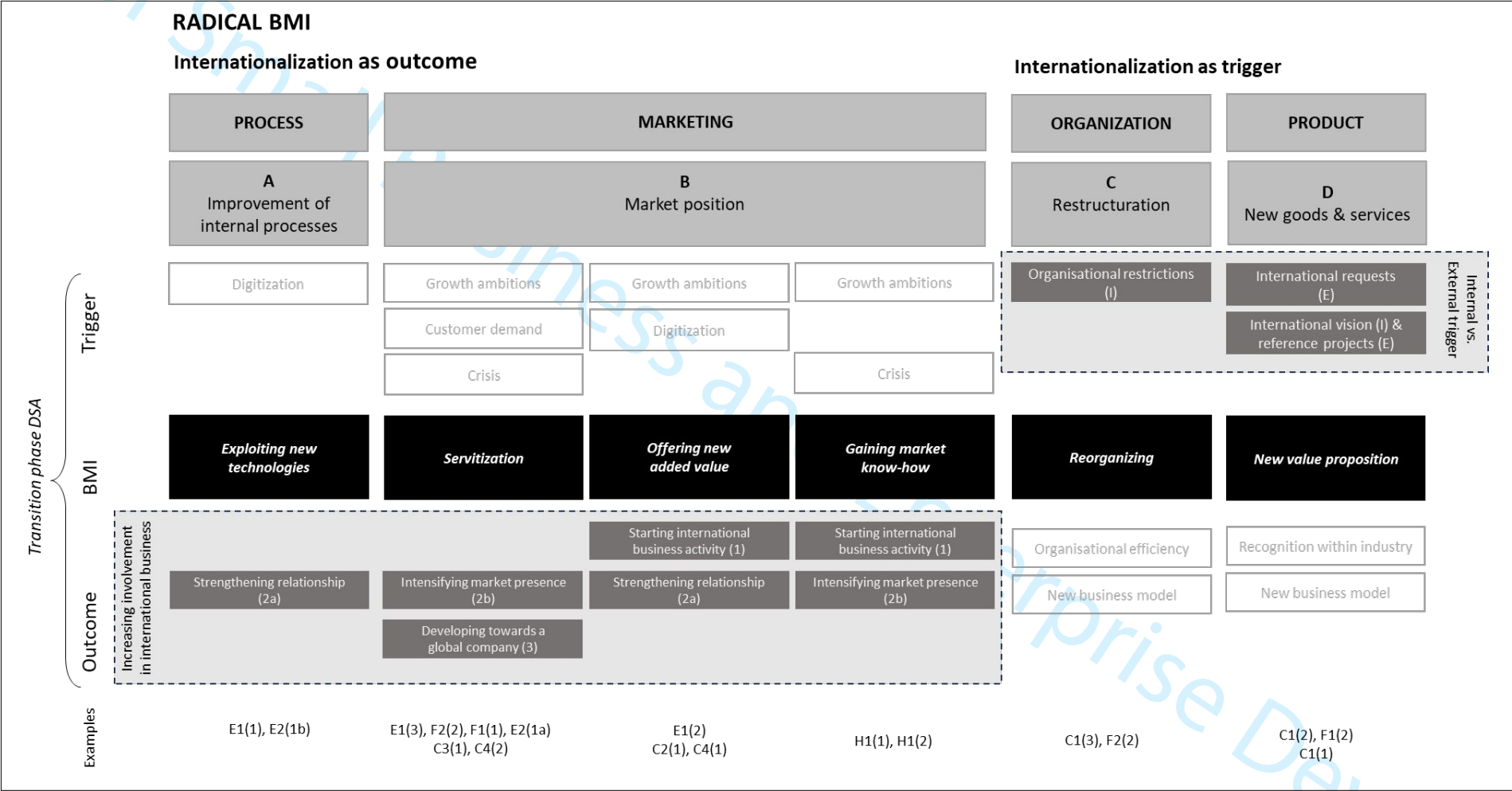


Figure 2: Radical BMI and internationalization

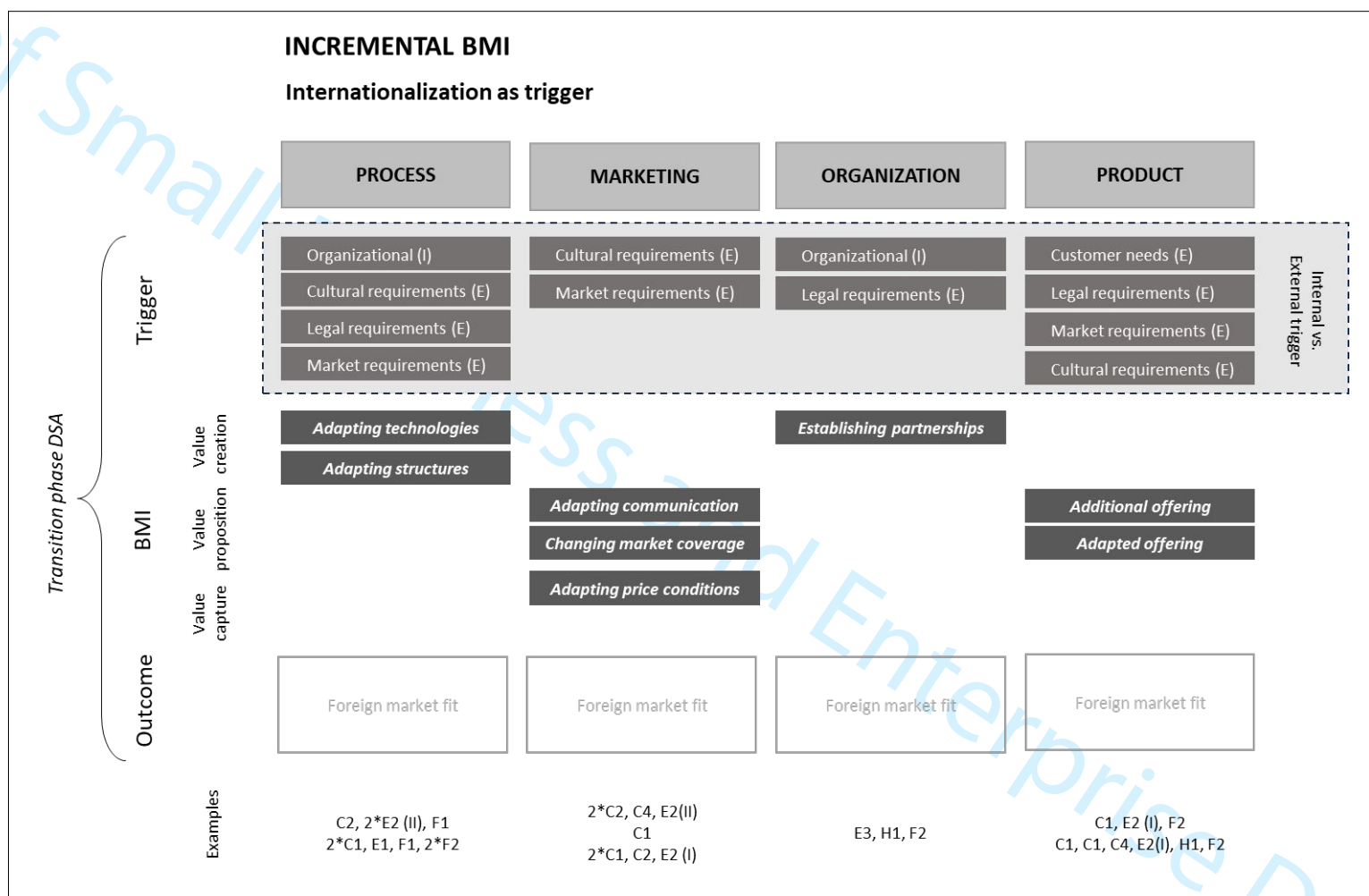


Figure 3: Incremental BMI and internationalization