LUND UNIVERSITY
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# Exploring the B2B Innovation Decision Making Processes

Stories from the Functional Food and Consumer Health Care Industry

by

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# Abstract

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**Keywords:** Adoption of Innovation; Organizational Adoption Decision; B2B decision-making; Incremental Innovation; Radical Innovations; Psychological barriers to Adoption of Innovation; Innovation Resistance

**Research question:** *How do Psychological Barriers to Adoption of Innovation Evolve throughout the Organizational Decision-Making Process?*

**Methodology:** As part of this research, an inductive and qualitative study which is based on data collection through semi-structured interviews has been conducted. The research methodology relies on a longitudinal case study and takes an interpretive epistemological approach. The approach to data analysis has been in line with the methodology by Gioia, Corley, & Haamilton, (2013) and some elements of Eisenhardt, (1989).

**Theoretical perspectives:** Rogers'(2003) innovation decision-making process and innovation resistance research as summarized by Joachim, Spieth, & Heindenreich, (2018). Comparison between Innovation Adopting Organization (IAO) and Innovation Generating Organization (IGO) as researched by Damanpour & Wischnevsky, (2006).

**Conclusion:** A dynamic model which reflects the comprehensive view on B2B decision making shows that an innovation-decision process by an Innovation Adopting Organization can be divided into two parts. In the first part (pre-decision phase), the decision is made by an organization, while in the second part (post-decision phase), the decision power shifts to consumers. The psychological barriers that have been identified based on consumer studies are also applicable to the organizational settings. Further on, the pre-decision and post-decision phase experience similar challenges; social risk, economic risk and resource risk are present in both phases, but manifested differently.

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# List of Abbreviations

| | |
|---|---|
| B2B | Business to Business |
| RQ | Research question |
| R&D | Research and Development |
| APAC | Asia-Pacific |
| EMEA | Europe, the Middle East and Africa |
| IGO | Innovation Generating Organization |
| IAO | Innovation Adopting Organization |

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# 1. Introduction

## 1.1 Background

*To adopt or not to adopt innovation?*

*"If you want something new, you have to stop doing something old"*

Peter F. Drucker

Many researchers have been trying to solve the puzzle of innovation adoption for years (Rogers, 2003; Geroski, 2000; Vowles, Thirkell, & Sinha, 2011; Reinhardt, Hietschold, & Gurtner, 2017). While considerable efforts have been made to gather knowledge about the adoption itself, the resistance to it remains a bit of a mystery. From a theoretical point of view, the adoption is defined as a decision to fully and continuously use an innovation, hence to adopt or not to adopt innovation primarily depends on the outcome of the decision-making process (Sahin, 2006; Rogers, 2003). While the decision process itself has also been researched throughout the years, an understanding of how it relates to innovation resistance remains relatively unexplored (Talke & Heidenreich, 2013). Not all individuals and not every organisation adopt innovation. In fact, many new products fail to be adopted widely (Cohen, Wesley, & Levinthal, 1990; Steward et al., 2019).

Simultaneously, the business environment keeps changing, and companies face pressure to innovate and stay competitive, thus acknowledging the importance of innovativeness is crucial for the survival of most businesses (O'Connor, 2006; Kumar, Haleem, & Sushil, 2019; Kodama, 2017; Klein & Knight, 2005). However, awareness and initiation of innovation are not sufficient enough; it is only when an innovation is implemented and put in use that it can be considered a novelty and meet the objectives of innovating (Damanpour & Schneider, 2008). In other words, understanding the process of innovation adoption is of great importance to companies who want to stay ahead of their competitors.

Nevertheless, understanding the process of innovation adoption is not easy as the globalization and the emerging markets continuously bring changes to business practices (Grewal, et al., 2015; Turulja & Bajgoric, 2019). Consequently, many companies need to keep their innovative products relevant to their customers' needs and understand their perception of innovativeness to stay competitive (Turulja & Bajgoric, 2019; Rothwell, 1994). The perception itself plays an

important role in the decision-making process by which customers decide to adopt or reject a new product or technology (Rogers, 2003; Geroski, 2000; Tornatzky & Klein, 1982; Frambach & Schillewaert, 2002). It is, however, essential to distinguish between the different types of decision-making processes, as a decision to adopt an innovation or not can vary significantly between consumers and organizations. For example, the decision made by consumers can be based on impulses and emotions, but the decision-making process by which organizations decide whether to adopt or not to adopt an innovation is more complex (Vowles, Thirkell, & Sinha, 2011; Pilelienė & Rėklaitis, 2019; Wisdom et al., 2013). Within the organizational context, companies usually want to know more about the logic of the product, quality, price, terms of trade, volume discounts and alternative solutions (Pilelienė & Rėklaitis, 2019). Overall, the organizational process of innovation adoption is more challenging and involve planned activities in which several people who are part of a larger network make decisions about adopting or not adopting an innovation (Aarikka-Stenros & Lehtimäki, 2014; Makkonen, Hannu & Johnston, & Wesley, 2014).

Due to its complexity, the organizational decision-making process is seen as a risky business; hence many factors need to be taken into consideration before making important decisions (Pilelienė & Rėklaitis, 2019). It would make sense to think that companies who generate innovations must evaluate the market potential first and ask themselves: "Do our customers want our product? ", "Can we expect a good return on investments?". Desouza, et al., (2008) claim that successful companies are those who let their customers drive innovation, which in the long run, creates sustainable businesses. Christensen, (1996), on the contrary, claim that focusing too much on the customers leads to overlooking of the new emerging customer needs. Consequently, companies end up missing the window of opportunity to introduce a disruptive innovation that does not meet current customers' needs. Overall, seeing innovation from Christensen's point of view poses a new question: *"Do customer know what they want?"*

## 1.2 Problem Discussion

One of the most challenging issues within the field of innovation is the non-adoption of new products, technologies or services. Moreover, the benefits of innovation can take many years to be fully effective (Tidd & Bessant, 2004; Kirchner, Smith, Powell, Waltz, & Proctor, 2020; Geroski, 2000). A typical example is the healthcare industry where basic science and clinical

trial researchers can spend years, even decades, developing innovations that have limited implementation in routine clinical care (Kirchner et al., 2020). Educational and social changes may take another decade before the drug is prescribed and adopted by patients (Cohen, Wesley, & Levinthal, 1990). Furthermore, if the decision not to adopt an innovation becomes an active rejection in a market, it will lead to a decrease in revenues and failure to reach the mainstream market (Joachim, Spieth, & Heindenreich, 2018).

Anyhow, the adoption of innovation is a complex problem since the customers who intend to adopt innovation differ in many ways; the differences exist between the determinants of early adoption, intent to adopt later, and unawareness of the innovation (Rogers, 2003; Aarikka-Stenros & Lehtimäki, 2014; Kim & Huarng, 2011). While research until now mainly focused on the different stages of the adoption and diffusion processes, not much has been researched on the transition between them from a resisting perspective (Joachim, Spieth, & Heindenreich, 2018; Reinhardt, Hietschold, & Gurtner, 2017).

With this in mind, a better understanding of the shift from non-adopters to adopters continues to be an essential part of research on innovation resistance (Reinhardt, Hietschold, & Gurtner, 2017; Laukkanen & Kivinemi, 2010). Moreover, most literature until now explored the field of innovation resistance among different groups of consumers (Bozbay & Yasin, 2008; Reinhardt, Hietschold, & Gurtner, 2017), but the similar research within B2B (business-to-business) context seems not as equally prioritized and needs further attention (Steward et al., 2019; Frambach & Schillewaert, 2002; Asare, brashear-Alejandro, & Kang, 2016; Schwarz & Schwarz, 2014; Vangani, Gatti, & Proietti, 2019). Based on these insights, researching innovation resistance within B2B settings seems promising, and a research gap has been identified.

This study will, however, not focus on the broader context; thus, the effect of marketing, social network and manager characteristics on the decision-making processes will not be investigated. Instead, the scope of this study will be to investigate how the barriers to innovation adoption evolve throughout the decision-making process. Previously, different barriers have been identified and studied (Joachim, Spieth, & Heindenreich, 2018; Kapoor, Dwivedi, & Williams, 2014; Tornatzky & Klein, 1982; Frambach & Schillewaert, 2002). However, as the psychological ones are still relatively unexplored within B2B settings (Talke & Heidenreich, 2013), this research study aims to specifically investigate if the psychological barriers

perceived by consumers apply to the organizational settings and the decision-making process. Moreover, as the psychological barriers have been associated with risk-taking, and the decision-process itself is a risky activity, these barriers are more applicable to the organizations and people, as well as resistance to innovation which is the research gap identified.

Additionally, the research approach taken in this study may allow for discovering entirely new psychological barriers that are present within B2B settings. Lastly, as the success of innovation adoption often depends on the role of leadership, their perspective was interesting and chosen in this study (Kumar, Fuksa, & Kumar, 2007; Wisdom et al., 2013), hence the research question (RQ) was formulated as:

*"How do Psychological Barriers to Innovation Adoption Evolve throughout the Organizational Decision-Making Process?"*

A perspective of the Leadership in Innovation-Adopting Organization

## 1.3 Research Purpose

This study aims to explore the challenges associated with innovation adoption in a B2B setting. By understanding the organizational decision-making process and how the barriers to innovation evolve and influence the decisions made by the customers, companies can easier position themselves on the global market and be prepared to deal with the unpredictable nature of the commercialization process (Aarikka-Stenros & Lehtimäki, 2014). The outcome of this study will fill the gap of innovation resistance (Joachim, Spieth, & Heindenreich, 2018) and provide a better understanding of the transition from non-adopters to adopters (Reinhardt, Hietschold, & Gurtner, 2017). Overall, this study will make a contribution to the adoption of innovation literature. Moreover, an understanding of the transition from non-adopters to adopters and how the decision-process evolves can also help companies develop more realistic business plans (Tidd & Bessant, 2004).

## 1.4 Key Concepts

Table 1 Key concepts

| CONCEPT | DEFINITION | AUTHOR |
|---|---|---|
| **Innovation** | Ideas successfully applied in practice | Schumpeter 1911 |
| **Radical Innovation** | Discontinuous innovation, breakthrough innovation, paradigm-shifting | (Ahmadi, 2018) |
| **Incremental Innovation** | Small continuous improvements of the products, processes or services | (Harrigan, Ang, & Wu, 2017) |
| **Adoption of Innovation** | An innovation is implemented and put in use by the adopting organization or | (Damanpour & Schneider, 2008) |
| **Diffusion of Innovation** | Translation of innovations for social and economic benefits | (Rogers, 2003; Tidd & Bessant, 2004) |
| **Innovativeness** | A continuous phenomenon that can be measured by intensity | (Kunz, Schmitt, & Meyer, 2011; |
| **Psychological barrier** | A barrier that arises when innovation is perceived as too risky | (Kleijnen, Lee, & Wetzels, 2009) |
| **Implementation of innovation** | The decision to adopt an innovation turns into routine use of it | (Klein & Sorra, 1996) |

## 1.5 Case Company

The case company is a medium-sized research-based company, dedicated to B2B solutions in the biotech-healthcare and functional food industry. The company is headquartered in Sweden but has a presence in global markets such as APAC (Asia-pacific), EMEA (Europe-Middle-East-Africa) and North America. Consumer products are available in more than 40 markets around the world, and the company itself is holding over 400 patents worldwide. With regards to the company's innovation portfolio, it is science-driven, and the products are built on a solid foundation of research. However, while their radical innovations have been scientifically proven, there are many new players in the field who sell market-driven products without scientifically proven background. Consequently, this variety of available products result in low

market entry barrier which allows other new players to enter easily. With this in mind, the chosen case company is interesting for the research topic, which aims to understand the adoption of innovation in a B2B setting.

## 1.6 Outline of the Thesis

This thesis is structured as follows: first, the existing literature on innovation is discussed, then a review of the literature on adoption of innovation and barriers to it is presented. Further on, the existing knowledge and literature on the organizational decision-making process for adopting innovation are discussed. Chapter 3 describes the research methodology that is used for collecting and analysing data. This chapter is followed by an examination of the results produced and presentation of the empirical findings. The last chapter covers conclusions based on the findings and recommendation for future research, as well as the limitations of this study.

*Nevertheless, today, the literature on innovation adoption is vast and diverse; hence this thesis only presents a small fraction of the existing knowledge that was found to be relevant for answering the research question.*

# 2. Literature

*Relevant literature inside the field of adoption of innovation is reviewed and presented in this chapter. Due to the qualitative nature of this study, the reviewing approach is narrative (Bryman and Bell, 2011). Keywords such as "Adoption of Innovation", "Organizational Adoption Decision", "B2B decision-making", "Incremental Innovation", "Radical Innovations", "Psychological barriers to Adoption of Innovation", "Innovation Resistance" etc. were used as search criteria.*

## 2.1 Innovation and Innovativeness

Innovation is a core activity in many industries. Engaging in innovation and collaborations is an important strategic move that helps companies maintain their public image of innovativeness (Aghmiuni et al., 2019; Kodama, 2017; Nicolau & Santa Maria, 2015). While innovativeness is defined as a continuous phenomenon that can be measured by intensity (Kunz, Schmitt, & Meyer, 2011; Kuratko, Morris, & Covin, 2011), the innovation itself is seen as a process of creating value from ideas (Tidd & Bessant, 2004). A new idea could be a new product, new technology, service, method of production or even a new market (Damanpour & Wischnevsky, 2006). However, innovation is only considered an innovation when it is successfully implemented and put in use (Damanpour & Wischnevsky, 2006). In other words, innovation, as defined by Schumpeter 1911 is *"ideas applied successfully in practice"* (Miller & Miller, 2012). Many different definitions exist, and in summary, innovation is about making changes to create a competitive advantage.

The degree of change can, however, vary and be classified as radical (doing something different) or incremental (small improvements of current businesses) (Damanpour & Wischnevsky, 2006; Kodama, 2017). These two innovation classifications are frequently used in the existing literature; incremental ones are further defined as an update of the current products, processes or services of the business, while the radical ones show the common attributes of being more explorative by introducing new markets, products and technologies to the business (Kodama, 2018).

Incremental and radical innovations are also frequently discussed within the context of different innovation perspectives. Schumpeter (1911) classified innovation as either entrepreneurial or the corporate one. The entrepreneurial view defines innovations as a new independent company (new entrant) that changes the industry by introducing a radical innovation (new product, new technology or a new process) and entering a new market (Abertnathy & Utterback, 1978). The corporate view, on the other hand, sees the big established firm as the main initiator of innovation and the focus is usually on the incremental changes (Kodama, 2017; Abertnathy & Utterback, 1978). In other words, incremental innovation focuses on the exploitation of the current businesses and operational efficiency, while the radical one concentrates on the exploration of opportunities and building new capabilities (Kodama, 2017). From a strategic point of view, incremental innovations are often the result of "market pull" while the radical ones are seen as a result of "tech push" (Rothwell, 1994). The market pull is defined as the model of innovation where the market is the source of ideas, whereas the tech push assumes that ideas have to originate from R&D (Rothwell, 1994).

As incremental innovations are usually associated with market pull strategies, the approach to managing these innovations can also be a very standardized one (Khurana & Rosenthal, 1998). A downside of this approach and too much focus on the market pull is that the risk for imitation is higher; hence the competition may also be high (Rothwell, 1994). Moreover, too much focus on the market pull strategy results in a weak capacity to adopt radical innovations (Rothwell, 1994). Compared to radical innovations, the incremental ones are easier to implement, since they are often small continuous improvements of the products, processes or services (Harrigan, Ang, & Wu, 2017). In other words, the level of uncertainty associated with incremental innovations is low or medium (Bouncken, Friedrich, & Kraus, 2017), while the level of uncertainty associated with radical innovation is much higher.

Radical innovation often results in an entirely new to world innovation, which creates a new trajectory (Tidd & Bessant, 2004; Kodama, 2017; Ahmadi, 2018). These innovations lead to business growth through the creation of whole new lines of products or technologies that are new to the world and new to the market or may even lead to the creation of entirely new markets (O'Connor, 2006; Ahmadi, 2018). At the same time, as mentioned earlier, these types of innovation are also risky and difficult to predict with many unknowns (Tidd & Bessant, 2004; Kuratko, Morris, & Covin, 2011). Pushing towards a new direction can lead to outstanding inventions, but it can also result in non-successful innovation (Tidd & Bessant, 2004).

Moreover, companies engaging in radical innovations face many challenges in areas such as markets, resources and organizations (Kodama, 2017). Overall., to gain new capabilities for radical innovation research, big companies must engage in new management activities and at the same time utilize the existing capabilities they have developed in-house based on their incremental innovations (Kodama, 2017).

## 2.2 Adoption of Innovation

*As this study aims to explore the adoption of innovation within the B2B context, the literature review focusses primarily on the adoption of innovation by firms. Nevertheless, the consumer perspective was presented for the comparison purposes; the first step towards understanding the adoption of innovation by an organization requires an understanding of the buying behaviour which differs significantly between consumers and organizations. Further on, within the B2B context, the adoption of innovation can be analysed from the perspective of an innovation generating firm or from the perspective of an adopting organization.* (Damanpour & Wischnevsky, 2006). *As this study aims to understand how the adopting organization decides on adopting a new concept, the literature review presented below will also discuss differences between the two perspectives. Nevertheless, within the scope of this study, when discussing the adoption of innovation by firms, it will mainly mean the process by which an innovation is assimilated into the adopting organization* (Damanpour & Wischnevsky, 2006).

***Early Theories of Diffusion of Innovation***

The theory of Diffusion of Innovation originated in 1962 when Everett M. Rogers defined it as a *"communication of innovation amongst the members of a social system, through certain channels over time "* (Kapoor, Dwivedi, & Williams, 2014; Rogers, 2003). In other words, diffusion explains the process of spreading information about innovations for social and economic benefits (Tidd & Bessant, 2004; Sahin, 2006). While understanding of Rogers' diffusion theory provides valuable information about innovation performance on the market, excessive research on the subject has been performed, and many alternative works of literature on innovation diffusion exist. For example, Geroski (2000) focused on different explanations of the diffusion of innovation and proved that the adoption of innovation over time typically follows an S-curve. The model developed is called an epidemic model and builds on the assumption that the speed of diffusion is dependent on the information available about it. While

clear technical and economic information speeds up the diffusion process, the model assumes a homogenous population of adopters and has therefore been criticized for its limited potential (Tidd & Bessant, 2004). Rogers, on the other hand, classified population of adopters into different groups: Early Adopters, Early Majority, Late Majority, and Laggards (Rogers, 2003; Sahin, 2006). Based on his theories, in each group, the adopters (Figure 1) are similar to each other in terms of innovativeness and will adopt an innovation at the same time. For example, *innovators* are the first ones to adopt, as they are seen as risky and willing to experience new ideas (Sahin, 2006).

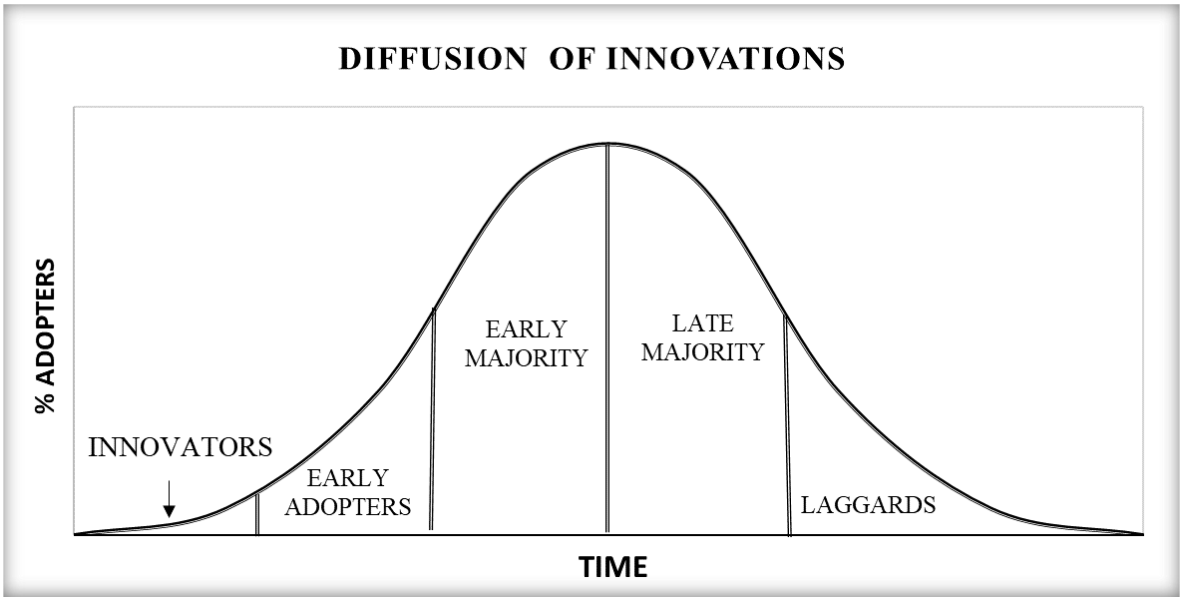


Figure 1 Innovation Diffusion, Own illustration based on Rogers' adopter's categorization

As seen in Figure 1, the time of the adoption varies between the different groups of adopters. Gorski (2000) also presents a "probit" model which is based on the assumption that the different firms are likely to want to adopt the new technology at different times (Geroski, 2000). Characteristics such as firm size, suppliers, technological expectations and switching cost are critical factors that influence the decision to adopt an innovation (Geroski, 2000; Frambach & Schillewaert, 2002).

### ***Adoption of Innovation among Individuals and Organizations***

Adoption of innovation within the B2B context is seen as a complex process in which distributors, experts, regulators, and many other stakeholders interact and make decisions about adopting or rejecting a new concept (Aarikka-Stenros & Lehtimäki, 2014; Makkonen, Hannu

& Johnston, & Wesley, 2014). Compared to individuals, organizations adopt products to satisfy their buyers and impulse-buying is rare; instead, the objective criteria are clear, and the price usually influence the decision to adopt an innovation (Grewal, et al., 2015; Pilelienė & Rėklaitis, 2019). Moreover, marketing and sales strategies are different within the B2B context since companies market their products exclusively to other companies and not consumers (Pilelienė & Rėklaitis, 2019). Sales might also have higher order values and larger market; hence B2B sales process is usually more complicated compared to B2C (business-to-consumer) sales, as presented in Table 2.

Table 2 Difference between B2B and B2C markets (Rėklaitis, Pilelienė, 2019)

| CRITERION | B2C | B2B |
|---|---|---|
| **Target** | End-User | Enterprise |
| **Market size** | Large | Smaller |
| **Sales volume** | Low | High |
| **Decision making** | Individually | By committee |
| **Risk** | Low | High |
| **Purchasing process** | Short | Longer |
| **Consumer decision** | Emotional | Rational |
| **Demand** | Based on wish | Based on the need |
| **Usage of mass media** | Essential | Avoidable |

Further on, as pointed out earlier, two different perspectives of innovation adoption in a B2B setting exist: an innovation-generating organization (IGO) and an innovation-adopting organization (IAO). As discussed by Damanpour and Wischnevsky, (2006), the primary goal of an IAO is not to innovate, but to assimilate new products, services or technologies that are available somewhere else. Further on, these types of organizations usually rely on their managerial capabilities to adopt innovations. The research aims differ significantly compared to an IGO which concentrates on the study of one or few innovations, and the focus is on creativity and aligning capabilities with the existing market opportunities (Damanpour & Wischnevsky, 2006). The IAO, on the other hand, focus on matching the company's strategy with the potentials of the existing innovations (Cohen, Wesley, & Levinthal, 1990; Damanpour & Wischnevsky, 2006). Moreover, the capabilities of the IAO can significantly influence the decision to adopt an innovation, for example, firms that invest in R&D can better recognize and

exploit new information (Cohen, Wesley, & Levinthal, 1990). However, as pointed out earlier, the primary objective of an IAO is not to explore or discover, but rather to improve innovations and determine which ones are most valuable and economical to assimilate (Damanpour & Wischnevsky, 2006).

Further on, the firms that adopt innovation early have been larger, more efficient, had more industry advantage and thus outperformed the non-adopter firms. (Kumar, Fuksa, & Kumar, 2007; Geroski, 2000). Due to more resource and larger network of clients, big established companies usually have an advantage over the small ones for the adoption of both radical and incremental innovations (Damanpour & Wischnevsky, 2006). Other positive characteristics of adopting firms include the presence of a champion who will push the B2B idea, higher top management support and strategic opportunity (Kumar, Fuksa, & Kumar, 2007). At last, the most important one is the role of leadership, since management understanding of the presence of a champion is crucial for successful adoption of innovation (Kumar, Fuksa, & Kumar, 2007; Wisdom et al., 2013).

With regards to the case company, it can be classified as an IGO. The adopting units (IAO) are customers of the case company who adopt innovations of the case company, make them into their own brands and sell them to consumers, see Figure 2 for an illustration of the buying process between IGO and IAO.

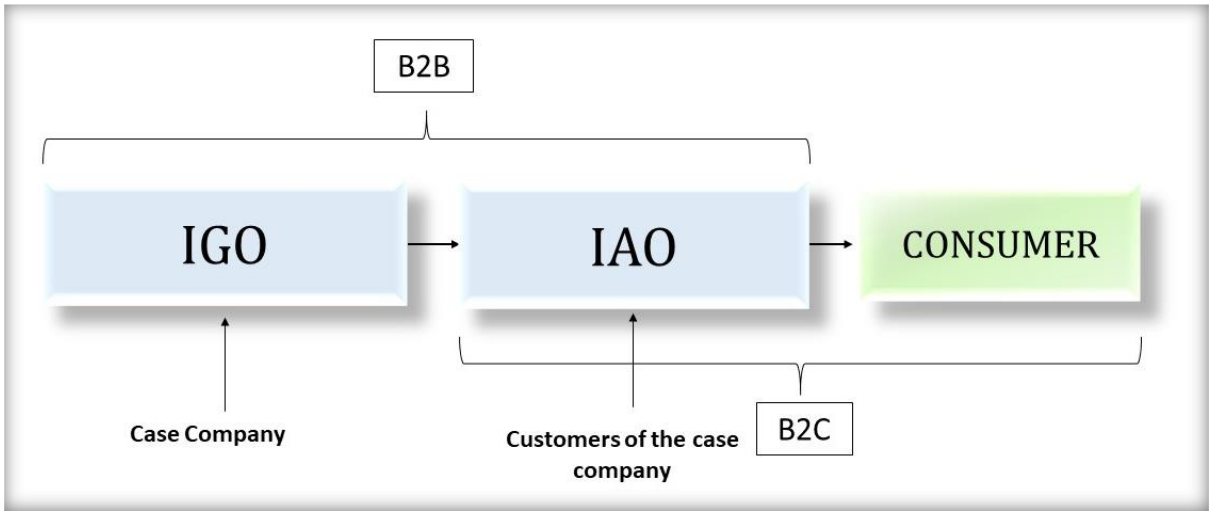


Figure 2 IGO and IAO Relationship, Own illustration

## 2.3 Innovation Resistance

In contrast to the positive adopter characteristics mentioned above, the adopting organizations can also develop inertia and resist to adopt an external innovation that does not fit in with their core competencies of the firm (Leonard, 1992). An unwillingness to assimilate new knowledge from external sources often leads to the so-called "Not invented here" or "Not shared here" syndromes (Burcharth, Knudsen, & Sondergaard, 2014). This resistance is more common when innovation is radical (Vowles, Thirkell, & Sinha, 2011); hence one of the common barriers to innovation adoption is the radicalness of it (Kapoor, Dwivedi, & Williams, 2014).

Compared to an IAO, an IGO, if classified as a corporation, faces many other challenges with regards to generating innovations. Kuratko, Morris, & Covin, (2011) refer to these as *"Organizational constraints on Corporate Entrepreneurship*". They further claim that standard procedures, overly rigid and formal planning systems can lead to missed opportunities and blocking of innovations. Another category of organizational constraints are policies and procedures which include long and complex approval cycles. These approval cycles are not only time consuming, they can also have a destructive effect on the creation of innovative concepts.

Moreover, fear of failure and resistance to change are also frequently mentioned by Kuratko, Morris, & Covin, (2011) as two main obstacles to innovation. Oreg (2003) described the resistance to change as a situation where control is taken away from an individual who believes that the change is imposed rather than self-initiated. These situations can be stressful as giving up old habits is difficult, and the change is resisted because what is known is perceived as incompatible with the new situation (Oreg, 2003).

Lastly, Kuratko, Morris, & Covin, (2011) mention that the culture of an organization can have a significant impact on innovation activities. Since culture itself is defined as a belief and assumption that an individual may have, it can also lead to failure and loss of focus, if negatively perceived inside the organization. Klein & Knight, (2005) further point out the importance of a strong and positive climate where innovation is regarded as a top priority.

In summary, the environment and characteristics of an adopting unit can influence the perception of innovation. Another major element that influences the perception of innovation

is the characteristic of the innovation itself (Tidd & Bessant, 2004; Schwarz & Schwarz, 2014; Frambach & Schillewaert, 2002). However, as the scope of this study is to analyse how the psychological barriers to innovation adoption evolve and influence the decision-makers to adopt or reject an innovation, the adopter characteristics will not be considered in this research. An understanding of the innovation itself, on the other hand, and the resistance towards it from an organizational point of view will be more interesting in this study.

Until now, the research on innovation resistance included identifying various barriers towards the adoption of innovations (Ram & Sheth, 1989). Innovation characteristics such as perceived compatibility, complexity, observability, and trialability were also researched by Tornatzky & Klein, (1982), Frambach & Schillewaert, 2002, and Rogers (2003) (Kapoor, Dwivedi, & Williams, 2014). A most recent study, however, was presented by Joachim, Spieth, & Heindenreich, (2018) where 17 barriers in total have been summarized, nine functional and eight psychological, see Table 3 for an overview of the different barriers. However, in contrast to the innovation resistance among organizations, as discussed earlier, these barriers have been researched based on consumer studies and products.

Table 3 Barriers to Innovation Adoption (Joachim, Spieth, & Heindenreich, 2018)

| **FUNCTIONAL BARRIER** | **PSYCHOLOGICAL BARRIER** |
|---|---|
| Value | Norm |
| Communicability | Usage |
| Trialability | Image |
| Amenability | Information |
| Compatibility | Economic risk |
| Complexity | Social risk |
| Visibility | Functional risk |
| Realization | Personal risk |
| Co-dependence Barrier | |

The psychological barriers presented above in Table 3, are defined as beliefs that a consumer might have, while the functional ones are more related to the functional aspects of a specific product. Both of these groups of barriers are present throughout the decision-making process; however, their effect on innovation adoption vary, depending on whether the innovation gets evaluated or not (Talke & Heidenreich, 2013). If the consumer decides to reject an innovation

before evaluating it, the rejection is classified as passive innovation resistance, but if the rejection follows after an evaluation, it is called active innovation resistance (Talke & Heidenreich, 2013). Kapoor, Dwivedi, & Williams, (2014) also present a review of the research on innovation attributes and mention barriers such as radicalness, scientific status, riskiness, profitability, importance and social approval among others (Kapoor, Dwivedi, & Williams, 2014). However, as this study aims to investigate the psychological barriers, in Table 4 an explanation and the meaning of each one is presented, as summarized by Joachim, Spieth, & Heindenreich, (2018). It is also worth mentioning that this research study is an inductive one and the psychological barriers present within the organizational settings may differ significantly compared to the ones present among the consumers. Further on, the psychological barriers might have been researched by some other researchers as well, but Table 4 presents only the literature used in this report.

Table 4 Psychological barriers to innovation adoption, as summarized by Joachim, Spieth, & Heindenreich, (2018)

| **BARRIER** | **DEFINITION** | **Reference*** |
|---|---|---|
| Personal risk | Innovation is seen as a threat to a consumer's physical condition or property | (Joachim, Spieth, & Heindenreich, 2018) |
| Functional risk | Fear that a product could be dysfunctional | (Talke & Heidenreich, 2013) |
| Economic risk | Innovation's costs are too high, and the investment would be a waste of money | (Kleijnen, Lee, & Wetzels, 2009) |
| Social risk | Worries that a related social group would not approve the adoption | |
| Information barrier | Perceiving information asymmetries with the conclusion that innovation has undesirable consequences | (Talke & Heidenreich, 2013; Kleijnen, Lee, & Wetzels, 2009) |
| Image barrier | Negative associations with a brand or country of origin | (Ram & Sheth, 1989) |
| Usage barrier | Consumption of innovation requires an undesirable disruption of established user | (Ram & Sheth, 1989) |
| Norm barrier | Innovation is conflicting with family values, social norms or traditions | (Joachim, Spieth, & Heindenreich, 2018; Talke & Heidenreich, 2013) |

The psychological barriers listed in Table 4, however, may vary among the different group of adopters, as many of the psychological barriers are associated with risks (Kleijnen, Lee, & Wetzels, 2009). As presented earlier in Figure 1, the risk associated with innovation is perceived differently by different groups of adopters. Companies often succeed in making a profit from the early adopters since they are easier to reach and their perception of innovativeness is not different compared to previous technology or product (Rogers, 2003; Aarikka-Stenros & Lehtimäki, 2014). These differences between the early adopters and the ones who intend to adopt later or not adopt at all are often related to the level of knowledge, innovation-related experience, depth of search, perception of supplier marketing, and future size of networks (Vowles, Thirkell, & Sinha, 2011). The level of knowledge is often the most influential factor, as the decision process itself starts with collecting knowledge about an innovation (more details about the decision process itself is presented below).

## 2.4 The Decision Process of Innovation Adoption

According to Rogers (2003), the decision to adopt an innovation can be classified into three types of decision makings:

- ***individual decision*** (for example consumer)
- ***collective decision*** (made in the group of people)
- ***authority's decision*** (made by individuals with power, status or experience)

The decision in a B2B setting is made by several people who are part of a larger network, for example, stakeholders, sales managers and suppliers (Pilelienė & Rėklaitis, 2019). Some of them possess more power to make the decision; hence the adoption decision within B2B context can be classified as both collective and authoritarian (Tidd & Bessant, 2004; Grewal, et al., 2015). Due to the complex and interactive nature of the buying, the B2B decision process usually takes longer time and may involve extensive bargaining and negotiations (Grewal, et al., 2015).

With regards to the adoption of innovation within B2B, it can be divided into two stages: initiation and implementation stage (Frambach & Schillewaert, 2002). During the initiation,

awareness, and attitude towards the product are formed, while during the implementation, the decision to purchase an innovation is made (Frambach & Schillewaert, 2002). Rogers (2003) present a framework on the Innovation adoption (Figure 3) and divide this process of communication into five stages: (1) knowledge, (2) persuasion, (3) decision, (4) implementation, and (5) confirmation (Dube & Gumbo, 2017; Sahin, 2006). Throughout this process, firms or individuals that consider adopting an innovation, seek information to reduce uncertainty about the advantages or disadvantages with it. Each stage of the process includes specific activities associated with the decision to adopt or reject an innovation. However, before the decision-making process begins, previous conditions such as previous practice, need of the organization, innovativeness and norm of the social system can influence the decision.
*For more details about the decision-process, see further description of each stage below Figure 3, which illustrates Rogers' decision-making process.*

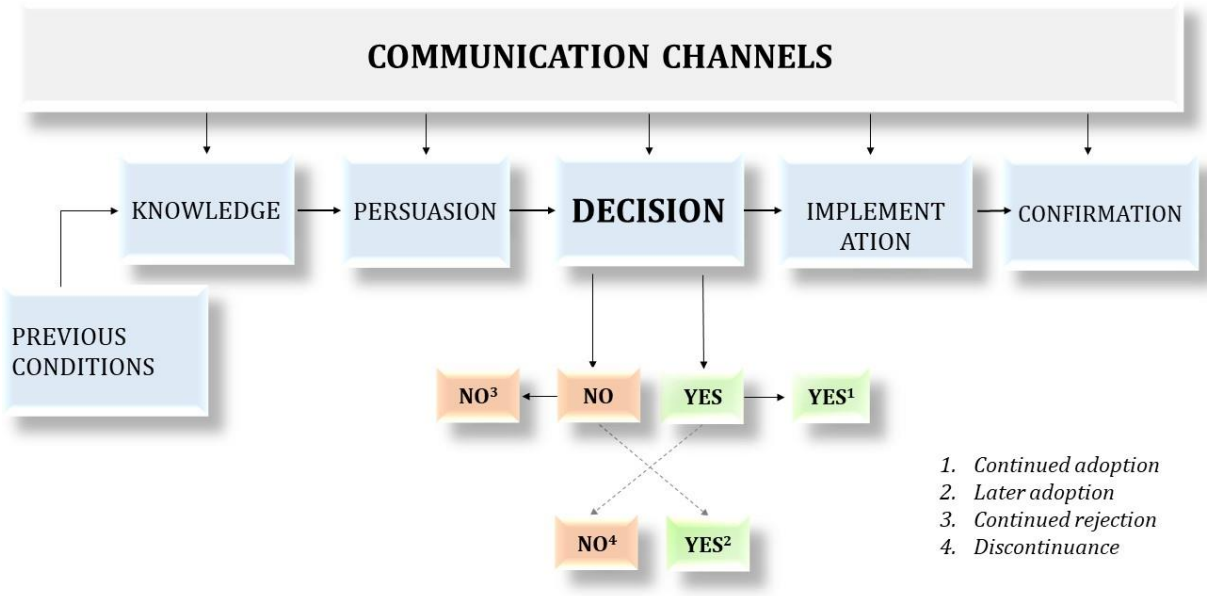


Figure 3 Rogers' decision-making process, own illustration

## ***The knowledge stage***

The first stage of the decision-making process starts with learning about innovation and seeking information about it. Rogers further divide this stage into three parts: Awareness knowledge, how-to-knowledge and principles knowledge. The awareness knowledge means learning about

the existence of innovation, but also gaining and seeking a new type of knowledge (Sahin, 2006). Nevertheless, if the individual is highly satisfied with the product, this step may be skipped, and passive innovation resistance is likely to occur (Talke & Heidenreich, 2013). On the other hand, if the individual decides to consider the product, then the how knowledge which relates to knowing how to use the innovation, becomes relevant. Seeking this type of knowledge, however, is more prevalent within the context of complex innovations. Lastly, the principles knowledge means knowing why innovation is needed and how to integrate it (Sahin, 2006). Nevertheless, the process of acquiring new knowledge about innovation can be stressful as the individual is often forced to learn new skills (Klein & Knight, 2005).

### ***The persuasion stage***

While the knowledge phase focusses on knowing about the innovation, the persuasion stage can be more centred around feeling about it. At this stage, an attitude about the innovation is formed, either negative or positive, however, the individual opinion can still be changed and influenced by the social system (Sahin, 2006). The role of the supplier is critical here as they are responsible for spreading information about the new product or technology (Geroski, 2000).

### ***The Decision stage***

While at the persuasion stage, an attitude is formed about the product or technology, the adopting part is still not ready to make the decision. At the decision stage, on the other hand, the individual chooses to adopt or reject an innovation. This decision process can, however, vary depending on the type of innovation being evaluated. For example, Rogers' theory about the decision-making process is still focused on the technological type of innovation and describes how functional barriers or enablers such as perceived compatibility, complexity, observability, and trialability influence the decision. If the individual can test a product or technology, then they may be more willing to adopt it. However, even then, the adoption has still not occurred, as the individual can still choose to discontinue innovations.

### ***The Implementation stage***

During the implementation stage, innovation is put into practice. Klein & Sorra, (1996), defined this stage as the one where the decision to adopt an innovation turns into routine use of it. However, the final implementation is still depending on the diffusion rate of innovation. As seen in Figure 1, the diffusion process is time-consuming and is depending on how fast the information is spreading among the consumers (Geroski, 2000). The information itself is important for creating new knowledge and awareness about an innovation. However, uncertainty about the outcomes is still present at this stage and reinvention is possible. Overall, the implementation can be time-consuming and expensive (Klein & Knight, 2005). Companies must take the risk of ending up with the poor result in the short run, but expect implementation benefits in the long run. The biggest challenge might be to rely on the long-term potential of an innovation. The ultimate success of it depends on the consumers' acceptance of it, hence it is not surprising that the failed implementation is a result of the rejection by consumers (Laukkanen, Sinkonnen, & Laukkanen, 2008).

### ***The Confirmation stage***

At the last stage of the decision-making process, the individual looks for support for his or her decision. Conflicting messages are avoided, but an attitude about the innovation is formed. This attitude, if negative, can still lead to discontinuance of the innovation. For example, if the end-user finds a better product or technology, they may replace the old one. Rogers referred to this type of discontinuance as "replacement discontinuance". On the other hand, if the end-user is not satisfied with the performance of the innovation, it will lead to disenchantment discontinuance (Sahin, 2006).

In summary, the adoption of innovation can be defined as an information-processing activity where supplier communication strategies play an essential role throughout the decision-making process (Frambach & Schillewaert, 2002; Geroski, 2000). It is necessary to clarify at this stage that Rogers' decision-making process does not capture the complexity of B2B interactions. The focus of his framework is also on functional barriers to the adoption of technological innovations (Sahin, 2006). The research performed as part of this study will, therefore, take a different perspective on the decision-making process since the focus will be on psychological barriers and organizational adoption decision.

# 3. Methodology

*This chapter presents the methodology used in this research study. Research approach, Research Process, Research Design and Data Analysis are presented and explained below.*

## 3.1 Research Approach

As the aim of this research was to obtain a more comprehensive understanding of the organizational decision-making process and resistance to innovation, the focus of the research was on people and their interactions with other social actors involved with the decision-making. For this reason, methods applied in social sciences were used to investigate human interactions and thoughts. Further on, the nature of this research was qualitative, which means that the collection of data was based on conversational communication (Bryman & Bell, 2011).

The qualitative study took an epistemological and interpretive position which analyses the social world through the interpretation of its participants - a different logic compared to natural sciences (Bryman & Bell, 2011). This approach allowed the researchers to gain an understanding of human behaviour through the eyes of the interviewees. The downside of this strategy, however, is that it is assumed that the interviewees are knowledgeable and that they can explain their thoughts, intentions and actions (Gioia, Corley, & Haamilton, 2013). Further on, this study applied the ontology theory and took the constructionism view. Companies that were interviewed about the adoption of innovation were not perceived as individual entities - their adoption decision was dependent on the interactions among many different actors, external and internal. Due to the interactive nature of the decision-making, a double interpretation might have been going on. The organizational decision process itself is a multi-person process, and the interviewees may have presented their interpretation of other actors and their actions. Overall, there is a risk that the interviewees interpreted the world with subjectivity (Bryman & Bell, 2011). Further on, the third level of interpretation has been presented, since the researchers of this study interpreted the thoughts of the interviewees in terms of concepts and theories (Bryman & Bell, 2011). In other words, it was assumed that the researchers of this study are also knowledgeable and can figure out a pattern in the data (Gioia, Corley, & Haamilton, 2013).

Lastly, the research process followed an inductive approach, but with deductive elements. Bryman and Bell, (2011) describe the deductive method as one that starts with theories and existing literature following the testing of them. At the end of the study, the theories are either confirmed or rejected by the researcher. The inductive analysis, on the other hand, builds on observations and findings that result in a new theory (Bryman & Bell, 2011). Since this study applies both inductive and deductive views, the research approach was also iterative, but with a higher tendency towards the inductive approach due to qualitative interviewing.

## 3.2 Research Design

From a theoretical point of view, the aim of this research was to explore psychological barriers to adoption of innovation, hence the theoretical concepts associated with innovation resistance, as summarized by Joachim, Spieth, & Heindenreich, (2018) guided the design of this study and were labelled according to the terminology presented in Table 4, chapter 2. Additionally, Rogers' decision-making process (Figure 3) and the relationship between IGO and IAO (Figure 2) were another main inspiration for the design of this study.

To obtain a holistic view of the decision-making process, a retrospective approach was taken in this study. In total, five different IAO's were selected to participate in the study, but the aim was not to compare the cases; hence a cross-sectional design was not implemented. Instead, this study aimed to generalize findings into one dynamic model. The rationale behind this choice is that although the characteristics of the interviewees are different, the decision process is assumed to be the same and follow Rogers' five stages. In other words, a homogenous population of adopters was assumed (Figure 1), which might be a limitation of this approach. Still, this limitation might not be very significant, as although the level of risk may vary between the different adopters, the nature of the risk may be the same. The level of risk mainly varies with the type of innovation being evaluated (Kuratko, Morris, & Covin, 2011). All the companies that were selected were customers of the case company; they had their own production facilities (R&D) and they possessed knowledge and experience of similar scientific innovations (functional food and consumer healthcare industry).

Nevertheless, the classification of the study is somewhat complex. As the research question starts with "how" and often a reason behind a certain behaviour is investigated, a case study was an appropriate choice here (SO, 2011; Bryman & Bell, 2011). However, even though the interviewees are customers of the case company who is an IGO, the case company served only as a learning environment and provider of resources needed to conduct the study. With this in mind, the research design is not a single case study as it does not aim to understand the B2B interactions between the case company and its customers.

On the other hand, as multiple units of analysis were used (different companies), the design of the study can be defined as "embedded design" (SO, 2011). Overall, Bryman and Bell (2011) point out that the distinction of the study is not always perfect. Further on, they explain that quite often, the studies can cross two types, which seems reasonable in this case. As this study took a retrospective look at the decision making within B2B, it also represents a somewhat longitudinal type of studies. This type of studies is often implemented when researching behaviour and consumer trends which extend beyond a single moment in life. Since the aim of this research was similar, the classification of this study can be defined as a longitudinal case study.

With regards to the validity of the design, it can be noted that a selection of the interviewees was made by the employees of the case company which means that the interviewers themselves had not known the interviewees previously. With this in mind, the risk of going native was minimized, and the overall credibility of the study increased (Bryman & Bell, 2011).

Lastly, it can be mentioned that the research was conducted through telephone interviews and skype videoconference (due to the geographical locations of the customers). Bryman and Bell (2011) further stress that the telephone interviews can sometimes be more effective. For example, some of the questions might have been a bit sensitive; questions about fears and economic risks were asked. According to Bryman and Bell (2011), the interviewee feels less distressed about answering this type of questions over the telephone.

## 3.3 Research Process

*Informal meetings and unstructured interviews inside the case company resulted in an initial understanding of the biotech-healthcare and functional food industry. As mentioned above, the case company in this study only served as an inspiration and provided an insight into the perspective of an IGO. Further on, the company provided contact details of available customers willing to participate in an interview. However, prior to approaching customers, it was stressed that the study is conducted independently of the case company and is pure academic research. The research process followed the step-by-step plan, as presented in Table 5 below.*

Table 5 Step-by-step research process

| STAGE | Description |
|---|---|
| **1. Unstructured Interviews** | Insights into an innovation-generating company (IGO) |
| **2. Narrowing down RQ** | An iterative process of narrowing down the research topic |
| **3. Sampling** | Selecting interviewees for answering the research question |
| **4. Interview Guide** | Developing an interview guide |
| **5. Interviews** | Performing semi-structured interviews |
| **6. Findings** | Presenting findings |
| **7. Analysis of findings** | Presenting a dynamic model |
| **8. Literature** | Comparing findings to the existing theories |

## 3.4 Unstructured Interviews

Unstructured interviews were obtained to gain insights into the industry dynamics and get inspiration for a research topic. Additionally, the availability of customers willing to participate in an interview was discussed. Below is a summary of the first insights (Table 6).

Table 6 Unstructured interviews

| Employee Position | Insights |
|---|---|
| **Product Manager** | o *Innovation and innovativeness are an important part of the company's strategy*<br>o *Incremental innovation is equally important as the radical one.*<br>o *Different market segments require different marketing strategies.* |
| **R&D Lead** | |
| **Scientific Affairs Lead** | |
| **Director of Marketing** | |
| **Director of Sales** | |
| **Business Development Manager** | |
| **CEO** | |

## 3.5 Narrowing Down Research Topic and RQ

RQ was revised a few times throughout the research process. The final question focuses on psychological barriers and how they evolve throughout the organizational decision-making process. The selected RQ was narrowed down to one type of barriers, and the psychological ones were chosen since the aim of the research was to obtain general findings of the innovation resistance. For example, focusing too much on the functional barriers and a specific type of product could result in findings that would be difficult to generalize. Moreover, the functional barriers are often related to the technological innovations and the end-users; the psychological ones seemed more applicable within the organizational settings and the decision making, where risks associated with buying and innovation adoption are being assessed. Lastly, and most importantly, exploring specific functional barriers associated with a certain type of products and the rejection of them was a sensitive topic from a business point of view.

## 3.6 Sampling

Unstructured interviews with salespeople inside the case company were conducted with the purpose of selecting the relevant interviewees for answering the RQ. However, as the research

question takes a perspective of an IAO, the selected interviewees had to be either customer of the case company or the customers of another IGO. Additionally, ethics had to be taken into consideration when making the selection of the interviewees. It was clearly stated to all participants that this project is an independent research study and the questions about specific products or concepts of the case company were not included in the interview guide. Instead, the questions were designed so that a customer adopting any innovation from any supplier can answer. As the researchers of this study had no previous contact with any of the customers, the selection of the interviewees was made by the case company, but with the desired criteria as described below in Table 7. For example, the aim was to include different perspectives to increase the chances of generalizing findings (Bryman & Bell, 2011). Although the sampling of the interviewees occurred through non-probability and convenience sampling, the selection was made by four different employees of the case company and the sample was heterogeneous with respect to the geographical location, industry and company size. From the researchers' point of view, the sampling was random and increased the credibility of the study, while at the same time meeting the selection criteria in Table 7. For example, the most important criterion was that the interviewees themselves were involved in the organizational decision-making of adopting innovations. The downside of this type of non-probability sampling is that one person represents an entire organization. This limitation, however, might not be very significant in this study, since the focus of the research is to investigate the decisions making in an organization. People in leadership positions usually have the authority to make decisions, since they are interacting with many different stakeholders; hence their perspective was relevant in this study.

Table 7 Selection criteria for semi-structured interviews

| **Criteria** | **Justification** |
|---|---|
| **ADOPTER or NON-ADOPTER** | The aim was to follow the process of decision-making and investigate psychological barriers associated with it. The aim was, however, not to focus on a specific product. |
| **CUSTOMER of an IGO** | The aim was to generalize findings of the organizational adoption decision; hence customers of any IGO were suitable. |
| **Involved in the decision at the leadership level** | The person interviewed had to be involved in the organizational decision-making process at the leadership level. |

## 3.7 Selection of Interviewees

Based on the criteria stated in Table 7, the selected interviewees are listed in Table 8 below.

Table 8 List of selected interviewees

| Interviewee | Position in the Company | Industry | Size |
|---|---|---|---|
| **Company A** | Portfolio Director | Consumer Healthcare | Large |
| **Company B** | CEO, Owner | Consumer Healthcare | Small |
| **Company C** | Managing Director | Functional Food | Small |
| **Company D** | Vice president R&D | Functional Food | Medium |
| **Company E** | Head of Science | Consumer Healthcare | Small |

As part of the interviewee selection, a short introduction of the project was prepared, which was a pitch sent to customers. The pitch was inspired by some elements of the NABC model, and it was sent to business development managers inside the case company who forwarded it to their customers, see Table 9 below.

Table 9 Pitch sent to customers (column to the left excluded, only presented in the report)

| **Pitch sent to the customers** | |
|---|---|
| ***NEED*** | *Health Science has become an important sector of interest in the innovation field. A small team from the Master Program in Entrepreneurship and Innovation, Lund University, are doing a research study on Innovation Adoption. As part of their project, they would like to interview B2B customers.* |
| ***BENEFIT*** | *As the aim of the research is to produce new knowledge, research of high quality is important. Therefore, your contribution to the research within the innovation field will be of high importance. Your participation will be highly appreciated and the research report sent to you if interested.* |
| ***APPROACH*** | *The research study contains general questions about organizational decision making and innovativeness. The interview should not take more than 30 min over the telephone or skype. This is a purely academic research and separated from the case company. All answers are anonymous.* |

*Companies who agreed to participate in an interview are described below. The description is partially a presentation by the case company and partially as researched by the researchers. As the interviewees possessed extensive knowledge and experience of scientific innovations and business development, their input was highly relevant for this research study. Representative introduction quotes are included in Appendix B.*

***Company A***

Contact details of the company A interviewee were provided by the Sales Director of the case company. The interviewee was described as highly experienced in the innovation field of life science and perfect to interview in this area. From the researchers' point of view, the interviewee met the desired criteria as defined in Table 7, and the company information was obtained from the Website. Company A is a consumer healthcare business, part of a big biopharmaceutical company (a strong corporate name and brand). Overall, the company is committed to improving people's life by introducing innovative medicine in various therapeutic areas. The diversity of their portfolio and the existence of an Innovation and Development Committee were further interesting and relevant for this research project. The participant was directly involved with the decision-making and held a position of a "Portfolio Director".

***Company B***

Details of Company B were provided by one of the business development managers of the case company. The customers are one of the oldest and biggest of the case company in the EMEA region. They have purchased a range of different products within the healthcare consumers industry. It is a relatively small and fast company, owned by the three founders. Now they are about 30-40 people. The company was founded in 2008 and has its own production plant and laboratories. They adopt innovation and sell them under their own brand. The participant is a medical doctor and the owner of the company.

***Company C***

Company C details were provided by the Business Development Manager for Functional Food. The company is a branch office to a company selling baby products, ranging from diapers to food. The managing director has developed the company and its brand with the ambition to

identify premium European products and import these to other countries. Company's manufacturing facilities are based in the home country of the interviewee. The customer has been doing business with the case company for two years and is buying functional food products. The company was founded in 2018 and is small by size.

***Company D***

Company D sells functional food products and has been a customer of the case company for ten years. Historically they have been very innovative. The case company has worked closely with them to develop new application types and product concepts. The company is a medium-sized company with its own brand (a brand of its supplier, not the case company's brand). Contact details of the Vice President in R&D were provided by the Business Development Manager for functional food, and the contact was initiated by e-mail, as with the other interviewees. It was stated by the interviewee that the perspective provided would be the R&D one. This perspective was also encouraged, as the aim of the study was to generalize findings, and different perspectives were welcomed.

***Company E***

Contact details of Company E were provided by the business development manager for consumer healthcare products. The contact was initiated by e-mail, and the information about the company was obtained through their Website. It is a small company with its own manufacturing capabilities, and the participant is a Head of Science. Their R&D team are experts in nutrition and also consult the work of other independent scientific teams. The company is very innovative and is a new customer of the case company. The buy ingredients and dietary supplements which they then make into their own brands.

## 3.8 Interview Guide

The research study conducted as part of this thesis aimed at collecting data through in-depth semi-structured qualitative interviews. To allow for a consistent approach towards interviewing, an interview guide was developed based on the instructions provided in Bryman & Bell, (2011). The guide was divided into two themes: Theme 1: Previous conditions and Theme 2: The Decision-Making Process.

Although very specific questions were asked, the interviewees were allowed to deviate from the answers which allowed for an explorative view on new psychological barriers throughout the decision-making process (Bryman & Bell, 2011). General consideration when formulating questions was to ensure that the questions can be asked any customer purchasing any innovation and allow for generalizability. Further on, the first questions were meant to be light and let the interviewee get familiar with the environment before moving on to more in-depth questions about the adoption decisions. This first part of the interview was also meant to include "face sheet" questions about the background of interviewees (position in the company and previous experience of adopting innovations) (Bryman & Bell, 2011). The previous experiences are also defined as "previous conditions" in Rogers' decision-making process, Figure 3.

When moving on to the main questions, the interview guide was designed to follow a chronological order and let the interviewee reflect back on the decision-making process; hence the guide is divided into five stages of the decision-making. However, to avoid bias questions and assumptions about the different barriers at each stage, the interviewee was first asked to present their experience of adopting or not adopting an innovation. The fact that they could freely choose which experience to elaborate on is adding more credibility to this study as the interviewee do not feel pressure to provide a correct or wrong answer. This flexible approach which encourages rich answers is a typical characteristic of the semi-structured qualitative study (Bryman & Bell, 2011). Follow up questions were asked when appropriate; for example, it was interesting to find out how they described the decision-making process themselves.

For a complete list of questions and more details on how the questions were formulated see the interview guide, APPENDIX A.

*Overall, the interview guide was aimed to discover which psychological barriers were present throughout the decision-making process and how they evolve. To ensure that the questions were clear and ethical, a pilot study was conducted internally, and the questions were reviewed by the sales team of the case company.*

## 3.9 Performing interviews

The interviews were conducted via video conference calls due to the geographical locations of the customers. More than one interviewer was present at each occasion which allowed for triangulation and informal settings (Bryman & Bell, 2011). Prior to each interview, the interviewee received an invitation in the form of a zoom link or skype link. Following the invitation, an informed consent form was e-mailed to the participant where the details about confidentiality, de-identification of the company names and their names were guaranteed. During the interviews, one of the researchers was usually responsible for conducting the interview, while the other two were responsible for the recording of the conversations and ensuring that no questions were missed. Applications such as zoom and skype were used for conducting the interviews.

## 3.10 Data Analysis Method

Data in the form of conversations generated from the interviews were analysed using the coding method developed by Gioia, Corley and Hamilton (2012). This method is based on grounded theory and is suitable for inductive qualitative research (Gioia, Corley, & Haamilton, 2013). The other alternative to data analysis is the approach by Eisenhardt (1989), which sets a more static view on research. The approach by Gioia, Corley, & Haamilton, (2013) on the other hand, results in a more dynamic framework for research, which was the ultimate goal of this research study, hence this method was the primary choice. Nevertheless, to achieve the objective of grounded theory, a deductive analysis was also occasionally applied (Bryman & Bell, 2011). For example, the theory, as presented in Table 4, Chapter 2, guided and influenced the analysis of conversations. Although data were also used to discover new concepts, quite often they were labelled according to the terminology presented by Joachim, Spieth, & Heindenreich, (2018).

Moreover, as the aim of the research was to explore psychological barriers associated with the decision-making, the primary focus of the interpretation of the data was to determine if the psychological barriers were present and when throughout the process. While the data could have been used to gain other insights too, this approach kept the focus on the RQ. Hence, the most relevant quotations were extracted from the conversations and analysed by applying an iterative approach. Each interview was analysed separately, but quotes that were similar in terms of the message being communicated, were grouped into the same category by combing

answers from all five interviewees. Further on, the quotes were divided into a pre-decision and post-decision phase and the first concepts were created which reflect the point an interviewee wanted to get across. A summary of all quotes and 1st concepts is presented in Appendix B. By combining the voice of the researcher and the voice of an interviewee, the first concepts were grouped into the second order themes which often reflected a risk or a barrier identified. To not lose the focus of the research, the aggregated dimensions were identified as psychological barriers in the pre or post decision. On one occasion, however, this aggregated dimension did not reflect the second-order themes; instead of "psychological barrier", the "organizational constraint" was a more accurate reflection of the higher perspective.

Lastly, it can be mentioned that the data presented and analysed in Chapter five follows a chronological order of the barriers, as perceived by an IAO. This approach is relevant, since the RQ aims to investigate how the barriers evolve throughout the decision-making process. By presenting them in chronological order shows that some of them disappear while some of them stay and have a bigger impact on the decision-making process.

*On two occasions, some technical issues with the recording of the interviews were experienced at the beginning of the interview and instead of recording, the introduction part was typed in.*

# 4. Findings

The interviews were recorded and transcribed, following an analysis of the conversations. The results based on the gathered data are presented in this chapter. As mentioned in Chapter 3, the approach to data analysis was based on grounded theory as described by Gioia, Corley, & Haamilton, (2013). Rich data sets and many codes were generated (Bryman & Bell, 2011). The most representative quotes from the participants were grouped into the first-order concepts, following a second-order analysis which resulted in the aggregated dimensions. As, the ultimate aim of this research was to explore psychological barriers throughout the decision process, the data analysis focused primarily on identifying these barriers, and investigating if they exist, based on the theoretical concepts, as summarized in Table 4 (Joachim, Spieth, & Heindenreich, 2018). Therefore, the second-order themes often represent psychological barriers associated with innovation adoption. To reduce subjectivity, insights from three researchers of this study were collected, and an iterative approach to data analysis was applied.

*Some minor corrections of the quotations have been made to clarify the meaning of them for the reader. Also, often, the most representative quotes were selected, and the data analysis does not follow specific rules of, for example, including all five samples. The reason for this is that the interviewees were often allowed to drift away from the subject and present their perspective. Due to time limitations, some questions were skipped, if the interviewee already provided an answer; hence the interviewing followed a very flexible approach and encouraged rich non-bias answers* (Bryman & Bell, 2011). *Although a cross-sectional comparison of the companies was not the aim of this study, often the companies provided very similar answers to the questions, which is commented on.*

## 4.1 Previous Conditions

The focus of the "previous conditions" part of the research was to learn about the interviewees' previous experience of adopting innovations. Rogers (2003) list previous practice, need of the organization, innovativeness and norm of the social system as important factors that can influence the adoption decision. Hence, the first quotations presented below represent the view on innovation, from an IAO's perspective:

*"Innovation is at the heart of our business, and my responsibility is to bring innovation to consumers, to transform innovations, to transfer new products, to meet consumer needs."*

Q1. Portfolio Director, Company A

Somewhat different, but overall, very similar answers were provided by all five interviewees. Innovation is seen as a core function of their businesses and a necessity for business growth. This information gives an insight into the previous need of the companies, see Table 10 for the data analysis. As seen in Table 10, the first-order concepts are based on the extracted quotations from the interviews that are the most representative ones for answering the question (see Appendix B for details of each quote). These primary concepts reflect the point an interviewee wanted to get across. Second-order concepts were created by grouping the primary concepts into new terms, based on the voice of the researchers and the voice of the interviewee (Gioia, Corley, & Haamilton, 2013). This approach allowed for an insight into the higher perspective, which is the aggregated dimension. Overall, as presented in Table 10, the 2nd Order Theme was identified to be "Innovation drives business growth". The aggregated dimension, as mentioned in the beginning, is the previous need of the companies.

*Each quote is labelled with a number. In the document, Q1. means quote no.1, as presented in Appendix B and tables below.*

Table 10 Previous conditions analysis

| Q. | 1st Concepts | 2nd Order Theme | Aggregated Dimension |
|---|---|---|---|
| **1.** | *Innovations is a core function of the business* | INNOVATION DRIVES BUSINESS GROWTH | COMPANY'S NEED PREVIOUS CONDITIONS |
| **2.** | *Innovation creates competitive advantage* | | |
| **3.** | *Innovation is important for business growth* | | |

## 4.2 Pre-Decision Phase

The aim of the interview guide was to analyse what happens in each stage of Rogers' decision process. However, the first finding was that the interviewees themselves tended to separate only two phases of the decision making: the pre-decision phase and the post-decision phase. Moreover, the interviewees themselves would very often present what they found most relevant for answering the question, hence to divide the decision process into five stages, according to Rogers' theory was not applicable in practice. In reality, the phases were overlapping, and the interviewees themselves would often present a holistic view of the decision-making process. However, once the decision was made, the distinction became clear; hence a discussion below includes identification of the barriers before the decision and after the decision.

***SOCIAL RISK***

The initial discussion about the decision-making started with presenting views on innovation itself. One of the interviewees explained their innovation strategy as follows:

*"We try to implement an innovative strategy based on the medical market; we collect feedback from patients and try to introduce our products by communicating this need through medical doctors, pharmacists and dieticians so that they can deliver the knowledge to their patients"*

Q6. CEO, Company B

The views on innovation were similar among all five interviewees. The innovation adopting organizations match their strategy with the potential of the market need. One other statement that is in line with this insight was presented by Company D interviewee:

*"Developing, launching and selling a truly innovative product can be can hard because retailers need some confidence that the consumer gets and understands the product and that there will be a pull from the consumer."*

Q5. Vice President R&D, Company D

By collecting all the relevant answers and grouping them into first concepts, second-order themes and aggregated dimensions, it is understood that the social risk barrier (Joachim, Spieth, & Heindenreich, 2018; Talke & Heidenreich, 2013) is present in the pre-decision phase and that the main concern among the interviewees is that the consumers would not approve the

adoption of innovation. Market research and pull from the consumer are mentioned which suggest that innovation must be desired by the consumers to be considered for adoption. Further on, feedback from patients is collected to confirm that there is a need for the product. Overall, the focus in the pre-decision phase is on approval from the potential end-users. The social risk barrier was also identified on a few other occasions throughout the interview when the participants randomly chose to present their experience of the decision-making in general, as presented in the quotations below:

*"We have a voting system consisting of sales and marketing and myself here. So, for example, we find out from the market research that this product has been top-rated, then we discuss together what kind of product we can develop to meet the need of this specific market."*

Q 11. Managing Director, Company C

*"This is the first process of decision because if there is no background, no scientific literature, we already know it will be very difficult to sell such products because doctors who we are collaborating with, they are awaiting some proof. Why should I use this?"*

Q 36. CEO, Company B

Based, on the quotations above, company C is concerned with the acceptance by consumers, while company B needs approval from the doctors, to consider adopting innovation. Table 11 summarizes the data analysis. By grouping the first concepts into the second-order themes, it became clear that the higher perspective is a social risk barrier in the pre-decision phase.

Table 11 Pre-Decision Phase, social risk barrier

| Q. | 1st Concepts | 2nd Order Theme | Aggregated Dimension |
|---|---|---|---|
| **4.** | *Innovations need to match consumer needs* | SOCIAL RISK BARRIER | PSYCHOLOGICAL BARRIER<br>PRE-DECISION PHASE |
| **5.** | *Worries that a consumer will not adopt an innovation* | | |
| **6.** | *Patients' need in focus* | | |
| **11.** | *Social approval is important* | | |
| **36.** | *Fear that the doctors would not approve the innovation* | | |

***NORM BARRIER***

With this acquired information, the interview continued with a question about the openness to new suppliers. By asking this question, the aim was to create a better understanding of how the adopting units (IAO's) in general react to newness and change of routines. Some of the representative quotes are presented below:

*"I think the existing suppliers are seen as resources; we don't want to explore new supplies right now. We performed market studies, and right now I think that the supplier we are dealing with can meet the needs of the market."* Q7. Managing Director, Company C

*"We have established a loyal customer base. We have centred our marketing around them. And changing that would require a compelling story, it would require at least the same efficacy and effect of the product."* Q8. Vice President R&D, Company D

*Although both companies also mentioned that they are open to the new suppliers, the extracted quotations above are only associated with their presentation of the risks associated with considering a new supplier.*

Based on the collected quotations (Q7-Q8), the impression is that passive innovation resistance might also be present among the IAO's. If the adopting organizations seem satisfied with the current supplier, switching to a new one is not an option worth considering. This insight is relevant for the research question, which aims to investigate barriers associated with risks and innovation resistance. Moreover, it seems clear that the supplier-customer (IGO-IAO) relationship is important when assessing market needs, since changing to a new one may create a new social risk barrier. This fear of changing routines and resisting change is classified as norm barrier by Joachim, Spieth, & Heindenreich, (2018). In literature, this barrier is more accurately defined as the one that is present when rejection is based on conflicting views with current traditions. The tradition, in this case, could be the core competency of the company, which is more evident based on the quotation below:

*"In the case of smaller companies with limited capabilities, we are attempting to be very disciplined and not stay too far from our core capabilities. Because we think within our current product range, there are still many market opportunities. If we stay too far from them, we dilute ourselves too much, and we stretch ourselves too much and our resources."*

Q 33. Vice President R&D, Company D

It could be argued that the IAO's prefer to focus on the existing knowledge of the firm and their current suppliers. Companies seem more resistant towards assimilating an external innovation that does not fit in with the core competencies of their organization. As summarized in table 12, it became clear that the norm barrier is present in the pre-decision phase.

Table 12 Pre-Decision phase, norm barrier

| Q. | 1st Concepts | 2nd Order Theme | Aggregated Dimension |
|---|---|---|---|
| **7.** | *Not open to a new supplier* | NORM BARRIER<br><br>PASSIVE INNOVATION RESISTANCE | PSYCHOLOGICAL BARRIER<br><br>PRE - DECISION PHASE |
| **8.** | *The new supplier requires a change in marketing routines* | | |
| **33.** | *Preference for what is known and established in an organization* | | |

***IGO-IAO Relationship***

To further understand the importance of the supplier-customer relationship (IGO-IAO), the interview guide included a question about the importance of a supplier. Some of the collected answers were:

*"The supplier is very important because it is with the suppliers that we can discuss the cost of the products, the timeline to develop the product, and everything around the quality of the product, regulatory requirements, regulatory doses that we should prepare in order to register the product in each country that we targeted. So, a supplier it's really a key stakeholder in the process of making the decision."*

Q 59. Portfolio Director, Company A

*"We have a very close collaborative relationship with our supplier. It's a give and take relationship where we share learnings and collaborate on the technical side. What is the production status? How much can we produce every year? How soon do we need to order to be delivered on time?"* Q 60. Vice President R&D, Company D

As presented by the interviewees, customers build a strong and long-lasting relationships with their suppliers. It is common practice for IAO's to work closely with IGO's to develop a new product, hence the IAO perceive IGO as a key stakeholder when considering to adopt innovation.

***FEAR OF FAILURE***

When asked about the decision-making in general, the interviewees were encouraged to present their stories freely to avoid bias-answers. The following quotations were analyzed for gaining further insights into the organizational-decision making process:

*"Again, we have the scorecard and the score in terms of opportunity was so high that we decided to go with the risk. And I have to say that we're still sometimes scratching our heads and asking ourselves if we made the right decision or not, because it's really difficult."*

Q 12. Head of Science, Company E

*"It's always based on business evaluation. So, that means we have board committees that are evaluating each project, and for each project, we are creating a new business case. So that means we are estimating the cost and time to develop a new product."*

Q 15. Portfolio Director, Company A

*"We use a funnel process. We develop a pool of potential products that might be of interest. And this is based on retailer input, consumer requests, market studies and trend observations. And then we compare the scores for the different product ideas, to see what products will have the highest probability of commercial success."* Q 13. Vice President R&D, Company D

*“We have a very rational, productive evaluation scoring sheet for each opportunity, and then we decide based on this scorecard, if it's worth the effort, and the risk of going with innovation in the market. It's quite critical for us because we cannot really innovate with our own formulations. We have to use the innovations of our partners, and we have to buy innovations.”*

Q 14. Head of Science, Company E

*“So good question. It's I think there's is always a need to be sure that our evaluation is a true evaluation that we do not miss something. It is a lot of work to gather all the figures needed to make the evaluation in each country that we targeted the system. So, we always spend a huge work on the preparation of the presentation to the board for the decisions.”*

Q 62. Portfolio Director, Company A

Based on the presented quotations, from an interviewee's perspective, organizational decision-making follows a rather structured and rational approach (Q13, Q14 and Q15). From the researchers' point of view, the complex approval cycles suggest that the fear of making the wrong decision and the fear of failure exist. Overall, rigid and formal evaluation systems are common practice among companies.

Nevertheless, the interviewees themselves never mention the word "fear", but the *in vivo* coding of their conversations reveals that motivations behind building structural approaches to decision making are most likely based on the fear of failure (more evident in Q12 and Q62). Fear of failure, however cannot be classified as a specific barrier, hence a more explicit definition of the aggregated dimension is “Organizational constraint”. Similarly, rigid and formal evaluation systems fall into same category of organizational constraints.

Insights based on the answers from the interviewees are further summarized in Table 13 below.

Table 13 Pre-Decision Phase, fear of failure

| Q. | 1st Concepts | 2nd Order Theme | Aggregated Dimension |
|---|---|---|---|
| **12, 62.** | *Fear of making the wrong decision* | FEAR OF FAILURE | ORGANIZATIONAL CONSTRAINTS |
| **14.** | *Need to reduce and minimize risk* | RIGID AND FORMAL EVALUATION SYSTEMS | |
| **13.** | *Need for a structural approach to decision-making* | | |
| **15.** | *Routine process for evaluation of opportunities* | | |

***KNOWLEDGE AND INFORMATION BARRIER***

When discussing the knowledge stage, the conversation started with presenting the process of collecting information, as described below:

*"We have a board, the three of us. So, of course, it's always first an idea. Then it's an internal discussion, and then we consult this idea with other specialists, our collaborators and people who are knowledgeable in this area."* Q 10. CEO, Company B

Based on the quotation no.10, it seems as companies seek different type of knowledge to minimize risks associated with the adoption of innovation. A primary source of knowledge is the market need, but different types of knowledge are searched for. For example, quite often, companies seek knowledge outside the organization, which suggests that some form of barrier associated with lack of knowledge was present. Companies seem not able to make the decision based on the existing knowledge, hence the knowledge stage, as described by Rogers (2003), needs to take place before considering to adopt an innovation. This barrier might be closely related to the information barrier since new information creates new knowledge. To further explore the knowledge stage, the participants were asked to present their experience of either adoption or a non-adoption of innovation. Rogers (2003) mentions awareness as the first type of knowledge; hence one of the interview questions specifically aimed to explore how companies dealt with the spread of awareness and if the companies themselves were aware of

the potential of the product. Some interesting answers were obtained and are presented as quotations below, for example:

*"We could only read very sophisticated and specialized journals about the role of these products, but this was not known to the general audience. So, by reading these papers and relying on our own feelings and thoughts, we thought it would be very innovative in the next decade. And it came true. Yes, now the market is booming, and everybody's talking about it. And since then we started educating people about the importance of our products, also medical doctors, pharmacies and dieticians. We did this for the last 12 years and managed to introduce several other projects into the market."* Q 35. CEO, Company B

*"Right now, our target consumers are the ones who were born in 1990. They are quite young, and they use the new communication channel instead of the traditional one. Especially in my home country, they buy goods, they buy products on the internet, and then they always see different comments from other consumers, so if this product has a lot of good comments, then it is reliable."* Q 18. Managing Director, Company C

*"The knowledge was the formula of the products, benefits of the products, package size, the cost of the product, the cost of productions, the cost of marketing. So, we are evaluating everything in order to decide on the decision to be accurate. The decision not to go with this project was based on a few years of research."* Q 17. Portfolio Director, Company A

Based on the quotations presented, building awareness and accurate business cases is a process that can take many years. Hence, one could argue that a lack of awareness and lack of knowledge can be a barrier to adopting innovation, as the process of gathering relevant information is time-consuming. While the importance of knowledge is clearly emphasized by some of the interviewees, in some other cases obtaining the relevant information was also a challenge. Kleijnen, et al.,( 2009) describe the information barrier as the one where one party has the correct information, but the others do not. Overall, the challenge experienced by the interviewee A (Q.17) was how to obtain an accurate and diverse information in order to create new knowledge about the potential of innovation and its value. One could argue that the two barriers, knowledge and information overlap in terms of classification. However, a more

distinct manifestation of the information barrier is evident in Quote 18. The challenge, as presented by Company C, was how to gather consumer insights and which communication channel to use. Both traditional and modern communication channels for collecting information exist, and companies are not always up-to-date with the latest ones. This finding is interesting since Rogers' decision-making process, as illustrated in Figure 3, shows how communication channels influence each stage of the decision process. Overall, while the interviewees themselves put great effort into overcoming the knowledge barrier, its impact is biggest when information barrier is present, and companies struggle to obtain accurate information, as described in the quote below:

"*We were collecting different opinions from the key opinion leaders and experts, and they gave us the green light and told us the product is safe. But actually, in the end, this product was denied. So, if we knew that, we could have given up from the beginning, but we thought that delivering scientific proofs and opinions from the experts would help to convince authorities, but it didn't help.*" Q 29. CEO, Company B

As presented in Table 14, the information barrier, as well as the knowledge barriers, were present in the pre-decision phase.

Table 14 Pre-decision phase, knowledge and information barrier

| **Q.** | **1st Concepts** | **2nd Order Theme** | **Aggregated Dimension** |
|---|---|---|---|
| **10.** | *Searching for external knowledge* | KNOWLEDGE BARRIER | PSYCHOLOGICAL BARRIER<br><br>PRE-DECISION PHASE |
| **16, 35** | *Knowledge stage is crucial to spread the awareness* | | |
| **17.** | *Diverse sources of information required* | INFORMATION BARRIER | |
| **18.** | *Up-to-date communication channel required* | | |
| **29, 63.** | *Challenge of obtaining accurate information* | | |

Further on, it is worth mentioning that the food and healthcare industries face specific challenges with regards to the information barriers, since the final decision is often made by the regulatory authorities. These specific challenges are explained below:

*"It's always a bit more difficult to work with novel ingredients. We are open to working with new players in the market, providing that the product is authorized. So basically, if the product is authorized, and we have all the documentary guarantees that it is authorized, then we will go with it"*

Q 30. Head of Science, Company E

In summary, companies collect information about consumer needs, trends, market and regulatory requirements.

***ECONOMIC RISK***

After the knowledge phase, the questions about the persuasion stage were asked. Rogers (2003) describes this stage as the most important one; evaluation depending on the innovation attributes starts here. With regards to collecting data about the persuasion stage, the interview guide included questions about the brand and the role of a supplier. However, once a holistic view of the data was obtained, the answers to the persuasion stage were provided randomly throughout the conversations with the interviewees. For example, some of the answers are presented as quotations below:

*"What is the price of such a product because even if it is very innovative and might work on the market, from the business point of view, it could be too expensive."*

Q 24. CEO, Company B

According to Company B interviewee, the market opportunity might be a good one, but the cost from a business point of view might be too high, and it is not worth pursuing the opportunity. The interviewee D further elaborates on this by saying:

*"In many cases, when a new product is being considered for launch, the minimum production sizes are so large that the cost is not reasonable. If the manufacturer required us to run a million units for the first run, it would require so much money or tie up so much capital that it would not be viable."*

Q 26. Vice President R&D, Company D

Based on this quotation, Company D suggests that investment into the opportunity is not reasonable. Similarly, the same concern is presented by company C interviewee:

*"Eventually, the price will be really extremely high in our market that's equipped partly, and it would be a big barrier for us to introduce this product to our consumers."*

Q 25. Managing Director, Company C

All the representative quotations and the outcome of the analysis are presented in Table 15. Based on the 1st concepts, the 2nd order themes, the economic risk barrier has been identified. Joachim, Spieth, & Heindenreich, (2018) present this barrier as the one where the customer views innovation's costs as too high and believes that the investment would be a waste of money. It can be debatable, however, if the quotations above are based on believes or figures. Still, from the researchers' point of view, the psychological barrier seems present, as the opportunities are perceived as too risky and the possibility of investing in a long-term profit not considered.

Table 15 Pre-Decision phase, economic risk

| **Q.** | **1st Concepts** | **2nd Order Theme** | **Aggregated Dimension** |
|---|---|---|---|
| **24. 25, 26** | *Perceiving the investments as extremely expensive, not worth considering them* | ECONOMIC RISK | PSYCHOLOGICAL BARRIER<br><br>PRE - DECISION PHASE |
| **27.** | *Return on investments is very important* | | |
| **28.** | *Fear of making investments* | | |

***COMPETITIVE RISK***

Further on, throughout the interview, some new insights into the decision-making were gained. For example, the assessment of competitors and how the persuasion stage evolved based on other players on the market was an interesting insight. Some of the representative quotations collected were as follows:

*"The marketplace is extremely competitive. If your product does not sell, you're out in no time. So, it's probably not surprising to you, but these are key criteria we were facing."*

Q 22. Vice President R&D, Company D

*"Last year, for example, I presented to the board of innovation, an idea of new product and we decided not to proceed with the development, based on the fact that the market is too small where we will not be able to compete based on the competitors."*

Q 19. Portfolio Director, Company A

Based on the extracted quotations and the analysis of the first concepts, as presented in Table 16, one of the psychological barriers that was identified in the pre-decision phase is also a fear of competition. Nevertheless, as discussed earlier, the interviewees never mention the word fear, but the *in vivo* coding (Bryman & Bell, 2011) of the first concepts often suggests an underlying fear about the decision-making process. For example, the interviewee E is primarily concerned about the differentiation on the market as evident in the quote below:

*"Being able to differentiate ourselves in the market is important. Can we sell the product?"*

Q 21. Head of Science, Company

Table 16 Pre-decision phase, competitive risk

| Q. | 1st Concepts | 2nd Order Theme | Aggregated Dimension |
|---|---|---|---|
| **19.** | *A rejection based on the competitors* | COMPETITIVE RISK | PSYCHOLOGICAL BARRIER<br><br>PRE - DECISION PHASE |
| **20. 21.** | *Fear of not being able to create effective product differentiation* | | |
| **22.** | *Extremely competitive environment* | | |
| **23.** | *How to stand out?* | | |

***RESOURCE RISK***

Further on, the pre-decision phase brings many new challenges to the decision-makers. Compared to the consumers, the organizational-decision makers need to consider many other things, as for example explained by some of them:

*"Do we have the capability to produce these products in house, do we have the competency in our organization to pursue these products. Our current products are typically refrigerated, but if the price would require frozen distribution, storage shipping, we would have to develop capabilities and even an understanding of the retailer and how to approach this segment."*

Q 31. Vice President R&D, Company D

*"To find a cooperative partner is important; this is one way to obtain resources. So, this is also very important."*

Q32. Managing Director, Company C

Based on the quotation 31, the evaluation of the business opportunity is perceived as too risky, due to lack of resources. Based on the *in vivo* coding of the quotations it became clear that if an opportunity is perceived as too risky, psychological barriers are manifested, in this case, the fear of lacking resources, see Table 17 below. As seen from a higher perspective, the second-order theme was identified as a resource risk.

Table 17 Pre-decision phase, resource risk

| Q. | 1st Concepts | 2nd Order Theme | Aggregated Dimension |
|---|---|---|---|
| **31.** | *Fear of lacking resources* | RESOURCE RISK | PSYCHOLOGICAL BARRIER PRE - DECISION PHASE |
| **32.** | | | |

***USAGE BARRIER***

Throughout the conversations with the interviewees, it became clear that the characteristics of the innovation itself can be the main barrier to adoption of it, even by an organization. Company D interviewee presented an example where the radicalness of innovation is perceived as too risky:

*"Well, it depends on where you draw the line for true innovation. From a product category standpoint, to create something truly innovative is rare and hard. Because if the product is too foreign or too exotic or needs explanation to the consumer, it is hard to establish what was originally a new product or an innovative product?"* Q 34. Vice President R&D, Company D

In summary, the resistance to radicalness of innovation is related to the social risk barrier, as the worries that a consumer may not understand or adopt the innovation is present here as well. However, this barrier can also be defined as a "usage barrier" which means that innovation adoption requires a disruption of the established user patterns (Joachim, Spieth, & Heindenreich, 2018). Company D interviewee describes the disruption as "additional explanation to the consumer". Table 18 summarizes the analysis of the presented quotation above.

Table 18 Pre-Decision Phase, usage barrier

| Q. | 1st Concepts | 2nd Order Theme | Aggregated Dimension |
|---|---|---|---|
| **34.** | *Innovation requires disruption of the established user patterns* | USAGE BARRIER | PSYCHOLOGICAL BARRIER |

***IMAGE BARRIER***

Another question which was asked as part of the persuasion stage was the role of the brand and the importance of it. The answers varied between the interviewees, since some of them preferred their own brands, while some others found it very important. For example, some of the answers collected were as follows:

*"The brand is very important because it makes a difference. Our market evaluation is based on brand awareness and brand penetration. Because for sure, if the brand is not well-known it's difficult to make the products known by the consumer, compared to a brand that is well known with large market share, and so it's always very important."*

Q 37. Portfolio Director, Company A

*"If the brand has been on the market for many years, it will have partners in different countries. It's very important to meet these partners through conferences where you can attend lectures of very knowledgeable and well-known scientists. You can initiate new collaborations; you can meet very knowledgeable people who can in the future help you to develop a new product."*

Q 38. CEO, Company B

*"At the beginning, definitely, a recognized brand is easier to remember, and my own brand is not so strong, so if we can combine it with the supplier's brand, that definitely helps."*

Q 39. Managing Director, Company C

On the contrary, companies who preferred their own brand, seemed not too concerned about the brand of the seller company, for example, company E interviewee had a different perspective on this:

*"I have to say not much, because, at the end of the day, the trick is that we are mixing products that are not ours into our own products and then selling them. So basically, if I use my suppliers' brand and my competitor also uses this brand, then it automatically, let's say, levels things between us, we're selling the same thing. So, usually, we use our own brand as support."*

Q 40. Head of Science, Company E

Lastly, company D Interviewee was not too concerned about the brand either and explained their perspective as follows:

*"We display the brand of the supplier on our products, but we find that consumer recognition is not significant. We look at the value of the ingredients from the functionality side; if it functions well, it delivers a benefit to the consumer and noticeable benefit, which is very powerful. We think this is actually more powerful than a name or a logo on the product."*

Q 41. Vice President R&D, Company D

Based on these quotations, it can be argued that the image barrier is variable, see Table 19 for the summary of the data analysis. The first concepts were formulated based on representative quotations. Second-order theme was identified as a variable image barrier.

Table 19 Pre-Decision phase, image barrier

| Q. | 1st Concepts | 2nd Order Theme | Aggregated Dimension |
|---|---|---|---|
| **37.** | *Brand is important* | IMAGE BARRIER VARIABLE | PSYCHOLOGICAL BARRIER<br>PRE - DECISION PHASE |
| **38.** | *The brand creates new opportunities* | | |
| **39.** | *A brand is seen as an extra resource* | | |
| **40.** | *A brand is not that important* | | |
| **41.** | *Functionality is more important than a logo* | | |

## 4.3 Post-Decision Phase

At the decision stage, an individual chooses to adopt or reject innovation. However, the adoption of innovation is still an ongoing process, and the adopter can choose to discontinue innovations after adopting it, as illustrated in Figure 3, Chapter 2. Alternatively, if the decision is a no-go, the individual can still change their mind and adopt the innovation at a later time point. By asking in-depth questions about the decision stage, a deeper insight into the post-decision phase was obtained, from the interviewee perspective. For example, when asked if the

interviewees ever change their mind after making the decision, some of the answers are presented below:

*"In my opinion, it was a fair decision and a true decision because it was based on figures."*

Q 42. Portfolio Director, Company A

*"I would say our decision is sometimes based on the failure of our supplier to supply basically. but otherwise, until now we didn't change our mind."* Q 43. Head of Science, Company E

*"Once we made the decision, we always continued with the decision, so we were not looking backwards."*

Q 44. CEO, Company B

Based on the quotations above, once the decision is made, a new phase is initiated and the aggregated dimension from now and onwards are labelled as the post-decision ones. However, to further confirm that the post-decision phase is entered, a question about the fear of making the decision was asked. In one case, the fear was seen as a necessity and a motivating factor, in the other case, the emotional aspect is absent. Either way, the two quotations below further confirm that once the decision is made, it is a firm decision and a new phase of the adoption process follows. For example, the two answers were as follows:

*"Of course, we take certain risks, and there's never a guarantee, and we had failed launches, or we had to discontinue products. But I would say no, we were never afraid because we would have abandoned an approach if there were serious doubts about it."*

Q 45. Vice President R&D, Company D

*"The fear is a necessity. You can't really avoid it, but once you make the decision, just go for it, it's like a ski jump. The jumpers don't think about the fear. Once you are on the way you can't really stop, you have to fly. Otherwise, it will probably not work."*

Q 46. CEO, Company B

***PEOPLE RISK***

Further on, when explored what other challenges were present in the post-decision phase, some of the collected answers are presented below:

*"The biggest challenge, most of the time, is when a decision is a no-go. How to keep the team motivated because they spend a lot of energy with the evaluation of the projects. And it is always kind of deception when the decision is a no-go. So, it's a challenge to explain and communicate to the team the decision based on facts. But is part of a life of managing a portfolio of projects, we always have some good decisions that are very positive and motivating for the team. And we also have sometimes a no-go decision that we have to manage."*

Q 47. Portfolio Director, Company A

*"The main difficulty is having everybody on board, to accept the difficulties, accept the challenge, and accept to do the extra work that you need to do with a different product. People don't always see why it's important to launch this product and do this extra work. So you have to convince everybody that their efforts will be recognized and rewarded."*

Q 48. Head of Science, Company E

*"The other problems might be the lack of people, lack of human resources, for example someone is working on a project and is responsible for providing important data. If, for some reasons such collaborations are no longer possible, you have no time to find new people."*

Q 49. CEO, Company B

Based on the quotations presented above, it can be argued that "employee motivation" is a barrier that companies struggle with throughout the organizational decision-making process. This barrier can be defined as "people risk", see Table 20, for more details on the data analysis.

Table 20 Post-decision phase, people risk

| Q. | 1st Concepts | 2nd Order Theme | Aggregated Dimension |
|---|---|---|---|
| **47.** | *Challenge to keep the team motivated after a no-go decision* | PEOPLE RISK After a no-go and after a yes decision | PSYCHOLOGICAL BARRIER POST-DECISION |
| **48.** **49.** | *Challenge to keep the team motivated after a yes decision* | | |

***TIMING RISK AND ECONOMIC RISK***

In combination with the employee motivation, another similar barrier which is related to time pressure and stress was identified; a representative quote that was extracted was presented by the company E interviewee:

*"So basically, we ask ourselves: shall we put the effort and wait for one year when it is much easier and much safer? And then, in the end, okay, in which case do we make more money? Should we wait one year and have the killer product, knowing that we don't know what's going to happen in one year, or shall we shoot a product quickly? And also well, it will take us four, five months to go to the market with a new product, six more months of making a profit out of a product."*

Q 50. Head of Science, Company E

Moreover, once the decision is made, the challenge is how to execute, as presented by Company C:

*"I think it's definitely how to execute, once the decision is made. And if we don't execute very well, from the money perspective, it is really a huge waste."*

Q 52. Managing Director, Company C

Company A and company B mention similar challenges, as presented in the two quotes below:

*"To keep the timing and the budgets that we presented and evaluated. In a nutshell, the main challenges are keeping the time, the workload, most of the time workload, timing, budget."*

Q 51. Portfolio Director, Company A

*"Because of a viral pandemic, there are plenty of fears and unknowns. First, human resources - you are not sure if someone may be sick. Some other people may get infected. Or maybe health authorities can close your production plant if there is a suspicion of infection or something like this. We don't know how the global market will react and how many people will lose work and what will be the net income of the country, there might be fewer people buying this product."*

Q 56. CEO, Company B

In summary, the post-decision stage face challenges such as how to motivate the team, time pressure and fear of financial loss. The second-order theme, based on the quotations above, were identified as timing risk and economic risk, see Table 21 below.

Table 21 Post-decision phase, timing risk and economic risk

| Q. | 1st Concepts | 2nd Order Theme | Aggregated Dimension |
|---|---|---|---|
| **50.** | *Time pressure, uncertainty* | TIMING RISK | PSYCHOLOGICAL BARRIER<br>POST-DECISION |
| **51.** | *Keeping the budget is a challenge* | ECONOMIC RISK | |
| **52.** | *Failure to execute can be a waste of money* | | |
| **56.** | *Fear of not making a profit* | | |

Overall, some new challenges were identified in the post-decision phase. Timing risk and people risk were not present in the pre-decision phase.

Further on, as defined by Rogers (2003), the post-decision face includes the implementation stage. This stage is still part of the decision-making process since depending on the diffusion rate of innovation, the decision to discontinue an innovation can also occur at this stage. With this in mind, the objective from now onwards was to understand the challenges associated with the implementation phase. Representative quotes were extracted and are presented below:

*"Hmm, that's a good question. I think the biggest challenge could be; I would say the challenge is the consumer. If they adopt your product or not."* Q 53. Managing Director, Company C

*"The biggest uncertainty? Consumer acceptance, I think, is the fair answer. It's probably not a big surprise, whenever a true innovation is pursued, the challenge is: will the consumer understand it will they be willing and able to pay potentially a premium for it."*

Q 54. Vice President R&D, Company C

Based on the quotations above, the companies still seem to fear the risk of social acceptance which is related to the social risk barrier. However, other challenges are present in this stage as well. For example, the quotation below suggests that the functional risk barrier also is present at this stage:

*"You have to take care of this product. For example, we need to monitor stability and sterility, and if one factor goes wrong then the whole product is wrong so there is always a chance that this product will be dysfunctional, I think our products are very fragile supplements."*

Q 55. CEO, Company B

Based on the quotations above, and from the perspective of the interviewees, it is evident that a consumer is the biggest threat in the implementation phase. One could argue that any psychological barriers that a consumer perceives in this stage could affect the final organizational adoption decision as well. Form this stage, and onwards, the power has shifted from organizations to consumers.

While this transition from B2B to B2C is elaborated further in chapter five, a summary of the psychological barriers identified based on the quotations above is presented in Table 22.

Table 22 Post-decision stage, social risk and functional risk

| Q. | 1st Concepts | 2nd Order Theme | Aggregated Dimension |
|---|---|---|---|
| **53. 54.** | *The consumer is the biggest challenge* | SOCIAL RISK | PSYCHOLOGICAL BARRIER POST - DECISION |
| **55.** | *Fear of dysfunctionality* | FUNCTIONAL RISK | |

Lastly, the post-decision phase includes the confirmation stage. At this stage, the discontinuance is still possible, but conflicting messages are avoided. The interview guide included questions about the last stage of the decision process, and the interviewees were asked to reflect back on it. Some of the collected quotations are presented below:

*"Without innovative products that we thought were not possible, technically, or from a quality standpoint, years ago, we are in a very different place today and only innovating and reacting to the market requirements allow us to survive if we would have just stood still. We would have a hard time surviving in the marketplace."* Q 67. Vice President, R&D, Company D

*"From time to time, we review the cases. we think about how to improve our decision process next time, why did we fail?"* Q 66. Managing Director, Company C

*"To be honest, now we when we look back at the time it took us to develop the first formula, we are looking at similar timelines for the new product. So, we will make our decision based on previous projects and, let's say the effort that we had to put in, in terms of development."*

Q 68. Head of Science, Company E

*"I would say that our process became more comprehensive. And we have better means to assess, for example, consumer interest now. we have expanded our capabilities into consumer research, which is a very valuable tool to assess the interest of consumers."*

Q 63. Vice President R&D, Company

The psychological barriers identified in this study are summarized in Table 23 in chapter five below.

# 5. Analysis and Discussion

*In this chapter, the findings presented in chapter 4 were summarized and analysed from a holistic perspective. Moreover, an in-depth analysis of each psychological barrier that was identified is presented. Comparison with the existing literature, as presented in Chapter 2, was carried out. By comparing the theory and data towards the closest theoretical fit, the approach by Eisenhardt (1989) is also followed. Overall, the data were analysed by combining the inductive and theory-based approach.*

## 5.1 Summary of the Identified Psychological Barriers

In summary, all the barriers that were identified in this study are presented in Table 23 below. In total 12 different psychological barriers were found, of which five are new and specifically related to the organizations. Fear of failure and formal evaluation systems were classified as organizational constraints rather than risks.

Table 23 A summary of the identified psychological barriers

| 2nd Order Themes | Aggregated Dimension |
|---|---|
| ○ KNOWLEDGE BARRIER | NEW BARRIERS IDENTIFIED |
| ○ COMPETITIVE RISK | |
| ○ RESOURCE RISK | |
| ○ PEOPLE RISK | |
| ○ TIMING RISK | |
| ○ NORM BARRIER | PSYCHOLOGICAL BARRIERS perceived by consumers, as presented by (Joachim, Spieth, & Heindenreich, 2018) |
| ○ IMAGE BARRIER | |
| ○ USAGE BARRIER | |
| ○ FUNCTIONAL RISK | |
| ○ ECONOMIC RISK | |
| ○ INFORMATION BARRIER | |
| ○ SOCIAL RISK | |
| ○ FEAR OF FAILURE | ORGANIZATIONAL CONSTRAINTS |
| ○ RIGID AND FORMAL EVALUATION SYSTEM | |

## 5.2 A Dynamic Model of Organizational Decision-Making Process

***Holistic view on the decision-making process***

A summary of the findings from this research study are presented visually. A dynamic model presented in Figure 4 illustrates the organizational decision-making process and the psychological barriers associated with it, in a chronological order.

The empirical data analysed as part of this research suggest two phases of the decision-making, the pre-decision and the post-decision phase. This distinction between the two phases can be compared with the view of Frambach & Schillewaert, (2002) who divide the adoption process into initiation and implementation stage. During the initiation, awareness, and attitude are formed; the implementation phase, on the other hand starts with the decision to purchase an innovation (Frambach & Schillewaert, 2002). However, while the view of Frambach & Schillewaert, (2002) is in line with the findings of this study, the decision-making process as presented by Rogers (2003) is slightly different. Rogers' decision-making process, as shown in Figure 3, Chapter 2, includes five stages and does not capture the complexity of B2B interactions. The research performed as part of this study identified five new organizational psychological barriers perceived by an IAO. Risk such as, " people risk", "timing risk", "resource risk" and "competitive risks" were new psychological barriers, explicitly related to the organizations. Knowledge itself is classified as a barrier and can be related to the first stage of Rogers' process, which starts with knowledge.

These new barriers, however, are more associated with the organizations and may not always be product-specific, as the ones presented by Joachim, Spieth, & Heindenreich, (2018). Details of each barrier in the pre-decision and post-decision phase are presented in Table 24 below Figure 4. As seen in the Figure, some barriers are present in both phases. Economic risk in the pre-decision phase is related to the investments of resources, while the economic risk in the post-decision phase is related to the profitability of innovation. The social risk barrier in the pre-decision phase is related to the need for innovation, while the post-decision phase depends on the acceptance of innovation by the consumer.

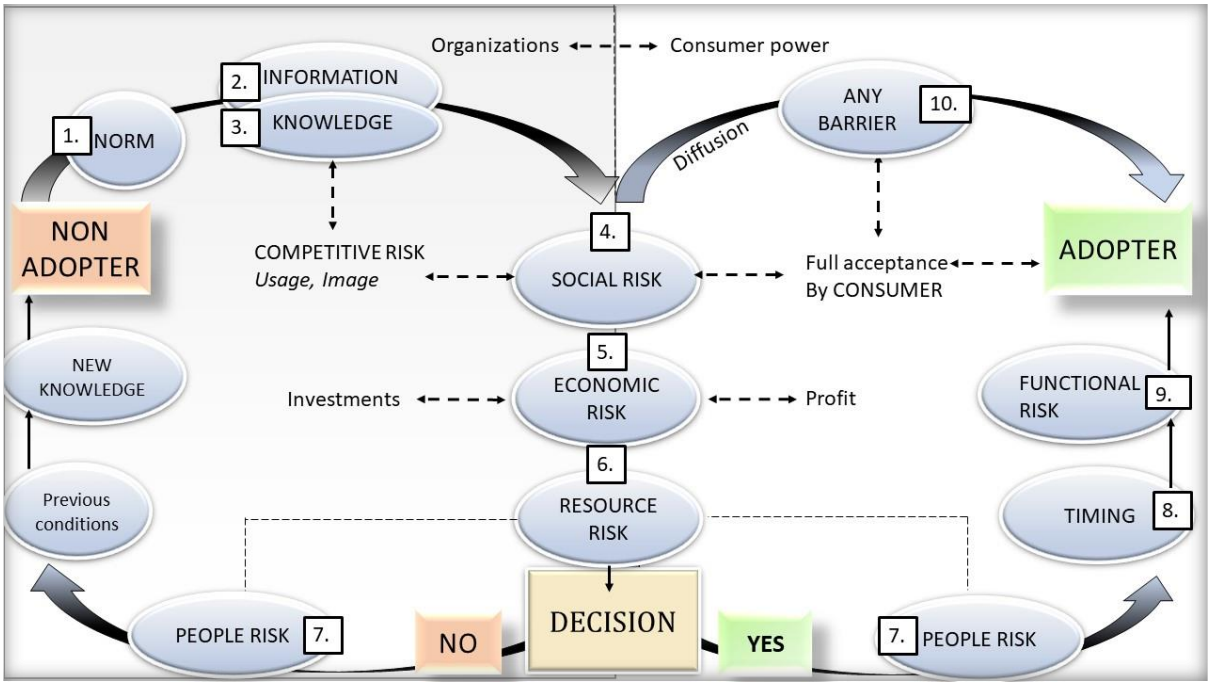


Figure 4 Dynamic model representing B2B Innovation Adoption Process (by an IAO)

Table 24 Psychological barriers throughout the B2B innovation decision process

| **PRE-DECISION** | **POST-DECISION** |
|---|---|
| 1. Norm barrier | 8.Timing risk |
| 2. Information barrier | 9.Functional risk |
| 3.Knowledge barrier | 10.Any barrier perceived by the consumer |
| 4. Social risk (including competitive risk, usage and image risk) | |
| 5. Economic risk | |
| 6. Resource risk | |
| 7. People risk | |

In total, 12 psychological barriers were identified, five new ones and seven that were presented by Joachim, Spieth, & Heindenreich, (2018). Personal risk is the only barrier that is not applicable within the organizational settings (based on the summary of all psychological barriers in Table 4). Overall, as illustrated in Figure 5 below, one could argue that the organizational and consumer perceived barriers overlap which suggests an interconnection between B2B and B2C.

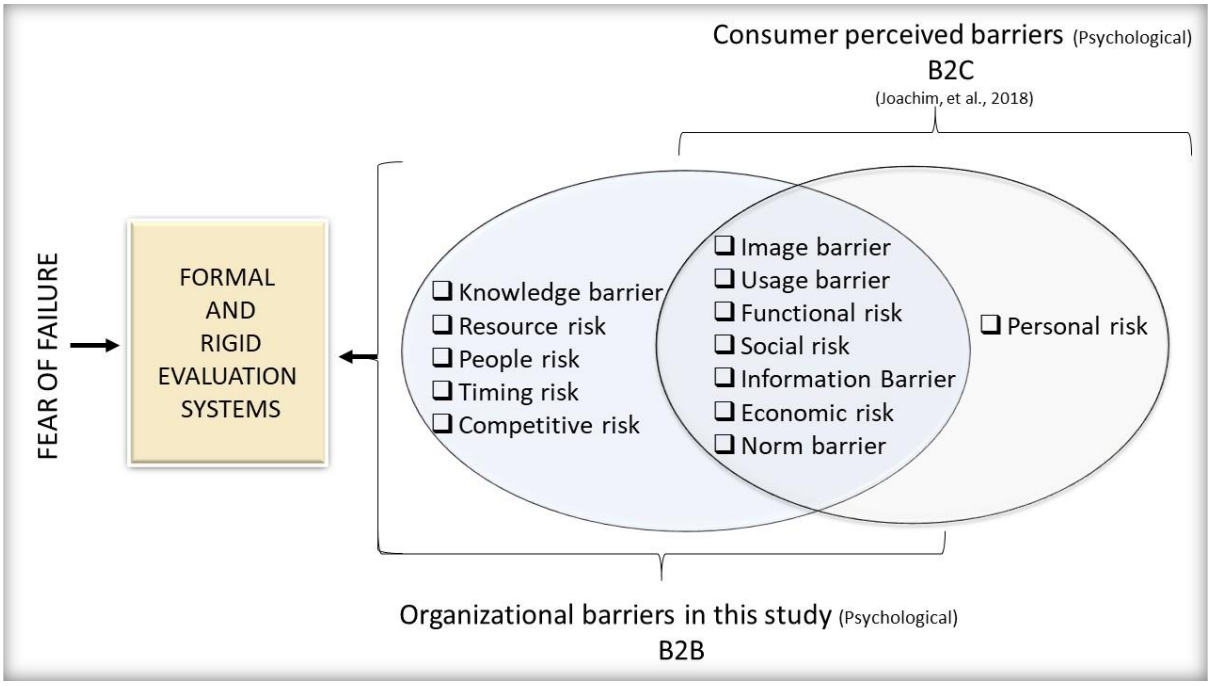


Figure 5 Organizational and consumer perceived barriers

By looking at the data as a whole and Figure 5, some interesting findings became clear. The decision-making challenges experienced by an IAO's resemble the organizational constraints on corporate entrepreneurship (Kuratko, Morris, & Covin, 2011). Systems such as overly rigid and formal planning processes were common among the IAO's. Further on, long and complex approval cycles were implemented, and the evaluation of innovation was based on a few years of research. One other constrain that was detected by the *"in vivo"* coding was the fear of making the wrong decision which is closely related to the fear of failure. Kuratko, Morris, & Covin, (2011) elaborate on those constraints and define them as forces that work against corporate entrepreneurship. Figure 5 above illustrates the relationship between the fear of failure, formal and rigid systems and risks perceived by an IAO. As, some of the companies interviewed were part of large corporations (company A-large, company D-medium), these constraints were particularly experienced among them, and structural approaches were built in to minimize risks associated with innovation.

Risk-taking and innovativeness are closely related (Kuratko, Morris, & Covin, 2011). Risk plays an important role when resisting innovation. The risk is frequently mentioned within the context of the psychological barriers, and the riskiness itself is described as one of the most significant barriers to innovation adoption (Kapoor, Dwivedi, & Williams, 2014). The level of risk, however, varies with the type of innovation being evaluated (Kuratko, Morris, & Covin,

2011). Throughout the conversations with the interviewees, it seemed as incremental innovations were preferred. Market pull strategies and standardized approaches were also common, which are, in general, more suitable for the incremental innovations (Khurana & Rosenthal, 1998) where the risk associated with innovation is low. Radical innovations, on the other hand, are difficult to predict, hence the risk associated with them is high (Tidd & Bessant, 2004; Kuratko, Morris, & Covin, 2011). Overall, companies involved in radical innovations face challenges in areas such as markets, resources and organizations (Kodama, 2017), hence, the fear of failure was somewhat expected organizational constraint to find in this study.

However, when asked about the fear, the answers varied between the interviewees, hence this constraint is also another variable. However, it is possible that most psychological barriers also vary, since the level of risk associated with innovation often varies between the adopters (Rogers, 2003). The companies interviewed varied in terms of size. As pointed out by Geroski (2000) companies that adopt an innovation early have been larger, more efficient and had more industry advantage compared to the late adopters (Kumar, Fuksa, & Kumar, 2007; Geroski, 2000). Due to more resources and investments in R&D, big companies usually have an advantage over the small ones for the adoption of both radical and incremental innovations (Damanpour & Wischnevsky, 2006; Cohen, Wesley, & Levinthal, 1990).

For example, the answers varied between company A and company B (Q53. and Q64.). Company A is a large corporate company and company B is a small entrepreneurial company, hence the different view on risk-taking and the fear about it can be a result of the differences between the entrepreneurial and the corporate view on innovation (Kodama, 2017; Abertnathy & Utterback, 1978). Compared to Company A, the Company B sees fear as a motivational trigger and is perceived as risky and visionary; this definition fits in with Rogers' view on early innovators who are risky and willing to experience new ideas (Sahin, 2006).

Further on, fear of failure, as discussed by Kuratko, Morris, & Covin, (2011), can be a step towards success, if learning takes place. By learning from failure, the decision-making process is continuously being improved. This is further confirmed by the interviewee C (Q.66) who mentions failure as an opportunity to learn and improve the decision-making process.

Overall, one could argue that the process of assimilating innovation into an IAO is similar to the process of generating innovations by an IGO. The IAO's also often collaborate with

suppliers; hence it is not surprising that the adoption of innovation often follows a similar process as the IGO's. For example, when asked a question about the role of a supplier throughout the decision-making, company D defined their relationship with the supplier as very close and collaborative. The status of the production and learnings were often discussed (Q60.)

Further on, by looking at the decision-making process from a holistic perspective, the most critical part of the decision-making process is the post-decision phase as this phase includes the implementation of the innovation. As described by Klein & Sorra, (1996), the implementation phase is where the decision to adopt an innovation may turn into routine use of it. Damanpour & Schneider, (2008) further point out that it is first when innovation is put in use that it can be recognized as an innovation. As illustrated in Figure 4, the organizational decision-making is a two-part process. The power after the decision is made shifted to consumers, compared to the pre-decision phase where regulators, leaders and many stakeholders make decisions. In other words, the decision made within the B2B settings is authoritarian, collective and individual throughout the process. The implementation process, where the consumers are in power, faces many different challenges and barriers, as seen in Figure 4. In other words, any psychological barrier perceived by the consumer may be present in this stage, since the success of implementation depends on the rate of diffusion of innovation.

## 5.3 Psychological Barriers throughout the Decision-Making Process

***Previous conditions***

The first finding in Chapter 4 presents a view on innovation from an IAO's perspective. It became clear that innovation is seen as a necessity for business growth. As discussed in the literature, acknowledging the importance of innovativeness is fundamental for the survival of most business (O'Connor, 2006; Kumar, et al., 2019; Kodama, 2017; Klein & Knight, 2005). This finding is in line with the statement by company D interviewee, who stressed the importance of innovating and reacting to the market requirements (Q.67).

Overall, the innovation strategy of an IAO is based on the market need. From a theoretical point of view, market pull strategies often result in incremental innovations (Rothwell, 1994). These innovations focus on the exploitation of their businesses and operational efficiency

(Kodama, 2017). From the perspective of an IGO, however, the question could be *"what happens to radical innovations?".* As Christensen, (1996) point out, staying to close to customers may lead to overlooking of the new customers' needs. Radical innovations can create business growth through the creation of entirely new markets (O'Connor, 2006; Ahmadi, 2018). Hence, the characteristic of innovation itself can have a significant influence on the decision of an IAO to adopt an innovation (Tidd & Bessant, 2004; Schwarz & Schwarz, 2014; Frambach & Schillewaert, 2002). To adopt, or not adopt innovation, primarily depends on what you define as innovation, as mentioned by Company D interviewee (Q 34). If innovation is perceived as too exotic and needs explanation to the consumer, the perception of it by an organization may be as "too radical". How an organization, in general, react to newness and non- tradition is presented below.

***NORM BARRIER***

Fear of change which is classified as norm barrier, seemed to have been present in the past and is still experienced by all five companies. When asked questions about new suppliers, most companies preferred not to take the risk of changing the supplier. However, if highly satisfied with the products, the individuals are not motivated to seek out information about potential substitutes (Talke & Heidenreich, 2013), hence norm barrier is labelled as no.1 barrier in Figure 4.

Further on, as discussed by Pilelienė & Rėklaitis, (2019), the risks associated with B2B buying are higher than the ones perceived by consumers. The unwillingness to consider alternative ideas in this research may also be associated with the complexity of the industry itself, timelines of the project and the established customers base (Q8.). From a theoretical point of view and from an innovation resistance point of view, giving up old habits is difficult, and the change is resisted because what is known is perceived as incompatible with the new situation and the stress is produced (Oreg, 2003). It could be argued that the IAO's prefer to focus on the existing knowledge of the firm and may be more resistant towards assimilating an external innovation that does not fit in with the core competencies of their organization (Leonard, 1992). On the other hand, Vowles, Thirkell, & Sinha, (2011) claim that this resistance is common mainly when innovation is radical. As previously mentioned, an IAO innovates based on the market pull innovation strategy, which is more suitable for the incremental innovations, hence adopting radical innovations can be more challenging for such organizations. The so-called "Not invented here" or "Not shared here" syndrome can arise (Burcharth, Knudsen, &

Sondergaard, 2014). On the other hand, if an organization decides to consider new suppliers, for example, the next stage in the decision process is to serach for information, which is more elaborated on below.

***INFORMATION AND KNOWLEDGE BARRIER***

As seen in Figure 4, the information and knowledge barrier overlap. From a theoretical point of view, a stressful situation is experienced when adopters are required to gain new knowledge and learn new skills (Klein & Knight, 2005). Whether the adopters chose to adopt or reject innovation is often depending on the level of knowledge they possess about an innovative concept (Vowles, Thirkell, & Sinha, 2011). To gain new knowledge, effective approach to information search is needed. Hence, information gaps increase the probability of rejection. (Talke & Heidenreich, 2013).

As illustrated in the dynamic model, this barrier is present in the pre-decision phase. In this phase, an awareness of the innovation is followed by acquiring knowledge about it (Talke & Heidenreich, 2013). Frambach & Schillewaert (2002) define the pre-decision phase as the initiation phase, where awareness and attitude towards the product are formed. Based on the insights from the interviews, the challenge was how to obtain accurate information about an innovation. Kleijnen, et al., (2009) describe the information barrier as the one where at least one party has relevant information, whereas the others do not. Within B2B settings, the information is shared between experts, regulators, and many other stakeholders that interact and make decisions about adopting or not adopting a new product or technology (Aarikka-Stenros & Lehtimäki, 2014; Makkonen, et al., 2014). This complexity of the decision-making was also presented by company A interviewee (Q17). The knowledge that is searched for includes the formula of the products, benefits of the products, package size, the cost of the product, the cost of productions and the cost of marketing. With regards to the other interviewees, the information barrier was also present in the past, but nowadays the procedures for evaluation of innovations have become more thorough and complex, as evident in the quotation Q63; Company D mentioned that the capabilities of the firm have expanded into consumer research.

Since the diffusion of innovation itself is explained as the process of spreading information about innovations for social and economic benefits, the identification of the information barrier

it is also a somewhat expected finding (Tidd & Bessant, 2004; Sahin, 2006). Further on, Geroski's epidemic model builds on the assumption that the speed of diffusion is dependent on the technical and economic information available about it (Geroski, 2000). Based on the findings presented in Chapter 4, companies search for information about consumers, trends, regulatory requirements and scientific knowledge. Overall, the focus is on social approval by consumers, doctors and regulators. In other words, the information barrier is related to the social risk barrier, which is presented below.

***SOCIAL RISK, COMPETITIVE RISK, USAGE BARRIER and IMAGE BARRIER***

A fear that the consumer will not adopt innovation and the need for market search is classified as a "social risk" barrier which is further elaborated below. In literature, this barrier is defined as the one where an individual worries that innovation will not be adopted by the wider group of society (Joachim, Spieth, & Heindenreich, 2018; Kleijnen, Lee, & Wetzels, 2009). A wider group of society based on findings in chapter 4 includes patients, doctors, consumers, regulators and other stakeholders.

Throughout the conversations with the interviewees, the word "market" was mentioned frequently. Adoption of innovation by an IAO's is often depending on its acceptance by consumers, as discussed above, hence market research is the first step towards considering to adopt innovation. As most innovations fail due to rejection by consumers (Laukkanen, Sinkonnen, & Laukkanen, 2008), their perception of innovativeness is an important aspect of the innovation adoption (Rogers, 2003; Geroski, 2000; Tornatzky & Klein, 1982; Frambach & Schillewaert, 2002).

The downside of too much focus on market research is, however, the fact that long-term innovation capability decreases (Rothwell, 1994). However, as discussed earlier, the aim of an IAO is not to innovate, but to assimilate innovations that are available somewhere else (Damanpour & Wischnevsky, 2006). This theory aligns well with the explanation by company E interviewee (Q14.) who stated that their innovations are often the innovation of their partners.

Based on the above-mentioned findings, it is evident that the market pull innovation strategy is the most common one among the IAO's. Form a theoretical point of view, the risk for imitation is higher if the market is a source of ideas (Rothwell, 1994). In other words, social

risk and competitive risk barrier also overlap. As explained by company E interviewee, the need for differentiation is mostly evident in the pre-decision stage (Q23). Interestingly, the need for differentiation is recognized, but the fear for radicalness of innovation experienced at the same time. For example, company D interviewee described the difficulty of having to explain an innovation for the consumer (Q34.). Based on the quote 34., the usage barrier was identified, which is also closely related to the social risk barrier.

From a theoretical point of view, Ram and Sheth (1989) mention the usage barrier as the most common cause for consumer resistance to innovations. Although the usage barrier may often be associated with technological innovations, it was also present among the interviewees (Q34.). In literature, as a psychological barrier, it is defined as the perception that consumption of innovation requires an undesirable disruption of established user patterns, workflows and routines. One could argue that this barrier is closely related to the radicalness barrier as discussed by Kapoor, Dwivedi, & Williams, (2014). The fear of radicalness was evident in the pre-decision phase, which is not surprising as companies often evaluate market needs in this phase, as mentioned above, and radical innovations are rare.

Lastly, the social risk barrier can also be related to the image barrier. This barrier is described as the one that is associated with negative feelings about the brand (Joachim, Spieth, & Heindenreich, 2018). When asked about its importance, in some cases it was very important, while in some other cases it was not considered to have an impact on the decision made. Factors that seemed to influence the importance of brand were the functionality of the product and if own brands were used.

In summary, the social risk is a barrier most frequently experienced, in both pre-decision and post-decision phase. Within the B2B settings, an organization worries that a consumer will not accept the adoption of innovation. A consumer, on the other hand, worries that the innovation they adopt is not going to be approved by the other members of society (Joachim, Spieth, & Heindenreich, 2018). Overall, B2B and B2C buying processes interconnect in terms of innovation resistance. Although the social risk barrier is manifested in both phases, its impact is biggest in the post-decision phase. The success of the implementation depends on the consistent use of innovation, hence how effectively an innovation is used by the consumers is the most important deciding factor throughout the process (Klein & Sorra, 1996; Sahin, 2006).

Moreover, the successful implementation creates more profit, hence the fear of not making profit which is related to the economic risk barrier is discussed below.

***ECONOMIC RISK and RESOURCE RISK***

The economic risk can also be associated with the resource risk as both barriers relate to high costs. Overall, the two barriers overlap and in terms of classification, which is evident in the quotation by company B (Q 56.) The concern among the interviewees was mainly related to human resources, hence as presented in Figure 4, the resource risk is also related to the people risk. Overall, compared to the consumer who perceives mainly economic risk, a similar barrier present among organizations is mainly related to the fear of losing staff and fear of making investments. Training new employees on new technologies can also lead to switching cost, which is a critical factor that influences the decision to adopt an innovation (Geroski, 2000; Frambach & Schillewaert, 2002). Further on, when discussing investments, the economic risk barrier can also be related to the profitability barrier (Kapoor, Dwivedi, & Williams, 2014) and a value barrier (functional barrier) (Joachim, Spieth, & Heindenreich, 2018). The fear of not making a profit is evident in the Q21. As stated by company E interviewee, to see the profit is a must.

Overall, one could also argue that an innovation must create value to the consumer and to the company to be recognized as an innovation, hence the fear of not creating value is one other major obstacle to innovation in general. As discussed by Joachim, Spieth, & Heindenreich, (2018) the rejection of innovation in a market will lead to a decrease in revenues and failure to reach the mainstream market. Moreover, within a B2B context, the price usually influences the decision to adopt an innovation (Grewal, et al., 2015; Pilelienė & Rėklaitis, 2019), hence the economic risk barrier was an expected insight.

***PEOPLE RISK***

A somewhat interesting finding was to learn what happens after a no-go decision. Company A explained that the challenge is how to motivate the team, as presented in the Q47. A similar experience was described by company E interviewee, but after the "yes" decision, as presented in Q48. Overall, the importance of the team and teamwork is recognized by the IAO's. Form a theoretical point of view, this barrier can be related to the team's climate for innovation

implementation (Klein & Knight, 2005). To regard innovation as a top priority, an organization need to implement a strong and positive climate where employees regard innovation as a priority (Klein & Knight, 2005). Kuratko, Morris, & Covin, (2011) further mention the importance of a culture that supports the development of innovations. Culture itself is defined by Kuratko as a belief and assumption that employees may have about an organization, and it can have an emotional aspect, hence it is also closely related to the psychological barriers.

***TIMING RISK***

Time pressure is frequently experienced post the decision. Once, the decision is made, companies feel pressure to meet deadlines, follow schedules and sell the product. The time pressure, as discussed earlier, can be also defined as stress, as explained by Company E (Q50.) Based on the quote 50, however, it is evident that the challenge is related to the timing risk, as company E interviewee sees many uncertainties with regards to choosing the right time to introduce innovation on the market. Overall, as Klein & Knight, (2005) point out, implementation is time-consuming and expensive. Companies must be prepared to deal with the poor result in the short run, but expect implementation benefits in the future. The biggest challenge might be to invest in the long-term potential of an innovation. These challenges can be directly related to the healthcare industry where scientist spend many years on clinical trials and development of innovations that have limited implementation in routine clinical care (Kirchner et al., 2020). Further on, educational and social changes may take another decade before the product is adopted by patients (Cohen, Wesley, & Levinthal, 1990).

***FUNCTIONAL RISK***

Functional risk is concerned with uncertainty about the performance of the innovation. From a theoretical point of view, Talke & Heidenreich (2013) define this barrier s the one that appears if an individual fears that a product could be dysfunctional (Talke & Heidenreich, 2014). As this is only a belief that something might happen (*"there is always a chance"*, Q55.), but has not happened yet, this barrier is present in the post-decision phase. It is mainly experienced by an organization, as company B, for example, described in Q55. The quality attributes of a product, such as stability and sterility, are critical, and there is always a risk that something may go wrong.

***ANY PSYCHOLOGICAL BARRIER***

Lastly, it can be mentioned that any psychological barrier experienced by the consumer may affect the final decision of an organization to adopt innovation. Adoption itself is confirmed only when an individual decides to make the full use of innovation (Frambach and Schillewaert, 2002; Rogers, 2003). Thus, successful implementation of innovation depends on consumers' awareness or attitudes (Joachim, Spieth, & Heindenreich, 2018). In figure 4, any psychological barrier can be related to the social risk barrier and the process of overcoming this barrier leads to full acceptance by consumers. In other words, the relationships between the social risk barrier and "any psychological barrier" as illustrated in Figure 4 (the arrow from social risk to adopter), is a process of diffusion of innovation.

Overall, B2B and B2C are interconnected, but the focus is always on a consumer.

# 6. Conclusions

*This chapter summarizes the outcome of the research and conclusions of our study. Additionally, managerial implications and limitations of the study are presented. Lastly, suggestions for future research are discussed.*

## 6.1 Conclusion

The outcome of this research contributes to a wider understanding of the innovation-decision processes within B2B settings. More explicitly defined, the findings of this study provide a comprehensive view on how psychological barriers to adoption of innovation evolve throughout the decision-making process, (from a perspective of the leadership in an IAO).

A more conclusive summary of findings is presented visually in a dynamic model which shows how some barriers to innovation adoption disappear (norm, information and knowledge), while some others remain and have a more significant impact on the decision process itself. For example, social risk, economic risk and resource risk were present in both pre and post-decision phase, and their influence on the final adoption decision is present throughout the entire process. Social risk barrier is the most influential one, since how effectively an innovation is adopted and put in use by the consumer is what ultimately drives an IAO to decide on innovation adoption. Hence, it is not surprising that previous innovation resistance research has focused primarily on consumer studies.

With this in mind, it can be concluded that the findings of this study point in the same direction; the success of innovation within B2B settings depends primarily on the consumers' adoption of it. In consideration of these findings, one can question the influence of the leadership on the organisational decision-making by an IAO. Based on the outcome of this study, it can be concluded that the decision-making process by an IAO is authoritarian (regulatory agencies), collective (team members and leadership) and individual (consumers) at the same time, but the focus is always on the consumer. While previous research focused on the difference between the collective decision-making (B2B) and the individual one (B2C) (Pilelienė & Rėklaitis, 2019), this study presents a dynamic model of how B2B and B2C interconnect throughout the organizational-decision making. Pilelienė & Rėklaitis (2019) further claim that the decision in

B2B is rational, which was also the standpoint of the companies interviewed in this study. While this view may question the importance of psychological barriers for the organizational-decision making, the outcome of this research suggests that the decision itself can include emotional elements as well, if seen from a holistic perspective and if buying is related to an innovative concept.

In literature, psychological barriers are defined as barriers that arise when innovation is perceived as too risky; the findings of this study point out that riskiness itself and the fear of it were present throughout the innovation-decision process. Nevertheless, this is not a surprising finding, since the IAO's that were interviewed primarily relied on the market as a source of ideas (Rothwell, 1994) and the adoption of radical innovations was perceived as too risky. Still, while the risk perceived with incremental innovations is low or medium (Bouncken, Friedrich, & Kraus, 2017), the risk associated with B2B buying is high (Pilelienė & Rėklaitis, 2019). Hence, it is a common practice for the IAO's to focus on minimizing risks associated with innovations by implementing structural and rational approaches to decision-making. These approaches are often too rigid for considering to adopt new to the market innovations; the strategy based on the market need often results in a poor capacity to adopt radical innovations (Rothwell, 1994).

In summary, to adopt or not to adopt innovation primarily "*depends on where you draw the line for a true innovation"*, as stated by one of the interviewees. Based on these findings, one could argue that the radicalness of innovation, or from a psychological point of view, the fear of it, is the most important barrier to adopting innovation. From a more general perspective on innovation, in total twelve other psychological barriers are perceived by an IAO when making decisions to adopt innovation. The psychological barriers, as presented by Joachim, Spieth, & Heindenreich, (2018) were also applicable to the organizational settings, but quite often they overlapped between B2B and B2C. This finding led to a wider understanding of the organizational innovation-decision process itself.

While Rogers (2003) divided the decision process into five stages, the dynamic model presented in this study is divided into two stages, pre-decision and post-decision stage. As mentioned earlier, some of the barriers were present in both stages; for example, economic risk, social risk and resource risk. In other words, the pre-decision and post-decision phase experience similar challenges. However, the barriers, although defined as same, are manifested

differently in the different phases. Economic risk in the pre-decision phase is related to the investments of resources, while the economic risk in the post-decision phase is related to the profitability of innovation. The social risk barrier in the pre-decision phase is related to the need for innovation, while the post-decision phase depends on the acceptance of innovation by the consumer.

Lastly, it can be concluded that the decision-making process is an ongoing activity. Companies involved in the decision-making often re-assess their processes and build more structure to minimize risks associated with innovation adoption. Overall, the challenges associed with innovation, perceived by an IAO, resemble the constraints on corporate entrepreneurship, as discussed by Kuratko, Morris, & Covin, (2011). Innovation, whether seen from the perspective of an IAO or IGO, is challenging to manage. Ultimately, the degree of risk an organization is willing to take and how well it tolerates failure could be an important indicator of the success of innovation.

## 6.2 Managerial Implications

From a managerial point of view, the outcome of this study provides IGO's with valuable guidance on how to approach and understand their customers. An in-depth understanding of the barriers perceived throughout the decision-making process can help companies to better position themselves towards their customers. Further on, while research until now focused on identifying positive characteristics of the IAO's, this research study takes the perspective of innovation resistance. By knowing what barriers to expect, the IGO's can develop better commercialization strategies. For example, most radical innovations will struggle on their way to the market. These types of innovation often create new markets and the risk associated with them is high, compared to the incremental innovations, which were the preferred choices of the IAO's.

Nevertheless, the success of the commercialization can be increased by increasing the awareness and visibility of the innovations. Many IAO's seek new knowledge outside the organization, and it is common that the decision made can be influenced by the key opinion leaders and regulatory agencies. In other words, IGO's can focus on improving the flow of information, which creates new knowledge and awareness of radical innovations. Further on,

IGO's could focus on creating new capabilities that are different from the existing skills, with regards to commercializing radical innovations.

## 6.3 Limitations

This study has a few limitations that are worth mentioning. The field of innovation adoption is complex, and many other factors can influence the decision to adopt or reject an innovation. The most influential ones are the characteristics of the innovation itself and the characteristics of the adopting units, as occasionally commented on. Companies that were interviewed varied in terms of size. As presented in the literature chapter, the diffusion of innovation will start with early innovators who are riskier and more open to new ideas. Overall, although commented on one occasion, this research does not fully take into consideration the difference between the corporate and the entrepreneurial view on innovation. The generalization of the results may be a major limitation of it. Moreover, the adoption of innovation is researched through a somewhat limited number of companies, and a larger sample is needed to obtain more valid findings. The current pandemic situation has had an impact on the availability of customers to participate in the study.

The challenge with this research project has also been to focus on a certain type of product, which was the aim initially, for example a radical innovation. However, from an ethical point of view, this study took a somewhat broad and general view on innovation adoption itself. Exploring specific products and the rejection or adoption of it was a sensitive topic from a business point of view.

One other major limitation of these findings is the fact that functional food and the consumer healthcare industry face many specific challenges, such as heavy regulations, hence the outcome of this research may not be applicable to other industries. Further on, many of the psychological barriers explored in this study can be associated with a specific type of products only, as mentioned above.

## 6.4 Future Research

As this study revealed the preference for the incremental innovations by IAO's, future research could focus on radical innovations and cross-sectional comparison of a different group of adopters. As Reinhardt, Hietschold, & Gurtner, (2017) advised, the future research could also investigate the shift from non-adopters to adopters; hence a sample containing both adopters and non-adopters can be researched. The focus of the research could be on a specific product and an understanding of how the different group of adopters perceive the different barriers. Further on, as this research study took the perspective of the leadership in an IAO, future research could include a perspective of the IGO or both IGO and IAO for comparison purposes. Alternatively, different positions in the company could be interviewed to understand the decision making from an employe's perspective. Moreover, consumer studies can also be conducted to further understand how B2B and B2C interconnect. Lastly, future research could investigate the effect of different working cultures on decision-making.

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## APPENDIX A - INTERVIEW GUIDE

***Formulation of the questions***

The first stage of the decision process is knowledge (Rogers, 2003; Sahin, 2006) and the questions here were meant to explore the importance of the knowledge related to the innovative concept and find out if the interviewee was at this stage considering adopting the innovation or not? Rogers divide knowledge into three parts and mention questions such as What? How? And Why? Again, in order to avoid bias questions, a question is formulated as "What was your knowledge? The question is aimed to find out what type of knowledge was important to the interviewee. Rogers mentioned that at this stage, individuals search for knowledge about the innovation, but also other types of relevant knowledge (Sahin, 2006). The question "Were you considering to adopt an innovation at this stage and "Why" or Why not may give a clue to what barriers were present at this stage.

After the knowledge comes the persuasion stage, and the questions here were meant to explore the role of a supplier and barriers present at this stage (Frambach & Schillewaert, 2002). Rogers describes knowledge stage as the cognitive one, while the persuasion stage is more feeling-oriented; hence the questions here are more oriented towards the relationship with the supplier and are aiming to explore if any feelings were involved in the decision-making process. The question about the image barrier (Joachim, Spieth, & Heindenreich, 2018) is randomly asked in this stage and allows the interviewee to elaborate on its importance. Follow up questions such as "when was this important" may give a clue to where this barrier was present throughout the process.

Moving on to the decision stage, the questions were formulated to further investigate the psychological barriers, but not specifically in connection with the decision stage, in order to avoid bias answers. The question "Did your organization feel stuck with the decision-making at this stage" is meant to find out what psychological barriers were present at this stage? It is also a good question to ask since it gives an interviewee a chance to elaborate on their experiences and strategies that they implemented in order to deal with a difficult situation. Barriers such as social approval, economic risk, personal risk, functional risk were also investigated when appropriate. However, ethics were taken into consideration not to come across as pushy or to interrogate (Bryman & Bell, 2011). The interview guide was designed to be neutral, with a light tone and considerate towards the customers.

In the end, the last questions were meant to explore the post-decision situation and explore the challenges in the last stage of the decision process. Questions such as "After the decision was made, what were the biggest challenges with regards to assimilating this product into your organization?" may give a clue about the implementation challenges and allow for explorative study with no assumptions made from the side of the interviewer. As the implementation itself is described as "ideas put into practice" (Schumpeter 1911), questions such as "Is the innovation still in use" allows for an exploration of the barriers experienced post the decision. The last question aimed to find out about the current situation and discover if the confirmation stage has been completed.

# INTERVIEW GUIDE

*Many thanks for taking the time to participate in this interview! We are three students from Lund University, studying Master programme in Entrepreneurship and Innovation. We are currently researching the topic of innovation adoption and are interviewing customers within B2B who are involved in the decision-making. Our research project is pure academic research and totally separated from the case company. The research study contains questions about organisational decision-making and innovativeness. Your name, the name of the company and the product will be de-identified and used for research purpose only; please read the attached consent form that guarantees your confidentiality.*

| **THEME 1** | **PREVIOUS CONDITIONS** |
|---|---|
| **ADOPTER**<br><br>*Face sheet questions*<br><br>*Need*<br><br>*Previous practice*<br><br>*Innovativeness*<br><br>*Norm of the social system*<br><br>(Rogers, 2003) | 1. Could you please introduce yourself shortly (position in the company) and tell us briefly about the company you work for? |
| | 2. How is innovation affecting your business in general? |
| | 3. How frequently do you adopt new to market products or technologies? |
| | 4. In general, are you open to new suppliers, or do you prefer to rely on the known and existing pool of suppliers? |
| | 5. Overall, how does your organization make the decision to adopt an innovation from another company or partner?<br><br>6. *Follow up: Does your organization have a standardized process to look for and adopt innovations from other companies or partners?* |

| THEME 2 | DECISION-MAKING PROCESS |
|---|---|
| **KNOWLEDGE**<br><br>*How? What? Why?*<br><br>*Awareness* | 7. Can you recall a time, perhaps a recent decision-making process in which you were involved, when your organization decided to adopt or not adopt an innovation? Could you elaborate on this experience and share it with us, please? |
| | 8. At the early stage of the decision process, what was your awareness of the potential of this product? Could you elaborate on this experience with us, please? |
| | 9. What was your knowledge about the product in the early stages of decision making? What type of knowledge is relevant to have about an innovation? |
| | 10. Were you at this stage already seeing an outcome of your decision making? Why or why not? |
| **PERSUASION** | 11. Form your perspective - What was the role of a supplier throughout the decision-making process? |
| | 12. How important was the brand for considering to invest in innovations from supplier or partners? |
| **ADOPTION DECISION** | 13. Did your organization feel stuck with the decision process at the time? What was the main challenge when deciding on the adoption or rejection of innovations from other companies and partners?<br><br>14. *Follow up: Do you ever recall making this type of decision based on your emotions or the emotions of others?* |
| | 15. Compared to the early phase of finding out about the product, would you say that your opinion had changed throughout the process of making a decision? Why? |

| | |
|---|---|
| *A retrospective look at the decision-making process.* | 16. Throughout the decision process, did you have any thoughts on return on investments? Could you tell us a little bit about it? When was this important to take into consideration? |
| | 17. Could you recall being afraid to invest in the product? Why? When was this? |
| | 18. Throughout the decision-process, were you aware of many other users who had already adopted or rejected the same product? When did you find out this? |
| **IMPLEMENTATION STAGE** | 19. After the decision was made, what were the biggest challenges with regards to assimilating this product into your organization? |
| | 20. Would you say that the innovation was successfully implemented in your organization yet or is the process still ongoing? |
| **CONFIRMATION STAGE** | 21. Is the implemented innovation still in use? |
| | 22. *Follow up: Were you ever afraid that the product would be dysfunctional or difficult to use?* |
| | 23. After the implementation, or during it, what were (are) your final thoughts about the decision? |
| *Looking back at the decision-making* | 24. Currently, what is the biggest uncertainty your organization is facing with regards to the implementation? |
| | 25. Do you have any other on-going decision processes currently, could you share your thoughts on it?) |

**APPENDIX B – QUOTES**

| THEME 1 - FACE SHEET ANSWERS | Company |
|---|---|
| *I am managing projects and entering into our portfolio a new product for consumers. I have in my team three project leaders. I have been at Company A for five years now. Previously, I was in charge of the innovation for a company called X, where I was in charge of innovation management. I was working for that company for eight years and I was in charge of R&D for microorganism used in fermented foods, yogurt, and also milk …. everything that is made by the microorganisms. I am a microbiologist and I have a PhD in microbiology.* | **A** |
| *I'm a medical doctor. I graduated in 1997 from the American Medical University in X. During my studies, and after my studies, I was also working at various institutions. And one of them is University of Pennsylvania in the United States where I spent one year in the experimental medicine lab. And then I was also working in Sydney in Australia with neuroscience, neurodevelopmental probe program. This was also more than one a year and since 2003, I'm staying in this city. As a gastroenterologist, I'm running my private office and also working at university, so I am always connected to the medicine. I was always interested in the holistic medicine to get a whole picture, not only pharmacology based or so. That's why I was so interested into microbiota bacteria.* | **B** |
| *I am a managing Director for a company called X, and my background is in both business development and science. I have a degree in Food Science and Nutrition as well. Two years ago, say, actually two years ago I came here to begin my new start-up, that's on behalf of a X company. So, I came here to initiate contact with some x supplies and then cooperating with them in order to sell product, especially for X market. That's our base over there. So that's how a story began.* | **C** |
| *I have worked for small and large companies in food industry. For the last 12 years I have worked for a company called X and we have a partnership with the case company. We focus our business on product development and innovation. I have a PhD in Food Science and several years of experience as R&D Director.* | **D** |
| *I also have a scientific background, I am an engineer and I have a PhD in medicinal chemistry and I started my career in the pharma industry as a project manager, the development of new API's and drugs and then I let's say shifted to more business jobs including having my own small company which was a an R&D company, so we are full of innovation, at least attempts. And then I, I went back to school, I have an MBA an executive MBA actually in business as well. So now, I'm let's say I work at the at the boundary of business and science where I'm head of science at a small nutraceutical company.* | **E** |

**THEME 2 DECISION MAKING**

| No. | QUOTES | 1st Concepts | Company |
|---|---|---|---|
| **1.** | *Innovation is at the hearth of our business, and my responsibility is to bring innovation to consumers. To transform innovations, to transfer new products, to meet consumer needs.* | *Innovations is a core function of the business* | **A** |
| **2.** | *Innovation very much affects our business. When we launched our product, it was an innovative product in the US market. It was an innovation even though the product existed in Sweden…* *but we transferred the technology and Americanized the products, so we were having the first mover advantage.* | *Innovation creates competitive advantage* | **D** |
| **3.** | *Our job is to buy ingredients from a supplier, mix them together and make a new product for healthcare but not as a drug, more like a…* *So basically, we are planning to launch around 10 products per year, I would say seven of these need to include something innovative.* | *Innovation is important for business growth* | **E** |
| **4.** | *So, for me, it is about identifying the needs of the consumers, based on the market research and marketing studies and try to identify all the science and technologies that might help us to bring new products to the market.* | *Innovations needs to match consumer needs* | **A** |
| **5.** | *Developing, launching and selling a truly innovative product can be can hard, because retailers need some confidence that the consumer gets and understands the product and that there will be a pull from the consumer.* | *Worries that a consumer will not adopt an innovation* | **D** |
| **6.** | *We try to implement an innovative strategy based on the medical market; we collect feedback from patients and try to introduce our products by communicating this need through medical doctors, pharmacists and dieticians, so that they can deliver the knowledge to their patients.* | *Patients' need in focus* | **B** |

| | | | |
|---|---|---|---|
| **7.** | *I think the existing suppliers are seen as resources; we don't want to explore new supplies right now. We performed market studies, and right now I think that the supplier we are dealing with can meet the needs of the market.* | *Not open to new supplier* | **C** |
| **8.** | *We have established a loyal customer base. We have cantered our marketing around them. And changing that would require a compelling story, it would require at least the same efficacy and effect of the product.* | *New supplier requires change of marketing routines* | **D** |
| **9.** | *If the product is authorized, and we have all the documentary guarantees that it is authorized, then we will go with it. But it can be a risky process because we have timelines and schedules to follow.* | *Changing supplier can be a risky business* | **E** |
| **10.** | *We have a board, the three of us. So, of course, it's always first an idea. Then it's an internal discussion, then we consult this idea with other specialists, our collaborators and people who are knowledgeable in this area.* | *Searching for knowledge outside the organization* | **B** |
| **11.** | *We have a voting system consisting of sales and marketing and myself here. So, for example, we find out from the market research that this product has been very popular.* | *Social approval is Important* | **C** |
| **12.** | *Again, we have the scorecard and the score in terms of opportunity was so high that we decided to go with the risk.*<br>*And I have to say that we're still sometimes scratching our heads and asking ourselves if we made the right decision or not, because it's really difficult.* | *Not sure if the right decision was made* | **E** |
| **13.** | *We use a funnel process. We develop a pool of potential products that might be of interest. And this is based on retailer input, consumer requests, market studies and trend observations.* | *Need for a structural approach to decision-making* | **D** |

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| **14.** | *So, we have a very rational, productive evaluation scoring sheet for each opportunity, and then we decide based on this score card, if it's worth the effort, and the risk of going with an innovation in the market. It's quite critical for us because we cannot really innovate with our own formulations. We have to use the innovations of our partners and we have to buy the innovations* | *Need to reduce and minimize risk* | **E** |
| **15.** | *It's always based on business evaluation. So, that means we have board committees that are evaluating each project, and for each project we are creating a new business case.* | *Routine process for evaluation of opportunities* | **A** |
| **16.** | *So, we always need to make an investigation, what is known in the literature, what is known among experts to be able to communicate this to our customers. This is the first process of decision because if there is no background, no scientific literature, we already know it will be very difficult to sell such products.* | *Knowledge is crucial to spread the awareness* | **B** |
| **17.** | *The knowledge was the formula of the products, benefits of the products, package size, the cost of the product, the cost of productions, the cost of marketing. So, we are evaluating everything in order to decide, for the decision to be accurate.* | *Diverse sources of information required* | **A** |
| **18.** | *I think the very first part is to assess the market trends and see if it is worth for us to enter this market. Right now, our target consumers are the ones who were born in 1990. They, they're quite young and they use the new channel instead of the traditional one.* | *Up-to date communication channel required* | **C** |
| **19.** | *It was last year for example, I presented to the board of innovation, an idea of new product and we decided not proceed with the development, based on the fact that the market is too small where we will not be able to compete based on the competitors.* | *Rejection based on the competitors* | **A** |

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| **20.** | *Also based on the fact that by the time we went through the technical assessment and shelf life testing, there were already a couple of established players, we decided there is not enough room in the marketplace.* | *Fear of not being able to create effective product differentiation* | **D** |
| **21.** | *Being able to differentiate ourselves in the market, is important. Can we sell the product? The visibility that we must have is that, yes, I can sell this product.* | | **E** |
| **22.** | *The marketplace is extremely competitive. If your product does not sell, you're out in no time. So, it's probably not surprising to you but these are key criteria were facing.* | *Extremely competitive environment* | **D** |
| **23.** | *am I going to make more money by selling the same product as everybody else with a different packaging? Or do I need something new to make more money?* | *How to stand out?* | **E** |
| **24.** | *What is the price of such a product because even it's very innovative and might work on the market, from the business point of view, it could be too expensive?* | *Too expensive investment* | **B** |
| **25.** | *So, eventually the price will be really extremely expensive in our market that's equipped partly, it would be a big barrier for us to introduce this product to our consumers.* | *Extremely expensive investment* | **C** |
| **26.** | *In many cases when a new product is being considered for launch, the minimum production sizes are so large, that the cost is not reasonable or if the manufacturer would require us to run a million units with the for the first run, it would require so much money or tie up so much capital that it would not be viable.* | | **D** |
| **27.** | *We are tracking the success of new product launches and compared against historic product launches. And yeah, return on investment is the overriding criteria on for product launch.* | *Return on investments is very important* | **D** |
| **28.** | *So, I think every process associated with investment especially if you think about innovation is associated with fear and you can't get rid of it.* | *Fear of making investments* | **B** |

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| **29.** | *We were collecting different opinions from the key opinion leaders and experts and they gave us the green and told us the product is safe. But actually, in the end, this product was denied. So, if we knew that, we could have given up from the beginning, but we thought that delivering scientific proofs and opinions from experts would help to convince authorities but it didn't help.* | *Challenge of obtaining accurate information* | **B** |
| **30.** | *It's always a bit more difficult to work with novel ingredients. We are open to working with new players in the market providing that the product is authorized. So basically, if the product is authorized, and we have all the documentary guarantees that is authorized, then we will go with it.* | *Challenge of regulations* | **E** |
| **31.** | *Do we have the capability to produce these products in house, , do we have the competency in our organization to pursue these products, our current products are typically refrigerated but if the price would require frozen distribution, storage shipping, we would have to develop capabilities and even an understanding of the retailer and how to approach this segment* | *Resource risk* | **D** |
| **32.** | *To find a cooperative partner is important, this is one way to obtain resources. So, this is also very important.* | | **C** |
| **33.** | *In the case of smaller companies with limited capabilities, we are attempting to be very disciplined and not stay too far from our core capabilities. Because we think within our current product range, there are still many market opportunities. If we stay too far from them, we dilute ourselves too much and we stretch ourselves too much and our resources* | *Preference for what is known and established in an organization* | **D** |

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| **34.** | *Well, it depends on where you draw the line for a true innovation. From a product category standpoint, to create something truly innovative is rare and hard. Because if the product is too foreign or too exotic or needs explanation to the consumer, it is it is hard to establish what was originally a new product or an innovative product?* | *Innovation requires disruption of the established user patterns* | **D** |
| **35.** | *We could only read very sophisticated and specialized journals about the role of these products, but this was not known to the general audience. So, by reading these papers and relying on our own feelings and thoughts, we thought it would be very innovative in the next decade. And it came true. Yes, now the market is blooming and everybody's talking about it. And since then we started educating people about the importance of our products, also medical doctors, pharmacies and dieticians in Poland. We did this for the last 12 years and managed to introduce several other projects into the market.”* | *Knowledge is crucial to spread the awareness* | **B** |
| **36.** | *This is the first process of decision because if there is no background, no scientific literature, we already know it will be very difficult to sell such products because doctors who we are collaborating with, they are awaiting some proof. Why should I use this?* | *Fear that the doctors would not approve the innovation* | **B** |
| **37.** | *The brand is very important because it's makes a difference. Our market evaluation is based on the brand awareness and brand penetration. Because for sure, if the brand is not well-known it's difficult to make the products known by the consumer, compared to a brand that is well known with large market share, and so it's always very important.* | *Brand is important* | **A** |

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| **38.** | *If the brand has been on the market for many years it will have partners in different countries. It's very important to meet these partners through conferences where you can attend lectures of very knowledgeable and well-known scientists. You can initiate new collaborations; you can meet very knowledgeable people who can in the future help you to develop a new product.* | *Brand creates new opportunities* | **B** |
| **39.** | *At the beginning, definitely, a recognized brand is easier to remember and my own brand is not so strong, so if we can combine it with the supplier's brand, that definitely helps.* | *Brand seen as an extra resource* | **C** |
| **40.** | *I have to say not much, because at the end of the day, the trick is that we are mixing products that are not ours into our own products and then selling it. So basically, if I use my suppliers' brand and my competitor also uses this brand, then it automatically, let's say, levels things between us, we're selling the same thing. So, usually we use our own brand as a support.* | *Brand is not that important* | **E** |
| **41.** | *We display the brand of the supplier on our products, but we find that the consumer recognition is not significant. We look at the value of the ingredients from the functionality side; if it functions well it delivers a benefit to the consumer and noticeable benefit which is very powerful. We think this is actually more powerful than a name or a logo on the product.* | *Functionality is more important than a logo* | **D** |
| **42.** | *In my opinion, it was a fair decision and a true decision because it was based on figures.* | *No doubts* | **A** |
| **43.** | *I would say our decision is sometimes based on the failure from our supplier to supply basically. But otherwise, until now we didn't change our mind.* | *Firm decision* | **E** |

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| **44.** | *Once we made the decision, we always continued with the decision so we were not looking backwards.* | *Not looking back* | **B** |
| **45.** | *Of course, we take certain risks, and there's never a guarantee and we had failed launches, or we had to discontinue products. But I would say no, we were never afraid, because we would have abandoned an approach if there were serious doubts about it.* | *No fear* | **D** |
| **46.** | *The fear is necessity. You can't really avoid it, but once you make the decision, just go for it, it's like a ski jump. The jumpers don't think about the fear. Once you are on the way you can't really stop, you have to fly, otherwise it will probably not work.* | *Fear is a motivating factor* | **B** |
| **47.** | *The biggest challenge, most of the time is when a decision is a no-go. How to keep the team motivated, because they spend a lot of energy with the evaluation of the projects. And it is always kind of a deception when the decision is a no-go. So, it's a challenge to explain and communicate to the team the decision based on facts. But is part of a life of managing a portfolio of projects, we always have some good decisions that are very positive and motivating for the team. And we also have sometimes a no-go decision that we have to manage.* | *Challenge to keep the team motivated after a no-go decision* | **A** |
| **48.** | *The main difficulty is having everybody on board, to accept the difficulties, accept the challenge, and accept to do the extra work that you need to do with a different product. People don't always see why it's important to launch this product and do this extra work. So you have to convince everybody that their efforts will be recognized and rewarded.* | *Challenge to keep the team motivated after a yes decision* | **E** |
| **49.** | *The other problems might be the lack of people, lack of human resources, for example someone is working on a project and is responsible for providing important data. If, for some reasons such collaborations are no longer possible, you have no time to find new people.* | | **B** |

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| **50.** | *The main issue is the visibility and the schedules. So basically, we ask ourselves: shall we put the effort and wait for one year when it is much easier and much safer? And then at the end, okay, in which case do we make more money? Should we wait one year and have the killer product, knowing that we don't know what's going to happen in one year, or shall we shoot a product quickly? And also well, it will take us four, five months to go to the market with a new product, six more months of making profit out of a product.* | *Timing risk* | **E** |
| **51.** | *keep the timing and the budgets that we we presented and evaluated. In a nutshell, the main challenges are keeping the time, the workload, most of the time workload, timing, budget.* | *Keeping the Budget is a challenge* | **A** |
| **52.** | *I think it's definitely how to execute, once the decision is made.And if we don't execute very well, from the money perspective, is is really a huge waste.* | *Failure to execute can be a waste of money* | **C** |
| **53.** | *Hmm, that's a good question. I think the the biggest challenge could be a, I would say the challenge is the consumer. If they adopt your product or not.* | *Consumer is the biggest challenge* | **C** |
| **54.** | *The biggest uncertainty? Consumer acceptance, I think, is the fair answer. It's probably not a big surprise, whenever a true innovation is pursued the challenge is: will the consumer understand it will they be willing and able to pay potentially a premium for It.* | | **D** |
| **55.** | *You have to take care of this product. For example, we need to monitor stability and sterility, if one factor goes wrong then the whole product is wrong so there is always a chance that this product will be dysfunctional, I think our products are very fragile supplements.* | *Fear of dysfunctionality* | **B** |
| **56.** | *Because of viral pandemic, there are plenty of fears and unknowns. First, human resources - you are not sure if someone may be sick. Some other people may get infected. Or maybe health authorities can close your production plant if there* | | **B** |

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| | *is a suspicion of infection or something like this. We don't know how the global market will react and how many people will lose work and what will be the net income of the country and so there might be less people buying this product.* | *Fear of not making profit* | |
| **57.** | *Maybe distribution will be difficult, maybe the borders will be closed for a longer time and won't be able to get substrates from abroad, yes. It's lots of uncertainty,* | *Fear running out of supplies* | **B** |
| **58.** | *So, we have a very rational, productive evaluation scoring sheet for each opportunity, and then we decide based on this score card, if it's worth the effort, and the risk of going with an innovation in the market. It's quite critical for us because we cannot really innovate with our own formulations. we have to use the innovations of our partners and we have to buy the innovations* | *The aim is not to innovate but to assimilate innovations* | **E** |
| **59.** | *The supplier is very important because it is with the suppliers that we can discuss the cost of the products, the timeline to develop the product. And everything around the quality of the product, regulatory requirements, regulatory doses that we should prepare in order to register the product in each country that we targeted. So, a supplier it's really a key stakeholder in the process of making decision.* | *Supplier is a key stakeholder* | **A** |
| **60.** | *We have a very close collaborative relationship with our supplier. It's a give and take relationship where we share learnings and collaborate on the technical side. What is the production status? How much can we produce every year? How soon do we need to order to be delivered on time ?* | | **D** |

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| **61.** | *But European Union made the statement that since 2000, we can't distribute these products as medical devices, they need to be registered as drugs. So, this was of course, a higher decision, governmental decision, legal decision which destroyed the whole project.* | *Authoritarian decision-making* | **B** |
| **62.** | *So Good question. It's I think there's is always a need to be sure that our evaluation is a true evaluation that we do not miss something. It is a lot of work to gather all the figures needed to make the evaluation in each country that we targeted the system. So, we always spend a huge work on the preparation of the presentation to the board for the decisions.* | *Fear of making the wrong decision* | **A** |
| **63.** | *I would say that our process became more comprehensive. And we have better means to assess, for example, consumer interest now. we have expanded our capabilities into consumer research, which is a very valuable tool to assess interest of consumers.* | *Need for accurate information*<br>*Learning from failure* | **D** |
| **64.** | *So, the fear is more about the predictions you need to make, it is like being a visionary, you need to foresee what might happen, what might go wrong and counteract it. I think fear is some kind of a motivational trigger.* | *Fear is the driving force* | **B** |
| **65.** | *We were making assumptions; I can give you one example years ago. When protein became a big thing in beverages everybody wanted more protein in any kind of food product and we considered using it too. And we thought it would be a good idea to ask our core consumers, and we had a database of a couple of thousand consumers we can connect with what they think of certain protein sources. We were shocked to see how much rejection we got, almost 50%.* | *Learning from failure* | **D** |
| **66.** | *from time to time we review the, cases. we think how to improve our decision process next time, why did we fail?* | *Learning from failure* | **C** |

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| **67.** | *Without innovative products that we thought were not possible, technically, or from a quality standpoint, years ago, we are in a very different place today and only innovating and reacting to the market requirements allow us to survive if we would have just stood still. We would have a hard time surviving in the marketplace* | *Innovation is crucial for surviving as a business* | **D** |
| **68.** | *To be honest, now we when we look back at the time it took us to develop the first formula, we are looking at similar timelines for the new product. So, we will make our decision based on previous projects and, let's say the effort that we had to put in, in terms of development* | *The decision process is a continuous learning* | **E** |