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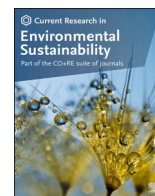
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Heterogenising forestry value production – Drivers and barriers of entering the non-wood forest products sector

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ABSTRACT

Global trends towards the bio-economy and a rapid change in value production caused by an awareness of climate change and the importance of forests and the environment overall, as well as of the demographical change in modern societies suggests a potential for increasing the role of non-wood forest products (NWFP) in future forest-based natural resources systems. The change of production-based societies to service-based societies has opened opportunities for the growing heterogenic group of forest owners as well. As new value production models have been identified, many forestry sector managers and owners are still in their infancy in seizing opportunities related to the service-based forest value production as well as in the need of conceptual clarity and understanding of the phenomena. This paper aims to study those factors influencing forest owners in diversifying value production into non-wood based products. The focus is on identifying those factors that attribute to the non-industrial private forest owner's decision to engage in NWFP production alongside traditional forestry. The results provide an overall picture of drivers and barriers which forest owners encounter while engaging and operating in the natural products sector. This study was based on in-depth interviews collected from twenty forest owners in Finland. The results revealed that drivers for engaging in NWFPs production are principally internal whereas barriers are mainly external. According to results increased knowledge, more effective communication, cooperation and networking between forest owners, forest professionals and NWFP suppliers are needed to support the supply chain, and consequently to develop the NWFPs production.

1. Introduction

Global trends towards the bio-economy suggest a potential for an increasing role for non-wood forest products (NWFPs) in future forest-based value systems. There has been increasing evidence that non-wood forest products and intangible products (e.g., aesthetic, therapeutic, recreational and tourism facilities) constitute an important and underrated segment of forest goods and services (Weiss et al., 2019a; Vacik et al., 2020a). In particular, the joint production of timber and NWFPs has intensified alongside the recognition of opportunities to diversify forest yields and earn additional income (Vacik et al., 2020b). In addition to economic value, NWFPs cover the dimension of natural resources and materials, and are vastly related to ecosystem services, biodiversity conservation, traditional knowledge and cultural and social values (Rintamäki et al., 2007; Carvalho Ribeiro et al., 2018; Wolfslehner et al., 2019; Weiss et al., 2020).

Earlier, the use of forests mainly focused around timber production

and wood-based products which were grounded on the relative economic importance of wood and the well-developed and competitive value chains based on wood as a raw material (e.g., wood products, pulp and paper, bioenergy) (Wolfslehner et al., 2019; Weiss et al., 2020). In many cultures, NWFP, i.e., products of a biological origin other than wood derived from forests, other wooded land, and trees outside forests (FAO, 1999) have had a long tradition, but their value has been underestimated, and little researched in the value creation of forest ecosystems (Wiersum et al., 2018; Wolfslehner et al., 2019; Lovrić et al., 2021; Primmer et al., 2021). However, the value potential of NWFPs in sustainable management of natural resources systems can be considered significant, which has been identified in various sectors (Wong and Wiersum, 2019; Vacik et al., 2020b).

The multidimensional value of NWFPs is visible in their increasing use in the food sector as well as in cosmetics and medical use. Furthermore, NWFPs are also often combined with recreational and tourism facilities. Globally, the economic value of NWFPs is estimated to

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be about USD 7.71 billion in 2015 (FAO, 2020). However, the real economic value of NWFPs is estimated to be much more because the majority of NWFPs extracted from forests is used for self-consumption within households of which there is very limited information (FAO, 2010, 2014, 2020). In Finland, most NWFP enterprises are single-person or family owned small or microenterprises. Since 2010, the turnover of the natural products sector has increased annually, and the unadjusted total turnover for 2017 was approximately EUR 530 million, with no decline in the trend in NWFP products sales is expected. (TEM, 2019).

While the traditional ownership of forests has mainly relied on traditional wood raw-material production, the change from production-based societies to service-based societies has opened opportunities for the growing heterogenic group of forest owners as well (see e.g., Vacik et al., 2020b). The value creation of NWFPs is constructed in multidimensional ways: forest owners gain economic benefits by collecting and selling raw material themselves or by selling licenses for picking permits. Moreover, forest owners have the opportunity to achieve a higher value through further processing products or even marketing the final product (Pettenella et al., 2019). This means, that value network for producing NWFPs involves more service providers and service-based value production, such as logistics, agents, labor hiring etc., compared to traditional wood production. Traditional wood production has worked on basis of one-stop principle while joint production of wood and NWFPs is more service-oriented and requires expansion of the value creation of primary producers. Attitudes have changed and wild and natural products, traditional skills and production methods, healthy and sustainable lifestyles, and ecological choices have become noteworthy ways of offering additional income for forest owners (Pettenella et al., 2019; Weiss et al., 2019a; Sheppard et al., 2020).

Multidimensional value creation requires a broader understanding of the characteristics of NWFPs and those attributes determining the value from NWFPs. Even though multidimensional ecosystem-based approaches are transforming our understanding of forests, recent studies have underlined the need for further information about the importance of NWFPs and their potential for a bio-based economy (Sheppard et al., 2020, see also FAO, 2020). Indeed, many managers and owners are still in their infancy in seizing the opportunities related to the service-based forest value production and are still in the need of conceptual clarity and understanding of the phenomenon of diversifying forest value with NWFPs. Currently, the growth of the natural products sector is limited by the adequate availability of the right kind of raw material which has been identified as the key bottleneck in the natural product sector (Rutanen, 2018). In this, forest owners play a crucial role as producers of raw materials for natural products and it is important to understand what factors motivate them to enter the natural products sector and what kind of barriers are hindering this development.

The aim of this research is to study the factors influencing forest owners in diversifying value production into non-wood based products. More precisely, this study aims to identify the drivers and barriers that attribute to the non-industrial forest owner's decision to engage and operate in NWFP production alongside traditional forestry. In doing this, insights are provided about the value elements and causalities that create a better understanding of reasons behind the multidimensional value production of NWFPs. This study is based on in-depth interviews collected from twenty forest owners having business activities in NWFPs production in Finland.

2. Non-industrial private forest owners' motives and barriers to entrepreneurship of NWFPs

The scientific discussion around NWFPs has been increasing in popularity during recent decades. Information regarding the production and use of NWFPs has been gathered in many studies globally (see, e.g., Wiersum et al., 2018; Lovrić et al., 2021), which has enhanced knowledge about the current state of NWFPs. Nevertheless, official reporting of production volumes of NWFPs is still sparse and inaccurate due to a

complex system (Sheppard et al., 2020). Still, several studies have highlighted the increasing importance of NWFPs as a way to contribute to human nutrition (FAO, 2014), renewable materials, and cultural and experiential services (Wiersum et al., 2018; Weiss et al., 2019a), as well as their potential to diversify forest use and create employment and income opportunities in rural areas (Pettenella et al., 2007; Delić et al., 2017; Vacik et al., 2020b).

2.1. Drivers to engage NWFP production

Forest owners' motives have been studied widely from the perspective of forest ownership objectives and decision-making (Karppinen, 1998; Wiersum et al., 2005; Hujala et al., 2007; Hujala and Tikkanen, 2008; Kuuluvainen et al., 2014; Ficko et al., 2019; Weiss et al., 2019b). Several factors determine forestry practises and how forest owners intend to engage in entrepreneurship in the forest sector.

In literature, the motivating factors to start enterprises are often divided into two categories: drive theory and incentive theory (Carsrud and Brännback, 2009). According to drive theory, the individual has an internal need which motivates a person to start new businesses, such as a feeling of autonomy, while according to incentive theory, the individual is motivated more due to external factors such as income or prestige (Fayolle et al., 2014). The other categorisation of engaging in entrepreneurship is opportunity-based and necessity-based small-business owners. Opportunity-based small-business owners start their own business because they would like to exploit and pursue entrepreneurial opportunities voluntarily, whereas necessity-based small-business owners engage in entrepreneurship because they have no other viable options for work (Reynolds et al., 2002). Opportunity-based entrepreneurship, in which the business venture is mostly voluntary, is often connected with a concept called pull factors, which include, among others, self-realization, independence in decision-making, and autonomy (van Gelderen and Jansen, 2006; Staniewski, 2009). On the other hand, necessity-based entrepreneurship is connected with push factors because the business venture is mostly involuntary and done because it is necessary (Gilad and Levine, 1986; Amit and Muller, 1995; Shinnar and Young, 2008; Williams et al., 2009). Push factors may include motives such as risk of unemployment, dissatisfaction with one's present situation (Verheul et al., 2010), or a bad situation in the labour market (Bernat et al., 2008).

These theories and concepts give us a general understanding of the motivational factors of entrepreneurship but entering entrepreneurship is rarely inspired by one single motive. Commonly, a decision to start a business is based upon a complex configuration of external (push factors) and internal (pull factors) motives (Staniewski and Awruk, 2015). The factors influencing entrepreneurial engagement have been studied extensively, and different drivers have been identified that motivate individuals to start a new business (Stephan et al., 2015; van der Zwan et al., 2016; Madriz et al., 2018; Prasastyoga et al., 2020). In this research, drivers are defined as *external and internal factors that influence forest owners to engage in the field of non-wood based forest products*. External factors are things outside forest owners' action that will have impact on its entrepreneurial success whereas internal factors are forest owner driven and can be controlled by forest owner. For further understanding, this study utilises the state-of-the-art academic research with integrated literature review in identifying different types of drivers contributing to the forest owner's engagement in the NWFP field. Identified drivers are introduced in the paragraphs which follow; the synthesis of the identified driver categories is illustrated in Table 1. The synthesis created from the literature provides analysis framework for the empirical data of the study. The iterative research process applied allowed to develop the key driver categories through the discussion between scientific literature and empirical findings.

As the most recognised driver category, *economic or social status* related factors have been identified as an important motivating factor in many studies. Starting a new business to achieve higher or additional

Table 1
Driver categories with literature sources.

Nature of driver	Source
Economic or social-status	van Gelderen and Jansen, 2006; Stewart and Roth, 2007; Staniewski and Awruk, 2015; Stephan et al., 2015
Self-actualization	Staniewski, 2009; Akehurst et al., 2012; Staniewski and Awruk, 2015; Stephan et al., 2015; Lee et al., 2014; Tyrväinen et al., 2014; Wolfslehner et al., 2019
Education or expertise	De Clercq and Arenius, 2006; Madriz et al., 2018
Recreation	Howley, 2013; Kuuluvainen et al., 2014; Weiss et al., 2019a; Karppinen et al., 2020
Operational environment	Stephan et al., 2015; Karppinen et al., 2020
Social network	Davidsson and Honig, 2003; Morales-Gualdron and Roig, 2005; Klyver et al., 2007
Life-situation or change	Shapero, 1980

income is the most frequently mentioned reason for entrepreneurship (Staniewski and Awruk, 2015; Stephan et al., 2015). In addition, independence and autonomy at work and in decision-making are recognised as crucial motivators for business starters. (van Gelderen and Jansen, 2006; Stewart and Roth, 2007; Staniewski and Awruk, 2015).

Self-actualization related factors capture an individual's personal desire to implement one's own values in work and promote well-being and health. It has been noted that the affirmation of one's own values is a strong motive to establish a business (Staniewski, 2009). In addition, self-realization and self-satisfaction, including fulfilling one's personal vision, are important factors motivating entrepreneurship, as well as aspects such as having meaningful work (Akehurst et al., 2012; Staniewski and Awruk, 2015; Stephan et al., 2015). The collection and use of NWFPs is an intrinsic component of personal well-being which has long traditions in forest culture. There is increasing evidence that nature not only provides more than just good quality foods and medicines, but also nourishes the human psyche and has positive health effects (Lee et al., 2014; Tyrväinen et al., 2014; Wolfslehner et al., 2019). Harvesting and collecting NWFPs can be an intense nature experience which have favourable effects on a person's well-being, the promotion of which is recognised as being a valid objective in many decision-making processes (Wolfslehner et al., 2019).

In addition to self-actualization, *education or expertise* dimension has been recognised as a significant factor motivating entrepreneurship. It appears to be that knowledge acquired through work experience or education about entrepreneurship is relevant to making the decision to engage in a business (Madriz et al., 2018). As well as this, being connected with those individuals with entrepreneurial knowledge has a great impact on people to become involved in starting their own business (De Clercq and Arenius, 2006).

As a motivational factor, *recreation* highlights the importance of one's own hobby and ways of spending leisure time. Forest owner surveys have shown that decision making in forests is directed to the objectives for forest ownership (Kuuluvainen et al., 2014). Recreationists are a group of forest owners for whom intangible aspects of forest ownership, such as nature and landscape protection and outdoor activities, are important in decision-making (Kuuluvainen et al., 2014; Karppinen et al., 2020; see also Howley, 2013). Weiss et al. (2019a) found that many people who engage in maple sugaring do so as a leisure or recreational activity. In addition to recreation, maple sugaring motivates people to be outdoors and sense the social cohesion, emotional well-being, and connections to nature.

Operational environment as a motivating factor is well understood in the context of forest ownership. In Finland, two thirds of forest owners live on their farm or in the same municipality where the farm is located (Karppinen et al., 2020), and the utilization of forest products has a long tradition, especially in rural areas. Stephan et al. (2015) found that nascent entrepreneurs are considerably more often driven by a good idea

or a good opportunity, which may arise from the chance to seize opportunities offered by the environment.

Literature has developed an increased recognition of the importance of *social networks* in engaging in entrepreneurship since the mid-1980s (Klyver et al., 2007). Personally knowing someone who has started a business has a positive impact on people's decisions to become entrepreneurs (Morales-Gualdron and Roig, 2005), and one is more likely to become a nascent entrepreneur if one's parents or close friends or neighbours are in business (Davidsson and Honig, 2003).

Last but not least, a circumstance-dictated or self-realized *change in life* can be a motivator to engage in entrepreneurship. One of the greatest reasons for the creation of an entrepreneurial event seems to be a change in an individual's path in life. An example of an unexpected change can be the loads of a job. Other life changes, can be dissatisfaction in a job, midlife crises, or an opportunity to take a risk, for example, when a possible partner emerges (Shapero, 1980).

2.2. Barriers to engage NWFPs production

Starting a new business and implementing production is often a complex process that is affected not only by motivation but also by numerous obstacles and barriers. Many individuals are interested in creating a business, but they hesitate to take action and actually start a business (Stephan et al., 2015). Barriers hinder the establishment of enterprises and cause friction in the development of entrepreneurial activities (Ataei et al., 2020). In this research, *barriers* are defined as *external and internal factors that prevent forest owners from becoming entrepreneurs in the field of non-wood based forest products and hinder the development of entrepreneurial activities*. External factors are things outside forest owners' action that will have impact on entrepreneurial success whereas internal factors are forest owner driven. For further understanding, this study utilises the state-of-the-art academic research with integrated literature review in identifying different types of barriers contributing to the forest owner's engagement and operations in the NWFP field. Identified barriers are introduced in the paragraphs which follow; the synthesis of the identified barrier categories is illustrated in Table 2. The synthesis created from the literature provides analysis framework for the empirical data of the study. The iterative research process applied allowed to develop the key barrier categories through the discussion between scientific literature and empirical findings.

When starting a new business, *information* related factors have been identified to be important obstacles to entrepreneurship. A lack of general business knowledge and professional experience as well as

Table 2
Barrier categories with literature sources.

Nature of barrier	Source
Information	Möhring and Rüping, 2008; Staniewski, 2009; Smith and Beasley, 2011; Hoogendoorn et al., 2019
Cooperation network	Lee and Tsang, 2001; Anbumozhi et al., 2010; Tanveer et al., 2011
Resource	Hatala, 2005; Staniewski, 2009; Jankelova et al., 2017; Hoogendoorn et al., 2019
Price	Jankelova et al., 2017
Demand	Nowak, 2010
Market	Nwankwo and Gbadamosi, 2010; Sharma and Kharub, 2015
Regulation and bureaucracy	Klapper et al., 2006; Schmidt et al., 2007; Peltola et al., 2014
Outside interference	Jankelova et al., 2017
Quality	Norocel and Paduret, 2020.
Employees	Williamson et al., 2002; Nwankwo and Gbadamosi, 2010; Stephan et al., 2015; Sharma and Kharub, 2015; Björklund, 2018
Human or personal	Hatala, 2005; Tanveer et al., 2011; Jankelova et al., 2017; Converso et al., 2018
Logistics	Sternad et al., 2016; Arvis et al., 2018
COVID-19	Kumar et al., 2020.

contradictory advisory support from external agencies have been identified as hindering obstacles to starting one's own business (Staniewski, 2009; Smith and Beasley, 2011). In sustainable entrepreneurship, which means entrepreneurs who start a business to serve both self-interests and collective interests by addressing unmet social and environmental needs, a lack of information support in business has been considered a barrier more often than among regular entrepreneurs (Hoogendoorn et al., 2019). Studies have also recognised that there has been a considerable lack of information about the economic consequences with regard to practical experience in forestry (Möhring and Rüping, 2008).

An important factor especially with small and microenterprises is *cooperation networks*. For example, results show that networking enhances access to market information and reduces its costs (Anbumozhi et al., 2010). In addition, networking has been recognised to have a positive effect on venture growth. Connections and other resources through business partners may help entrepreneurs create new ideas and solve problems, which will eventually facilitate their business growth (Lee and Tsang, 2001). Difficulties in this area, e.g., a lack of sector-specific mentors and experience of familiar entrepreneurship and assistance, have been seen as a hindering factor for entrepreneurship recognised among students who are starting their own businesses, for example (Tanveer et al., 2011).

Resource related barriers, e.g., a lack of finance and capital were also considered a barrier to entering the field in many studies among sustainable and regular entrepreneurship (Hatala, 2005; Staniewski, 2009; Tanveer et al., 2011; Hoogendoorn et al., 2019) but also in agricultural sector, which has many commonalities with the natural product sector (Jankelova et al., 2017). More specifically, an increase in the cost of capital, a lack of liquidity, a decline in share prices and exchange rate risks were mentioned as factors (Jankelova et al., 2017). Other resource related barriers include for example a lack of time (Hatala, 2005).

In particular, with regard to Slovakian farmers, *price* risks, such as the risk of the decline in output prices and the increase in the prices of inputs, have been identified to be one of the most important barriers (Jankelova et al., 2017). In addition, a low *demand* in the market reduces interest in moving into the field and hinders entrepreneurial activity (Nowak, 2010). A lack of *marketing* research has a negative effect on business management, where small enterprises do not often have the possibility to launch market research which would mean the collection of information necessary to run a business and make decisions concerning the products, price distribution and gathering, etc. (Sharma and Kharub, 2015). Other marketing constraints include inadequate financial resources, a lack of market information and time, and a shortage of marketing expertise (Nwankwo and Gbadamosi, 2010).

In addition to these barriers, *regulation or bureaucracy* related barriers have been mentioned as hindering factors in business start-ups. Regulations may hamper the creation of new firms due to difficulties with bureaucratic regulations (Klapper et al., 2006). Furthermore, legislation can be a burden for small enterprises causing direct costs, time costs and information costs (Schmidt et al., 2007). In addition to legislation, there may be other regulations that can restrict business operations, one of which is everyman's right, as applied in Finland and other Nordic countries, which is based on traditional ways of using forests. This right allows the picking of NWFPs (wild berries, mushrooms, etc.) regardless of land ownership. Household picking has long positive traditions in Finland, but in recent years commercial picking has been replaced by foreign seasonal pickers. Consequently, discussion has arisen about the limits of everyman's right and inhabitants' rights to local natural resources (Peltola et al., 2014). Depending on the product collected from forests, everyman's rights may cause hindering obstacles for producers of NWFPs and hamper the availability of raw material used, for example.

In the agricultural sector, *outside interference* related barriers such as weather and nature conditions have been commonly seen as barriers. Agriculture, as well as NWFP production, is a specific area where the production process is closely connected with natural phenomena. Climate conditions and unallocated natural phenomena cause

unpredictable effects throughout the year (Jankelova et al., 2017). In addition, depending on the NWFP used, *quality* issues may be very important barriers and cause risks in production. Some of the NWFPs are very sensitive to contamination. For example, birch sap is a beverage with exceptional properties that should be consumed fresh to a maximum of two weeks and kept under refrigerated conditions. However, for longer consumption periods, birch sap must be subjected to a pasteurisation process (Norocel and Pădureț, 2020).

For small firms, which NWFP producers commonly are, one of their most difficult goals is to locate and hire qualified *employees* to enable the provision of products and services (Williamson et al., 2002; Nwankwo and Gbadamosi, 2010; Stephan et al., 2015). As small firms do not have enough liquidity to hire qualified employees (Björklund, 2018; Sharma and Kharub, 2015), they may also have difficulties to retain skilled employees (Sharma and Kharub, 2015). In addition, small firms are often run by an individual or family, and entrepreneurs' *personal or human related* factors, like personal competence and skills, may not only hinder persons from entering into the field but also limit the business activities (Hatala, 2005; Tanveer et al., 2011; Jankelova et al., 2017). Furthermore, age is significantly and negatively associated with the ability to work but personal resources such as hope, optimism and resilience and other job resources like decision authority and meaning of work moderate the relationship between age and working ability (Converso et al., 2018).

Logistics related barriers are identified as relevant hindering factors as they are related to the material and information flows in the product-service supply chains (Arvis et al., 2018). Indeed, the examined logistics barriers have an influence on logistics lead times, service levels and trust among partners in a widespread supply chain (Sternad et al., 2016). In the context of NWFP entrepreneurs, logistical problems can typically mean problems with capacity or quality, and, moreover, a lack of logistics options or possibilities to reach markets.

In addition to the abovementioned barriers, the *COVID-19 pandemic* has brought additional and unexpected challenges for enterprises, where markets around the world were forced into a total lockdown and the focus shifted to a surge in demand for essential products and services. This led to a decline in demand for some nonessential products and services such as logistics, hospitality, restaurants, and tourism, and also caused difficulties with workforce requirements (Kumar et al., 2020).

3. Research design

The focus of this study was to gain an understanding of those determinants affecting the multidimensional value creation of non-industrial forest owners. The research followed an explorative qualitative research approach with semi-structured interviews as the main data collection method. The explorative approach was considered appropriate as the research theme had received only limited attention previously and as the research focus was to gain insights and discover causalities behind the phenomenon. The secondary data was received through an integrated literature review, which was seen to facilitate the creation of the semi-structured interview guide. The illustration of the research process can be seen in Fig. 1 below.

3.1. Methods and data

The research for this study utilised qualitative interviews as the main data collection method. In the qualitative research design, special attention was given to the reliability and validity of the study (Yin, 2003), and the main interest was in reporting a unique and especially interesting case study of an increasingly important phenomenon. Two different types of triangulation were used in this study, namely the triangulation of theories and the triangulation of different investigators (Denzin, 1978).

The study followed an information-oriented data selection strategy, the purpose of which was to maximise the utility of information from the

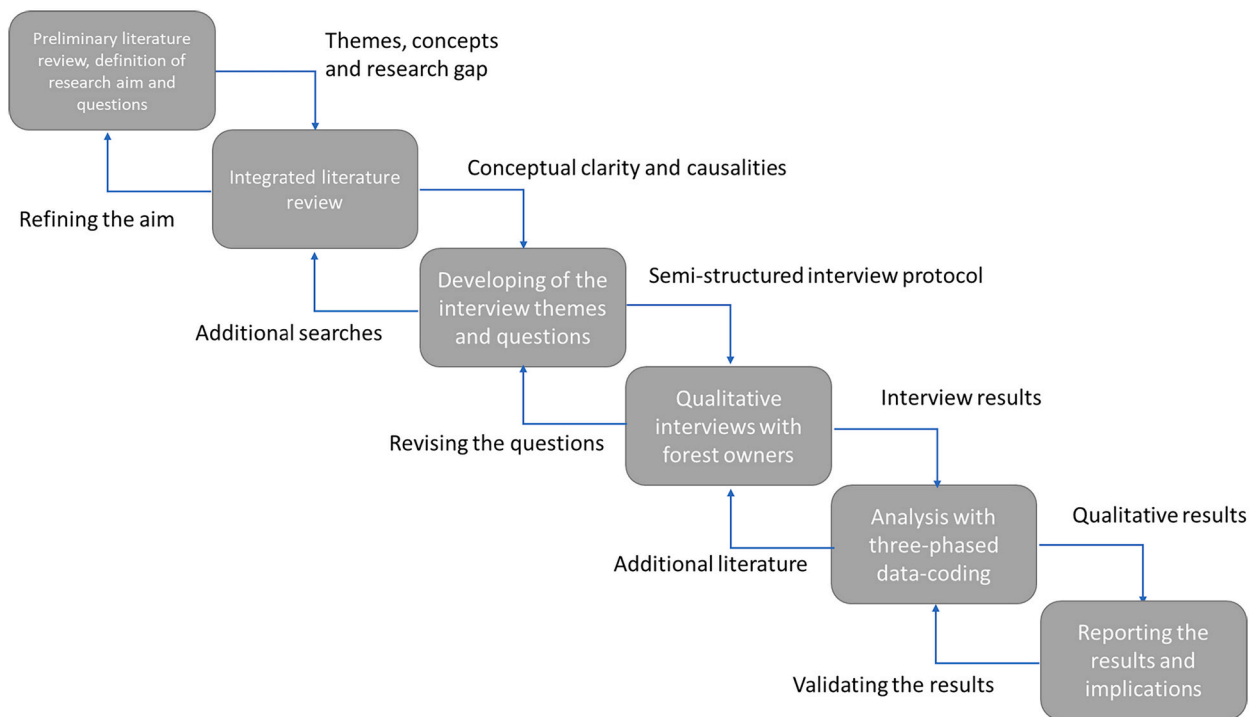


Fig. 1. Research process.

case and thus to enable a better development of concepts and theories (Flyvbjerg, 2011). The informants were identified using a multitude of connections: First, different parts of the value network were contacted to identify and gain access to the relevant forest owners with multiple ways of producing value (products/services) to the local businesses and other end users as well. Secondly, researchers used their own networks of colleagues and interest groups to acquire knowledge of possible informants. Thirdly, forestry companies and forest owners and linked societies were contacted, and finally internet searches of possible informants were carried out. Overall, twenty relevant informants were selected according to the information content as well as

knowledgeability of the subject for the study, which are illustrated in Table 3 below along with the relevant background information.

Although many of the informants had several forest holdings and different forms of ownership, most of the informants owned at least one of their forest holdings alone or with their spouse. Four informants were shareholders in a forestry partnership, one holding was co-owned by a consortium, one holding was jointly-owned and two of informants did not own the holding themselves unless they were the holder of the right of possession. The size of the forest holding varied considerably between informants: though a quarter of informants had rather small forest holdings (under 20 ha), another quarter also had rather large forest

Table 3
Background characteristics of the investigated sample of informants.

Informant	Ownership (non-industrial private forest owners)	Size of the forest holding (hectares)	Length of ownership (years)	Experience in natural products sector (years)	Main product	Number of products
1	Jointly owned by spouses	10	20	5	Chaga	5
2	Individual landowner, jointly owned by spouses	40	18	4	Birch sap	1
3	Jointly owned by spouses	8	3	3	Birch sap	2
4	Individual landowner	60	3	1	Chaga	2
5	Individual landowner	60	20	1	Spruce sprouts	1
6	Forestry partnership, individual landowner, jointly owned by spouses and children	300	50	50	Twig	3
7	Individual landowner, jointly owned by spouses, jointly owned by children	220	26	3	Birch sap	3
8	Individual landowner, co-owned by consortium	8	8	2	Chaga	1
9	Individual landowner	10	32	3	Birch sap	1
10	Forestry partnership	100	66	5	Chaga	1
11	Jointly owned by spouses	329	40	10	Other	5
12	Holder of the right of possession	35			Chaga	2
13	Individual landowner	13	10		Other	4
14	Individual landowner	80	15	5	Twig	7
15	Individual landowner	150	22	22	Twig	3
16	Individual landowner, forestry partnership	280	13	9	Birch sap	1
17	Holder of the right of possession	50	3	3	Birch sap	4
18	Individual landowner	180	10	1	Spruce sprouts	2
19	Individual landowner, jointly-owned forest	230	28	9	Twig	2
20	Forestry partnership	200	4	2	Chaga	3

holdings, over 200 ha. Most of the forest owners had already owned their forest for a long period of time, over 20 years, but there were also those for whom the ownership of forests was a fairly new matter. For one informant, the period of ownership was not known. Half of the informants had started in the natural products sector only recently, while the other half had been in the business for much longer, over four years, and one couple even over ten years. For two informants, the period of producing NFWPs was not known.

The primary data for the study was gathered by interviewing the chosen forest owners about their motives for product NFWPs, their value network, bottlenecks, shortcomings, and opportunities from the company's point of view. By interviewing forest owners who already had entered into NFWPs production allowed to get insights of the factors when entering to and operating in NFWP business. The interviews, which were carried out by phone, were semi-structured, and the interviewee rather freely talked about different themes, and also asked supplementary questions or reverted to a previous theme (Wengraf, 2001). Thematic coding was used to analyse the data from the interviews. The qualitative data analysis software NVivo was used as a tool to condense, classify and code the data (Bazeley and Jackson, 2013). At first, the interviews were read through and coding classes based on the theoretical background were formulated after the first coding, since new aspects arose from the data. The new classes were used in the second coding. Following this, triangulation of two researchers was used; the first researcher carried out the preliminary coding and the second researcher read the coded text and expressed their ideas and suggestions for more detailed coding.

As a result of the thematic coding, 24 drivers were identified which motivate forest owners to start their own businesses in the natural product sector. Forest owners also recognised several barriers, 77, which hinder the production of NFWPs and complicates operations. In further analyses, recognised drivers were arranged into seven categories (Appendix a). Likewise, recognised barriers were arranged into 13 categories (Appendix b).

4. Empirical analysis – Drivers and barriers of heterogenilizing value production

The empirical part of this study presents the analysis of the qualitative data collected. The analysis of the results is carried out from the perspectives of drivers that impact the forest owner's willingness to enter the field of producing NFWPs and barriers which hinder the entrance to the field or challenges operations in the production activities. The results are presented with descriptive analyses from the case interviews collected from 20 Finnish private forest owners.

4.1. Drivers

Forest owners who enter the natural product sector are rarely inspired by one single motive. In this research, 24 different drivers in seven categories which motivate one to start their own business were recognised (Appendix a.). Drivers are divided into external and internal drivers.

4.1.1. External drives entering NFWPs production

From recognised driver categories *economic* or *social-status* and *operational environment* related drivers were considered as external drives for entering natural product sector. Many interviewed forest owners reported that diversification of economic forest value production was important driver to them. These forest owners considered forest as a source for many kinds of earning possibilities, not only for traditional wood production.

The forest is usually seen as mere trees, it is much more.

(Informant 9)

NFWPs were seen as an opportunity to generate alternative income from the forest, and benefit from less productive areas for wood production.

“almost all birches are hay birches, so there really is no other future for them. Another option would have been pulpwood, but of these, at least, there is a noticeably better economic benefit (birch sap).” (Informant 10).

Only few forest owners who participated in this study considered NFWP production as a main economic income. However, NFWPs as a secondary income was a more important driver and NFWPs were seen to bring additional income to otherwise small income. NFWPs were also a way to obtain more regular annual income from forest.

“Yes, you expect to get a good secondary income from chaga, and the Christmas tree job is, of course, a hobby first; but nowadays when it's already for sale, it's a clear secondary income.” (Informant 1).

“They are in a way supportive of this small farmer's livelihood evenly throughout the year. That's where one season always follows the other.” (Informant 6).

Some of the forest owners reported that self-employment was an important driver for the production of NFWPs. Self-employment was often seasonal and production quantities were considered sufficient when level of self-employment reached. They didn't have desire to expand the business. However, some stated that they were happy if they were able to offer job opportunities to others as well.

For couple of forest owners, living on land or on an old home farm provided opportunities to seize advantage of the NFWPs around them. For one owner, NFWPs previous household use inspired more professional production. Another owner considered it easy to produce, since the location enables that raw materials are generally available and are close.

4.1.2. Internal drivers entering NFWPs production

Entering the natural products sector was also strongly influenced by the forest owners' *self-actualization*. Forest owners were interested in natural products sector and the utilization and collection of NFWPs had been a traditional way of life. Forest owners were willing to promote NFWPs well-being and therapeutic values as well as expand pure and healthy products to the markets.

Let's say, it has been tradition to use nature and NFWPs at home, it has been familiar in your household”

(Informant 14)

“I think it's nice to promote these pure products to the markets... Therefore, when this earth gets polluted, on and on, these NFWPs can become highly valuable at some point.” (Informant 2)

Some forest owners reported that they had a desire to experiment new things. For many *recreational* values were important and collection and utilization of NFWPs has been a hobby. They were anxious to see could it be also a new way to earn income.

“Well, it's been a hobby. And when you collect mushrooms and berries and other for own use, and you are interested in nature generally, so the question is how you could utilize forestry in diverse ways other than wood production. However, I have such a small forest area that by selling timber you won't get much (money).” (Informant 19)

“It's a combination of business and pleasure. Maybe it's just that when you collect them, and when you sell them and people buy them, it's kind of a meaningful thing. You can always donate but ask for a small price, so there is a real appreciation.” (Informant 15)

To gather information and *experience* through *education* or *professional* activities or participating in research projects were initial inspiring factors for entrepreneurship in the field. Also, *social networks*, like support from friends and relatives helped forest owners to start own enterprises in NFWPs production.

"To start the Christmas tree production was kind of, a relative was already in the business and I went there, learned that thing and saw what it was." (Informant 15)

"Well, I've been working at, like a secondary job in a company which buys birch sap and that's where I got interested in." (Informant 9)

4.1.3. Driver which has characters from both internal and external factors

Life-situation or change category included driver as circumstances-dictated change in life, which is typically external driver entering into entrepreneurship. Becoming unemployed changed the direction of life and starting an enterprise became a viable option.

I got into this situation, I'm part of the invalidity pension and, I was unemployed, and then I thought that what I would like to do, and I was not really interested in the matter of balling from one place to another, day here and there, at work. (Informant 17).

Self-realized change in life is in turn internal driver which rises of the person's own interest. The change is planned and wanted opposed to external drivers which are often unexpected. For example, forest owner wanted to change hectic life into more peaceful way of life.

"Well for a long, very long time I was active in trade, and I wanted to have change in life and to this soft, softer values style. I wanted to utilize more NWFPs." (Informant 13).

4.2. Barriers

Forest owners face many barriers when they are starting new business in natural product sector but also when they are already operating in the field. In this research, 77 barriers in 13 categories were found that either hinder the entrance into the field of or complicates NWFP production (Appendix b). The categories are divided into external and internal barriers.

4.2.1. External barriers entering and operating NWFPs production

Recognised barrier categories were mostly external barriers thus only human or personal related barriers were considered as internal. Many forest owners reported that lack of resources hinder their actions in NWFPs production. High initial investments costs may be an obstacle to start business and lack of equipment's and supplies limits production possibilities. Also, many forest owners work alone or among the family and workload is often large. NWFPs collection period is usually short which limits the amount of collected products when working alone.

Forest owners experienced that information related issues hinder their actions. Research information and practical experiences about NWFPs production were difficult to obtain. Knowledge must be acquired by yourself, which is laborious and requires resources and skills. Information exchange is limited between actors due to close dyadic partnerships and jealousy which sometimes leads unreliability of information as well.

"But there is, of course, when you work only on the Finnish markets and producing in the same areas than others, the share of information is about such that it is being hold back, and some of the things just needs to be learned the hard way." (Informant 15)

Entrance to the NWFPs market considered difficult because there were only few buyers in the market who dominated trading. Many buyers required large volumes of production in which it was impossible for small companies to respond to. The field lacked a wholesale channel that could assemble imports from small producers and pass them on to buyers.

"The wholesale channel would be a buyer, cares for transportation, instructions and everything. The wholesaler would be easier to sell them (NWFP) further due to bigger volumes it has gathered." (Informant 4)

Some of the forest owners considered market of NWFPs small which

limited the demand of the products. Some reported that demand is generally low, or it is uncertain. Many forest owners reported that Covid-19 pandemic had caused decline in demand and canceled events and contracts. Forest owners experienced that they didn't have adequate cooperation networks which hindered entrance but also production and expanding opportunities in the field. Some longed-for peer support from other entrepreneurs but also professional support from an organization or an actor from which to seek information about NWFPs production.

Many forest owners considered outside interference as hindering factors in the case of NWFPs production. Nature and weather conditions contributed much to NWFPs production opportunities. Yields vary from year to year due to weather conditions and unexpected natural upheavals like storms or diseases can destroy the yield.

The biggest problem is being on nature. Like weather conditions and unexpected destructions which may destroy the yield. ... well, if its too rainy, too hot or too cold. ... or if some insect eats the birch leaves you cannot use them if they are full of holes.

(Informant 14)

Some of the interviewed forest owners reported that regulation or bureaucracy related issues hinder their actions as an entrepreneur. Legislation in the field perceived difficult and paperwork of the business considered laborious. Many of the NWFPs are easily perishable and this challenged many forest owners in quality issues. Bad quality of the product could affect a reputational risk which causes serious impacts in the long run. Low price received from the primary product and high production cost compared to price were mentioned as hindering factors in the NWFPs production as well.

"Even the price trend, the primary producer should get more money compared to someone who sells it or who brands it as a superfood." (Informant 4)

Difficulties in gaining skilled employees was hindering factor for some forest owners. Few of them mentioned logistics as complicating factor in NWFPs business, like long transport distances, too slow or too expensive transportation.

4.2.2. Internal barriers entering and operating NWFPs production

Human or personal related barriers are considered as internal barriers which hinder entering natural product sector and challenge the actions in the field. Some of the forest owners were elderly people and they thought not to have so many work years left. Aging caused worriers about health issues as well. Collecting NWFPs is often hard work and requires physical fitness and stamina.

"I will be 60 next year and I know that I will no longer be physically stronger. Every year the step gets shorter and the sack of seedlings feels heavier, it has to accept that the best days have gone." (Informant 9)

Lack of competence and education in the field were factors some forest owners experienced as barriers operating in the field. For example, couple of forest owners stated that they don't have knowledge how to further process their products or expand their production to international markets.

5. Discussion

The aim of this research was to study those factors influencing forest owners in diversifying the value production into non-wood based forest products. Joint production of timber and NWFPs was seen as multidimensional way in sustainable value creation and the focus was in identifying those factors that attribute to the non-industrial private forest owner's decision to engage in NWFP production system alongside traditional forestry. The results provide an overall picture of drivers and barriers and their nature, which forest owners encounter when engaging and operating in natural products sector. In doing so, this research revealed gaps in the current body of knowledge with regard to the small

scale NWFPs entrepreneurs entering the field. More precisely, the revealed complexity and relevance of different attributes in the multi-dimensional value creation of ecosystem services according to NWFPs was illustrated which allows one to improve the management value, while distinguishing the holistic value of forests. The study was based on in-depth interviews collected from twenty forest owners in Finland. The applied research method, namely the explorative approach with qualitative research method worked well in this study as it provided in-depth knowledge of the field in which there exists limited research information.

Competition in the forestry sector has intensified and wood production alone is no longer an adequate form of forest use. Today, consumers are attracted by global trends such as sustainable forest management, naturalness, well-being, authenticity, individuality, as well as ethics, ecology and responsibility (Shepherd et al., 2005; Hughner et al., 2007; Kumar and Ghodeswar, 2015; Ting et al., 2019), which have expanded opportunities to use forest resources in a more diverse manner. In addition, digitalisation has brought new opportunities to the forestry sector for market access and to widen the possibilities for business ventures (Watanabe et al., 2018).

The natural product sector is essentially different compared to forest management. The value chain of forest management, from primary producers to end users, is traditional and rigid. The natural product sector is significantly more service-oriented and complex due to a wide range of products and customer groups. The value network for producing NWFPs and placing them on the market involves wide spectrum on service providers. Traditional wood production mechanisms cannot properly support the production of NWFPs because the structure of this is not flexible enough for service-based value creation (Ellram et al., 2007). For the forest owner, transformation from passive wood production to activity requiring NWFPs production set challenges in terms of its value creation, but they also create a wide range of possibilities to forest owners who are willing to focus their management on the joint production of wood and non-wood resources (Vacik et al., 2020b).

Although scientific information in the field is increasing, there is still little research information of value networks and potential on NWFPs which limit actors engaging in the field. In order to manage the diversified value production, it is essential to understand what the relative benefits and barriers are. The natural products sector includes several different products and production methods that have their own specific characteristics, and this research recognised drivers and barriers connected to NWFPs. As previous studies of NWFPs have not viewed the overall picture of motivational factors and barriers of the field, the results of this study increase the understanding of the nature of NWFP production and contributes to the overall picture of different drivers and barriers for engaging in and operating with NWFPs production.

The results of this study indicate that drivers for engaging in NWFPs production are principally internal and are associated with positive voluntariness to entrepreneurship. Self-actualization related factors considered highly important and forest owners had an intrinsic desire to fulfil their own values and goals by entering NWFPs business. The natural product sector is unique and developing field and it is understandable that forest owners who have a vocation in the field are enthusiastic pioneers. NWFPs are associated with functional, emotional, social and symbolic values (Rintamäki et al., 2007; Weiss et al., 2020) and they can have characteristics of territorial goods which are produced in certain areas, for example, and this may provide added value to products with short transport distances, which are experienced locally (Pettenella et al., 2007). Therefore, the value creation of NWFPs is multidimensional and requires a deeper understanding of the spectrum of values.

From drivers considered as external, economic drivers were important motivational factors to engage in entrepreneurship. This has been noticed in previous research as well (Staniewski and Awruk, 2015; Miina et al., 2016; Vacik et al., 2020b). NWFPs are still not considered a main income unless they are more or less a secondary income. As forest

owners are not obligated to produce NWFPs, instead they diversify income generation and allow for more regular income generation from forestry. Life-situation or change related drivers had characteristic as both internal and external. This and the division into internal and external drivers mentioned above underscores that motives to engage NWFPs production is multifilament and their consideration into forest owners decision making may be complex. Therefore, to promote the engagement to NWFPs production, this complexity should be conducted in further research.

Barriers identified in this study were mainly external. This means that they are often out of forest owners' control and more difficult to change. According to the results of this study, lack of information hindered activities entering and operating in the NWFP field. Although there are effective support and advising services based on wood production in forestry, this is lacking in the natural products sector, and forest owners felt it laborious to seek information by themselves and would need support from professionals and peers in NWFP production. Forest owners need information e.g. on production methods, yields, markets and costs on NWFPs production. An organization or an actor from which to seek information or advice was needed as well.

When it comes to resources, small and microenterprises often experience problems (Casals, 2011), and the results of this study support this. NWFP producers often work alone or with families where they do all the work related to the company themselves. As the workload is emphasised because the NWFPs collection time is usually rather short and intensive, cooperation and networking with other enterprises or actors could bring benefits, such as saving costs and learning as well as sharing from other producers and possibilities, to lighten the workload by outsourcing activities (Lee and Tsang, 2001; Casals, 2011). Based on the results of the study, small NWFP producers had found it difficult to supply experienced big buyers' requirements for large production lots. Furthermore, the markets in the natural products sector are small and a few organisations dominate the field. An actor as a wholesaler or collector, which is lacking in the field at the moment, would help individual small entrepreneurs to enter the markets. On the other hand, a wholesaler could hamper the market orientation of small companies, which often involves direct marketing to customers.

Clearly increased knowledge, more effective communication, cooperation and networking between forest owners, forest professionals and NWFP suppliers are needed. This would enable to support the supply chain, and consequently the development of the sector in while advocating NWFPs as a relevant part of the Finnish bioeconomy.

6. Conclusions

Diversifying the value production of forest owners has been identified to bring many opportunities and challenges to multiply forest use (Weiss et al., 2019a, 2019b; Vacik et al., 2020b). Although the opportunity to diversify the value creation of forests has been identified, the lack of knowledge makes it difficult to understand and exploit this phenomenon. The complexity of the phenomenon and the incompleteness of the structures in the field pose challenges for both researchers and actors as well as for entrepreneurs intending to enter the field. The purpose of this study was to identify and assess those factors associated with the transition to and operation in the natural product sector. The result of the study draws an overall picture and increases the understanding of drivers and barriers that forest owners face.

6.1. Theoretical implications

This study has four kinds of scientific implication. Firstly, it provides an overall picture of the impact of the factors involved in the transition to the natural product sector for operators and thus creates information that helps one to better understand the phenomenon. Secondly, this study identified the main factors and their nature which motivate or hinder the transition to the sector. This will help researchers to

understand the causal relationships and management mechanisms in the natural product sector and to produce action models. Thirdly, the study identifies both the intrinsic and external factors and their multifilament nature that impacts to the entering of to the NWFPs production. This will help to increase understanding the factors and how to manage them. Lastly, the study increases the understanding about the complexity of the value production when transitioning from the traditional wood production to more service-based NWFPs networked value management.

6.2. Managerial implications

The managerial implications of the research are three-fold: First, the identified factors enable managers to gain information about relevant drivers and barriers when entering the field of NWFPs. Secondly, the results help forest owners to better understand the requirements of the transformation from passive wood production to activity requiring NWFPs value production. Lastly, the results provide a holistic picture for managers about the needs of individual actors in an evolving and relatively diverse field of value production.

6.3. Limitations and suggestions future research

This study has obvious limitations due to its qualitative nature and limited sample size. The data of the study has been collected in a specific geographical area and to improve the generalisability the study should be conducted in another geographical location. Further research about the subject should be focused on the networked value production and operational models of NWFPs as well as clarifying the multifilament nature of different drivers affecting forest owners' decision making.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Categorisation of identified drivers

Category	Driver
Economical or social-status	Diversification of economical forest value production, Alternative value production beyond traditional forestry, Secondary income, Self-employment, Business opportunities, Additional utilization of organic collection areas of forests, Main economic income, Employment
Operational environment	Seizing locational opportunities, Seizing countryside-living provided opportunities
Self-actualization	Interest for well-being and therapeutic value, Interest for pure and healthy domestic products, Interest for natural products sector, Utilization of NWFPs as a way-of-life, Desire to experiment new things
Recreational	Hobby, Recreational use
Education or expertise	Participation in research projects, Experience and interest through professional activities, Utilization of education derived expertise
Social network	Support and encouragement from personal contacts, Support and encouragement from relatives
Life-situation or change	Circumstances-dictated change in life, Self-realized change in life

Appendix B. Categorisation of identified barriers

Category	Barrier
Resource	The lack of work time, High initial investment costs, Workload, Lack of equipments and supplies, High costs of marketing, Limited resources and production possibilities, Limited production possibilities due to size and quality of forest holding, Lack of money, Lack of skilled employees.
Information	Difficulty to obtain information on process implementation, Efforts in searching information, Lack of information forces trial and error-based learning, Limited information exchange between actors, Closed dyadic partnerships limit information sharing, Unreliability of information, Jealousy caused limited information sharing, Difficulty to obtain information on organic certification, Lack of research information in the field.
Market	Only few buyers in the market, The lack of a wholesale channel, Dyadic purchase agreements between buyers and other producers, Buyers requirements for large volumes of production, Lack of further processing capabilities, Domination of large chains, Lack of marketing channel, Lack of marketing research.
Demand	Uncertainty in demand, Lack of demand, Limited demand due to small markets in natural products sector, Changes in demand and trends, The oversupply of NWFPs
COVID-19	Decline in demand, Cancellation of contracts, Cancellation of events, Difficulties in accessing labor.
Cooperation network	Lack of networks in general, Lack of expanding cooperation networks, Lack of international connections, Lack of digital platforms, Weak benefits from participating research and development projects, Lack of outsourcing possibilities, Lack of peer support, Lack of cooperation with forest actors, Lack of an organization or actor from which to seek information.
Outside interference	Accidents, Nature and weather conditions, Vandalism.
Regulation and bureaucracy	Difficulties to apply subsidies, Food legislation related issues, Organic production legislation related issues, Challenges with paperwork, Issues related with guidelines of Finnish Food Authority, Issues related to certification of organic collection areas, Taxation related issues, Everyman's rights related issues.
Quality	Challenges posed by customer quality requirements, The lack of quality assurance, Product contamination in supply chain, Product contamination sensitivity, Reputational risk
Price	Low price received from the primary product, High production cost compared to price, Uncertain market price of chaga, Decreased price due to oversupply.
Employees	Lack of employees, Difficulties in gaining a skilled employees, Problems with foreign employees.
Logistics	Long transport distances, Too slow transportation, High costs of transportation.
Human or personal	Health issue, Aging, Coping at work, Lack of language skills, Lack of cooperation skills, Lack of know-how and education in the field, Lack of competence

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