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**FOREST ENTREPRENEURS' WILLINGNESS TO COLLABORATE - A
RESOURCE-BASED VIEW**

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ABSTRACT

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This study focuses on the South Savo forest entrepreneurs' willingness to collaborate. The theoretical background for the study is the resource-based view. Collaboration among companies creates opportunities for new market entrants. It creates financial stability for collaboration partners and companies benefit from new innovations and solutions that are jointly created. The goal is to examine how the entrepreneurs' resources affect their desire to collaborate. Empirical research is conducted using quantitative research methods, and data were gathered through online survey method. Research results conclude that the amount of the internal resources possessed by entrepreneurs influence their willingness to collaborate. The study confirms that the inventory of services, human resources, equipment and size range of turnover have a significant influence over entrepreneurs' willingness to collaborate. The research contributes new information for research connected to South Savo forest entrepreneurs and their attitude towards networking business models, as well as strengthens the connection between resource-based view and collaboration. Results show entrepreneurs' positive attitude towards agreement-based collaborations.

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Tämä tutkimus keskittyy Etelä-Savon metsäalan yrittäjien halukkuuteen tehdä yhteistyötä. Tavoitteena on tutkia yrittäjien halukkuutta tehdä yhteistyötä resurssipohjaisesta näkökulmasta. Yritysten välinen yhteistyö luo mahdollisuuksia tarjota palveluita uusille markkinatulokkaille. Se lisää yhteistyökumppaneiden taloudellista vakautta, ja yritykset hyötyvät yhteisesti uusista innovaatioista ja ratkaisuista, jotka ovat yhteistyöllä luotuja. Pro-gradu tutkii yhteistyön konteksteja suhteessa resurssipohjaiseen teoriaan. Tavoitteena on tutkia yrittäjien resurssien määrän vaikutusta heidän halukkuuteensa tehdä yhteistyötä. Empiirinen tutkimus suoritettiin käyttäen kvantitatiivista tutkimusmenetelmää, ja aineisto kerättiin verkkokyselyllä. Tutkimustulokset osoittavat, että yrittäjän sisäisten resurssien määrä vaikuttaa yrittäjien haluun tehdä yhteistyötä muiden alan yrittäjien kanssa. Tässä tutkimus vahvistaa, että palvelujen määrä, työntekijöiden määrä, kalustojen määrä ja liikevaihdon suuruusluokka vaikuttavat merkittävästi yrittäjien yhteistyöhalukkuuteen. Tutkimus tuottaa uutta tietoa Etelä-Savon metsäalan yrittäjiin liittyvin liiketoimintatutkimuksin ja avaa heidän suhtautumistaan verkostomaisiin toimintamalleihin.

TABLE OF CONTENTS

1 INTRODUCTION	1
1.1 Background of the study	1
1.2 Background Master's Thesis Project	1
1.3 Research questions and structure of the thesis	2
2 THEORETICAL FRAMEWORK	4
2.1 Economic theories in perspective of collaboration	4
2.1.1 The resource-based view	4
2.1.2 The market power view	6
2.1.3 Transaction cost theory	8
2.2 The collaboration between firms	10
2.2.1 Levels of collaboration	11
2.2.2 Vertical and horizontal scope of collaboration	13
2.2.3 Motives and payoff of collaboration	18
2.3 Research framework	19
2.3.1 Literature review on collaboration of forest sector in Finland	20
2.3.2 Hypothesis development	22
3 METHODS AND MATERIAL	26
3.1 Sampling and data collection	26
3.2 Measures	28
3.3 Analysis methods	30
4 RESULTS	32
4.1 Descriptive statistics	32
4.1.1 Basic characteristics of respondents	32
4.1.2 Change in operation environment	42
4.1.3 Collaboration	47
4.1.4 Summarizing the survey	54
4.2 Hypothesis testing	56
4.2.1 A resource-based view on the willingness to collaborate	56
4.2.2 Relationship between resources willingness to collaborate	62
4.2.3 Summary of the analysis and hypotheses	69
5 DISCUSSION AND CONCLUSIONS	72
5.1 Discussion of the findings	72
5.2 Practical implications	75
5.3 Limitations	76
5.4 Future research	77
REFERENCES	78
APPENDICES	86
Appendix 1	86
Appendix 2	87
Appendix 3	98
Appendix 4	102
Appendix 5	103
Appendix 6	104

LIST OF SYMBOLS AND ABBREVIATIONS WITH DEFINITIONS

B2B – Business to Business

Describing the business relationship from company to company.

B2C – Business to Consumer

Describing the business relationship from company to consumer.

LUKE – Natural Resources Institute Finland (Luonnonvarakeskus).

PEST– Questions of Political, -Economic, -Social, -Technological. List of questions of factors that is used to analyse the effect of external powers affecting the company or industry. A strategic tool to map out threats and opportunities in firms perspective.

PESTLE – Questions of Political, -Economic, -Social, -Technological, -Legal, -Environmental. List of questions of factors that is used to analyse the effect of external powers affecting the company or industry. A strategic tool to map out threats and opportunities in firms perspective.

SME – Small and medium sized enterprise.

VRIN framework – Valuable, Rare, Inimitable, Nonsubstitutable.

VRIO framework – Value, Rarity, Imitability, Organization

A management tool that identifies and analyses companies' competitive advantage in terms of uniqueness or rarity of the resource.

LIST OF FIGURES

Figure 1 Levels of activity in relation to collaboration (Afsarmanesh and Camarinha-Matos, 2008)	12
Figure 2 The Scope of Collaboration (Simatupang and Sridharan 2002)	14
Figure 3 Theoretical structure of research	25
Figure 4 Distribution between forest entrepreneurs by trade	32
Figure 5 Services offered in South Savo	33
Figure 6 Entrepreneurs per municipal area	34
Figure 7 Distribution of entrepreneur sample in firm turnover	35
Figure 8 Differences between deliveries from amount of turnover	36
Figure 9 Interest to expand in round timber business activities	44
Figure 10 Interest to expand to woodchip related industries	46
Figure 11 South Savo entrepreneurs' preferred form of collaboration (entrepreneurs could select one or many)	48
Figure 12 Preferred forms of company or organization in the Finnish legal framework	49
Figure 13 Willingness to establish a jointly operated terminal company	51
Figure 14 Preferred terminal operation based on resource	51
Figure 15 Results of hypothetical testing	70
Figure 16 Sunburn chart of entrepreneurs and collaborating companies.	86
Figure 17 National Resource Institute Finland statistic service's printout of stumpage earnings	103

LIST OF TABLES

Table 1 Resource measurement	29
Table 2 Test of collaborations	31
Table 3 Service numbers per entrepreneur	33
Table 4 South Savo workforce numbers	35
Table 5 Total sum of entrepreneur's equipment in South Savo	37
Table 6 Sum of entrepreneur vehicles, categorized by type and number of cubic centimetres. Total cars are not the total sum of the vehicles suitable for the transportation	38
Table 7 Current cooperation with existing forest management enterprises (associations and other firms)	39
Table 8 Current cooperation with other forest industry firms	40
Table 9 Current cooperation relations with following companies	41
Table 10 Cooperative form with companies	42
Table 11 Entrepreneurs' estimation of change in operational environment affecting their business	43
Table 12 Entrepreneurs' estimation of change in operational environment affecting their business when woodchip demand increases	45
Table 13 Readiness to collaborate with the following firm types in South Savo	47
Table 14 Translation sheet of company and organization forms in Finnish context	49
Table 15 Readiness to participate in agreement-based relationships with the following entrepreneurs	50
Table 16 Distribution of terminal type and location of the type	52
Table 17 Outsourcing options for entrepreneurs in the current market	53
Table 18 Entrepreneurs' preferred actions for collaboration	53
Table 19 Analysis of correlation table of independent variables to dependent variables	57
Table 20 Analysis for test of collaboration—rejection and confirmation of dependent variables	58
Table 21 Analysis of test	59
Table 22 Analysis for test of stakeholder collaboration—rejection or acceptance of dependent variables	60
Table 23 Models of collaboration and regression expression	62

Table 24 Transportation entrepreneurs regression table (n=94)	63
Table 25 Terminal company regression table (n=94)	64
Table 26 Biorefinery company regression table n=94	64
Table 27 Forest owner regression table n=94	65
Table 28 forest management company regression table n=94	66
Table 29 Wood refinery companies regression table n=94	67
Table 30 End-Users regression table n=94	67
Table 31 Increased business activities with subcontractors multiple linear- and linear regression table n=94	68
Table 32 Significant variables in collaboration tests	69
Table 33 Kellerman et al. 2014 Researcher resource definitions (1/2)	98
Table 34 Kellerman et. al. (2014) Researcher resorce definitions (2/2)	99
Table 35 Kellerman (2014) Entrepreneurs resource definitions (1/2)	100
Table 36 Kellerman (2014) Entrepreneurs resource definition (2/2)	101
Table 37 T-stat & P-value table for resources and scope of collaboration	102
Table 38 Correlation matrix	104

1 INTRODUCTION

1.1 Background of the study

When the goal of a company is to grow and generate profits, it uses the available resources to gain a competitive advantage, a positional permanence in the market. Firms draw on their ability to change and adapt to attract customers either through convenience or capability. Collaborative actions, such as cooperation, co-creation, and coopetition benefit both parties either in outcomes or in costs when goals are set in mutual agreement. Collaboration may be competitive advantage as it offers the ability to outperform other companies within a competitive market (Besanko et al. 2000).

Collaboration among entrepreneurs can be seen as one of many positive strategies to employ. Society and companies have benefitted from collaborative efforts to develop economic prosperity for themselves and others within an economic region (Dussauge, Garrette and Mitchell, 2000). It has been demonstrated that with collaborations, partnerships, and mergers, company can benefit by utilizing each other's resources and opportunity thereby focusing on their core strenghts. Consequently, companies should utilize all of the resources at their command to grow their business, maximize the profits, and gain more network influence.

The Finnish forest industry is a prime subject for investigation, because of the environmental and procurement challenges. Most of those the prior research has focused on large end-users and refineries that use roundwood for their products.

1.2 Background Master's Thesis Project

In 2017, this thesis project was ordered by LUT-University Bioenergy Laboratory as an exploratory study to determine how South Savo entrepreneurs view change in their operational environments and to gauge their interest in collaborating with competing and complementary entrepreneurs. This master thesis study focus on the resource-based perspective of small and medium sized enterprises and how that corresponds with transaction -cost opportunities. According to LUKE statistics (Natural Resources Institute Finland; see appendix 5), South Savo is the largest county in Finland and has the largest gross stumpage earnings in the roundwood trade.

The survey was designed in August-September 2017 and conducted in October-November 2017.

This project was funded by Energy Foundation of the Great Savo (SuurSavo Energiasäätiö) whose interest in the findings stems from the possibility of using woodchips for biofuel production in the South Savo region.

1.3 Research questions and structure of the thesis

Objectives for this study are to determine the willingness among South Savo forestry and wood-processing entrepreneurs to collaborate in an environment where, during the time of the research, the industry began focusing on timber harvesting and woodchip production for the energy industry. In this context, collaboration is interpreted from the literature as cooperation and co-competition, where interfirm coordination, communication channels, campaigns, alliances, and supply chains are formed to benefit one-another, either monetarily or through additional value in competitive market. This study aims to understand the benefits and costs of collaborating with competitors or complementary entrepreneurs.

The main research question is:

What is the entrepreneurs' attitude towards collaboration and how do the firms' resources impact collaboration?

This study focuses on entrepreneurs who are working in the forest industry's supply chain—forest management, wood and wood-based product transportation, and wood harvesting. Their opinions on their changing environment and interfirm levels of collaboration are examined.

The following sub-questions are designed to answer the main question:

- *How do the firms' resources impact their willingness to collaborate?*
- *How willing are the entrepreneurs to engage in different types of collaboration?*
- *What is the scope of the collaboration?*

Earlier results of studies on the effect of external and internal resources on an entrepreneur's willingness to collaborate suggested that there is relationship between the two, depending on the resources.

The thesis begins with a two-part literature review of economic theories in relation to collaboration and collaboration between firms. The first part of the theoretical review is to describe the economic theories: resource-based view, transaction cost theory, and market power. The second part of the theoretical review examines the collaboration theories, scope, and descriptive relationship towards economic theories; how companies decide to work together; and what drives companies to move from stakeholders to collaborative partners or similar concepts of business transaction-based relationships. The chapter explores the context of the research and identifies the necessary qualitative factors for discussion and analysis of the research. Descriptive data are reported along with results of the survey data. Following are the key points and analysis for the discussion part of the thesis where questions are answered and analyzed based on the data.

In the discussion and conclusion chapter, the results are examined via the perspective of the literature and analyzed for how they answer the hypotheses. Additionally, the chapter explores the limitations of the research and discusses points that should be re-examined and critically evaluated.

The conclusion summarizes the discussion and introduces academic and practical recommendations for future research and applications for small and medium-sized enterprises.

Survey form of research was requested for this study and in context of South Savo. Survey is used to measure the willingness of entrepreneurial collaboration in South Savo.

The timing of the research and the context of the environment (weather conditions and increased demand) affected the results, as entrepreneurs either did not have the time to participate in the survey or answered the survey on basis of their current understanding of their demand and market environment.

2 THEORETICAL FRAMEWORK

2.1 Economic theories in perspective of collaboration

Accountable benefits from interfirm collaboration can be tangible or intangible assets or benefits for the firms involved. Interests and resources that are complementary to firms in cooperative relationships are motivators to establish such relationships. These motives are described in economic theories where the companies' justification for collaboration are presented as beneficial strategic moves.

To summarize, three theories will be examined:

- **The resource-based view**
- **The market power theory**
- **The transaction cost theory**

Other theories and concepts are included but are not the focus of this research. However, they are identified factors in a resource-based view of a company. The transaction cost is not thoroughly utilized as the author sees it as a case-by-case decision. However, the transaction cost underlies one of the main motivators in seeking relationships with other entrepreneurs or firms—reducing the operational cost of business activities and wanting to maintain positive relations with end users and forest owners.

These theories serve as constructive perspectives on how businesses would see themselves in the market, having a unique set of bundled resources from external contracts and internal resources; understanding the cost and benefits of the relationships that affect their business positively; and understanding their vision of the market environment affecting their business and business decisions.

2.1.1 The resource-based view

The resource-based view is considered one of the business management tools to determine which strategic resources the firm possesses to conduct business. The central foundation of the resource-based view is the firm's competitive advantage via bundling valuable resources that the business owns or utilizes (Penrose, 1959; Rubin, 1973; Wernerfelt, 1984). Transforming from a short-term competitive advantage into a sustainable competitive advantage requires these resources to be heterogeneous in nature and permanent movables (Wernerfelt, 1984); in other words, not perfectly mobile (Peteraf, 1993).

A common definition of the resource-based view and a definition of resource comes from Barney's quote (cited in Franz Kellerman et al., 2016, p 29) as:

'all assets, capabilities, organizational processes, firm dimensions, information, knowledge, etc. controlled by the firm that the firm uses to conceive and implement strategies that improve its efficiency and effectiveness,' and one example they added to the definition as quoted is 'virtually anything associated with the firm can be a resource'.

According to the resource-based view (e.g., Wernerfelt 1984, Barney 1991, Penrose 1995), movable and immovable resources within the tangible and intangible spectrum—and the ability to coordinate these resources and production inputs and outputs—are seen as valuable heterogeneous resources. The resources hold importance for a company's ability to sustain above-average returns and are the cornerstones of firm-level competitiveness (Barney 1991). This theory emphasizes the competitive advantage; to achieve a sustainable competitive advantage requires the possession of strategic firm-specific resources that are valuable, rare, imperfectly imitable, and not easily substitutable; a unique organizational structure; or connections with stakeholders (also known in managerial studies as VRIN or VRIO framework) (Barney 1991; see also Galbreath 2005). When competitive position is seen as strategic resource, Rumelt (1984) finds that a firm's position is defined by a bundle of unique resources and relationships, and that the task of general management is to renew and adjust these resources and relationships as time, competition, and change in competitive environment erode their value. Therefore, firms that are prepared to change can better sustain their competitive advantage than companies that are not; thus they find it beneficial to collect available resources to improve their flexibility.

The resource-based theory is connected to a company's strategic research and attempts to gain a maximum number of benefits when utilizing internal or external resources. External resources are defined as relationships with shareholders, stakeholders, cooperation, synergy seeking collaboration, and competitive collaboration. A study of the intersectionality of the stakeholder theory and the resource-based view by Alexander J. Kull, Jeannette A. Mena, and Daniel Korschun (2016) finds that a resource-based view and stakeholder theories are interconnected when compared in a business management perspective. Their research focused on stakeholder marketing in which they identified that alliance networks have differentiated from a resource-based view to stakeholder relationship management where they can actively improve the services to customers and subsidiaries that depend

on the alliance's quality level of the service and how balanced it is to the firm's performance. Theoretically, the resource-based view has been a rigid way to measure a firm's strategic resources to improve its performance but collaboration with stakeholders should yield the same or better performance (Kull et al. 2016).

After the explanation of a resource-based view of the firm, the definition of 'unique resource' in this study can be considered position within the market, the unique social contract with larger firms in the market, and other social or environmental resources that are unique within the market. The view of the entrepreneurs of their resources is connected to current bundles of resources as well as the capabilities of a firm and its unique relationships with end users, forest owners, and vertically and horizontally positioned entrepreneurs.

2.1.2 The market power view

The resource-based view is considered to be limited, depending on how unique the resources are in Valuable, Rare, Imitability, Organization (VRIN) and Value, Rarity, Imitability, Organization (VRIO) frameworks. Companies should also consider competitor positioning in relation to the firm and the local or global industry in relation to geological position, as well as how the informal and formal connections, agreements, and contracts made affect the price-cost dynamics within the market. Market power is viewed in this study as a construct in which entrepreneurs work in and understand the South Savo industry, with buyer-supplier relationships built on a microeconomic perspective and how they complement a firm's resource-based view.

The market power theory considers a firm's influence on its overall market. Buyers and sellers have equal power over the market from a supply-and-demand viewpoint where firms compete to fulfil the demand in the current market. Michael Porter (1980) found that the competitive intensity of industries is based on five forces:

- The degree of rivalry between competitors dividing the market;
- The power of the supply;
- The power of the buyers;
- The threat from new entrants; and
- Potential substitute products or services.

These forces are connected to one another where new entrants and possible substitutes may affect a rivalry, and innovative methods or products would increase rivalry within. Consequently, this could

lower prices, with current firms in the market competing with new threats over pricing of services or products. However, it is assumed that markets are either underdeveloped or the resources to provide services and products are limited by rarity or scarcity (i.e., the need for trained specialists to work on products or services, or that materials are rare and currently owned by firms to control the supply; see Porter 1998). In the context of the forest industry in South Savo, the supply-side harvesters are competitive because buyers have the power to establish their own supply chains through long-term contracts with service firms. Therefore, firms that compete upstream in the supply chain can improve their services and present substitute services that can change the power structure of the market.

In their study of labour and employment markets, Basu, Chau, and Kanbur (2015) examined formal and informal dualisms. They noted that employers had more power in informal markets than in formal contractual relationships with employees. However, this study illustrated that through formal and informal market policies, firms can either comply with the country's hiring policies or enforce their own informal hiring policies since they have the same elements as business to business (B2B) subcontracting. This perspective on intensity of market powers can be viewed through Michael Porter's (1980) five forces framework. The framework complements the research view where external factors are taken into consideration in the markets to determine the intensity of the rivalry between firms and actors and to evaluate the relationships in the case of rivalry.

Concentrating on small firm perspective, competition and relationships are involved in decision making in South Savo where firms accept, or decline offers to deliver the goods. These perspective of dualistic negotiating the price of labour takes in consideration of the current market powers where there is certain amount of wood and labour available, which makes the market intensive. This perspective can be viewed from intensity of market powers by Michael Porter (1980) five forces framework. The framework complements the research view where external factors of firms and competitors are taken in the consideration within the markets and how they see their competitors and the intensity of the rivalry between firms and actors and what are the relationships towards one another in case of rivalry.

Firms should devise a strategy that will gain advantage from all the factors described above. Profitability is a positioning function, and a strategy of cooperation may enable firms that collaborate to achieve a stronger position (Porter 1980). Michael Porter developed his framework to analyze the market powers of the companies within industries and to determine how they should adjust to current domestic or international competitive rivals and supply-and-demand forces. His view of the dynamic

external forces see companies' strategies as either proactive or reactive towards competitive moves. Firms measure and determine the effectiveness of their business transactions using various tools and frameworks to reveal the weaknesses and opportunities in the market. Porter's market forces are linked with a PESTEL or PEST analysis of the market, in which possible threats and opportunities are identified within the political, economic, social, and technological environments. The same issues are relevant within organizations that have common shared resources and guide how they react as alliance or partners in a shared or bi-shared market (Leischnig & Geigenmüller 2018). Entrepreneurs must be opportunistic, seizing new methods and connections with new entrants or current players in the market. However, they must also evaluate the social and political support for or opposition to the current forces in the market and determine what resources they have when compared to their rivals.

When examining the target of this study through a market power perspective, the aspects of buyer-seller relationships and cooperation and collaboration in supply chain management are quickly identified. Cooperation means that companies work together to get the most benefits they can from the current market. Concerning supply chain management theories, in a study of the U.S. manufacturing and supply chain by Terpend and Krause (2015), cooperative and competitive firms saw a positive outcome via either of the options. Costs were not affected since the study did not distinguish between an arm's-length relationship and a fully cooperative one. However, when mutual dependency was involved, the cost structure per entrepreneur was not affected, since cooperation and competition can be simultaneous without risking a decrease in performance (Terpend & Krause 2015). This is evident where competition and cooperation are possible in markets with buyer-supplier relationships. However, in Terpend & Krause's (2015) study, the social exchange theory set up their hypothesis while this study focuses on a resource-based view of the firm and its willingness to collaborate.

2.1.3 Transaction cost theory

Transaction cost theory is described in *Transaction Costs, Institutions and Economic Performance* by North (1992). It explains costs in the market that benefit the institutions and boost the economic growth of the institution within the market; in other words, lower transaction costs enhance an institution's economic growth (North 1992). Transaction cost theory offers a microeconomic view of the firm's interactions and a game theory perspective on operational costs to generate profit (Müller & Schmitz, 2016). This view usually is linked with opportunistic behaviour, uncertain knowledge, and frequent and limited rational views of the firms; it usually is criticized as a short-sighted view of the firm. Transaction costs of the firm's strategic moves are relative towards the current market.

Additionally, there are connections to a firm's behaviour within game theory, where companies determine the best outcome of different situations and attempt to predict the possible moves of the competing firms (Williamson 1985). These theories are multilateral sciences that examine social sciences relationship-building and the emotional side of the entrepreneurs. This research sees the value of the transaction cost theory as outside the scope of research examining why entrepreneurs would collaborate via the resource-based view.

Concerning transaction cost theory's relationship with collaboration, Williamson (1985) elaborated on the important role of the transaction attributes and the degree of asset specificity in cooperative agreements and alliances. When the transaction is one-off or short-term, and where assets involved are not specified, market-based transactions are seen as suitable. In this case, the contractual agreement provides effective safeguards to transaction parties that are supported by the current level of the market. It is more convenient for companies to set up a separate, co-owned organization or establish management structures when transactions turn from short-term or are being initialized as recurrent. Uncertain outcomes require a longer time period; a valuable, unique resource; or a transaction-specific investment. These concepts cover the methods used by entrepreneurs as they conduct transactions and share wealth or equity to provide either added-value or low-cost services and products. The same applies within labour-intensive industries where outsourcing and subcontracting are used to complete contracts.

Williamson (1985) presented a third possibility for a company to form a hybrid governance structure that is intermediate between market and hierarchies. Hybrids—for example, joint ventures—are characterized by mutual dependency between partners as they collaborate with their agreed-upon portions of equity and assets; they have also agreed on how to divide costs and profits of the relationship. This type of approach would require companies to rely on long-term contracts, offer assets used in collaboration as mutual commitments, and develop mutual trust.

This research will use transaction cost theory as one of the behaviours of the firm within the supply chain system as well as among entrepreneurs who seek low-cost solutions to improve the profit margin of the firm. Rent-seeking behaviour describes the short term and long term view of the business. The behavior can be described as entrepreneurs having choice to profit from renting resources to utilize and complete business transactions with profit. In this research, the transaction cost theory will be used to describe the rent-seeking behaviour in hypotheses and in discussion for future research.

2.2 The collaboration between firms

When collaboration is discussed as a strategic move, the ulterior firm-level motive for collaborating with another external firm is one key question. Why should companies work together?

One answer is described in 'The SME Co-operation Framework: a Multi-Method Secondary Research Approach to SME Collaboration' by Francesc Casals (2010, pg. 119 & 121) in which the author analyzes studies about interfirm collaboration. The beneficial results of collaboration are listed:

- Financial performance;
- Market share;
- External/internal firm functions, e.g., economies of scale and expandability in production;
- Learning, innovation, and product improvement;
- Internationalization and gaining new markets;
- Reputation and lobbying influence;
- Risk sharing;
- Decrease in costs; and
- Flexibility in business activities and complementary business relationships.

Francesc Casals (2010) also examined barriers and issues relevant to collaboration that arise from the relationships of partners and stakeholders. Casals (2010) categorized external and internal reasons, barriers, and issues of the collaboration. Internal barriers for entrepreneurs are described as the individual entrepreneur's skill (or lack thereof) in establishing relationships and selecting partners, fear about sharing information with another entrepreneur, and disinterest to cooperation either because of lack of information or lack of resources to sustain a profitable business. All of these barriers create a disinterest in collaborative actions or low motivation for developing new business opportunities. Casals (2010) described studies that had indicated a 50% failure rate due to poor collaborative performance and organizational difficulties among collaboration networks where firms had no precise structure to monitor and manage the relationships.

The author's perspective of the collaboration is to set up a theoretical research foundation for SME collaboration and to inspect and review the articles and their methodologies of the research. Their summary for an entrepreneurial perspective of collaboration is well-conveyed. Entrepreneurs can reap benefits from collaboration with other firms when they can answer the social and organizational challenges and have a positive attitude towards collaboration.

2.2.1 Levels of collaboration

This chapter's objective is to explain the definitions of collaborative concepts. The previous chapter introduced the concepts of collaborations where different dimensions were explained; this chapter defines their relationships and discusses the multilateral and dimensional relationships of collaboration. Finally, it sets the definition that will be used in this research.

This thesis focuses the perspective and definition of collaboration based on the literature and scientific consensus. A firm's perspective on internal resources can be described from a resource-based view (Kellerman 2014), and external resources can be explained through combining the theory perspectives of collaboration, resource-based view (Kull et al. 2016), and transaction cost theory (Barrat & Green 2001; Håkansson & Ford 2002). In short, it enables access to collaborating firms' resources or unique relationships with one another with mutual benefits and risks. These collaborations serve the firm and the firm's customers with superior products or services within contextual environments. These include position within value chain, position in market, position in firm network, and position in society.

Collaboration is described as a higher level of networking, communication, and coordination (Denise, 1999; Groz, 1996; Himmelman, 2001; Pollard, 2005 as cited in Afsarmanesh and Camarinha-Matos, 2008). In Afsarmanesh and Camarinha-Matos' (2008) book, 'Encyclopedia of Networked and Virtual Organizations', the structure seen in Figure 1 was proposed.

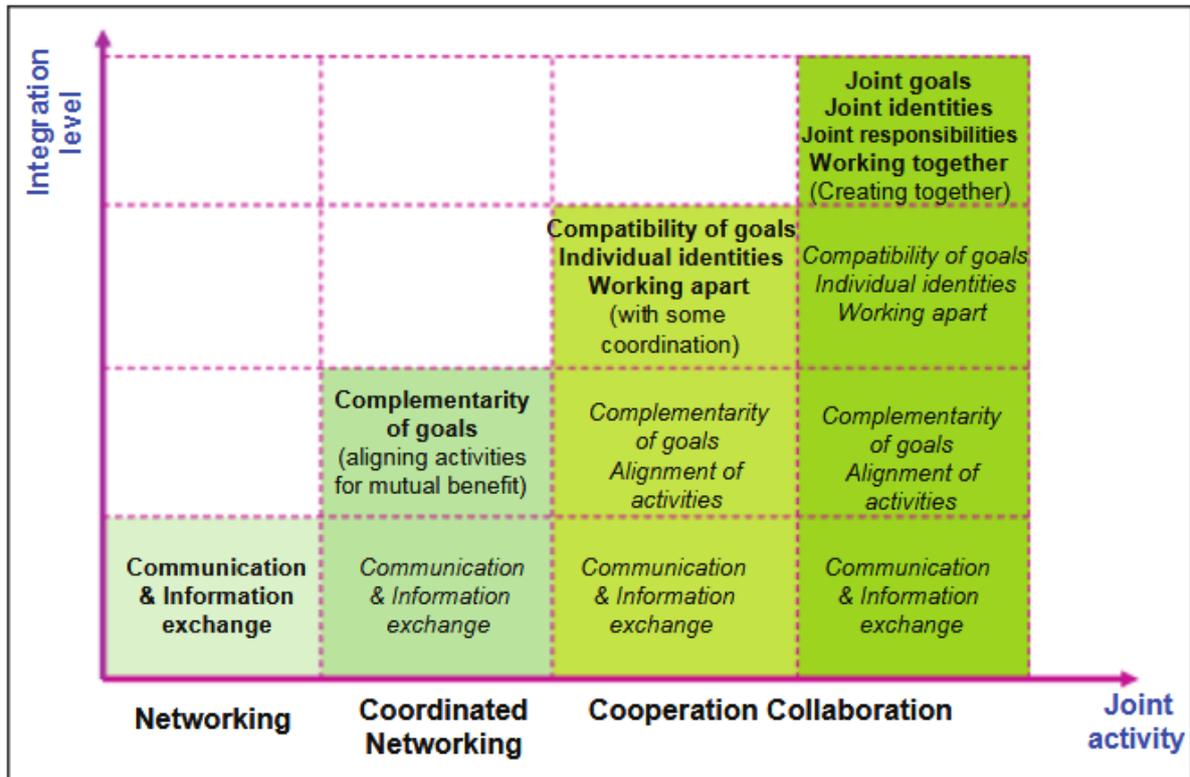


Figure 1 Levels of activity in relation to collaboration (Afsarmanesh and Camarinha-Matos, 2008)

Industrial competition has been studied for decades in the field of management and marketing research (e.g., Fiegenbaum & Thomas, 1993; Porter, 1980) where companies compete with one and another through superior products or services utilizing companies' internal resources. Through the lens of a resource-based view, companies attempt to outcompete one another by acquiring additional market share or gaining financial security through cost reduction (Dussauge, Garrette, and Mitchell, 2000). Literature about alliances and company networks summarizes that collaborative value creations depends on pooling and utilizing valuable resources that could not be done as a sole proprietor or inventor due to lack of internal resources (Das and Teng, 2000; Grant and Baden-Fueller, 1995, 2004; Ireland, Hitt and Vaidnyanath, 2002). Therefore, collaborators gain financial security or competitive options to expand or innovate when resources are shared. Strategic alliances between rival firms have created joint projects and ventures to gain access to new markets, share resources, or create value-added innovations in products or services (Dussauge and Garrette 1996). Therefore, collaboration is performed to define available resources and gain new connections to improve the current situation. Collaboration can add flexibility to managing and planning to outcompete or offer value-added operations to customers, which increase competitive advantage within the market.

Small firms and entrepreneurs can benefit from networking and maintaining relationships by gaining business transactions through these relationships. Small firms often build a web of external relationships around them; these are referred to as 'strategic alliances' (e.g., Miles, Preece, and Baetz 1999) or a 'network' (e.g. Curran et al. 1993). However, some extend their involvement to full cooperation and utilize collaborative firms' special access or a larger bi-shared pool of resources in their relationships (Steensma et al. 2000). Literature about small business' external connections and resources suggests that networks and strategic alliances can provide various tangible and intangible benefits to the firm (Miles et al., 1999; Curran et al., 1993). Establishing networks or alliances among smaller companies enhances their competitive awareness (Human and Provan 1996), lowers their dependence or reliance on others (Skinner and Guiltinan 1986), improves their ability to compete (Pfarrmann 1998), and increases their capacity to compete in economies of scale and, in some cases, economies of scope (Gomes-Casses 1997; Oughton and Whittman 1997). Therefore, based on the literature and context of SME alliance and network knowledge, enough information is available for establishing collaborative relationships among entrepreneurs.

To summarize, collaboration as a resource-based view perspective means managing, maintaining, and sharing relationships within the collaborative connections. Studies of large and smaller companies in the Finnish forest industry have examined practices of collaboration and how to apply managerial techniques.

2.2.2 Vertical and horizontal scope of collaboration

When discussing interfirm collaboration, questions arise about relationships and how these firms worked together to manage, coordinate, and agree on terms of shared resources. Supply chain management literature illustrates existing frameworks (see: Fjeldstad, Snow, Miles, Lettl C. (2012)) and confirms the current issues of collaboration among suppliers, which are lack of trust (Ireland & Bruce 2000; Barrat 2002), failure to select partners (Sabath and Fontanella 2002), and implementation (Sabath and Fontanella 2002). The primary focus for examining the dimensions of collaboration is to establish the logic of the technique with already established frameworks and determine how these frameworks serve the firm or the entrepreneur. Collaboration has been demonstrated to reduce market risk (not through collusion), rapidly develop products for market, decrease the cost of product development and process improvement, and provide access to new markets and technologies (Eisenhardt and Schoonhoven, 1996; Hagedoorn, 1993; Kogut, 1988; Wheelright and Clark, 1992).

Examining the supply chain management side of collaboration, several frameworks were introduced. Mark Barratt (2004) examined vertical collaboration in the article ‘Understanding the Meaning of Collaboration in the Supply Chain’. Barratt (2004) described the collaboration among e-business firms, where customers and procurers collaborated in supply chain management with suppliers. Collaboration can be divided into vertical and horizontal dimensions (Simatupang and Sridharan 2002, cited in Barratt 2004, p. 32 see Figure 2). The scope represents the dimensions of relationship types in the organization and whom the firm or entrepreneur is collaborating. Relationships are not yet determined, since the dimensions depend on the desired function and appropriate form of collaboration. Vertical collaboration applies mainly to relationships with suppliers, customers, and internal organizations, where the firm organizes the relationships and functions such as procurement, supply management, customer satisfaction, and tailored services or products. Relationships are determined by the parties’ needs and demands. Horizontal collaboration, in the perspective of an individual firm, considers collaborative relationships with competitors and other firms with complementary products (complementors), or organizations that have a stake or interest in the business (i.e., municipals, societies, and nonprofit organizations).

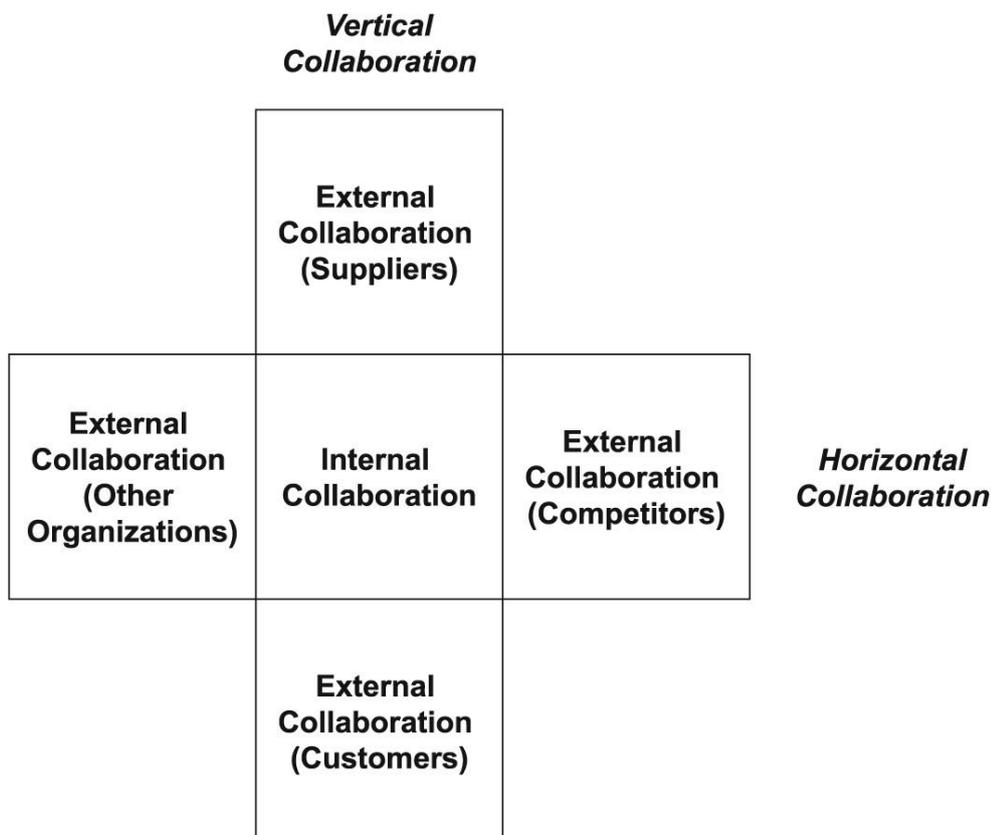


Figure 2 The Scope of Collaboration (Simatupang and Sridharan 2002)

Internal collaboration must be harmonized with external collaboration to develop closer relationships with companies when integrating and sharing information or resources between suppliers and customers (Barratt, 2002). Organizing internally and externally, supply chain managers and business managers or entrepreneurs must understand the differences between organizations to offer and receive the desired value in vertical and horizontal collaboration, without negatively affecting the firm's competitive advantage or performance (Barratt, 2002; Sabath and Fontanella, 2002; Hagedoorn, 1993).

Vertical collaboration is commonly established with suppliers or customers (Horvath 2001; Barratt & Olivera 2001). These relationships are traditionally seen as cost-efficient and concentrated on value or for gaining competitive advantage via exchange of information or other purposeful actions (Barratt & Green 2001). In this case, value creation refers to new or innovative ways to manufacture goods, provide services, and discover new value from old or new products or services. Collaboration for value creation is not tied to industries but is understood as a general undertaking for creating tangible or intangible value (Barrett, 2004, cited in Fawcett & Lorentz, 2008).

Horizontal collaboration is found among organizations that have shared interests to operate, innovate, or gain advantage within a shared market (Bengtsson & Koch, 2000; Bradenburger & Nalebuff 1996). These relationships are usually presented in a paradoxical relationship in which firms collaborating with competitors could be seen as colluding, but later the customer wins from that trade and the firm gains a new competitive advantage (Ritala, 2014; Raza-Ullah, Bengtsson, Kock, 2014; Rusko, 2011; Simatupang and Sridharan 2002). Horizontal collaboration is discussed in reference to external organizations, such as nonprofit or municipal organizations that value a relationship with the firm but are not dependent on the company's performance or actions (Simatupang & Sridharan 2018). Horizontal collaboration consists of relationships that are competitive or complementary, where relationships could offer added value to the market such as time or raw material costs, logistics costs, or other resources that are deemed valuable (Ritala, 2014; Bengtsson, Kock, Lundgren-Henriksson & Näsholm 2016). There is some evidence that horizontal collaboration is a risky relationship that often ends up in failure (Park and Russo, 1996) and a potentially detrimental 'learning race' (Hamel, 1991). It can also be detrimental to the performance of competitive alliances (Kim and Parkhe, 2009). These risks are most applicable to relationships where information and capacities are exchanged; some relationships are beyond control. Possible risks include a breach of confidentiality or a partner not using the information for his benefit rather than mutual benefit. On the other hand, some studies suggest that cooptation can have a positive effect on market performance (Luo, Rindfleisch, and Tse,

2007) and innovativeness (Belderbos, Carree, and Lokshin, 2004; Quintana-García and Benavides-Velasco, 2004; Tether, 2002). Therefore, firms that are considering collaboration should carefully plan and define their relationships and select partners who do not use the information to outcompete them.

When firms collaborate with competitors it is known as cooptition (collaboration with competition). The term was coined in the 1980s by Ray Noorda, the founder of Novell (Brandenburger and Nalebuff, 1996; cited in Luo 2007a). Noorda faced sceptical criticisms of ‘collaborating with the enemy’ when researchers framed the concept as a possible gateway to collusion or other illegal activities that can negatively affect the market (Luo 2007a). However, researchers decided to re-explore the concept of cooperation in an academic format. Lado, Boyd, and Hanlon (1997) published the first academic findings of cooptition: The strategy was explained with competitive synergy theory, but vaguely defined as ‘syncretic rent-seeking behaviour’. Rent-seeking behaviour from transaction cost theory is well-connected to the concept of cooptition, where firms seek out low-cost or minimal investment opportunities to gain maximized benefit from the relationships with mutual trust (Dowling, Roering, Carlin Wisnieski 1996; Eriksson 2008). Bengtsson and Kock (1999) published the first article in which ‘cooptition’ was used as term to describe formal cooperation among competitive firms, and a year later, they published the first typology of cooperative agreements according to cooperation labels. Likewise, there are real-world examples where companies collude to negatively affect the general public and the markets (Rusko 2011). Cooptition has been connected with game theory; it has been suggested that cooptition incorporates the logic that firms collaborate to increase the size of the business pie within the market, and then compete to divide it up (Brandenburger and Nalebuff, 1996). This means that it is beneficial when alliance or cooperative partners are mutually able to increase the total value they can then individually capture and bring value to stakeholders and customers. Furthermore, it has been claimed that cooptition may be a positive-, neutral-, or negative-sum game for the firm (Faulkner and Rond, 2001), and that it is the mix of the alliance partners’ capability alignment and the business environment that dictates the outcome (Ritala, 2009). This means that the outcomes may vary when collaborating with competitors, especially concerning how relationships are formed and utilized. To summarize, cooptition and horizontal collaboration can have a positive effect on market performance (Luo, Rindfleisch and Tse, 2007; Ritala, 2009) and innovativeness (Belderbos, Carree, and Lokshin, 2004; Quintana-García and Benavides-Velasco, 2004; Tether, 2002). Firms that involve themselves in collaborating with competitors should manage carefully how the relationship is defined and how the collaboration can benefit them in the long run, minimizing the risks that are tied to collaboration.

Studies within the alliance literature examine collaborative relationships that require co-owned or co-commitment to the organization set up to serve customers with superior value or serve members of the alliance or organization with minimal risks (Das and Teng, 2000; Grant and Baden-Fuller, 1995, 2004; Ireland, Hitt, and Vaidyanath, 2002). In other words, entrepreneurs realize they can create value for their customers through collaborative actions, or create value for themselves, by forming co-owned organizations with other entrepreneurs to serve alliance partners. Setting up alliances answers the issue of risks when a separate organization is formed.

When distancing from the overall concept of collaboration, there are positions within the research field that indicate the inconclusiveness of cooperation within industries. The extant literature provides a rich but thus far inconclusive account of how co-competition affects business performance (Faulkner and Rond, 2001), as the market behaves differently within the context of different cultures. Highlighting the risks of collaboration, perceptions are taken from different collaboration subjects, but these risks are like one another. There is some evidence that it is a risky relationship, which often results in failure in firm performance (Park and Russo, 1996). Additionally, some evidence points to a potentially detrimental ‘learning race’ (Hamel, 1991), where companies co-learn and develop their products and services together, but the result is that one partner expands towards the other’s field or begins competing with similar products. Those issues are detrimental to alliance performance (Kim and Parkhe, 2009). In other words, the issues that are seen in the alliance—collaboration with stakeholders, competitors, customers, and suppliers—affect the level of involvement, information, and other assets that are a crucial competitive advantage to the individual entrepreneur. He may be giving these up when agreements and contracts define the relationship (Hessels & Terjesen 2010).

Summarizing this chapter, the scope of collaboration and alliance formation is seen as a positive impact on company performance, innovativeness, and flexibility depending on where the alliance or collaboration is performed. These values are determined by the entrepreneurs or firms within the relationship that are located within the individual entrepreneur’s network or value chain and how the entrepreneurs are positioned within their customers’ (one or many) value chain. The aim of collaboration is to improve the quality of business transactions and productivity through trust and management of culture within interfirm collaboration; businesses succeed only when values are clearly set and the division of rewards is defined with mutual goals in mind.

2.2.3 Motives and payoff of collaboration

External resources are, in the lens of the resource-based view, a collection of different interfirm relationships and access to various utilities through those relationships (Cameron & Street 2007). These relationships are set either in writing or by mutual understanding and coexistence within a shared ecosystem. These resources can be with competitive or complementary business connections or agreements (Simatupang & Sridharan 2018). Through those connections and agreements, companies get financial or other value; for example, decreased operation costs, improved inventory management, and production time (Ellinger 2002; Fawcett and Magnan 2002; Ireland & Bruce 2002).

In their research on vertical collaboration, Mei Chao and Qingyu Zhang (2011), examined supply chain collaboration and its effect on collaborative advantage and firm performance. They reported that when firms are facing uncertain environments, they strive to achieve greater supply chain collaboration to leverage the resources and knowledge of their suppliers and customers. Their results indicate that supply chain collaboration improves collaborative advantage and indeed has a bottom-line influence on firm performance. Collaborative advantage is an intermediate variable that enables supply chain partners to achieve synergies and create superior performance. Their further analysis of the collaborative advantage and how bigger firms benefit from smaller companies' performance means there are mutual positive outcomes working for bigger companies as part of the supply chain.

The literature suggests that, through history, collaboration has affected company performance, depending on the relationships. Literature on cooperation and alliances demonstrate that research and co-development with other firms may bring innovativeness and positive results in firm performance (Belderbos, Carree, and Lokshin, 2004). Literature about cooptation provides numerous and inconclusive explanations of how competitive collaborations influence firm performance. On the one hand, collaboration is detrimental to alliance performance (Kim and Parkhe, 2009) since it ends up either in failure (Park and Russo, 1996) or in a 'learning race' (Hamel, 1991), or it yields a positive effect on innovativeness (Belderbos, et al. 2004; Quintana-García and Benavides-Velasco, 2004; Tether, 2002) and positive market performance (Luo, Rindfleisch and Tse, 2007). Cooptation was seen mainly as a price-discriminating mechanism before the late 1980s (Lamoreaux, 1985; Pate, 1969) but has recently been accepted more widely among policymakers across Europe, the United States, and Asia (Gnyawali, He, and Madhavan, 2008; Jorde and Teece, 1990). Literature about cooptation stems also from network theory where interorganizational interactions arise from social interactions to extract resources from interlinked organizations across networks (Håkansson & Ford,

2002; Håkansson & Snehota, 2006; Bengtsson et al. 2016). To summarize, firms' collaborative relationships may be seen as risky strategic moves to share resources or pool resources; it is important for businesses to realize what values they may gain from such relationships (Ritala, Hurmelinna-Laukkanen 2009).

2.3 Research framework

In following chapters the research question is examined through the lens of a resource-based view, and its hypotheses will be discussed, linking them to the theory and the relevancy of the South Savo wood industry economic environment. Some of the elements that can affect the research and its ability to avoid biases are discussed here.

To understand how a resource-based view of SME is studied and tested, a literature review of methodologies should be examined. The approach of the thesis is to determine the attitude towards collaboration among entrepreneurs and to find connections with their resources. It is important to understand how these collaborations have been measured to this point, as most of the previously mentioned are measured by key objective performance indicators such as a balance sheet. In this case, when measuring the attitude towards collaboration, how resources are perceived in a company's own organization as well as current connections is important.

These subchapters finalize the theoretical framework for the thesis and set the framework for the research.

It is important to understand how entrepreneurs see their resources instead of how researchers see their resources. In their research, 'The Resource-Based View in Entrepreneurship: A Content-Analytical Comparison of Researchers' and Entrepreneurs' Views', Franz Kellerman, Jorge Walter, T. Russel Crook, Benedict Kemmer, and Vadarake Narayanan (2016) (henceforth Franz Kellerman et al.) examined the different conclusions when entrepreneurs and researchers studied the same resources. Their examination of the research studies revealed that a resource-based view is mainly seen as a measurement tool for researchers, but they do not reach consensus on what are universally agreed unique resources within a VRIN or VRIO framework. Additionally, they do not have an understanding of available resources utilized or reserved from the perspective of the entrepreneur, therefore, they did content analysis of the dichotomic view of the resource-based view.

Consequently, a consensus about resources is left as an ‘amorphous heap’ and therefore yields a problem in business management theory when criticizing the resource-based view of a firm and the conceptualized view of a firm’s resources within the academic research. Franz Kellerman et al. inspected and compared the interview studies of 50 managers in six companies from Stevenson’s (1975) work and used their quote that ‘definitions of strengths and weaknesses generally applicable for the whole organization were not found’ (Stevenson 1975 p. 68, quoted in Kellerman et al. 2016 p. 29), meaning that qualitative factors of ‘strengths’ and ‘weaknesses’ of the firm from the perspective of the managers are not conclusive. Therefore, having resources is good, but which resource is better is inconclusive.

2.3.1 Literature review on collaboration of forest sector in Finland

This chapter introduces the current SME collaboration within the forest sector and the perspective of collaboration and a resource-based view.

Managers within the forest sector see external resources as resources from external associations that they have access to or permission to exploit. When companies initialize interorganizational agreements to cooperate, their partners often are public and private registered groups or other private organizations, therefore forming networks (Näsi et al., 2001; Lamberg & Laurila, 2005; Näsi, Ojala & Sajasalo, 2007). It is important to look at how external and internal resources are coordinated and what their relationships are towards one another.

The Finnish forestry industry has been studied to determine how innovative these companies are when it comes to answering demand (Näsi, Ojala & Sajasalo, 2007). Firms within forest sector are interested in improving the logistics of their product and procurement processes to answer the fluctuating demand (Rusko 2011). Through inventing new ways to establish connections and share resources with other firms, to gaining mutually beneficial logistical resources, to correcting supply errors and securing growth within the market, entrepreneurs and companies have found a way to evolve together (Lamberg & Laurila, 2005). Some firms have established spherical and block chains to gain competitive benefits from established relationships in global competition, where firms collaborate in the procurement of wood with networks that extend the local market to other countries. Consequently, they benefit from economies of scale when transporting large amounts of bulk products (Näsi et al., 2001). It is important to examine, develop, and improve collaboration and external resources among SMEs in the South Savo forestry industry to study the SME relationships as an enterprise resource.

There are instances where leaders at large firms in the Finnish forest industry have practised horizontal collaboration. Rauno Rusko (2011, p. 311) examined the collaborative dimensions of the forest industry with an eye toward coopetition. Rusko built a case for firms having an interest in establishing networks to find answers to logistics issues within the industry. Rusko found that larger firms collaborate with other firms to share operating costs and logistics resources to lower their operating risk and secure the profitability of the end products. However, in some of the cases there were signs of collusion in setting market prices and market shares, negatively affecting market competitiveness. However, looking at forest industry companies willing to collaborate on resources reveals that they want to find new opportunities through collaborative actions and gain new competitive advantage through business networks (Lamberg, Näsi, Ojala & Sajasalo 2007; Lamberg & Ojala 2005; Näsi et al., 2001; Allred, Fawcett, Wallin and Magnan, 2011). Horizontal collaboration should be taken into consideration when defining the current powers of the market.

A resource-based view helps determine internal and external resources of SMEs in South Savo. Resources of a firm are intangible and tangible assets as well as organizational assets used to conduct business (Barney 1991; Kellerman 2016). Barney (1991) defines these resources as ‘all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness.’ Based on that description, Kellerman et al. (2016) have linked internal and connected resources to external sources (see Appendix 4) but there is no coherent definitions that characterizes the resource as ‘virtually anything’ (Kellerman, et al., 2016). Organizational structure is difficult to determine when the entrepreneurs employ two or fewer people. The forest entrepreneur’s resources should be categorized in general categories listed by Kellerman et al. (2016), which can be seen in Appendix 4.

Optimizing and developing sustainable logistics and procurement solutions is needed within the Finnish forest industry. Studies on this industry’s strategic management focus on cost-effectiveness of logistics and other operations besides the manufacturing (Lamberg, Näsi, Ojala, & Sajasalo, 2007; Lamberg & Ojala, 2005; Näsi et al., 2001a, b). Some studies have investigated subjects such as co-evolution (Lamberg & Laurila, 2005; Lamberg & Ojala, 2005), spheres or blocks of corporate cooperation and collaboration (Lamberg, Laurila & Nokelainen, 2007a; Näsi, Ranta, & Sajasalo, 1998; Näsi, Sajasalo, & Sierilä, 2001a), and dualistic corporate cooperation (Skippari, Ojala, & Lamberg, 2005). Of the research papers about cooperating in the forest industry, only Skippari et al. (2005) have broached the concept of coopetition; however, they did not focus on the competitive side

of collaboration. Therefore, in the forest industry, there are strategic alliances or cooperatives on both the horizontal and vertical levels. These relationships ensure that wood and other related products are delivered on time (Rusko 2011); this creates new value within the value chain or creates new value chains through processes and added-value innovation in the supply chain (Kanberg & Laurila 2005; Karttunen, 2009). Therefore, the forest industry maintains collaborative practices and has arm's-length alliance relationships among firms.

The final definition of SME collaboration in the Finnish forest sector features memorable examples of competitive and customer-centric collaboration in cases that have been studied. The forest industry is traditional in that it produces low-value-added, heavy products that are expensive to transport (Toivonen 1999). The domestic market in Finland is small and sells homogeneous, constant, and standard bulk products (Lamberg & Ojala 2005). The constant demand for the wood products and the difficulty in moving the product to market demands strategic moves to manage, innovate, and perform.

2.3.2 Hypothesis development

The research focus is the resource-based view of the South Savo forest entrepreneurs' willingness to collaborate.

One of the initial findings regarding forest industry behaviour is the entrepreneurial collaboration within the market, where firms and entrepreneurs work together both horizontally and vertically, formally and informally. Among the considerations are the tangible properties and movables of the entrepreneur and whether collaboration is considered a beneficial move for the business to increase the feasibility of the market for other end-user participants. Therefore, the question of the research is:

Are South Savo wood industry SMEs willing to collaborate?

As established earlier in the resource-based view (Wernerfelt, 1984) and the understanding of the current resources and capabilities of the firm, the following understanding can be drafted:

Depending on the current resources, entrepreneurs will either:

- Collaborate or
- Not collaborate.

‘Willingness’ in this survey is determined by the object of collaboration (i.e., actor willingness to act towards one or many actors), where entrepreneurs preferred the object of collaboration to be determined based on the characteristics of such entrepreneur.

These resources can be internal and external resources of the company and are utilized based on the firm’s strategy for growth or sales performance; they are also motivated by possible outcomes and how an entrepreneur sees the outcome realized. Resources are determined from the aspects of valuable, rarity, inimitable, and organizational or non-substitutable within VRIO or VRIN frameworks. The wood industry—as well as the service industry around wood procurement and delivery—is mostly standardized, therefore, there are easy approaches to determine which equipment and capacity with service-level capabilities the entrepreneur has within the sample. Combined with the entrepreneur’s view of the resources from a study by Kellerman et al. (2016) and a resource-based view of collaboration and relation towards internal and external resources, it can be determined if having resources influences an interest in collaboration. Assuming from the literature that companies are willing to collaborate because there are resource benefits, then the question becomes which conditions are the correlating factor that may affect behavior. When considering small firms within South Savo, the capacity to collaborate relies on the firms’ or entrepreneurs’ own bundle of resources. These resources are either movable or are knowledge-based information about the firm, which would be considered the firm’s competitive advantage in a resource-based view. Based on the literature, in a perfect market, there are possibilities to improve the competitive advantage through service or value chain improvement with little to no improvement of the product (Karttunen et al. 2014). However, if firms have enough resources to deliver the goods to their clients and are not considering collaboration with other companies, then collaboration is the least-preferred option in their eyes. Thus, it raises the question of whether the firm’s individual resources have an effect on its willingness to collaborate.

Therefore, the overall hypothesis of the study is that a firm’s willingness to collaborate is related to its external or internal resources.

This approach answers the main question of willingness to collaborate in South Savo and contributes to the study by investigating which entrepreneurs reported that resources could be a factor or factors in willingness to collaborate. The hypothesis is crafted to determine which resources factor into an entrepreneur’s willingness to collaborate. Hypothesis 2 inspects where. The null hypothesis is probable either due to the testing or to other external factors that are beyond the research control. In order to differentiate the resources within the bundle of resources, a logical approach to external resources is taken with these hypotheses:

H1: A firm's willingness to collaborate is positively related to its external resources

H1a: ... having government organization.

H1b: ... having private organization.

H1c: ... retaining relationship in co-ownership.

H2: A firm's willingness to collaborate is related to its internal resources, including

H2a: ... the quantities of services it provides.

H2b: ... the quantities of human capital in its firm.

H2c: ... the quantities of reported turnover in the firm.

H2d: ... the quantities of tangible assets reported in the firm.

To measure the scope of the collaboration where the entrepreneurs' objects of collaboration can be determined, an approach of Simatupang and Sridharan (2002) is used to illustrate the scope of companies with which entrepreneurs are willing to collaborate in South Savo. Consequently, the following hypothesis is introduced:

H3: Firms are willing to collaborate with other firms within their supply chain that are positively related to the firms' resources.

To answer the levels of collaboration (Afsarmanesh and Camarinha-Matos, 2008) and to test the feasibility of co-ownership where collaboration ideas are introduced, the following hypothesis of general questions is introduced:

H4: Firms are interested in collaborating with co-ownership.

To describe the operationalization of dependent variables, the following definition should be taken into consideration:

- Objects are determined as recipients of an entrepreneur's willingness to collaborate.

Motive is determined as the objects' inherent value that represent different potential transactions for entrepreneurs within the South Savo forest industry.

Different companies are used as objects of collaboration in this research. Motives to collaborate with each company are assumed to be related to an entrepreneur’s goal of increasing turnover and business transactions.

The following structure of the research is introduced:

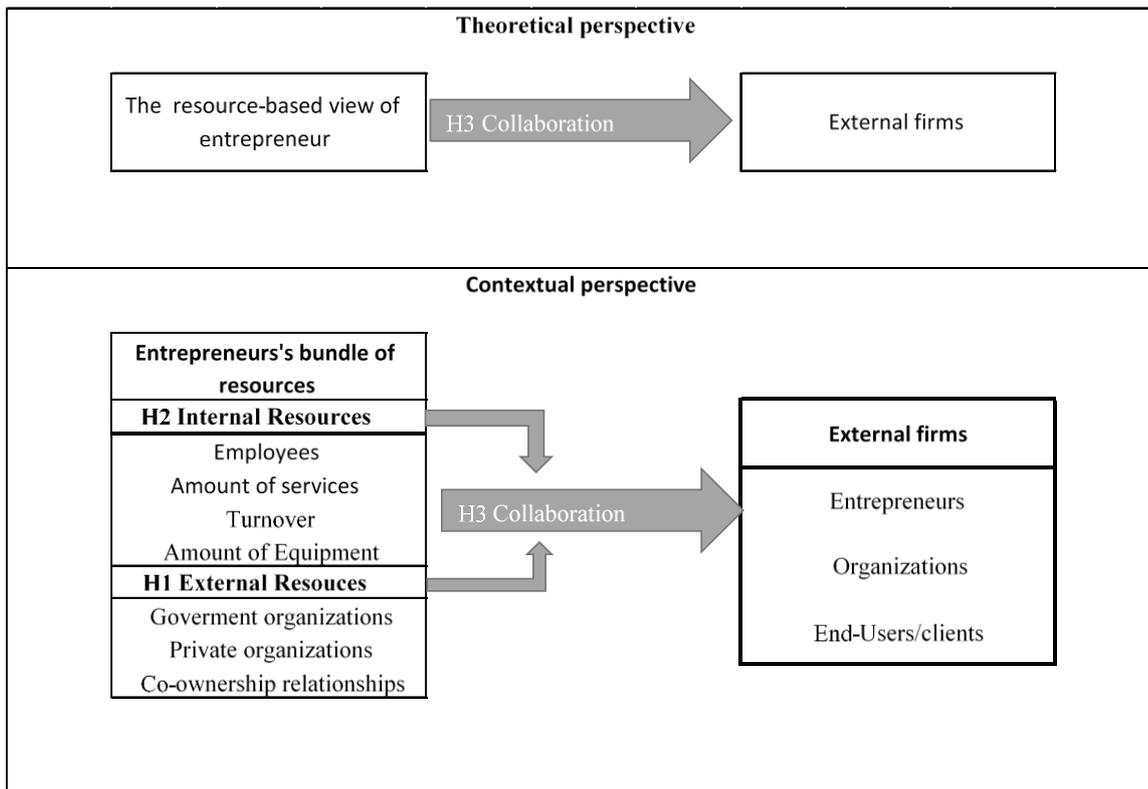


Figure 3 Theoretical structure of research

This approach helps to understand whether an entrepreneur’s current internal or external resources affect its willingness (or unwillingness) to collaborate. It is expected that it can be both as well, when companies that understand the benefits of collaboration and have experience in facing the risks are willing to collaborate and develop even further. This contrasts with companies that do not have the experience or current connections and are unwilling to collaborate to compensate for their lack of resources. The hypotheses help to answer the initial question that are they willing to collaborate based on their current resources.

3 METHODS AND MATERIAL

3.1 Sampling and data collection

List of companies were shared from the LUT Mikkeli branch and a research of criteria of the firms were following: The company had to be in South Savo. The company must be active. The company must have an email or phone number to able to call or inquire to the research. The company must be involved either in 3 trades: forest management, forest harvesting, or transportation specialized in transporting: round wood, round wood or woodchip and other forest biomaterial. Contact list was procured from trade associations of previous mentioned respected trades and more contacts were checked through kauppalehti.fi, Fonecta and shared open contact information from Suomen Yrittäjät Ry (Finnish entrepreneurs association). In overall, there were 298 entrepreneur information that could be reached with phone and email.

100 responses were the goal of the survey to get proper response rate from 298 entrepreneurs. 298 invitations in email-form were sent to entrepreneurs and 45 entrepreneurs responded to the email invitation. the researcher called entrepreneurs that has not responded to the email in order to get the over 100 responses. Overall response in the end were 103. The data for the research has been collected between October to November in 2017.

Some of the responses were eliminated due to following reasons:

- Some entrepreneurs mentioned in the survey's open answers that were retired or the company was going through liquidation.
- Outliers, with large pool of resources, when compared to the rest of the sample
- Wrong trade classification for the transportation: Since the Stat.fi classifications were used to identify the entrepreneurs from the websites, there were some responses that did not meet the criteria of the preferred entrepreneurs i.e. mentioned that they were either related to foodstuff or parcel transportation.

Due to the sensitive information that is collected in the questionnaire, the outliers can be identified from the rest of the sample, therefore not fulfilling the promised anonymity, thus elimination was in

the place. In the end there were 94 that were accepted to the analysis, but in the reporting, there will show different respond levels in the reporting due to the nature of the survey.

The information about the firms is collected with a questionnaire (Appendix 2). It includes the companies' resource and information about their connections to other firms and involvement of round wood and woodchip production, the effect of changing of environment and willingness to collaborate.

The questionnaire, developed for the empirical research, consists of three parts:

- Company characteristics and current amount of resources of companies
- Questions of effects on change of demand within industry environment
- Questions of collaboration and ideas of collaboration.

1. The first part contains the general information about the company, the trade as where they participate in, business entity, service offering, firm location in South Savo, number of employees, magnitude of firm turnover in accordance of Stat.fi categories, percentage of involvement to round wood harvesting, percentage of involvement to woodchip deliveries, number of machinery, number of vehicles specialized in traveling in forest, number of forest vehicles that are available either to transport woodchip or biomass in their separate questions and categories, contractual relationship with known big firms that operate in South Savo, collaboration with entrepreneurs for the woodchip deliveries and what kind of collaboration it is. Some of the variables identified in this part are used as control variables in the empirical research, but there are variables that are only used in the discussion, or analysis of the responses of the entrepreneurs and the link of the resource-based view;
2. The second part includes entrepreneurs view of the impact that change of environment affects their business in different scenarios, these are measured in Likert's 5-scale from very negative-no effect to very positive. There are 2 business scenarios that has been constructed with instructor to test the change of environment towards proposed ideas for logistic chain of Forest entrepreneur. These ideas are grounded from practical knowledge; however, they are important for this research as to have options to react on in entrepreneurs and firms view of the current environmental change affecting their interests and business in their mind. First scenario describes the decrease of demand in round wood deliveries and Following question related of decreasing demand of round wood deliveries are the entrepreneurs still willing to expand their lumber deliveries. Similar questions were asked for the second scenario of increase of woodchip demand and how probable entrepreneurs would expand their business

towards woodchip related deliveries and open questions about obstacles of woodchip deliveries business model

3. The third part contains the scales of willingness to collaborate with certain entrepreneurs or organizations in different trades that are involved in forest industry. Then there are questions of preferred collaboration model, the question of collaborating with co-ownership or joint venture with firms listed and which firms are entrepreneurs willing to establish agreement-based collaboration. These values are determined to be used in the discussion and analysis section, but it is not tested for the hypotheses. Test and question of co-ownership of terminal with other entrepreneur, to see if there is a statistical significance over idea and co-ownership and resource-based view. Test and question of outsourcing and subcontracting, where it is expected within transaction cost theory to entrepreneurs to utilize capacity increasing or low-cost solution to complete the contract. Finally, the test and question of stakeholder organization collaboration and activities. These are measured in Likert 5-scales to indicate the probability and necessity of the actions.

The research is targeted to South-Savo entrepreneurs of forestry and wood processing industries focused on producing woodchips and entrepreneurs that are involved in woodchip transportation. The questionnaire is timed to 2017 fall period of harvest where forest harvesting companies, forest management and forest transportation companies are most demanded when end-users are ordering more timber related raw materials to meet the demand of current seasons.

In the end of the questionnaire, we ask questions about collaborative actions and ideas of co-creation, co-owning, co-training. These questions are related towards current options within the South Savo area to outsource or collaborate with external managerial organization coordinating with interested parties and also are measured in overall to see if the entrepreneurs want to collaborate across trades, or with similar entrepreneurs as they are or is it more towards for client-based relationships (Services provider to end user) where collaboration can be seen as transaction basis relationship or other, regardless of the collaboration type, we are more interested towards collaboration towards different subjects than forms.

3.2 Measures

The essence of this research is to determine entrepreneurs' views about collaboration and its relation to a changing business environment. The background information could have been collected from databases that gather the entrepreneurs' balance sheet data; however, this restricts the opinion of the

entrepreneurs about what is considered a resource and how much of the resource is given. Therefore, a variable reporting was used with a set bins option for how much turnover the company has and how many items they possess that can be categorized as ‘equipment’ or ‘human resource’. This was to normalize the difference among the entrepreneurs. If there is a chance to categorically determine which equipment affects the collaboration more, that may minimize a Type II error, a confirmation of a specific resource affecting the willingness to collaborate.

Measuring the resources and how to analyze such resources is a debated topic in the resource-based view and theory (Kellerman et al. 2014). Therefore, the Kellerman et al. approach for content analysis of such resources was used; the resources of forest entrepreneurs were categorized as asset, human capital, financial capital, physical capital, and relationship capital in the perception of the entrepreneur. Measuring the correlation and linear regression of the entrepreneur’s resources has an effect on the willingness to collaborate and the change in environment. In Kellerman’s research, a balance sheet was used to test the theory of resources having an impact on the firm’s performance. His categorical view of the resources was examined and selected for this approach where the instructor and a representative of the entrepreneurs selected resources that are important for this context of the analysis. The resources that were chosen as variables can be seen in the beginning of the methodology chapter and the remainder of Kellerman’s resources are listed in Appendix 6.

Table 1 Resource measurement

Variable		Measurement and representation	
Internal resources	Turnover	ordinal value	statistics Finland interpretation of turnover.
	Human Resources	Numerical	sum of entrepreneurs, employees and temporary workers
	Amount of services	Numerical	Count of services
	Equipment	Numerical	Sum of all vehicles and equipment
External Resources	Government organization	Binary	Existence of at least 1 or many
	Private organization	Binary	
	Co-ownership	Binary	

Simatupang's and Sridharan's (2002) collaboration scope was utilized as a means to determine the dependent variables of each entrepreneur within the value network and to determine with whom entrepreneurs are willing to collaborate. These dependent variables are represented as different entrepreneurs that can be seen in Appendix 2, question 3.1. Similarly, the extent of collaboration will be tested for the concept of level of collaboration by Afsarmanesh and Camarinha-Matos (2008). All of them will be viewed from the perspective of developed solutions within South Savo. (See the questions for context in Appendix 2.)

3.3 Analysis methods

Research methodology is chosen as quantitative methods in order to answer the question contextual relationship of resource-based view and willingness to collaborate, in order to reach that a moderate amount of sample should be aimed from the population of South Savo. This way, practical question of entrepreneurial will to collaborate among themselves in South Savo is answered and compared to general theoretical hypothesis that entrepreneurs are willing to collaborate based on their resources or lack of it.

The research uses deductive approach, which begins with the general theory of resource-based view, its connection to market powers and collaboration concepts such as competition, cooperation, stakeholder collaboration. To analyse and leading to specific ideas and hypotheses which are developed and tested in the research.

The relationship between resources, object of collaboration and willingness to collaborate is examined using statistical quantitative methods. It is assumed that entrepreneurs are willing to collaborate based on their bundle of resources. Illustrating the positive relationship, the multiple linear regression analysis is chosen to use for the analysis.

These hypotheses are answered in multiple linear regression to find the correlation between the internal and external resources and the willingness to collaborate to expand the external resources.

The null hypothesis is set for specific purposes that there was no prior research on relationship of willingness to collaborate and resource-based view of the firm, perspective of entrepreneur having the internal resources or external resources having effect on the willingness to collaborate.

The variables of internal or external resources have not been qualified as quantitative variable within the strategy research, other than using balance sheet monetary values as variables when comparing

and linking the theory to firm performance. In this research the willingness of collaborating is examined for the purpose of finding out the relationship between different resources and to see if they affect to the willingness as a bundle when entrepreneurs are inspected from same industry, but not in same trade. This should open the entrepreneurial view between trades, and having this approach raises questions about entrepreneur’s relationship towards their own resources, the external resources and how those have relation towards each other.

For the test of collaboration following variables are measured:

Table 2 Test of collaborations

Tests and targets of tests		Va-riab-les	Scale and representation	Codification	Method of analysis internal re-sources	Method of analysis external resources	Analysis methods of bundled resources
Test of collaboration	Entrepreneur type	12	Likert 5-scale entrepreneur type with South Savo industry	Very unprobeable – Very Probable	Simple linear regression analysis	Cross tabulation chi-test	Multiple linear regression analysis
Test of co-ownership	Any entrepreneur assumptions	1	Likert 5-scale	Very unprobeable – Not necessary – Very Probable			
Test of outsourcing and subcontracting	4 different subcontracting or outsourcing services in South Savo	4	Likert 5-scale each service type				
Test of stakeholder collaboration	Ideas of stakeholder involvement in entrepreneurs	4	Likert 5-scale each idea				

External resources (collaboration with other organizations or companies) in this study were analysed with cross tabulation, statistical analysis of correlation, and regression of the relationships with current industry leaders that are listed in the questionnaire. Utilizing Pearson’s correlation matrix illustrates which selected resources have positive or negative relationships with collaboration. Multiple linear regression is used to test the ‘bundle of resources’ aspect of the literature. Linear regression is used to inspect the relationship of resources with the willingness to collaborate. Linear regression is chosen to represent the simple way to measure one independent variable to dependent variable.

4 RESULTS

4.1 Descriptive statistics

4.1.1 Basic characteristics of respondents

Questionnaires were distributed to entrepreneurs who are relevant to timber deliveries and the harvesting process to serve the wood, pulp, and woodchip industries. A total of 54 (out of 104) respondents were forest harvesting entrepreneurs and represented the majority when compared to forest management and transportation entrepreneurs of the respondent sample. The following graph illustrates the distribution of responding entrepreneurs.

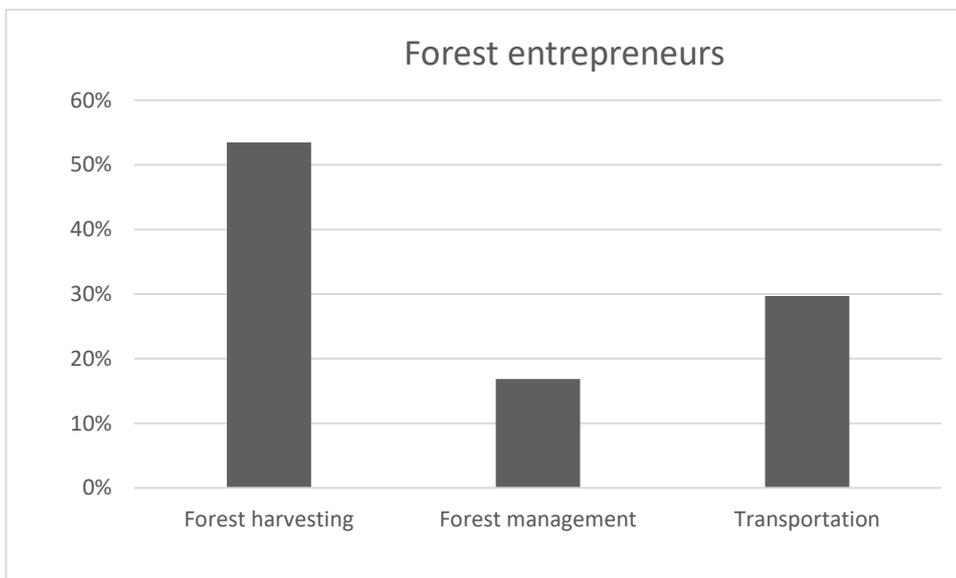


Figure 4 Distribution between forest entrepreneurs by trade

Most survey answers were from forest harvesting and transportation companies in the South Savo area. This was expected when comparing how many entrepreneurs were contacted in each service category.

Entrepreneurs were asked what services they offered to determine the distribution of services in the South Savo area. Most of the entrepreneurs are focused on forest harvesting and timber transportation, which is represented in the previous chart.

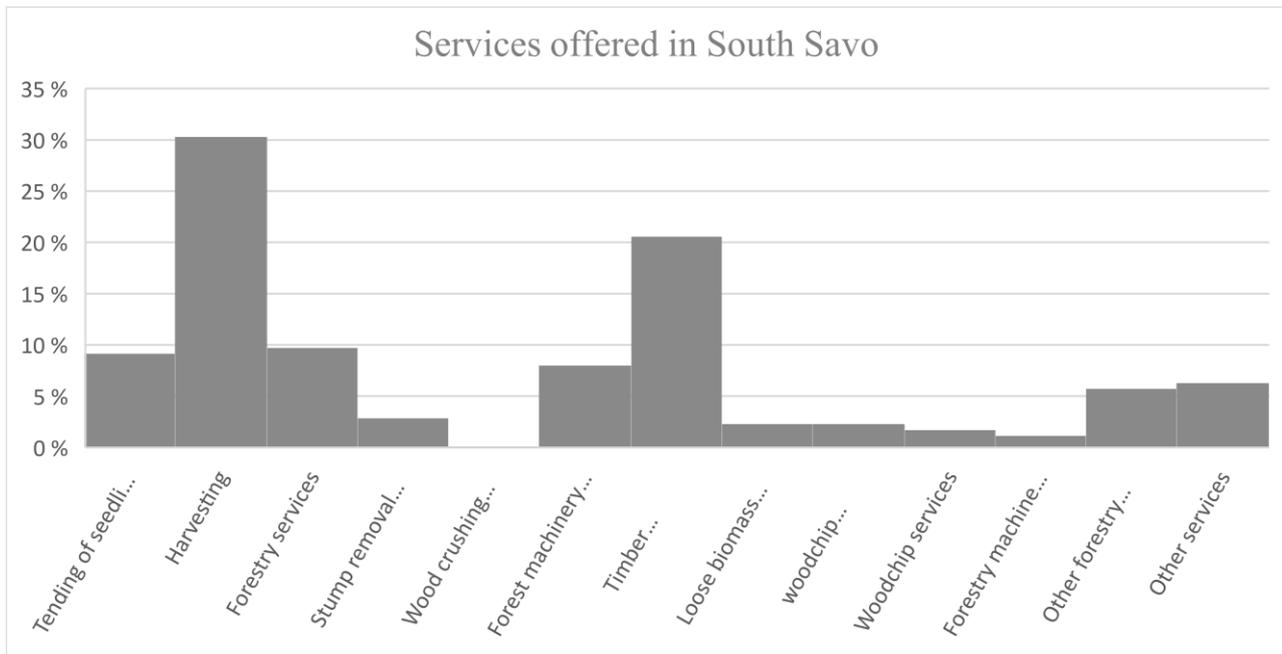


Figure 5 Services offered in South Savo

The arithmetic mean for service numbers is 1.70 services in the South Savo region with mode and to 1, which means most of the entrepreneurs have only one occupation or service in their business model.

Table 3 Service numbers per entrepreneur

Service amounts per entrepreneur	
Amount of services per entrepreneur	No. Of entrepreneurs
1 service	59
2 services	22
3 services	11
4 services	5
5 services	2
Arimethic mean	1,71
Median	1
Mode	1
Standard deviation	,85

The following map illustrates the distribution of entrepreneurs in South Savo. Most are registered primarily in rural areas but this does not conclude the areas of the operation.

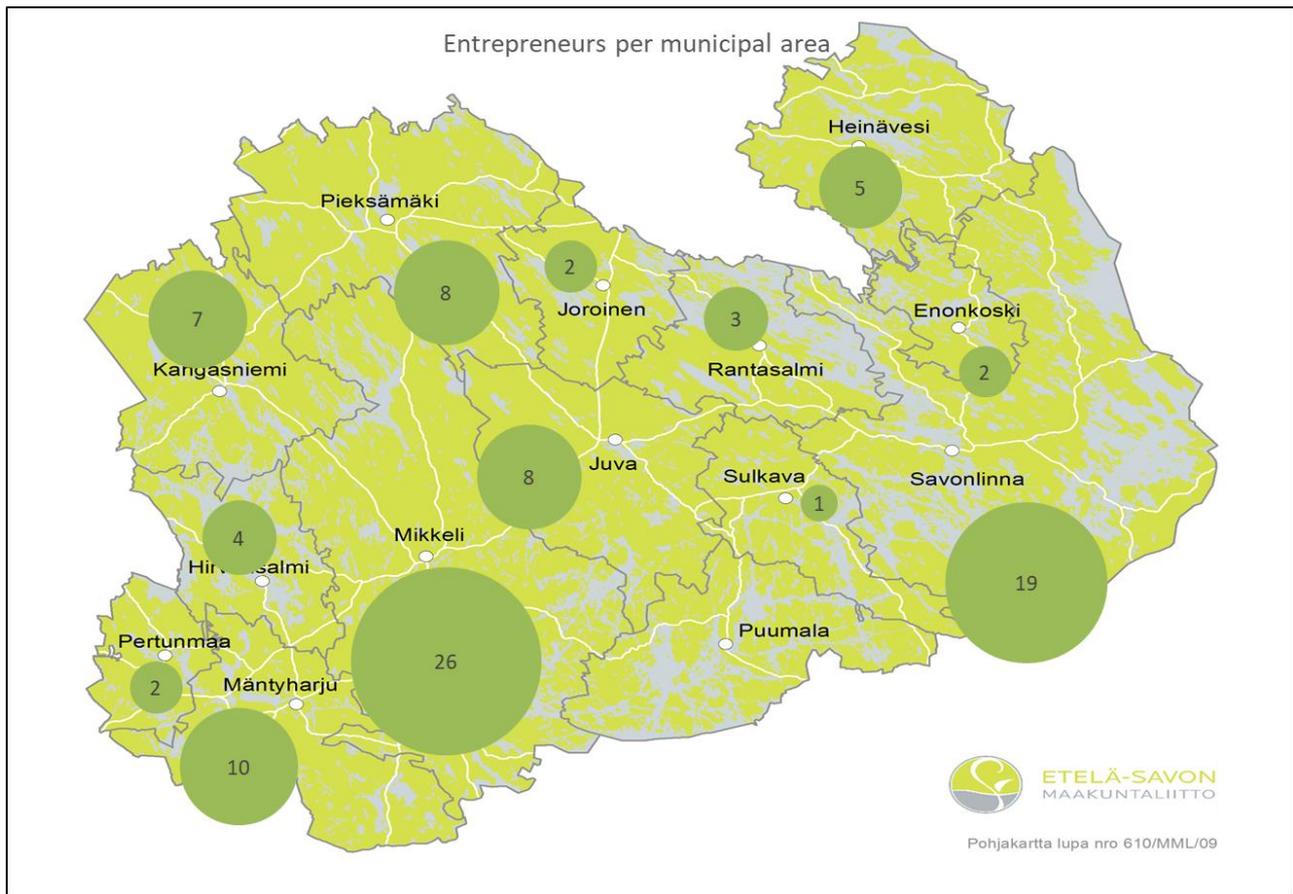


Figure 6 Entrepreneurs per municipal area

Distribution between forest harvesting, forest management, and transportation entrepreneurs per area can be viewed in the appendix file, as the difference between distribution of entrepreneur registered in the area is not significant for this research but may be important for further research opportunities.

The number of South Savo workers (see Table 4) tells the following information: There are sole entrepreneurs with at least three employees and at least one part-time staff member as mode values represent the frequent answers given by the participants, but on average there are companies that have more than two entrepreneurs (limited liability companies with multiple owners) and more than six employees on their payroll. Among 104 companies there are 184 entrepreneurs and business owners combined, with a sum of 519 current employees in 2017. The lack of agency workers in the current market is not explained in this research but may generate more interest looking towards outsourced worker models and researching qualitative and quantitative research to look for reasons why outsourcing or subcontracting employees is not utilized.

Table 4 South Savo workforce numbers

South Savo workforce	Sum	Median	Mode	Mean	ST. Dev
Entrepreneurs	184	1	1	1,80	3,31
Regular staff	451	3	0	6,63	9,36
Fixed-term staff	34	0	0	1,36	2,21
Part-time staff	34	1	0	1,03	1,62
Agency worker	7	0	1	,29	,35

The company turnover table confirms that most of the entrepreneurs are within targeted qualifications of companies that are considered small or medium-sized companies. Most of the entrepreneurs are considered micro enterprises according to Statistics Finland, which refers to the EU qualifications of qualifying entrepreneurs within EU countries. (Stat.fi)

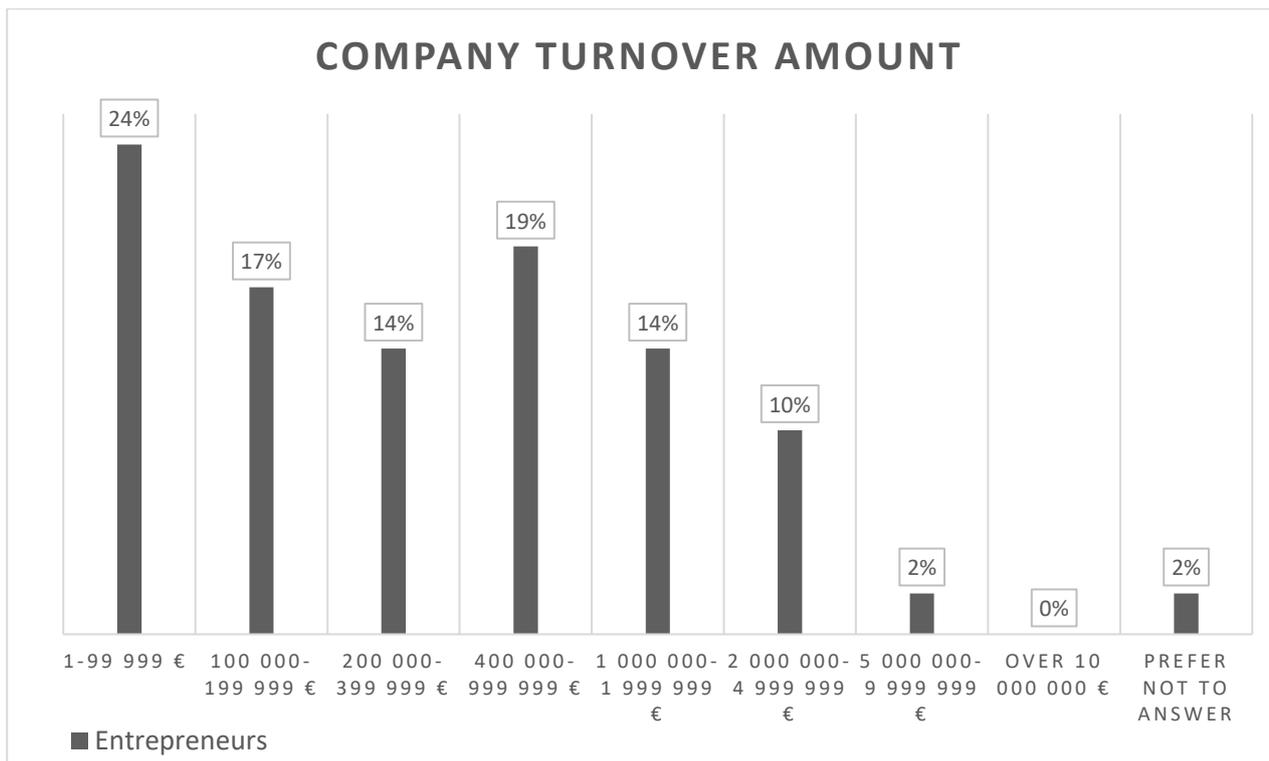


Figure 7 Distribution of entrepreneur sample in firm turnover

The amount of turnover gained from business transactions involved in timber deliveries and woodchip deliveries are different when compared with each other. Timber, as expected, comprises the majority of the current roundwood deliveries done in South Savo. Current deliveries of woodchips are not

highly involved, which may correlate with the lack of equipment in companies and other quantitative reasons (i.e., not profitable enough for investment in new equipment or delivery costs).

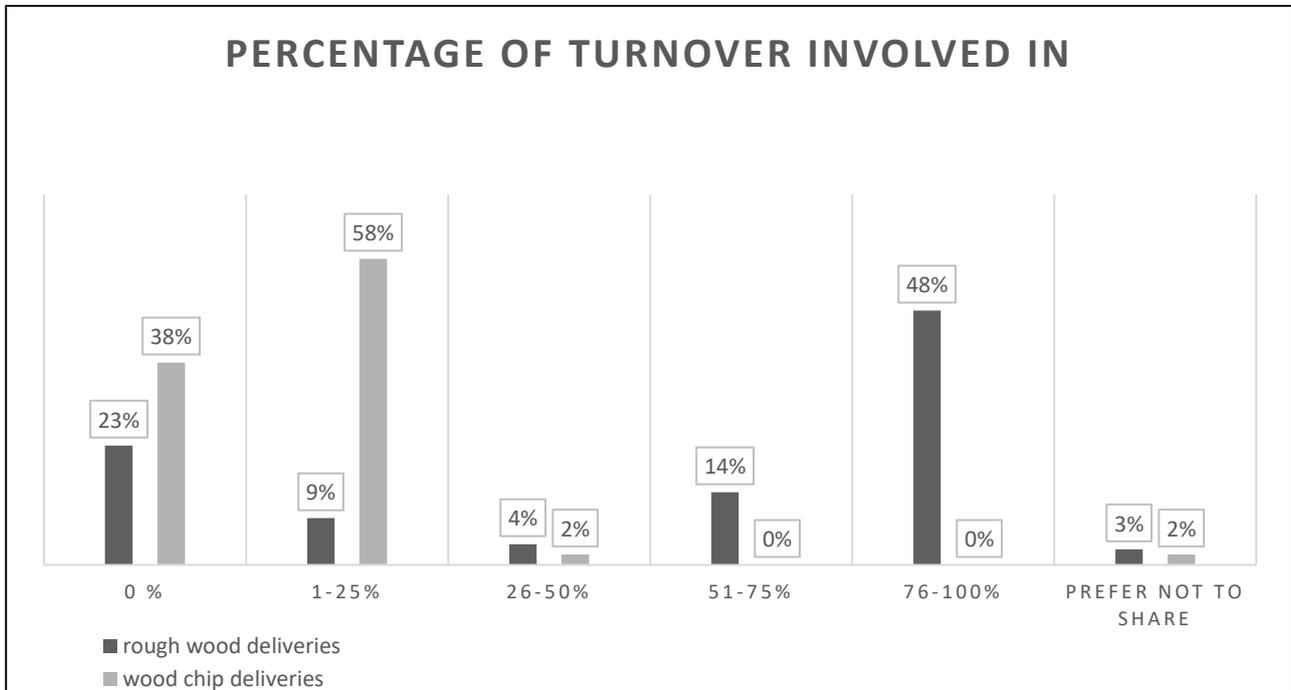


Figure 8 Differences between deliveries from amount of turnover

The equipment owned by South Savo entrepreneurs illustrates the area’s overall capacity to work in a woodland environment. On average, there is at least one harvester among 104 harvesting companies, which indicates there are one or more entrepreneurs within the sample who have enough equipment to distort the dataset. However, the companies are not marked as outliers since current collaborative and cooperative companies are also included in this study. Those outliers that have more impact on variance within an internal resource perspective are not removed since this study is about willingness to collaborate from a firm’s perspective, not from an individual entrepreneur’s perspective.

Table 5 Total sum of entrepreneur's equipment in South Savo

Average of machinery per entrepreneur					
	Sum	Mean	Median	Mode	St.Dev
Harvesters	82	1.09	1	0	1.41
Forest tractors	79	1.76	1	1	1.46
Material handlers	1	.11	0	0	.33
Front-end loaders	12	1.09	0	0	1.45
Wood Chippers	0	0	0	0	0
Wood crushers	0	0	0	0	0
Excavators	29	1.12	1	1	1.51
Harrowing machine	2	.20	0	0	.42
Forest clearance	2	.22	0	0	.67
Forest fertilizers	0	0	0	0	0
Others	123	7.24	1	1	24.04
Sum of machinery	330	4.40	2	1	11.59

The sum of vehicles among 52 South Savo entrepreneur respondents illustrates that there are more vehicles suitable for round wood transportation than vehicles suitable for biomass and woodchip transportation. The total company-owned cars exceed the sum of vehicles that are manufactured to transport roundwood and woodchip products.

Table 6 Sum of entrepreneur vehicles, categorized by type and number of cubic centimetres. Total cars are not the total sum of the vehicles suitable for the transportation

Total sum of vehicles in South Savo		Sum	Mean	Median	Mode	ST.Dev
Total cars		205	3.25	1	1	6.46
Vehicles suitable for round wood transportation	Under 80m3	24	2	0	0	5.69
	80 – 100m3	4	.50	0	0	1.07
	101 – 120m3	8	.89	0	0	1.96
	121 – 140m3	0	0	0	0	0
	Over 140m3	0	0	0	0	0
Vehicles suitable for wood chip transportation	Under 80m3	3	.60	1	1	.55
	80 – 100m3	1	.33	0	0	.58
	101 – 120m3	3	1	0	0	1.73
	121 – 140m3	2	.50	.50	1	.58
	Over 140m3	0	0	0	0	0

The current number of cooperative actions is illustrated in Table 6. It is deduced that most of the entrepreneurs are not in cooperative relationships with forest management associations or companies. On average, more entrepreneurs reported not having relationships with forest management associations or companies.

Table 7 Current cooperation with existing forest management enterprises (associations and other firms)

Cooperation with forest management enterprises			
	Sum	Mean	Standard deviation
Mhy Mänty-Saimaa ry	2	.02	.14
Mhy Etelä-Savo ry	16	.16	.36
Mhy Kangasniemi-Pieksämäki ry	2	.02	.14
Other FMO locating outside of South Savo area	1	.01	.10
Other Forest Management company	6	.06	.24
Not in cooperative relationship	72	.71	.46
Declined to declare	6	.06	.24

Cooperation with the largest-known companies related to forest harvesting and manufacturing with round timbers and end products have the following distribution (Table 7): Metsä Group has more small-sized South Savo entrepreneurs in cooperative relationships among the companies listed in the questionnaire. StoraEnso and UPM have an even share of SME and shared positions in the area. Unexpectedly, the responders reported ‘other’ forest companies as an option more prominently than other sawmill companies. This can indicate either insufficient options in the questionnaire and therefore lacking data for other named companies, or there are numerous small-sized sawmills or other forest product industry companies that evenly distribute the questionnaire targeting SMEs.

Table 8 Current cooperation with other forest industry firms

Cooperation with forest firms			
	Sum	Mean	Standard deviation
StoraEnso	18	.18	.38
UPM	18	.18	.38
Metsä Group	21	.21	.40
Harvestia	5	.05	.22
Koskitukki	4	.04	.19
Versowood	6	.06	.24
Other	16	.16	.36
Not in cooperative relationship	33	.33	.47
Not willing to declare	5	.05	.22

Collaboration with forest product-related companies (in other words, end users) is reported to comprise a significant proportion of cooperative relationships rather than cooperation with forest management enterprises.

Collaboration with similar or bilateral companies and forest owners illustrates the difference between cooperation with end-user companies of round timber refineries and manufacturers that use wood as a component in the end product. The difference between these key players in the industry reveals that the end users who use outsourced or cooperative networks to receive round timber or other wood product deliveries.

Table 9 Current cooperation relations with following companies

Cooperation relation with following company types			
	Sum	Mean	Standard deviation
Wood harvesting	10	.10	.30
Transportation company	5	.05	.22
Terminal company	0	0	0
End-User (Energy production facility, heating company)	3	.03	.17
End-User (Biorefinery)	0	0	0
Forest Owners	5	.05	.22
Forest machine and workforce rental entrepreneurs	0	0	0
Forest management association	11	.11	.31
Forest management company	3	.03	.17
Other, what?	5	.05	.22
None of these	57	.56	.50
Not willing to announce	13	.13	.34

Collaboration among companies within different industries at the beginning of the value chain is lower than company cooperation with the end users. Results demonstrate that many of the selected entrepreneurs do not work in cooperation in the South Savo area. Some reported cooperation with the wood harvesting and transportation companies; otherwise, the remainder of the population announced that it is not willing to share the information either due to agreements of nondisclosure or because the information is sensitive to their business and giving indication of the relationship to the researcher is not desirable.

Table 10 Cooperative form with companies

Cooperative form with the companies			
	Sum	Mean	Standard deviation
Co-owned with another entrepreneur in same field	7	.07	.25
Co-owned company with other entrepreneur with different field	1	.01	.10
Subcontract relationship with other entrepreneur in same field	19	.19	.39
Subcontract relationship with other entrepreneur in different field	5	.05	.22
Written cooperation agreement	5	.05	.22
Other	5	.05	.22
Not willing to announce	18	.18	.38

Collaboration contract relationship types were more differentiated than what was expected prior to the research. The number of co-owned companies with the same entrepreneur is quite small when compared to the number of subcontracting agreements. These results came from the entrepreneurs who answered the cooperation questions as it is not necessary to know the co-owned or subcontracting statuses of entrepreneurs who do not have cooperative agreements with end users or with other entrepreneurs in the same field or location in the value chain.

4.1.2 Change in operation environment

This part of the questionnaire asked entrepreneurs about their enterprises' position in South Savo and how comfortable are they in the current development of roundwood deliveries. After the questionnaire was answered, the demand for roundwood changed to more positive for the entrepreneurs.

Table 11 Entrepreneurs' estimation of change in operational environment affecting their business

Survey entrepreneur's estimation of change in operation environment affecting from decreasing demand of round wood								
	Very negatively	Negatively	No Effect	Positively	Very positively	Does not know	Mean	Standard Deviation
Turnover increase	1	18	50	10	0	23	2.87	1.42
Employee headcount increase	1	10	65	3	0	23	2.87	1.36
Equipment amount increase	1	9	68	3	0	21	2.90	1.31
Inventory increase	0	5	68	1	0	28	2.95	1.38
Network related business model increase	0	6	57	8	0	31	3.03	1.42

The South Savo entrepreneurs were asked to estimate the change in their operational environment due to the decreasing demand for round timber and woodchip production. Most of the respondents estimated that the change in demand was not affecting their business actions but roughly 20-28% reported that they do not know how the demand will affect their key business elements.

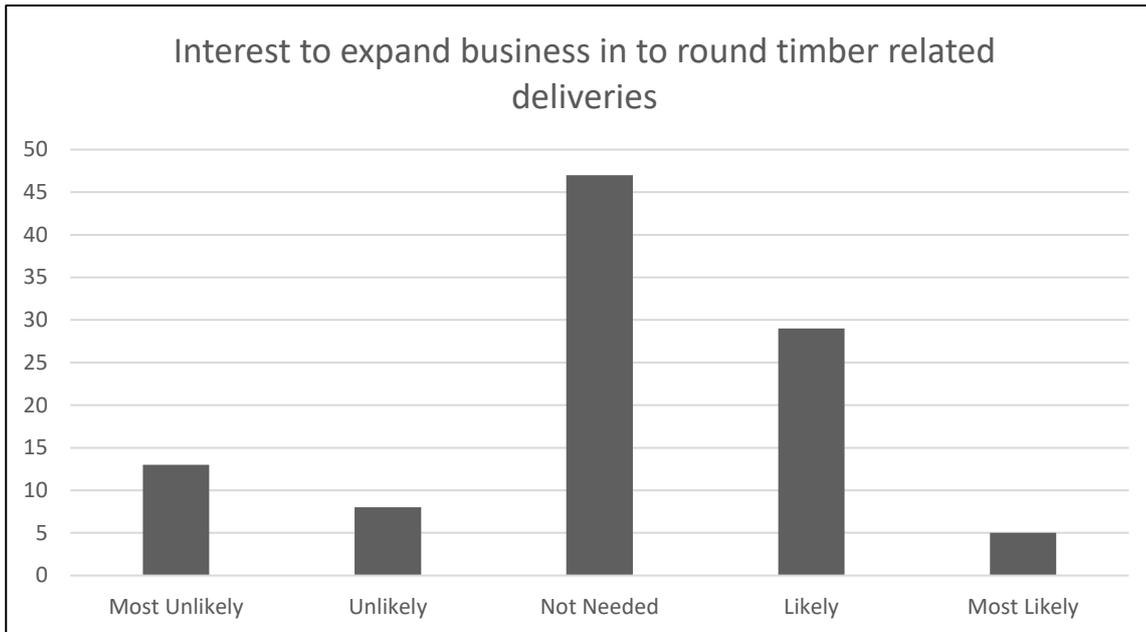


Figure 9 Interest to expand in round timber business activities

When asked whether they would be ready to expand their round timber business activities if the forecast indicated decreasing demand for roundwood, most of the entrepreneurs replied, ‘not needed’ and ‘likely’ levels of expansion.

The average of the interest to expand businesses into round timber-related deliveries has an arithmetic mean of 3.05 with a standard deviation of 1.03. The median of the survey population is 3, ‘not needed’.

The following conclusions can be made from this part of the entrepreneurs’ view of the market:

- Declining demand does not affect business performance for the majority but on average it is expected to have a negative impact on turnover and employee headcount.
- Declining demand does not affect their view of business practices negatively as a whole population.
- The general view of expanding business is ‘not needed’. The overall view indicates that more than 50% of entrepreneurs consider expanding their business in roundwood but the positive attitude towards likelihood of expansion is less than ‘not needed’. The positive attitude towards business expansion, however, reveals opportunity to those who are looking for more possibilities to expand their business opportunities.

To determine the difference between the attitude towards the roundwood and woodchip production industries, a separate identical question was asked regarding woodchip interest. It involved a hypothetical case of a foreign joint venture establishing a refinery within South Savo and how that new firm would affect demand.

Table 12 Entrepreneurs’ estimation of change in operational environment affecting their business when woodchip demand increases

Survey entrepreneur’s estimation of change in operation environment affecting from woodchip demand increase									
	Very negatively	Negatively	No Effect	Positively	Very positively	Does not know	Mean	Median	Standard Deviation
Turnover increase	1	0	42	41	2	23	3.58	4	1.07
Employee headcount increase	0	1	59	27	0	23	3.59	3	1.06
Equipment amount increase	1	0	62	25	0	21	3.54	3	1.06
Inventory increase	1	0	62	12	0	28	3.78	3	1.32
Network related business model increase	1	0	41	33	4	31	3.93	4	1.20

Entrepreneurs reveal more positive results for the woodchip demand increase when compared to a decrease in demand. These results may be affected the questionnaire setup of negative demand resulting in a decline in business transactions and positive demand resulting in positive or new opportunities in business transactions.

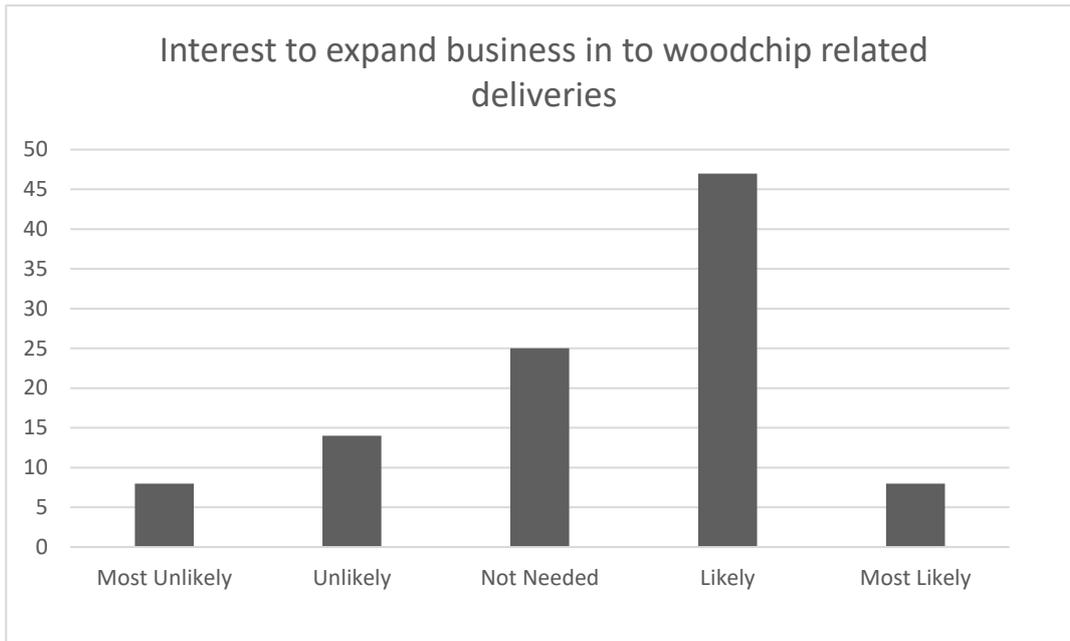


Figure 10 Interest to expand to woodchip related industries

Interest in woodchip-related deliveries was indicated from the result, however, the arithmetic mean of the sample is 3.04. Based on these results, entrepreneurs are interested in increasing their deliveries and expanding their product categories. However, the expression of interest in woodchip-related deliveries was more distinct when compared to previous results for roundwood deliveries. From the graph revealing the entrepreneurs' view of a new refinery and how they see it affecting their firms' performance are these conclusions:

- A new refinery yields positive results for a firm's overall performance in the entrepreneur's view.
- More entrepreneurs are interested in expanding their business to the woodchip side of the industry to meet increasing demand.
- Based on the arithmetic mean, the responses about business expansion were modest since some entrepreneurs either already have the facilities or capabilities to engage in woodchip production or have no interest in expanding their business as they believe it is not needed.

4.1.3 Collaboration

In this chapter, the collaboration aspect of entrepreneurs is generally depicted in the perspective of the questionnaire and entrepreneurs overall. The results of entrepreneurs' views overall about collaboration and collaborating with different firms are illustrated with tables and graphs.

Table 13 Readiness to collaborate with the following firm types in South Savo

Would you be ready to collaborate with following forest industry firms?									
	Not at all likely	Slightly likely	Moderately likely	Very likely	Completely likely		Mean	Median	Standard deviation
Forest owners	21	11	47	19	4		2.75	3	1.10
Forest harvesters	12	14	46	26	4		2.96	3	1.00
Logistic and transportation firm	20	18	45	17	2		2.64	3	1.04
Terminal Firm	19	25	41	14	3		2.58	3	1.03
Forest machinery and staff agency	27	34	32	8	1		2.24	2	.96
forest management firm	20	18	45	16	3		2.65	3	1.05
Forest management association	27	19	31	21	4		2.57	3	1.19
Biorefinery	17	17	44	19	5		2.78	3	1.08
Wood refinery	16	16	41	25	4		2.85	3	1.08
End-user (power station, heat stations)	17	16	39	23	7		2.87	3	1.14

The distribution of interest among entrepreneurs in collaborating with others in their field is generally under the neutral option 'moderately likely'. Some firms have indicated that they want to engage in further collaboration with companies, but they are definitely in the minority. This initial result may indicate that some entrepreneurs, at the time of survey, were sceptical about engaging in further

collaboration or they are unable to add further network or collaborative opportunities. The standard deviation illustrates the variance of sample difference between industries but not why it is preferred.

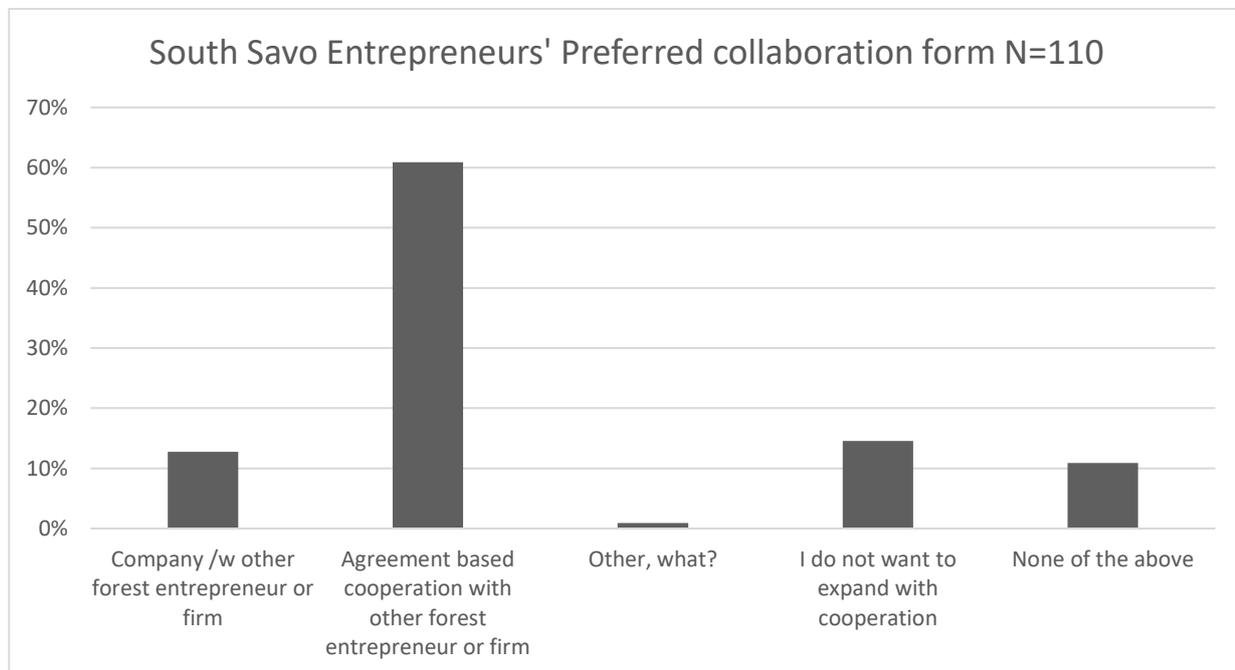


Figure 11 South Savo entrepreneurs' preferred form of collaboration (entrepreneurs could select one or many)

The overwhelming majority of firms prefer agreement-based collaborations rather than forming an independent or bilaterally dependent company to serve them. This is understandable since entrepreneurs are flexible since they are on their own, and agreements can be cancelled on their own terms. The results themselves do not indicate other than division between responders to entrepreneurs that want to collaborate and those that either are planning to exit the market due to retirement or seeing that they have enough cooperative actions currently and they do not need, or it is unnecessary for their benefit. Following up from this graph a difference between forming a company with other entrepreneur or having an agreement or joint venture.



Figure 12 Preferred forms of company or organization in the Finnish legal framework

Firms that stated their preference for forming a separate company were asked about their preferences. The questionnaire revealed that most of the firms¹ consider a limited liability company as their preferred choice. The second placement for company type is the general partnership but more entrepreneurs indicated a lack of information or were unable to make a choice from the limited options included in the question. Regardless of reason, this illustrates the interest in collaborating with firms with separate organizations and entrepreneurs. The following table helps to translate company names and intent of choices:

Table 14 Translation sheet of company and organization forms in Finnish context

Translation sheet of company and organization forms in Finnish context	
Finnish	English
Osakeyhtiö	Limited liability company
Kommandiittiyhtiö	Limited Partnership
Osuuskunta	Cooperative
Avoin Yhtiö	General Partnership
Rekisteröity yhdistys	Registered Association

¹ Note: Firms that answered the questionnaire which form of the organization was out of 14 entrepreneurs

Table 15 Readiness to participate in agreement-based relationships with the following entrepreneurs

Readiness to participate in agreement-based relationships with the following entrepreneurs								
	Not at all likely	Slightly likely	Moderately likely	Very likely	Completely likely	average	mean	Standard deviation
Forest owners	7 %	6 %	9 %	67 %	10 %	3.67	4	1.00
Forest harvesters	6 %	13 %	19 %	58 %	3 %	3.39	4	.96
Logistic and transportation firm	7 %	19 %	18 %	55 %	0 %	3.21	4	1.00
Terminal Firm	6 %	10 %	18 %	58 %	7 %	3.51	4	.98
Forest machinery and staff agency	15 %	25 %	30 %	30 %	0 %	2.75	3	1.04
forest management firm	18 %	10 %	10 %	52 %	9 %	3.24	4	1.28
Forest management association	7 %	13 %	12 %	64 %	3 %	3.42	4	1.01
Biorefinery	3 %	13 %	12 %	67 %	4 %	3.57	4	.89
Wood refinery	3 %	12 %	10 %	70 %	4 %	3.61	4	.86
End-user (power station, heat stations)	3 %	13 %	12 %	64 %	7 %	3.60	4	.92

From the list we see that, overall, entrepreneurs were interested in collaborating via agreement-based contracts. The overview of the entrepreneurs' willingness to collaborate is reflected in this chart. The results indicate that the traditional way of collaborating with agreements is preferred based on whom they trust. Most of the entrepreneurs align with end-user to woodchip and other wood processing entrepreneurs, which can be explained from their previous work experience with such entrepreneurs.

The following table is based on the hypothetical question of whether the entrepreneurs would be willing to start a shared terminal company with other South Savo entrepreneurs. A follow-up question asked what kind of terminal they would prefer among other options. These questions were not connected to each other since there was interest (for further studies) in finding out which terminal model would be preferred. The following figure illustrates the distribution of the willingness to establish a jointly operated terminal firm.

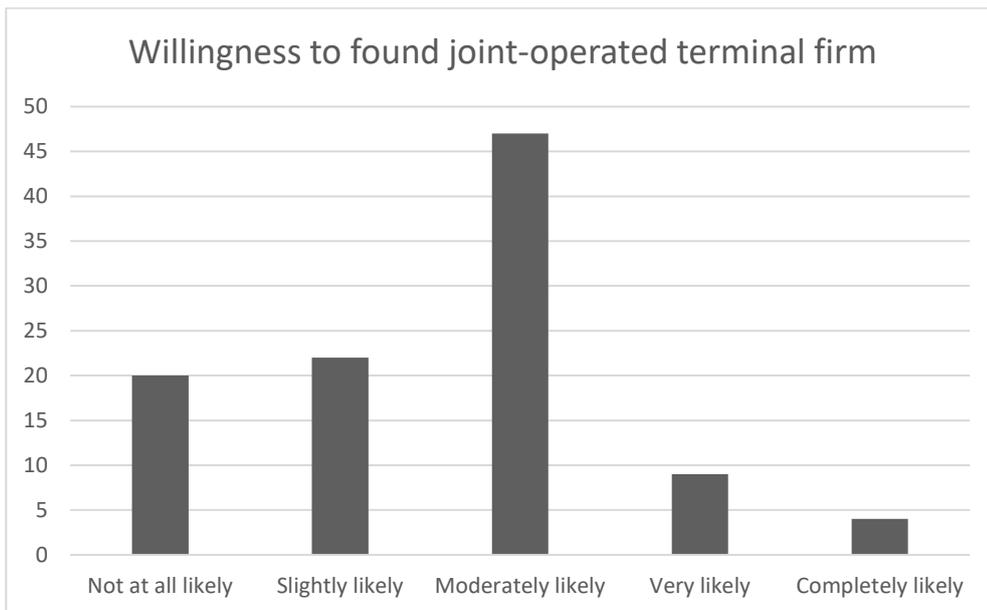


Figure 13 Willingness to establish a jointly operated terminal company

The distribution of the respondents' preferred terminal types follows:

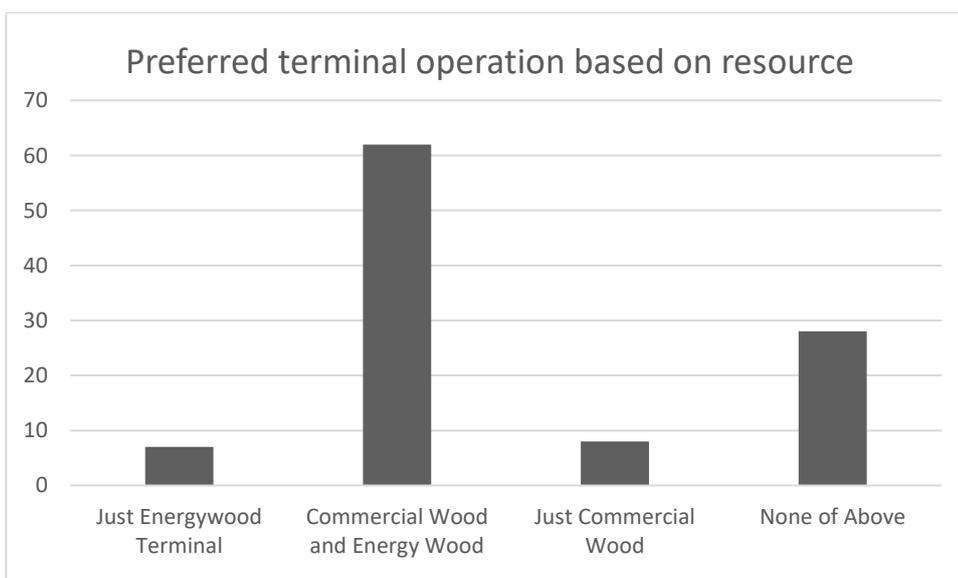


Figure 14 Preferred terminal operation based on resource

Overall, the results revealed positive indications towards establishing a joint-venture terminal operation with other entrepreneurs. Entrepreneurs indicated strong preference for a terminal handling two resources, and the remainder of the preferred choices were divided between just energy wood and commercial wood (roundwood). However, some entrepreneurs did not see their preferred choice listed. The ‘none of the above’ option is based mostly on either forest management or forest transportation entrepreneurs who might have suitable equipment to move in the terrain or have no interest in terminal business.

Table 16 Distribution of terminal type and location of the type

Type of terminal and preferred location					
	Plant terminal with chipping	Feeding terminal	Satellite terminal	Temporary terminal	N
Energy wood terminal	33 %	33 %	11 %	22 %	9
Roundwood and energy wood terminal	6 %	32 %	27 %	34 %	62
Roundwood terminal	30 %	10 %	30 %	30 %	10

Location of the terminals is introduced in Table 16. These answers were gathered from positive responses to the previous question (see Figure 13). The N represents the number of responses to the question about preferred location of the terminal. Most of the entrepreneurs chose the commercial and energy wood terminal but they were evenly divided among feeding and temporary terminals.

This result reveals their opinions about what kind of terminal should be established and how close it should be from the perspective of the refineries.

Table 17 Outsourcing options for entrepreneurs in the current market

Are entrepreneurs interested in...								
	Not at all likely	Slightly likely	Moderately likely	Very likely	Completely likely	Mean	Median	Standard deviation
Rental workers	27	27	30	18	0	2.38	2	1.06
Rental machinery	21	27	36	18	0	2.50	3	1.01
Subcontractors	12	18	36	33	3	2.97	3	1.04
Transportation entrepreneurs from workforce bank	24	24	40	13	1	2.44	3	1.02

Outsourcing and subcontracting options were the least positive of the options presented, as entrepreneurs indicated negatives about using rental employees and transportation workers (see Table 17). This overall response was not expected, and it does not follow the current rent-seeking behaviour that was expected from the company. This can indicate the following situations:

- Dependency on resources or ownership is a normal business practice.
- Current offerings and experience with such services are not positive in South Savo.

Subcontracting—in other words, hiring an entrepreneur to complete a task or as additional workforce—is the most positive out of four options. Therefore, trust among entrepreneurs is greater than trust with firms that offer outsourced labour or rent machinery.

Table 18 Entrepreneurs’ preferred actions for collaboration

What kind of activities do entrepreneur participate in								
	Not at all likely	Unlikely	Not needed	Very likely	Completely likely	Mean	Median	Standard deviation
Cross-networking over own line of business	11	14	34	26	1	2.91	3	1.02
Futherance of joint venture	5	15	22	41	3	3.21	3	1.00
Workforce joint-training	11	13	27	33	4	3.07	3	1.06
Testing and utilizing new technologies	7	14	23	39	3	3.19	3	1.01

Entrepreneurs were moderately interested in networking activities when compared to previous table. This question about willingness to participate in networking activities was asked to determine whether the entrepreneurs are interested in the idea of a workshop or other types of activities where the main goal is to introduce them to new technology or network with each other. Based on the mean, joint venture is the most interesting option for the entrepreneurs followed by testing and utilizing new technologies. This should be a positive indication for anyone interested in collaborating with entrepreneurs: Introduce them to new innovations and hear their feedback as well as make progress via networking and establishing new forest industry joint ventures.

Descriptive statistics for selected variables for testing the hypothesis of the relationship between collaboration and a resource-based view with following variables that are selected illustrate a change from the initial survey data to combined data.

The Pearson correlation matrix of the variables used in the research is presented below for analysis of relationships among variables (Appendix 4). Correlations reveal the relationship that is significant between two variables and in which direction the independent variable is leading the variable. From Pearson's correlation matrix it can be interpreted whether set dependent variables have a correlation to one another and which question groups, an observation that may lead to conclusions that can be made from positively (or negatively) correlating variances.

4.1.4 Summarizing the survey

South Savo entrepreneurs were not distributed evenly among the responders. Most of the answers were gathered from forest harvesters, followed by forest transportation and forest management, respectively.

The overall sample was unevenly distributed between entrepreneurs; there were no expectations how the outcome would turn out. However, since there was willing cooperation with Savo's 'koneyrittäjä'— an association interested in this study—that may have affected the percentage of people's participation. Another perception of the results could be seen from calling and reminding the entrepreneurs to answer the survey. In the end, entrepreneurs were collaborative towards this project.

The main findings of the overall results were:

- Expanding business is generally viewed as 'not needed'. More than 50% of entrepreneurs consider expanding their business in roundwood but the positive attitude towards

likelihood of expansion is less than 'not needed'. The positive attitude towards business expansion, however, reveals opportunity to those who are looking for more possibilities to increase their business opportunities.

- Entrepreneurs are interested in collaborating with any of the firms in South Savo but the frequency of likeliness to collaborate is higher in question 3.1.
- Generally, entrepreneurs are willing to collaborate but the most frequent answers were 'not necessary' or 'not needed'. However, there were unexpected results:
 - The distribution of outsourcing and subcontracting collaboration is uneven from the positive end; entrepreneurs have expressed their unwillingness to collaborate with companies that offer services that directly increase their capacity to complete contracts. This brings difficulty for chi-square testing for other tests; in other words, testing the independence of trade and outsourcing and subcontracting collaboration. However, this provides preliminary answers to 'Are entrepreneurs willing to collaborate?' as well as offering more questions about reasons why this happened.
 - In the question of collaborating with certain entrepreneurs, the firms reported more strong unlikeliness to collaborate than strong likeliness to collaborate. This is the opposite of collaborating with stakeholders where most entrepreneurs reported 'not needed' but reported 'very likely' to stakeholder participation.
- Collaboration towards the end of the supply chain is seen as positive. Collaboration results as variables in the correlation matrix reveal a positive correlation among the variables that are focused around end users and manufacturers.
 - Stakeholder and collaboration among the supply chain are shown strong correlation among respectable variables. There is significant correlation between two of the variance groups where there is positive collaboration in the beginning of the supply chain and in stakeholder collaboration, meaning that entrepreneurs are interested in general collaboration between trades and organizations.

A preliminary conclusion about the interest in collaboration is that entrepreneurs are generally more positive about joining with stakeholders than with individual entrepreneurs in their position in the supply chain. As expected, end users and refineries are seen as a likely target for collaboration, in the entrepreneurs' opinion. Collaborating with users of roundwood usually means a client-contractor relationship unless it is tight contractual relationship.

4.2 Hypothesis testing

This chapter reports the results of the survey and offers an analysis of the results. This chapter approaches the findings, highlights them for future discussion, and offers practical applications and recommendations. First, the chapter investigates the statistical significance of the research, clears the data up with correlation, then validates the research hypothesis where there is a relationship between internal and external resources of the firm that have a significant impact on the willingness for collaboration.

To examine the relationships between resources and collaboration, a correlation matrix of all variables was first constructed (see Appendix 6). Based on the correlations, some non-significant variables were eliminated from further analyses. As a result, the following explanatory variables were included in a linear or multiple linear regression models and chi-tests were conducted, if necessary.

A correlation table (Appendix 6) illustrates the significant variables that affect testing of the hypotheses, therefore, the following elimination of variables was conducted.

4.2.1 A resource-based view on the willingness to collaborate

To first establish a link of relationship between data requires a test of correlation to determine whether there is a positive (or negative) correlation among the variances (see Appendix 6). A table was created to visualize the elimination process of variables and the rationale behind the following proposed formulas and analysis of them (Table 19).

Table 19 Analysis of correlation table of independent variables to dependent variables

Count of significant variables over collaboration (19 dependable variables)		Dependable variables from collaboration	Dependable variables from Co-ownership	Dependable variables of outsourcing and subcontracting	Dependable variables of stakeholder collaboration	Multicollinearity among independent variables	Proposal for analysis
Internal resources	Service	5	Biorefinery, Wood owners, forest management company, End-users, wood refinery	-	-	-	Use in regression and multiple linear regression analysis
	Human resources	3	Terminal Company, Transportation company	-	Interest to business with subcontractors	-	Use multiple linear regression analysis.
	Equipment	3	Terminal Company, Transportation company	-	Interest to business with subcontractors	-	
	Turnover	1	Transportation company	-	-	-	Test with linear regression and multiple linear regression to transportation company
External resource	Government org	3	Forest management association, wood owners, biorefinery	-	-	-	Multiple linear regression analysis and chi-test
	Private org	1	-	-	Interest to business with subcontractors	-	Test external resource as cross tabulation
	Co-ownership	0	-	-	-	-	Reject co-ownership as independent variable

Table 19 demonstrates that from external resources, co-ownership had no significant correlation coefficient to be found in any of the tests regarding different collaborations. Therefore, a rejection of the variable is proposed. From a preliminary standpoint, it appears that some of the tests of the collaborations can be suggested for rejection for further testing. To inspect the tests, Tables 21, 22,

and 23 were created to illustrate which dependent variables are removed from the testing of relationship with independent variables and what observations can be seen from Table 20.

Table 20 Analysis for test of collaboration—rejection and confirmation of dependent variables

Count of significant variables over resources (7 independent variables)			Independent variables
Test of collaboration	Transportation company	3	Human resources, Equipment, Turnover
	Terminal company	2	Human resources, Equipment
	Biorefinery	2	Services, Government organizations
	Forest Owners	2	Government organizations, services
	Forest management company	1	Services
	Wood refinery	1	Services
	End-users	1	Services
	Forest management association	1	Government organizations
	Wood harvesting	0	-
	Forest machinery and workforce rental	0	-

The test of collaboration saw two dependent variables rejected for further testing; the remainder of the variables had at least one independent variable that positively (or negatively) correlated with one another. The critical value for r value for correlation coefficient was .20 for P value ($P > 0.05$) to meet the conditions of having significant correlation.

Table 21 Analysis of test

Count of significant variables over resources (7 independent variables)			Independent variables
Test of co-ownership	Willingness to establish a firm with other entrepreneurs	0	None
Test of outsourcing and subcontracting	Interest to increase business activity with agency employees	0	None
	Interest to increase business activity with rental equipment	0	None
	Interest to increase business activity with subcontractors	3	Human resource, equipment, private organization
	Interest to increase business activity with transportation entrepreneurs from workforce rental agency	0	-

There was no correlation from the correlation matrix for the entrepreneurs’ interest in co-ownership. The test of co-ownership is rejected, and it is seen that there is negative multicollinearity to wood owners and wood harvesters, meaning that entrepreneurs who have expressed positivity about collaborating with wood owners and wood harvesters have expressed negativity about co-ownership and vice versa.

Table 21 shows that one of the outsourcing and subcontracting tests variables “Interest to increase business activity with subcontractors” have positively correlated with “Human Resources”, “Equipment” and “Government organization”. Test is successful and it is discussed further in model formation

Table 22 Analysis for test of stakeholder collaboration—rejection or acceptance of dependent variables

Count of significant variables over resources (7 independent variables)			Independent variables
Test of stakeholder collaboration	Interest to participate in cross-industry networking events	0	-
	Interest to participate in advancing co-owned entrepreneurship	0	-
	Interest to participate in joint training of workforce	0	-
	Interest in participating in testing and co-benefitting of new technologies	0	-

From Table 22’s test of stakeholder collaboration, the entire test is rejected as there is no dependent variable that is significant to bundle resources (any variable correlation coefficient fulfilling $P > .05$). Within the test, it is seen that the multicollinearity between collaborations is strong towards end users and manufacturers, therefore, there is a link between more willingness to collaborate with end users and willingness to join, for example, joint training of workforce and benefitting new technologies. Multicollinearity of the variables suggest that entrepreneurs that are interested towards stakeholder collaboration within the set ideas that are presented. No clear connection towards resource-based view.

It is seen that the multicollinearity between collaborations is strong towards end users and manufacturers, therefore, there is a link between more willingness to collaborate with end users and willingness to join, for example, joint training of workforce and benefitting new technologies.

Following codification for variables to test models:

Variable	Resource
X ₁	Service
X ₂	Human Resource
X ₃	Equipment
X ₄	Turnover
X ₅	Government organization
X ₆	Private organization
Y ₁	Transportation company
Y ₂	Terminal company
Y ₃	Biorefinery
Y ₄	Forest Owners
Y ₅	Forest management company
Y ₆	Wood refinery
Y ₇	End-users
Y ₈	Forest management association
Y ₉	Interest to increase business activity with subcontractors

These variables and model can be seen in following Table 24

Table 23 Models of collaboration and regression expression

	Dependent variable	Independent variable(s)	estimated models for testing	Methodology
Test of collaboration	Transportation company	Human resources +Equipment +Turnover	$Y_1=X_2+X_3+X_4$	Multiple linear regression
	Terminal Company	Human resources +equipment	$Y_2=X_2+X_3$	
	Biorefinery	Services + Government organization	$Y_3= X_1+X_5$	
	Forest Owners	Services + Government organizations	$Y_4=X_1+X_5$	Multiple linear regression
	Forest management company	Services	$Y_5=X_1$	Simple linear regression
	Wood refinery	Services	$Y_6=X_1$	
	End-users	Private organization	$Y_7=X_6$	Cross-tabulation
	Forest management association	Human resources + Private organizations	$Y_8=X_6$	
Test of outsourcing and subcontracting	Business Activities with subcontractors	Equipment + human resource + Private organizations	$Y_9=X_3+X_4+X_6$	Multiple linear regression

Table 23 shows the models that have been accepted for regression and cross tabulation testing.

4.2.2 Relationship between resources willingness to collaborate

The following results of significance of regressions are used to demonstrate that there is multiple or linear regression relationship among the resources and the willingness to collaborate. The values that are inspected and tested are the level of significance through F-test and P-value comparison to .05 and .025 alpha levels of confidence.

Test of Collaboration

The initial test is to inspect the interest of collaborating with transportation entrepreneurs as it was deemed a significant variable in a group of dependent variables in *test of collaboration* (see Table 20 and Table 21 for Pearson correlation coefficient analysis tables).

Table 24 Transportation entrepreneurs regression table (n=94)

<i>Transportation entrepreneurs</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>R²</i>	<i>F</i>	<i>P-value of the model</i>
intercept	2.41	.21	11.38		1.99	2.83			
X ₂	.04	.019	2.08	.041**	.002	.079	.10	3.17**	.03**
X ₃	.01	.04	.16	.87	-.07	.08			
X ₄	.02	.07	.34	.73	-.12	.17			

***p<.01, **p<.05, *p<.10

Multiple linear regression was calculated to illustrate and predict the willingness to collaborate with transportation entrepreneurs, based on the sample numbers of human resources, quantities of equipment, and level of turnover. A significant regression equation was found ($F(3.90) = 3.17$, at $p < .03$), with an R^2 10%. Sample participants predicted willingness to collaborate is equal to $2.41 + .04$ human resources + $.01$ equipment + $.02$ turnover, where human resources are measured as the sum of entrepreneurs, full-time employees, part-time employees, and outsourced employees; turnover is measured as the level of turnover according to Finnish statistics official guidelines of turnover intervals; and equipment is summed from vehicles and harvesting or other forest entrepreneur equipment. Willingness to collaborate increased $.04$ in Likert's 5-scale value for each human resource, $.01$ of each of equipment hold, and $.02$ when compared in which turnover bracket their company is set. The quantity of human resources was a significant predictor of increase in interest, but equipment numbers and turnover threshold were not significant predictors.

When inspecting the regression, it is seen that resources have an impact on the willingness to collaborate, but the model indicates that equipment and turnover as individual resources are insignificant. However, the entrepreneurs are more interested in collaboration as they have resources or turnover with transportation entrepreneurs, since either the workforce or equipment quantities explains the specialized need of transportation entrepreneurs to transport the goods for the end clients. Thus, when a forest entrepreneur has greater resources, he is interested in collaborating with a transportation firm, otherwise he would rather do it himself.

Table 25 Terminal company regression table (n=94)

<i>Terminal Company</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>R²</i>	<i>F</i>	<i>P-value</i>
intercept	2.37	.13	17.68	.00	2.11	2.64			
X ₂	.05	.03	1.90	.06*	.00	.10	.11	5.54***	.01***
X ₃	.00	.04	-.05	.96*	-.08	.07			

***p<.01, **p<.05, *p<.10

Terminal companies were inspected in a linear regression model of number of human resources and quantities of equipment. Multiple linear regression was calculated and a significant regression equation was found ($F(3.90) = 5.54$, at $p < .01$), with an R^2 11%. Sample participants predicted willingness to collaborate is equal to $2.41 + .04$ human resources + $.01$ equipment, where human resources are measured as the sum of entrepreneurs, full-time employees, part-time employees, and outsourced employees; turnover is measured as the level of turnover according to Finnish statistics official guidelines of turnover intervals; and equipment is summed from vehicles and harvesting or other forest entrepreneur equipment. Willingness to collaborate increased $.04$ in Likert's 5-scale value for each human resource, $.01$ of each of equipment hold, and $.02$ when compared in which turnover bracket their company is set. The number of human resources was a significant predictor of increased interest but equipment quantities and turnover threshold were not significant predictors.

When examining the regression analysis, it is immediately revealed that willingness to collaborate with terminal companies is significant as a model but the p-values of individual independent variables within this model display insignificance of the variables. The model is rejected based on the individual independent variable p-values.

Table 26 Biorefinery company regression table n=94

<i>Biorefiner y</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>R²</i>	<i>F</i>	<i>P-value</i>
intercept	2.32	.20	11.44	.000	1.91	2.72			
X ₅	.39	.23	1.71	.09*	-.06	.84	.11	5.49**	.01***
X ₁	.25	.10	2.44	.02**	.05	.45			

***p<.01, **p<.05, *p<.10

Multiple linear regression was calculated to predict the willingness to collaborate with biorefineries, based on the entrepreneurs' number of services and the existence of collaboration with a government organization. A significant regression equation was discovered in both number of services and collaboration with a government organization regression model ($F(2.92) = 5.49$, $P < .025$), where

models strength is $R^2 = .11$. Sample participants' predicted willingness to collaborate is equal to $2.32 + .39$ (collaboration with a government organization) $+ .25$ (number of services), where collaboration is measured as observation with a single or more reported collaboration with a government organization (i.e., forest management associations in South Savo). Willingness to collaborate with biorefineries increased $.25$ in Likert's 5-scale value for each service that the entrepreneur provides; if the entrepreneur has a collaborative relationship with a government organization the value would increase the willingness to collaborate with a biorefinery by $.39$. The model, however, illustrates that collaboration with a government organization's p-value exceeds the threshold of $\alpha \leq .05$, thus making the multiple linear regression model of representing the significant relationship for collaborating with biorefineries fails reject the null hypothesis of model's relationship towards dependent variable insignificant.

Based on these results, the forest entrepreneurs are more interested in collaborating with biorefineries when they have certain or many services that they would deem usable to a biorefinery as a client or collaborative partner, especially if they have connections with government associations relevant to forest management. It becomes more insignificant due to the difference in services offered in combination with collaboration with other supply chain agents that are already in service that may not raise the level of interest to collaborate to that significant level. Individual resources, however, show a positive relationship for an interest to collaborate with biorefineries.

Table 27 Forest owner regression table n=94

<i>Forest owners</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>R²</i>	<i>F</i>	<i>P-value</i>
intercept	2.28	.21	11.05	.00	1.87	2.69			
X ₅	.50	.23	2.15	.04**	.04	.96	.11	5.49***	.01***
X ₁	.21	.10	2.04	.04**	.01	.42			

***p<.01, **p<.05, *p<.10

Multiple linear regression was calculated to predict the willingness to collaborate with forest owners, based on the entrepreneurs' number of services and the existence of collaboration with a government organization. A significant regression equation was found in both the number of services and collaboration with a government organization regression model ($F(2,92) = 5.49$, $P < .025$), where models strength is $R^2 = .11$. Sample participants' predicted willingness to collaborate is equal to $2.28 + .50$ (collaboration with a government organization) $+ .21$ (number of services), where collaboration is measured as one or more reported collaboration with a government organization (i.e., forest

management associations in South Savo). Willingness to collaborate with forest owners increased .21 in Likert's 5-scale value for each service that the entrepreneur provides; if the entrepreneur has a collaborative relationship with a government organization, then the value would increase by .50 and the willingness to collaborate with a biorefinery increases. The model displays a significant relationship towards interest in collaborating with forest owners.

Based on these results, multiple linear regression reveals a significant relationship towards willingness to collaborate with forest entrepreneurs. Linear regression proves the significance of the number of services to the interest to collaborate, however, the collaboration with a forest association according to a chi test of independence was not significant as an independent variable. This is valid as in the real world, when publicly controlled forest associations usually provide services to forest owners to harvest or manage their forests by subcontracting with the entrepreneurs.

Table 28 forest management company regression table n=94

<i>forest management company</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>R²</i>	<i>F</i>	<i>P-value</i>
intercept	2.33	.20	11.76	.00	1.94	2.72	.06	6.02***	.02***
X ₁	.24	.10	2.45	.02***	.05	.44			

***p<.01, **p<.05, *p<.10

In the linear regression model, significant equations were found ($X_1 F(1.93) = 6.02, P < .025$). R^2 for the X_1 has .08. With 98.5% confidence, entrepreneurs' predicted willingness to collaborate with a biorefinery when inspecting the number of services, the entrepreneur provides is equal to $2.33 + .24$ (services) of 5th Likert's scale when services are measured in Likert's scale. Entrepreneurs' Likert value to collaborate increased .24 for each service the firm reported to provide.

Results demonstrate that entrepreneurs are willing to collaborate with forest management companies based on the number of their services. The service level reveals a significant relationship towards willingness to collaborate with forest management companies.

Table 29 Wood refinery companies regression table n=94

<i>Wood refineries</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>R²</i>	<i>F</i>	<i>P-value</i>
intercept	2.55	.20	12.57	.00	2.15	2.96	.05	4.81**	.03
X ₁	.22	.10	2.19	.03**	.02	.42			

***p<.01, **p<.05, *p<.10

In the linear regression model, significant equations were found (X₁ F(1.93) = 4.81, P < .05). R² for the X₁ has .05. With 95% confidence, entrepreneurs' predicted willingness to collaborate with a biorefinery when examining the number of services the entrepreneur provides is equal to 2.55 + .22 (services) of 5th Likert's scale when services are measured in Likert's scale. Entrepreneurs' Likert value to collaborate increased .22 for each service that the firm reported to provide.

Results demonstrate that entrepreneurs are willing to collaborate with wood refineries based on the number of their services. The service level reveals a significant relationship towards willingness to collaborate with wood refinery companies and other companies affiliated with refining wood into end products.

Table 30 End-Users regression table n=94

<i>End users</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>R²</i>	<i>F</i>	<i>P-value</i>
intercept	2.52	.22	11.72	.00	2.09	2.95	.06	5.89***	.02***
X ₁	.26	.11	2.43	.02***	.05	.47			

***p<.01, **p<.05, *p<.10

In the linear regression model, significant equations were found (X₁ F(1.93) = 5.89, P < .025). R² for the X₁ has .06. With 98.5% confidence, entrepreneurs' predicted willingness to collaborate with a biorefinery when examining the number of services the entrepreneur provides is equal to 2.52 + .26 (services) of 5th Likert's scale when services are measured in Likert's scale. Entrepreneurs' Likert value to collaborate increased .26 for each service that the firm reported to provide.

Results demonstrate that entrepreneurs are willing to collaborate with end users (power stations and burning facilities) based on the number of their services. The service level reveals a significant relationship towards willingness to collaborate with end users.

Separately, collaboration with a forest management association implies a correlating relationship with a collaborative relationship with private organizations. The chi-test of independence of X₆ (the frequency that entrepreneurs reported to have a collaborative relationship with one or many private)

to collaboration with forest associations. No significant interaction was found ($\chi^2(4) = 6.80, P > .05$) where when entrepreneurs have one or more collaboration with private organizations are more interested to collaborate with forest management associations.

Test of outsourcing and subcontracting collaboration

Table 31 Increased business activities with subcontractors multiple linear- and linear regression table n=94

<i>Subcontractors</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>R²</i>	<i>F</i>	<i>P-value</i>
intercept	2.59	.19	13.96	.00	2.22	2.95			
X ₂	.05	.03	1.89	.06*	.00	.10	.12	3.91**	.01***
X ₃	-.02	.04	-.54	.59*	-.10	.05			
X ₆	.36	.23	1.60	.11*	-.09	.81			

***p<.01, **p<.05, *p<.10

A multiple linear regression was calculated to predict the willingness to increase collaboration with subcontractors, based on the entrepreneurs' number of human resources and existence of collaboration with a large private organization (e.g., UPM). A significant regression equation was not found in both number of services and collaboration with a government organization regression model ($F(3.91) = 3.91, P < .025$, but X_2 & X_3 & $X_6 (P > .05)$), where models strength is $R^2 = .12$. Sample participants predicted willingness to collaborate is equal to $2.59 + .05$ (human resources) $- .02$ (quantities of equipment) $+ .36$ (collaboration with a private organization), where collaboration is measured as observation with a single or more reported collaboration with a private organization. A model predicting willingness to collaborate with subcontractors is rejected, since it cannot reject the null hypothesis for variable. The model indicates that the number of employees/entrepreneurs increases by .05 per person of Likert's 5-scale value for each person in human resources; if the entrepreneur has collaborative relationship with a private organization then the value would increase by .36. The negative effect for subcontracting is indicated from the quantities of equipment, however, the model indicates a high p-value and can be an error within the model. The model is rejected since it is unable to reject the null hypothesis of resources having an insignificant relationship towards willingness to collaborate.

4.2.3 Summary of the analysis and hypotheses

Results showed that internal resources have more effect on the willingness to collaborate, which correlates with the established literature of entrepreneur’s willingness to collaborate. However, it is significantly proven that “bundle of resources” does not increase the willingness to collaborate, but an external organization such as government organizations increases the willingness to collaborate as sole person, but the evidence lacks for the significant repeatable relationship.

Following table shows the independent variables with significant relationship with willingness to collaborate within proposed tests:

Table 32 Significant variables in collaboration tests

Independent variable	Test of collaboration	Test of outsources and subcontract
Service	Significant towards client side of supply chain (end users, refineries) and bundled with government org is significant towards forest owners	Insignificant
Turnover*	Insignificant	Insignificant
Equipment*	Insignificant	Insignificant
Employees*	Insignificant	Insignificant
Government org	Significant for forest owners with bundled services. Significant relationship towards forest owners as itself.	Insignificant
Private org	Insignificant	Insignificant
Co-ownership	No significance prior testing	

Therefore, predicated on this knowledge, the overall null hypothesis of the entrepreneurs is rejected based on the internal resources and connection with a government-held forest association. Significant independent resources positively relate to willingness to collaborate, as literature has suggested. This test result reveals that due to the quantities of internal resources that forest entrepreneurs own for their business, they are willing to collaborate with transportation entrepreneurs when they have a set quantity of equipment or employees employed to maximize their output and outsource the logistics of the roundwood or woodchip production.

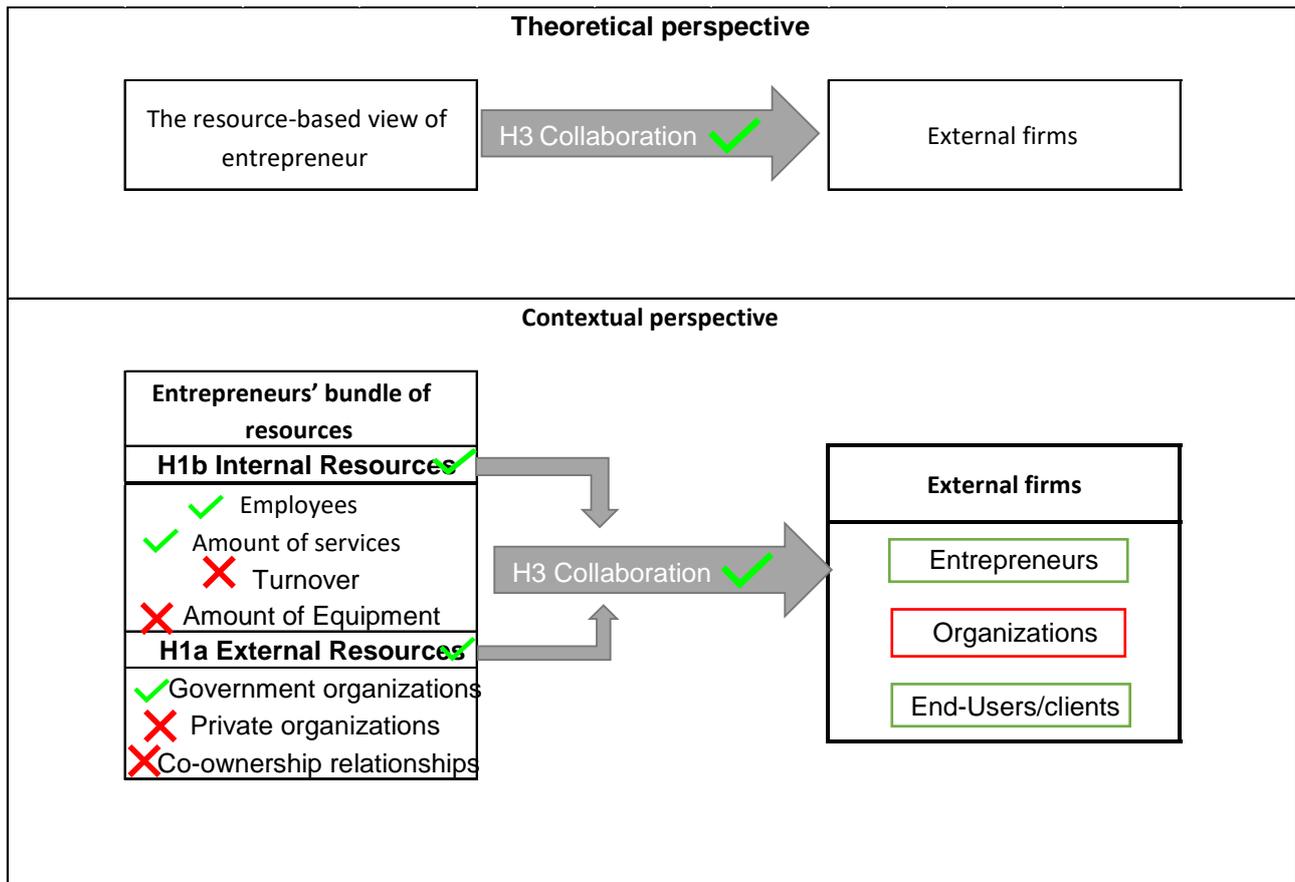


Figure 15 Results of hypothetical testing

The following conclusions can be reached from this research:

- Internal resources are positively associated with collaborating with external firms
 - Capacity is related to utility entrepreneurs and services/skills are related to end users/clients
- External resources display positive regression when bundled with internal resources
 - A government organization positively affects the willingness to collaborate when bundled with service and targeted to forest owners.
- Entrepreneurs display positive collaboration with other entrepreneurs and with end users and clients.
 - There is positive multicollinearity correlation of collaborating with stakeholders and generally collaborating with entrepreneurs and firms.
- Entrepreneurs' resources have an effect on the willingness to collaborate. When describing the scope of the South Savo forest entrepreneurial view, the entrepreneurs displayed positive willingness to collaborate when they have a number of services or a number of employees

as well as prior collaboration connections with a government-run forest management association.

5 DISCUSSION AND CONCLUSIONS

5.1 Discussion of the findings

The aim of this research was to explore and investigate the entrepreneur's willingness to collaborate in South Savo. The researchers built on the assumption that entrepreneurs value resources across trades. A survey was introduced to measure and detect whether there is a link between resources and collaboration whilst answering the question: 'Are entrepreneurs interested in collaboration?'

The sub-question helped answer the broad question where the answer for willingness to collaborate could be found within resource-based theory as well as the correlation and relationship through regression analysis. The sub-question answer is focused on the relationship of the entrepreneur's view through regression.

Which specific resources have an impact on the willingness to collaborate and with whom are entrepreneurs willing to collaborate?

To answer the sub-question, the survey was sent to entrepreneurs to inquire about their resources, their connections with companies, and their willingness to collaborate with entrepreneurs. The results of the analysis focus on forest entrepreneurs who manage, harvest, and transport timber and woodchips. The survey was successful in gathering and analyzing much of the provided data. The answers were not distributed evenly, resulting in implications for the data analysis.

Previous studies have indicated that firms want to expand, and the best way of doing so is to collaborate and create alliances to answer demand shifts or manage fluctuating market situations, either with strong financial performance or a well-managed and cost-effective structure (Dussauge and Garrette, 1996; Kull et al., 2016; Casals, 2010). Thus, entrepreneurs are willing to collaborate because such alliances bring financial stability and more opportunities, and with new connections they can acquire new customers or markets (Barratt M. 2004). The results of this analysis reveal the significant relationship of current resources to willingness to collaborate.

Entrepreneurs of South Savo are interested in collaborating with refineries, forest owners, and wood refineries, all potential partners that are considered as end users or clients in South Savo. This was strongly expected when firms function based only on market demand, in other words, clients and

customers. The resources representing strong correlation were the number of services offered. This can be interpreted that if a firm provides many services, it would be expected to be willing to collaborate with many clients. This is to demonstrate that some entrepreneurs have the knowledge or service capacity to serve additional end clients and stakeholders in South Savo. However, surprisingly enough, turnover or human resources did not couple with the number of services that entrepreneurs offered, but external resource connection to government organizations (MHY) with forest owners (client) did.

Forest entrepreneurs have demonstrated positive relationships with transportation companies. This indicates that there is clear interest in transportation entrepreneurs who provide value-added service for harvesting entrepreneurs, but a resource-based connection cannot be indicated from the test to have a resource-based willingness to collaborate. The timing of the survey probably impacted the results as respondents generally did not see an expansion of business as necessary action during the survey collection.

Internal resources individually had a significant impact on collaboration; the difference among them is the fact that the target for collaboration differs. Previously mentioned 'number of services' have significance for companies, entrepreneurs, and individuals who can be considered 'clients' in the forest industry. This relationship can be explained through transaction cost theory where clients find it more profitable to hire and rent an individual entrepreneur to complete the necessary task. Entrepreneurs offer that service to use their service-level skills to their fullest. The same theory can be explained for the relationship between human resources and transportation entrepreneurs; when a company has enough internal resources to maintain its level of operation it necessarily wants to have utility for moving and storing products that does not require ownership of equipment.

How willing are the entrepreneurs to engage in different types of collaboration?

Dimensions of such collaboration were introduced to the entrepreneurs; significant disinterest was noted in co-ownership or jointly founded terminals and could not be tested. However, what can be seen from the survey Figure 10 (pg. 52) is that entrepreneurs prefer agreement-based collaborations (62%) with other entrepreneurs where 11% indicated that they would be willing to form a new company with other entrepreneurs and another 15% reported they did not need the expansion or additional collaboration.

When asked about the terminal options, the entrepreneurs indicated they were moderately likely to be interested in a commercial wood and woodchip terminal. This is in direct contrast to a question about the willingness to collaborate with other entrepreneurs but indicates that they have a need or interest in collaborating with a terminal company. No significant support was displayed for resource-based willingness to partake in co-ownership with other entrepreneurs.

Surprisingly, and against transaction cost theory, is the disinterest in outsourcing companies that offer rental workers or equipment; however, subcontracting is positive amongst the entrepreneurs (see Table 18, pg. 57). The reason for the negative outsourcing signal could not be interpreted based on the data, but it could provide future opportunities for research either by examining the reputation of the outsourcing firms or by interviewing entrepreneurs about their transaction cost behaviour.

Entrepreneurs are willing to collaborate; those who have indicated that willingness have also provided positive feedback about stakeholder collaboration. This can be seen in the correlation table where variances about collaboration are multicollinear, even though it cannot be predicted properly with current listed resources that were inquired. Perhaps a more in-depth look at the resources would determine what internal factors for either resources or knowledge would positively affect stakeholder collaboration. Collaborating with different stakeholders were signalling positive willingness towards collaboration. From the combination of a significant relationship and the willingness to make a contractual agreement with entrepreneurs, we can determine that entrepreneurs want to collaborate with arm's-length collaborations where each of them is an individual party and an entity within a project contract.

Just like Kellerman's (2016 p. 29) conclusion of which resource is better, it was inconclusive which is better overall, but it raises a question of 'which resource is better in perspective of the outcome that is wanted?' End users/clients attracted entrepreneurs who had more services to provide as compared to transportation and terminal entrepreneurs who attracted entrepreneurs who had a higher volume of equipment and human resources.

The goal of the thesis was reached to test and explore the relationship of a resource-based view of a firm and its willingness to collaborate. The answer to willingness to collaborate is this:

They are willing to collaborate with certain companies and certain ideas that benefit them in a resource-based view. The reason why they have not collaborated yet is unknown and requires further study of the business environment of wood procurement and the forest industry. The interesting result

was that end users were more interested in the number of services and transportation entrepreneurs were more interested in human resources. This indicates the validity of a resource-based view, the reasons that a transaction cost theory provides, and the general entrepreneurial understanding of collaboration.

5.2 Practical implications

This research's practical contribution is to shed light on increased collaborative business behaviour in South Savo. Current changes and political moves affecting the Finnish wood and woodchip trade demand much flexibility from entrepreneurs. Despite the change in environment, entrepreneurs have expressed a willingness to collaborate; that willingness is underscored by regression analysis. There is a link of entrepreneurs willing to collaborate with stakeholders when measuring a correlation matrix, and there is strong multicollinearity among the collaboration variables. This means that entrepreneurs who have expressed their interest in collaboration are also keen on working with companies and stakeholders (i.e., universities, research facilities, and organizations that are interested in developing projects with shared benefits).

Significant positive signs were found from entrepreneurs holding bundled resources. This is an important factor for companies that are interested in investing in South Savo; there are entrepreneurs who are willing to collaborate even more when they have no current contractual obligations with private organizations. These entrepreneurs are ready to contract with companies that procure wood and woodchips with a significant vote for willingness to collaborate in Table 16.

Many articles offer advice on managing and maintaining networking businesses and setting up collaborative alliances for entrepreneurs who are interested in networking. Entrepreneurs should seek business models where information exchange and new profit models could be developed around wood and woodchip procurement. The following articles should be read for the purposes of developing new networking models (see: Håkansson, & Ford, 2002 and Gomes-Casseres, 1997). Literature on supply chain management showing existing frameworks (see Fjeldstad, Snow, Miles, Lettl C. (2012)) can be applied to South Savo, where supplier collaboration framework, culture, and management have been studied.

Using this research, entrepreneurs know they have potential to collaborate with other entrepreneurs to increase their output and profitability. For now, entrepreneurs should communicate among

themselves to establish clear objectives for expressing interest in cost-benefit managerial methodologies to manage logistics of roundwood and woodchip transportation. This project was ignited by interest in investing in South Savo to establish a refinery that would require constant input of woodchips in order to run profitably and efficiently.

There is a clear demand to provide that solution either through woodchip production or another means of providing heat for the manufacture of cellulose products. A communication system must be developed to predict and react to changes. It is important to understand the current policies in South Savo, even though the study was done in a country where labour is provided by natural persons and minimum-wage policies in Finland are different than in other countries outside of European economic markets. South Savo's forest industry is viewed as large to medium-sized biorefineries and sawmill firms that purchase the roundwood (or biomatter) from forest owners. However, the labour is contracted through small-sized firms or individual sole traders who are managed either by the buyer's firm or are fully outsourced to smaller firms to deliver the purchased goods.

5.3 Limitations

The limitations of this thesis should be viewed as the scope and the goals. The scope was relatively high in terms of what was required to know about the industry itself and about collaboration and a resource-based view. The context of entrepreneurs of South Savo was given and in-depth study was not found or similar business or economics study of forest entrepreneurs and the SME level of collaboration. Some of the topics (i.e., resource dependency theory) were missed due to the complexity of the theoretical background of a resource-based view in strategic, entrepreneurial, and collaboration sense. Concentrating on small firm perspective, competition, and relationships are involved in decision-making in South Savo where firms negotiate on deliverance of goods and services. These perspectives of dualistic negotiating the price of labour takes in consideration of the current market powers where there is certain amount of wood and labour available, which makes the market intensive. In perspective of future studies of the possible research topics for business and economic studies of forest entrepreneurs and focusing on sustainable business practices, these aspects should be inspected in the future.

5.4 Future research

This study was focused on South Savo and the entrepreneurs there; however, these constraints do not matter in the real world when external companies in South Savo or elsewhere in Finland can intercept and offer rivalling services across regional borders, thus the perspective should be expanded. There are improvements to the study that will further the entrepreneurial research and small-enterprise research in South Savo. First, the questionnaire should be improved concerning more collaboration and willingness to collaborate, as it was suggested that data from a balance-sheet database would result in more clarity about the willingness to collaborate. However, the survey was constructed to test the entrepreneurs' input against their other input variables and determine the independence and regression of their willingness to collaborate or, for instance, trust to collaborate. Further research could utilize more scaling, figuring the quantities of resources (trucks, cars, equipment, etc.), and set intervals or assign them numerical values when comparing the results. Entrepreneurs should be notified prior to answering the survey that their information will be gathered from databases and matched with the current ethics of research and GDPR.

The following further research proposals can be drafted from this master thesis considering South Savo and the surrounding area.

Examine resource dependency of the firms and determine whether they are not willing to collaborate because of their current relationship with a private organization (see Hessels & Terjesen 2010).

Involve external forest harvesters in the study if it is repeated in South Savo.

Determine entrepreneurs' interest in developing new, innovative ideas about stakeholder collaboration. However, it was not seen as a significant relationship with a resource-based view of the firm, even though there is discussion of the importance of unique resources and competitive advantage (Barney 1991).

Conduct market research of outsourcing companies that offer rental employment and equipment for entrepreneurs.

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APPENDICES

Appendix 1

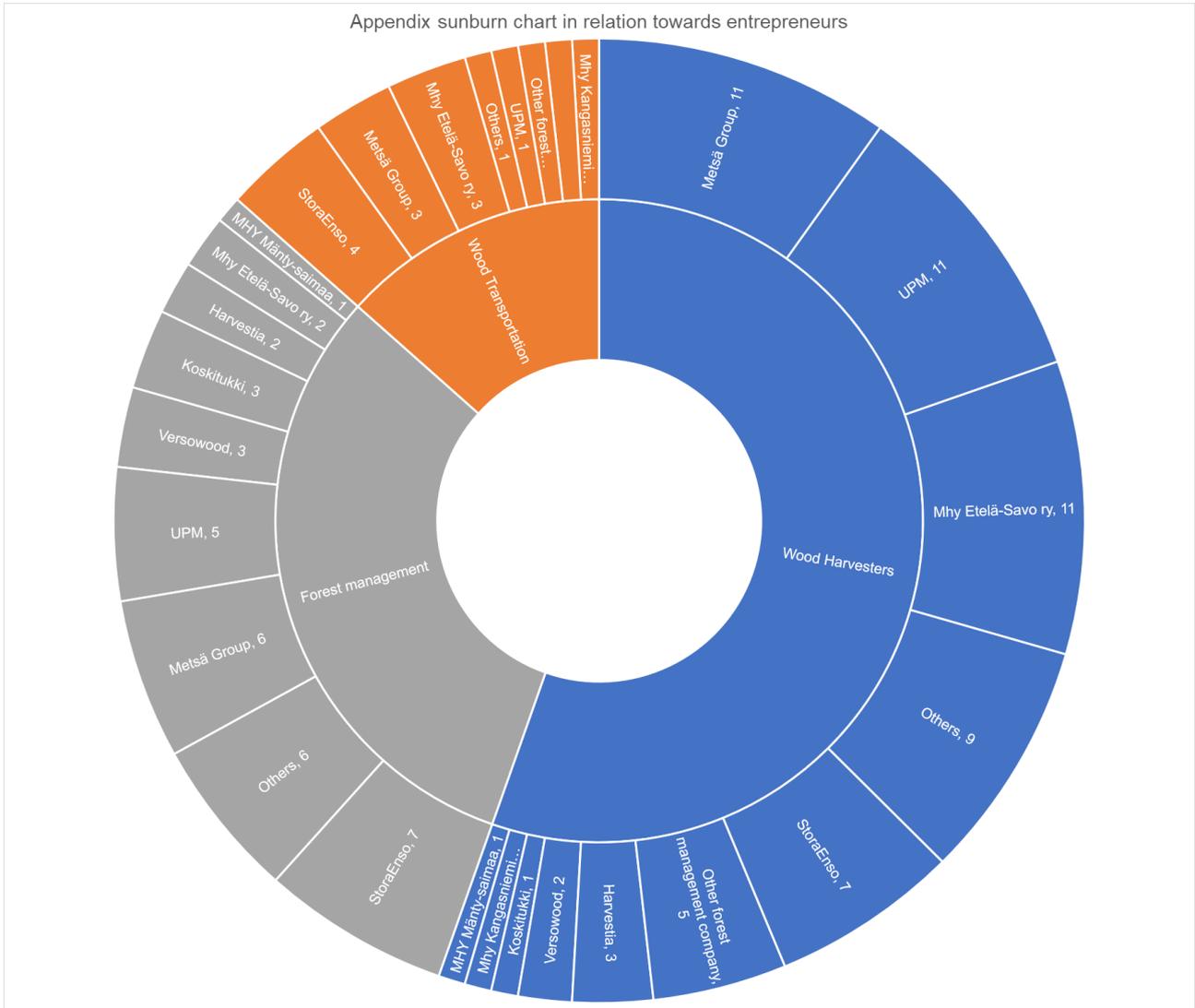


Figure 16 Sunburn chart of entrepreneurs and collaborating companies.

Appendix 2

The questionnaire is coded such that 1 is the basic information and the 2.x.x is the change of demand part of the questionnaire. 3.x is about collaboration and between competitors

Questionnaire part 1: Background information

Q1 Which industry classification describes you?

Wood harvesting

Wood management

Freight transport by road

1.1 what is the current business entity description

Sole entrepreneur

Open company

General partnership

Limited liability company

Cooperative

1.2. What types of forestry services your company offers? (Multiple choice)

Tending of seedling stand

Harvesting

Forest management

Stumpage removal

Crushing

Transportation of loose biomass

Transportation of woodchips

Wood chipping

Forestry machinery and equipment rental services

Others what

Transportation of Machinery

Transportation of lumber

1.3. What is your company's location municipality?

Enonkoski	Mäntyharju
Heinävesi	Pertunmaa
Hirvensalmi	Pieksämäen kaupunki
Joroinen	Puumala
Juva	Rantasalmi
Kangasniemi	Savonlinnan kaupunki
Mikkelin kaupunki	Sulkava

1.4 How many persons are employed in your company at the moment?

Entrepreneurs	_____
Full time employees	_____
Fixed time employees	_____
Part-time employees	_____
Rental employees	_____

1.5 What magnitude of turnover your company had in 2016?

1-99 999€

100 000 – 199 999€

200 000 – 399 999€

400 000 - 999 999€

1 000 000 – 1 999 999€

2 000 000 – 4 999 999€

5 000 000 – 9 999 999€

Over 10 000 000€

I do not want to declare

1.6 What is the portion estimation of the company revenue connected to lumber deliveries?

0% 1-25% 26-50% 51-75% 76-100% I do not want to declare

1.7 What is the portion estimation of the company revenue connected to biomass deliveries related to energy production

0% 1-25% 26-50% 51-75% 76-100% I do not want to declare

1.8 Your company's forest machinery number by types:

How many forest machineries does your company have?

Harvesters	_____	Backhoe loader	_____
Forest Tractors	_____	Harrowing machinery	_____
Material Handler	_____	Undergrowth cutting	_____
Machinery	_____	Machinery	_____
		Forest Fertilization	
Excavators	_____	equipment	_____
Others	_____		

1.9 How many forest vehicles do you have in your company?

Cars _____

1.10 How many and what sized vehicles do you have fit for forest biomass deliveries divided in load classes:

	Wood chip deliveries	Loose biomass; harvesting leftovers, stumps ect.
Under 80m3	_____	_____
80 – 100m3	_____	_____
101- 120m3	_____	_____
121 – 140m3	_____	_____

Over

140m3 _____

1.11 Are you currently in an agreement relationship with some forest management or other forest management organizing company (Can choose several)

(note: Mhy = Forest management association)

Mhy Mänty saimaa ry

Mhy Etelä-Savo ry

Mhy Kangasniemi-Pieksämäki ry

Other forest management association that are outside of South Savo

Other forest management companies, what?

I am not currently in cooperation

I do not want to declare

1.12 Are you currently in contract relationship with forest product company (several options can be chosen)

Stora enso

Koskitukka

I do not want to declare

UPM

Versowood

Metsä group

Muu, mikä?

Harvestia

I am not currently in cooperation relation

1.13 Are you in cooperation with a company that is part of woodchip supply chain? (several options can be chosen)

Wood harvesting company

Forest machinery- and employment renter

Transportation company

Forest management association

Terminal company

Forest management company

End user (Power plant, heating)

Other, what?

End user (biorefinery)

None of above

Forest owners

I do not want to declare

1.14 What kind of collaboration form do you have with another entrepreneur?

Co-owned company

Subcontract

Written cooperation agreement

Others, what?

I do not want to declare

Questionnaire part 2

Statistics of the last year points that the use of woodchips is decreasing in South Savo area but use of lumber has increased.

Q2.1. How do you estimate current woodchip operation environment affect your on...

Options scale from Really negative, negative, no effects, positively, really positively, unsure

2.1.1. Amount to revenue?

2.1.2 Amount to Employee?

2.1.3 Amount of equipment?

2.1.4 Amount of storage capacity?

2.1.5 Collaboration network business models?

2.1.6 Are you interested to expand your activities more on lumber deliveries?

2.1. Scale Options scale from **Really Negative, Negative, No Necessary, Positively, Really Positively,**

Questionnaire part 2.2 Positive change of operation environment

Q2.2. Due to the possible new operator, like large biorefinery, coming to the market can cause rapid change in operation environment and demand for adjustment, that can lead to twofold increase of woodchip demand in short amount of time. How would your company estimates the change of operation environment affect upon company's:

Options scale from: **Really Negative, Negative, possibly, Likely, Really Positively, Unsure**

2.2.1. Amount to revenue?

2.2.2 Amount to Employee?

2.2.3 Amount of equipment?

2.2.4 Amount of storage capacity?

2.2.5 Collaboration network business models?

2.2.6. If the biorefinery is founded to South Savo area and the demand of woodchips increase, would you be interested to increase or expand forest woodchip portion in your business activities?

Options scale from: **Really Negative, Negative, No necessary, Positively, Really Positively, Unsure**

2.2.7 What is the biggest obstacle, that hinders the business expansion?

3.1. Would you be ready to expand your business with collaboration with following forestry businesses?

Options scale from: Highly unlikely, unlikely, Possibly, Probably, Highly probable

Forest owners

Forest harvesters

Transportation companies

Terminal companies

Forest machinery and employee rental.

Forest management company

Forest management association

Biorefinery

Wood refinery

End user

Collaboration models

3.2 What collaborative model could be viable for business expansion? (choices can be many)

Co-owned Business entity-based collaboration with other forestry company

Agreement based collaboration with other forestry company.

Other, what?

I do not want to expand my business

None of the above

3.3. Which forestry company would you consider establishing a co-owned company with?

Options scale from: Not probable, Somewhat improbable, Not necessary, Somewhat probable ,
Very probable

Forest harvesting company

Transportation company

Terminal company

Forest management company

3.4. What company entity would be viable for co-owned company?

Joint-Stock company

General Partnership

Limited Partnership

Registered Association

Cooperative

I cannot say

3.5 Would you be ready to participate in agreement-based collaboration with following forestry companies?

Options scale from: Not probable, Somewhat improbable, Not necessary, Somewhat probable ,
Very probable

Forest owners

Forest harvesters
Transportation companies
Terminal companies
Forest machinery and employee rental.
Forest management company
Forest management association
Biorefinery
Wood refinery
End user

Co-owned/shared terminal

Founding a shared terminal is an alternative collaboration model for forest companies, which can ensure the delivery of lumber and biomass in every season.

3.6 Would you be ready to participate in founding of co-owned terminal

Options scale from: Not probable, Somewhat improbable, Not necessary, Somewhat probable ,
Very probable

3.7 What kind of co-owned terminal you would see preferable?

Just energy wood terminal

Rough lumber and energy wood terminal

Rough lumber terminal

None of the above.

3.8 What kind of energy wood terminal location would you see preferable?

Utilization terminal

Feeding terminal at the refinery

Satellite terminal (close to the refinery)

Temporary terminal

3.9 What kind of round lumber and energy wood terminal location would you see preferable?

Utilization terminal

Feeding terminal at the refinery

Satellite terminal (close to the refinery)

Temporary terminal

3.10 What kind of round lumber terminal do you see preferable?

Utilization terminal

Feeding terminal at the refinery

Satellite terminal (close to the refinery)

Temporary terminal

3.11 Are you interested of increasing business activity using...

Options scale from: Not probable, Somewhat improbable, Not necessary, Somewhat probable ,
Very probable

Rental workers

Rental machinery

Subcontractors

Transportation entrepreneurs from workforce database

3.12 Would you like to participate in following activities?

1. Options scale from: Not probable, Somewhat improbable, Not necessary, Somewhat probable , Very probable

Cross-business networking

Furtherance of joint venture

Workforce training

Testing new technology and joint-utilizing

Appendix 3

**Table 4
Researchers' Resource Definitions**

Assets (140)	Human Capital (280)	Organizational Capital (90)	Financial Capital (35)	Physical Capital (141)	Relationship Capital (64)
Asset (55)	Capability (46)	Process (27)	Financial (30)	Physical (37)	Reputation (17)
Intangible (37)	Knowledge (40)	Routine (10)	Equity (5)	Technology (33)	Market (9)
Tangible (25)	Human (39)	System (10)		Equipment (17)	Relation (9)
Factor (10)	Skill (25)	Structure (8)		Plant (11)	Available (6)
Bundle (6)	Brand (14)	Culture (7)		Material (9)	Access (5)
Complex (4)	Information (14)	Planning (6)		Stock (9)	Contract (5)
Observable (3)	Competency (11)	Coordination (5)		Land (7)	Customer (5)
	Experience (8)	Procedure (5)		Location (6)	Network (5)
	Patent (8)	Team (5)		Geographic (5)	Loyalty (3)
	Employee (7)	Activities (4)		Machine (4)	
	Individual (7)	Reporting (3)		Building (3)	
	Ability (6)				
	Capacity (6)				
	Learn (6)				
	Intelligence (5)				
	Personnel (5)				
	Right (5)				
	Training (5)				
	Insight (4)				
	Judgment (4)				
	Legal (4)				
	License (4)				
	Worker (4)				
	Labor (3)				

Resources are . . .
 tangible or intangible assets—such as . . .
 human capital, . . .
 organizational capital, . . .
 financial capital, . . .
 physical capital, . . .
 and relationship capital— . . .

Table 33 Kellerman et al. 2014 Researcher resource definitions (1/2)

Table 4
Continued

Ownership (81)	Firm (145)	Creation (195)	Value/Success (65)	Competitive Advantage (32)
Control (29)	Firm (84)	Use (38)	Value (16)	Competitive (15)
Own (17)	Organization (46)	Develop (17)	Efficient (12)	Advantage (13)
Tied (15)	Business (4)	Implement (17)	Effective (9)	Superior (4)
Semipermanently (8)	Collective (4)	Manage (17)	Improve (8)	
Possess (7)	Operation (4)	Input (15)	Economic (6)	
Internal (5)	Company (3)	Make (14)	Potential (5)	
		Enable (13)	Strength (5)	
		Production (10)	Performance (4)	
		Conceive (9)		
		Combine (7)		
		Result (6)		
		Source (6)		
		Utilize (5)		
		Achieve (4)		
		Deploy (4)		
		Transform (4)		
		Add (3)		
		Draw (3)		
		Generate (3)		
<hr/>				
that are owned by . . .	a firm, . . .	and that enable the firm to create . . .	value/success	and a competitive advantage.
<hr/>				

Table 34 Kellerman et. al. (2014) Researcher resource definitions (2/2)

Table 5
Practicing Entrepreneurs' Resource Definitions

Assets (115)	Human Capital (205)	Financial Capital (48)	Physical Capital (94)	Relationship Capital (149)
Thing (26)	People (48)	Money (22)	Tool (21)	Customer (20)
Tangible (25)	Knowledge (23)	Financial (13)	Equipment (18)	Supply (18)
Intangible (22)	Information (15)	Bank (8)	Material (16)	Client (17)
Asset (14)	Skill (14)	Cash (5)	Technology (16)	Market (11)
Item (13)	Experience (13)		Physical (6)	Relation (11)
Component (8)	Idea (11)		Computer (5)	Available (10)
Element (7)	Ability (9)		Building (4)	Network (10)
	Employee (8)		Machine (4)	Access (9)
	Individual (7)		Office (4)	Contact (6)
	Creativity (6)			Community (5)
	Human (6)			Sale (5)
	Staff (6)			Association (4)
	Talent (6)			Contract (4)
	Capability (5)			Outside (4)
	Concept (5)			Partner (4)
	Education (5)			Referral (4)
	Intellectual (4)			Sell (4)
	Labor (4)			Advice (3)
	Learn (4)			
	Personnel (3)			
	Training (3)			

Resources are . . .
 tangible or intangible assets—such as . . .
 human capital,. . .
 financial capital,. . .
 physical capital,. . .
 and relationship
 capital—. . .

Table 35 Kellerman (2014) Entrepreneurs resource definitions (1/2)

Table 5
Continued

Firm (163)	Creation (222)	Products/Services (47)	Value/Success (93)
Business (98)	Use (39)	Product (26)	Success (40)
Venture (26)	Make (25)	Service (21)	Profit (18)
Company (22)	Help (19)		Growth (11)
Operation (7)	Provide (16)		Value (10)
Firm (5)	Run (12)		Effective (4)
Organization (5)	Contribute (10)		Improve (4)
	Source (10)		Vital (3)
	Develop (9)		Wealth (3)
	Necessary (9)		
	Draw (8)		
	Support (8)		
	Create (7)		
	Operate (7)		
	Achieve (6)		
	Add (5)		
	Generate (5)		
	Foundation (4)		
	Manage (4)		
	Obtain (4)		
	Carry (3)		
	Combine (3)		
	Production (3)		
	Rely (3)		
	Result (3)		

which allow a firm. . .

to create. . .

products and/or services. . .

in its pursuit of
value/success.

Table 36 Kellerman (2014) Entrepreneurs resource definition (2/2)

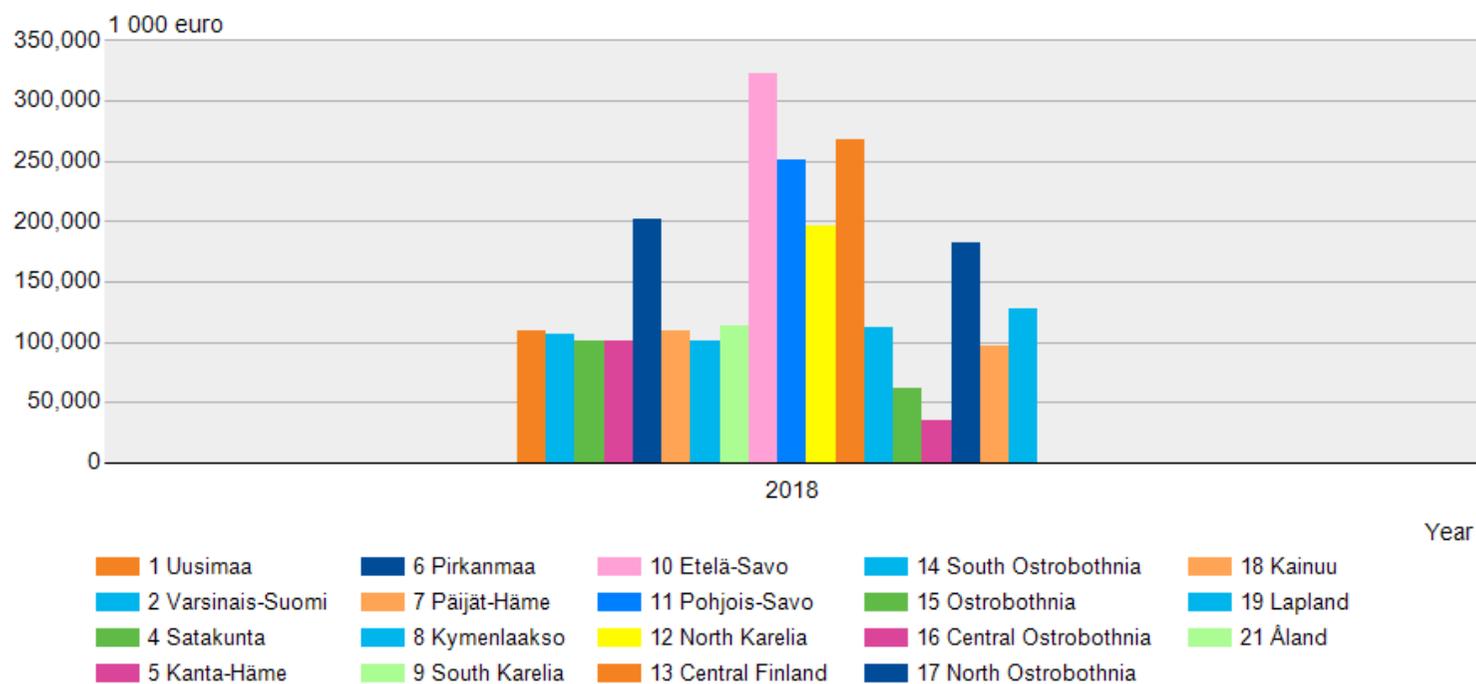
Appendix 4

	Wood owners		Wood harvesting entrepreneur		Transportation company		Terminal company		Forest machinery and workforce rental company		Forest management company		Forest management association		Biorefinery		Wood refinery		End-users (Energy and power companies)		
	<i>t Stat</i>	<i>P-value</i>	<i>t Stat</i>	<i>P-value</i>	<i>t Stat</i>	<i>P-value</i>	<i>t Stat</i>	<i>P-value</i>	<i>t Stat</i>	<i>P-value</i>	<i>t Stat</i>	<i>P-value</i>	<i>t Stat</i>	<i>P-value</i>	<i>t Stat</i>	<i>P-value</i>	<i>t Stat</i>	<i>P-value</i>	<i>t Stat</i>	<i>P-value</i>	
	1.2. Sum of services	2,241	,027**	1,294	,199	1,358	,178	,835	,406	1,392	,167	2,271	,025**	1,392	,167	2,719	,008**	2,189	,031	2,388	,019*
1.4. SUM OF PEOPLE	,848	,399	,817	,416	1,203	,232	1,871	,065	,773	,442	,514	,609	,773	,442	,950	,345	1,060	,292	,968	,336	
1.5 Turnover	-1,781	,078	,155	,877	1,394	,167	,458	,648	-1,313	,193	-	,580	,563	1,313	,193	,008	,994	,389	,698	-,299	,766
1.8 Sum of equipment	,164	,870	-,362	,718	-1,053	,295	-,304	,762	,384	,702	,536	,593	,384	,702	-,536	,594	-1,114	,268	-,458	,648	
1.9&1.10 sum of transport equip	-1,493	,139	-,362	,718	-,335	,738	-,872	,386	-,517	,607	-,931	,354	-,517	,607	-,956	,342	-,981	,329	-1,206	,231	

Table 37 T-stat & P-value table for resources and scope of collaboration

Appendix 5

Gross stumpage earnings by Region, Ownership category, Roundwood assortment and Year



Source: OSF: Natural Resources Institute Finland, Stumpage earnings

Figure 17 National Resource Institute Finland statistic service's printout of stumpage earnings

Appendix 6

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Human resource	1,000																									
Services	,117	1,000																								
Turnover	,663	,017	1,000																							
Equipment	,830**	,081	,548**	1,000																						
Government organization	-,108	,201	-,245*	-,076	1,000																					
Private Organization	,268**	-,107	,393**	,320*	-,169	1,000																				
Co-ownership	,160	-,023	,111	,130	,265**	,038	1,000																			
3.1 Wood owners	-,076	,250*	-,199	-,069	,258*	-,168	,034	1,000																		
3.1 Wood harvesting entrepreneur	,121	,146	,065	,106	,073	,093	,102	,441**	1,000																	
3.1 Transportation company	,307**	,153	,229*	,263*	,000	,123	,084	,139	,549**	1,000																
3.1 Terminal company	,329**	,130	,196	,270**	,057	,114	,076	,233	,533**	,714**	1,000															
3.1 Forest machinery and workforce rental company	,010	,103	-,020	-,074	-,008	-,123	-,008	,261	,443**	,449**	,360**	1,000														
3.1 Forest management company	-,017	,247*	-,048	,015	,192	,089	,063	,519**	,615**	,438**	,468**	,458**	1,000													
3.1 Forest management association	,032	,168	-,102	,066	,312**	-,030	,048	,554**	,430**	,321**	,349**	,349**	,709**	1,000												
3.1 Biorefinery	,036	,281**	,011	,029	,222*	-,064	,040	,420**	,510**	,530**	,619**	,433**	,636**	,530**	1,000											
3.1 Wood refinery	,063	,223*	,043	,037	,153	,005	,036	,350**	,523**	,565**	,671**	,447**	,568**	,432**	,928**	1,000										
3.1 End-users (Energy and power companies)	-,036	,245*	-,037	-,039	,125	-,040	,027	,417**	,470**	,510**	,583**	,473*	,589**	,439**	,903**	,885**	1,000									
3.6 Willingness to establish a firm with other entrepreneurs	-,159	-,170	-,017	,000	-,181	-,060	,018	-,296*	-,202*	-,019	-,117	-,042	-,166	-,155	-,206	-,209*	-,213*	1,000								
3.11 Interest to increase business activity with agency employees	-,158	,035	-,193	-,193	,066	-,011	-,024	,071	,090	,118	,012	,405**	,147	,191	,066	,065	,113	-,026	1,000							
3.11 Interest to increase business activity with rental equipment	,015	,120	-,196	-,035	,108	-,098	-,005	,098	,168	,168	,002	,418**	,133	,137	,014	,035	,085	-,148	,619**	1,000						
3.11 Interest to increase business activity with subcontractors	,299**	,130	,134	,235*	,195	,226*	,088	,146	,342*	,342**	,331**	,188	,303**	,254*	,335**	,325*	,275**	-,235**	,265**	,280**	1,000					
3.11 Interest to increase business activity with transportation entrepreneurs from workforce rental agency	,016	,034	-,033	-,015	,166	,030	-,021	,128	,126	,325**	,239*	,263*	,256*	,267**	,161	,125	,141	-,011	,590*	,471**	,474**	1,000				
3.12 Interest to participate in cross-industry networking events	,021	,140	-,042	-,028	,061	,010	-,023	,189	,178	,330**	,315**	,304**	,346**	,260*	,298	,302**	,274**	-,030	,202*	,120	,229*	,388**	1,000			
3.12 Interest to participate in advancing co-owned entrepreneurship	,148	,038	-,037	,081	,132	,027	-,043	,266**	,271*	,335**	,258*	,360**	,346**	,336**	,203	,196	,186	-,065	,321**	,366**	,291**	,434**	,589**	1,000		
3.12 Interest to participate in joint-training of workforce	,154	,063	,007	,078	,140	,035	-,113	,247*	,218*	,262*	,241*	,290**	,174	,229*	,185	,228*	,135	-,051	,230*	,251*	,320**	,401**	,554**	,641**	1,000	
3.12 Interest in participating in testing and co-benefitting of new technologies	,193	,108	,017	,147	,044	-,004	-,033	,272*	,225*	,373**	,316**	,314**	,234*	,201	,199	,236*	,175	,006	,191	,250*	,376**	,381**	,682**	,664**	,627**	1,000

*Correlation significant at the 0,05 level (two-tailed). **Correlation significant at the 0,01 level (two tailed).

Table 38 Correlation matrix