

Mechanization strategy of small-scale contractors in Japan

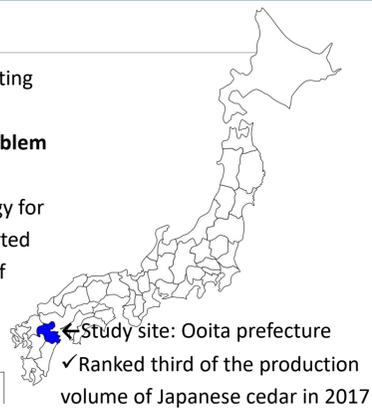
Akie Kawasaki *¹ and Katsuhisa Kohroki ²

¹ Faculty of Agriculture, Kyushu University
Moto'oka744, Nishi-district, Fukuoka-city, Fukuoka, Japan
kawasaki.akie@gmail.com

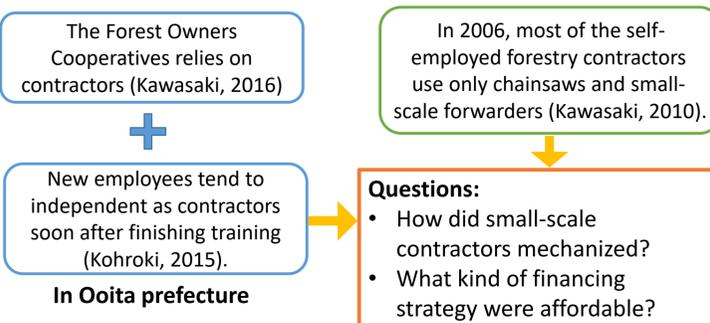
² Faculty of Life and Environmental Sciences, University of Tsukuba
Tennodai1-1-1, Tsukuba-shi, Ibaraki, Japan

1. Introduction

- ✓ Forestry machinery is essential for harvesting grown timber.
- ✓ Their acquisition presents a **financing problem** for contractors worldwide (Lidén, 1995).
- ✓ There are few affordable financing strategy for small-scale contractors who have just started their business and have little in the way of operating funds or bank credit.
- ✓ Mechanization seems to have advanced even among small-scale contractors since the end of the 2000s.



Background



2. Purpose and methods

- ✓ Interviewing research on September, 2017
- ✓ four small-scale contractors
 - Four of small-scale contractors are introduced by the Forest Owners Co-operative
 - under the requirements
 - small-scale contractors
 - started their own forestry contracting business during the past decade
- ✓ figure out
 - their process for mechanization
 - financial strategy

3. Results

3.1 Characteristics of contractors and owners

- The five owners of the four firms
- ✓ Each owners joined the Green Employment Project between 2002 and 2008
 - * the forestry agency trains beginners in forestry techniques, at forestry firms
 - ✓ They started their own contracting businesses between 2006 and 2011
 - ✓ Each owner is also a chainsaw and machine operator
 - ✓ They work with crews of two to four operators including the owner
 - ✓ The firms were certified as the Certified Forestry Contractor in Ooita between 2011 to 2016
 - * who have an improvement plan for employment management and business rationalization
 - ✓ The purpose, for all four firms, in becoming certified contractors was to apply for subsidies for mechanization

Table 1. Characteristics of contractors.

Contractor	A	B	C	D
Production volume per year	Under 4,000 m3	9,800 -10,000 m3	10,000 -11,000 m3	11,000 -12,000 m3
Age of owner	36 y/o	28 y/o	57 y/o	57 y/o and 58 y/o
Number of employees	2 employees	1 employee	3 employees	0 employee
Year started forestry as main job	2002	2008	2007	2002
Year of independence as contractor	2008	2011	2008	2006
Year certified by prefecture	2016	2015	2013	2011
Purpose of certification	To apply for subsidy for forestry machinery			
Business description	Logging (mainly clear cutting, and mainly contract work for a Forest Owners Cooperative)			

3.2 Process of mechanization

Mechanization history and methods of financing are shown in Table 2 (the method of financing and the year/ the type of machinery)

- ✓ The contractors introduced log forks or grapples at the beginning
- ✓ They started to use processors or harvesters after three to seven years.
- ✓ Five methods of financing are seen among the four contractors

The difficulty of financing for small-scale contractors can be seen, especially for the two contractors (A and D) that had to get their funds from consumer loan companies as personal loans at the beginning of their business.

Table 2. Process of mechanization.

Contractor	A	B	C	D
Introduced / sold or disposed	2) 2009 0.3 m3 used grapple		3) 2009 Log fork 3) 2009 0.2 m3 grapple	2) 2011 * 0.3 m3 grapple
Introduced /using	2) 2011 0.2 m3 grapple 5) 2016 * Processor 3) 2017 0.45 m3 grapple	3) 2012 0.3 m3 grapple 3) 2015 * Bucket grapple 4) 2015 Processor 3) 2016 Forwarder	4) 2013 * 0.3 m3 grapple 4) 2013 * Forwarder 4) 2015 Processor 1) 2015 0.2 m3 grapple	4) 2014 Harvester 4) 2014 Base machine 2) 2015 0.45 m3 grapple 3) 2016 0.45 m3 grapple
Notes	* Year contractor was certified by prefecture Financing code: ■ 1) Lump-sum payment or two payments ■ 2) Loan from consumer finance lender ■ 3) Lease (60 payments) ■ 4) 50% subsidy and 50% loan from public financial institution ■ 5) 50% subsidy and 50% loan from private financial institution			

According to the interview, the manner of financing that was chosen tended to depend on contractors' preference based on their situation. Each method has its advantages and disadvantages (Table 3).

Table 3. Advantages and disadvantages.

	Advantages	Disadvantages
Loan from consumer finance	<ul style="list-style-type: none"> • the easiest and most instant • not high bank credit rating is required 	<ul style="list-style-type: none"> • high interest rate loans • personal loan
Loan from public financial institutions	reasonable interest rates	the product for forestry companies that are enhanced by government policy is limited
Subsidies	chance to buy expensive machinery compared with the other financing methods	<ul style="list-style-type: none"> • limited and competitive • the types and models of equipment are limited • machines bought on subsidy are not allowed to be sold • 50% or more of the contractor's own funds is required
Lease	movable insurance is included	

4 Conclusion

- ✓ Although the four contractors have been certified for subsidies, they have had to use other financing strategies based on the timing of their need for new machinery
- ✓ A disadvantage of subsidy for small-scale contractors is that they still require a loan to cover half the cost of the machinery even when they are subsidized
- ✓ Subsidy is beneficial for introducing expensive machinery such as a processor or harvester.
- ✓ This area receives favorable economic terms for forestry compare with other area in Japan.
- ✓ Even so, it can be said that small-scale contractors need policy support at the initial stages of becoming independent contractors as well as for further mechanization.

3.3 The case of contractor A

- ✓ The owner started mechanization in 2009 at age 36 (Figure 1).
- ✓ At that time, he got **consumer financing as his personal loan** to buy a 0.3 m3 bucket-class used grapple.
- ✓ In 2011, a **machine company supported his financing and introduced him to a local bank**; by this good fortune, he succeeded in getting a loan from the bank.
- ✓ His company was certified by the prefecture, with one of the requirements being to apply to the government for a mechanization subsidy, and **his company was subsidized** in 2016.

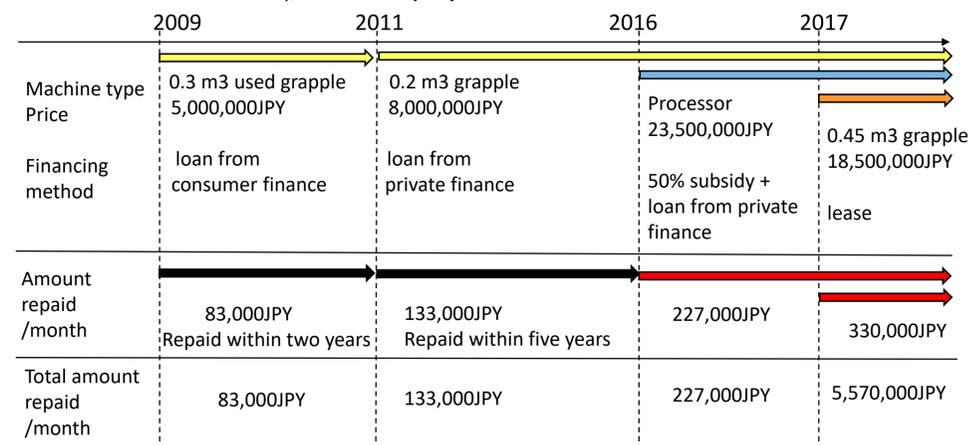


Figure 1. Mechanization history: the case of contractor A.

Whether there are any advantages to being independent contractor with the high-risk-loan mechanization? The yearly balance of payments of contractor A was estimated (Figure 2).

Estimated yearly income (a): Contract income: production volume and average contract fee in this area
Subsidy for trainee salary support: number of trainees and subsidy standard
Yearly definite spend (b): repaid for machinery, payoff for employee, and movable insurance
The amount of difference (a)-(b): approx. 4,870,000 JPY (≒41,280 EUR)
**Incl. other spending for business, company reserve, and owner's private income

The average yearly salary of an employee in this area: approx. 2,900,000 JPY
There is enough advantage in income if the company doesn't have other large expenditures.

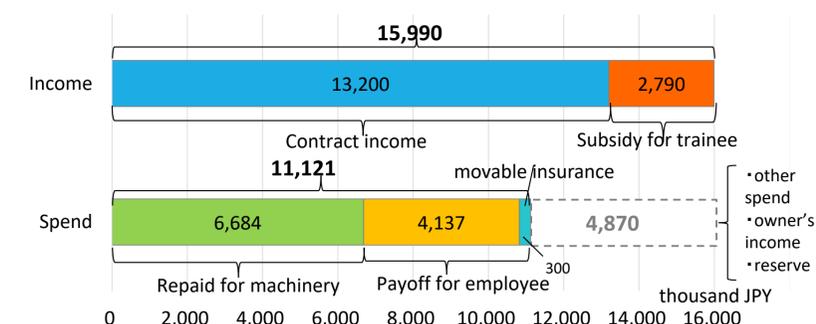


Figure 2. Estimated yearly balance of payments: the case of contractor A.

References

Lidén, E. (1995). Forest machine contractors in Swedish industrial forestry, Sveriges lantbruksuniversitet, Institutionen för skogsteknik Rapport nr 195.
Kawasaki, A. (2016). Employment and training of new forest workers for the Forest Management Centers: The case of Ooita prefecture, the Green Employment promotion and research project report, National Federation of Forest Owners' Cooperative Associations [in Japanese].
Kawasaki, A. (2010). Current status of self-employed forestry contractors and problem of labor policy [in Japanese], doctoral dissertation at the Graduate School of Bioresource and Environment Science, Kyushu University.
Kohroki, K. (2015). Relation of the Green Employment Project and employment and contracting: The case of Ooita prefecture, All about the Green Employment Project, J-FIC [in Japanese].