Approaches to data collection from contractors' logging operation in Sweden and Finland

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The logging operation is a process in the forestry supply chain, in which industries is supplied with raw material from the forest. Hence, being part of an industrial supply, there is a need to manage the operations, which includes the need to control the flow and quality of the supply as well as the quality and cost of the operations. To that end, it can be expected that the companies collect data from the logging operations. The operations are in most cases outsources, and conducted by contractors.

When performing the logging operations, the forest machines and their devices create data which might be of interest for the following-up of the operations. However, it is not obvious who owns the information that the forestry machines produce and how the data should be used. This was, for instance, highlighted with the introduction of GDPR. In Finland, the forest companies, machine manufacturers and contractors have come to an agreement on a recommendation about which data belongs to which party in order to give guidelines about ownership, use and processing of data. No such agreement is available in Sweden.

The aim of the study was to investigate forest companies' motives for collecting and using data with regards to follow-up a contractor after a logging operation. The investigation of several forest companies' different approaches to following-up data, enables benchmarking and can visualise local as well as national differences.

In total eight interviews with representatives for forest companies were conducted in Sweden and Finland (table 1). Attempt were also done to do interviews with companies in Scotland and Ireland, but it did was not possible to execute. The length of the interviews varied between 35-80 minutes. Face-to-face interview was preferred, but due to the distance, five of the interviews was on the phone. All interviews in Sweden were in Swedish. In Finland two interviews were held in English and one were in Swedish.

Table 1. Description of the companies the respondents represented.

Respondent	Country	Organisation type
A	Sweden	Forest and industry owing company
B	Sweden	Forest and industry owing company
C	Sweden	Forest and industry owing company
D	Sweden	Forest owner association, with own saw mills
E	Finland	Forest and industry owing company
F	Finland	Forest and industry owing company
G	Finland	Forest owner association, without own saw mills

The format for the interviews were so called “unstructured interviews”, in which the respondents discussed and provided details regarding the three following questions;

- What follow-up is done after a logging operation and how is that data collected?
- What is considered to be the advantage and disadvantage of having access to follow-up data?
- Are the companies satisfied with the amount of follow-up data collected?

All companies collected a range of different data after a harvesting operation. All companies collected data regarding the production outcome of the logging operations, both in terms of quantities and qualities. For instance, the harvested number of stems and volumes were collected by all companies. Such data is essential for managing the supply chain, when needing to fulfil agreements of delivering specific quantities of specific qualities at specific times to the receiving industries

Most companies collected information regarding the conditions under which operations were conducted. Such information is essential for the expected efficiency of the operation, and is hence decisive for the cost of the operations. All companies collected data related to features in the stand after the operation, both regarding to how the trees would continue to grow (in thinnings) and regarding ecological values (e.g. rutting). Such information is used to evaluate that the performed meets the expected quality, and to ensure that regulations are fulfilled. Some companies also collected data related to the quality of other data. The only mentioned example was data on calibration of the harvester head, which related to how well the bucked

logs meet industry demands. Hence, such data was motivated by the desire to ensure the right quality of produced logs.

The data was collected in a different way and both type of data and collection method could differ between the companies. One frequently used data source used was automatic collection of data from the forest machine, regarding production and quality related measures. Another source was by samples done by the forest company or a third party. In all cases, the contractor's self-evaluation was a data source for the companies.

From the material generated from the interviews, four themes for advantages with the collection of follow-up data were identified; knowledge, efficiency, improvement or education, and safety. All interviewed companies talked about data as a way getting more information about the operations. All respondents clearly stated that there are no disadvantages for them having access to follow-up data, but they all mentioned that some challenges can occur. Challenges with the data were identified under four themes themes; surveillance, unclarities, data handling and time limitation.

An important matter brought up, was the ownership of data. The view upon this differed between the companies, as did also the view on how and what should be followed up regarding the operations. In Finland, there are recommendations regarding ownership of data produced during logging operations, but not in Sweden.

Most companies felt satisfied with the type and amount of data they currently collected, but there was a desire for more data in the future – with the expectation that it would lead to more efficient operations.

In the future, there is a great possibility to continue developing the current systems for collecting follow up data from logging operations. However, the reasons for the data collection should be defined and motivated before doing so, in order to fulfil the desired business relationship between client (forest company) and supplier (the contractor). Moreover, there should be little need to spend resources to collect, handle and store data that is not contributing to the management of operations.