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An analysis of factors affecting the performance of supplier SMEs

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ABSTRACT

Purpose. While the performance of each company is still an important factor in gaining a competitive advantage, in an open economy, the performance of an entire supply chain becomes a crucial factor in the competitiveness of many interconnected companies. In this study, factors that might influence the performance of small and medium-sized enterprises (SMEs) that provide production services for the contracting company are analysed.

Methodology. In this study, the performance data of harvesting (n=46), timber transportation (n=23), and chipping (n=3) service suppliers in the supply chain of JSC Latvia's State Forests (LVM) are analysed. Based on the supplier's performance data, a group of experts, including two executive directors and five process managers, defined the problems and their root causes. The Ishikawa diagram and 5Why method were used. The root causes were redefined as hypotheses and regrouped into three groups: 1) workforce factors; 2) managerial factors; 3) contract-term factors. Hypotheses were verified by conducting a survey of suppliers' employees (n=594) and executives (n=59).

Findings. It was found that employees' dissatisfaction with shift work and salaries which do not correspond to work responsibilities, along with suppliers' disregard of the evaluation of employees' skills, complicated work requirements, the lack of training for employees, and the direct manager's insufficient knowledge about the skills needed for employees are the factors that significantly influence voluntary labour turnover and might lead to the leakage of skilled employees from suppliers, causing a performance decline. Meanwhile, there is no significant difference between high and low-performing supplier groups in terms of managerial knowledge, while a limited contract duration does not undermine low-performance suppliers' efforts to improve performance.

Value. In this study, factors that might cause performance problems for supplier SMEs are analysed. In the existing literature, it has been found that voluntary labour turnover might negatively influence the performance of a company (McElroy and Morrow, 2001; Brown *et al.*, 2009; Eady and Nicholls, 2011). This study attempted to assess factors causing voluntary labour turnover

among other factors. The main contribution of this study is to the literature regarding voluntary labour turnover, supplementing the factors that might cause it.

Keywords: suppliers' performance, root cause, voluntary labour turnover, SMEs

Paper category: research paper

INTRODUCTION

Competition between single firms is becoming less common as networks of firms compete against each other. In this environment, the disadvantages of an individual firm are often linked to the disadvantages of the network in which the firm operates (Dyer and Singh, 1998). Collaboration has many forms, such as strategic alliances, joint ventures, third-party logistics, short and long-term contracts, partnership sourcing, and retailer–supplier partnerships (Bernhard *et al.*, 2006). These networks provide firms with opportunities to establish mutually beneficial relationships in which to create competitive advantages and impose an obligation to manage performance and overcome obstacles.

Cooperation, compared to a purely competitive approach, makes it possible to extract savings since it gives suppliers the confidence that investments will pay off in the long run (Terpend and Krause, 2015). However, small businesses are, in general, conservative and do not want to overexpose or overextend themselves to certain investments. They limit their spending and commitment and only do what is essential to reduce uncertainty in running their business (Adams *et al.*, 2012). The supplier potentially benefits from collaborating with the buyer if their collective efforts translate into superior products and hence increased market share (Terpend and Krause, 2015). Furthermore, supplier performance strongly influences buyer performance in the short and long run (Parmigiani and Mitchell, 2005). Suppliers that do not achieve performance targets either need to be developed or replaced (Glock *et al.*, 2017), but terminating a contract might not always be possible, as the buyer may not have an alternative supplier (Porteous *et al.*, 2015). In addition, if a supplier underperforms due to a lack of common knowledge, the supplier should be inspired with confidence and supported to increase the company's relative absorptive capacity rather than being replaced (Kim *et al.*, 2015). These aspects point to the importance of suppliers' development and performance improvement activities.

Supplier relationship management encompasses various activities, such as the identification and selection of appropriate suppliers, the evaluation and development of suppliers, and the continuous monitoring of the suppliers' performance (Glock *et al.*, 2017). Generally, cooperative activities such as supplier development and supplier integration are effective, while supplier monitoring does not have a positive influence on supplier performance (Akamp and Müller, 2013). Direct involvement activities, where the buying company internalises a significant amount of the supplier development effort, play a critical role in performance improvement (Krause *et al.*, 2000). In addition to standard

supplier development practices, such as process efficiency and quality improvement, a buying firm may also consider helping the supplier to develop inter-organisational networks to enhance supplier buying company-specific innovation value (Yana *et al.*, 2017). Buyer and supplier commitment through maintained specificity intentions, operational linkages, and specific investments is likely to foster long-term buyer-supplier relationships. The latter, consequently, improves organisational performance due to knowledge and process-sharing (Adams *et al.*, 2012). This characterises the essentiality of supplier performance management in product and process improvement by development activities and long-term contract relationships.

Performance management is an uninterrupted process of identifying, measuring, and developing the performance of individuals and teams and aligning it with the strategic goals of the organisation (Aguinis, 2009). Buying firms that share information with and require improvements to suppliers are readily able to respond to market demand (Ralston *et al.*, 2015). Service-buying firms, to a greater extent than product-based firms, tend to rely on the competitive pressure of market forces to encourage supplier performance (Krause and Scannell, 2002) since the supplier's most relevant competitors are those with which it shares a buyer (Chatain, 2011). Product-based firms tend to use assessment, incentives, and direct involvement to a greater extent than service firms (Krause and Scannell, 2002). A buying firm should be aware of their suppliers' abilities and limitations to decide when and where supplier development should occur (Lawson *et al.*, 2014).

Accordingly, it is essential to analyse the supplier's performance, identify problems, and search for the root causes. Considering the conservative nature of small businesses (Adams *et al.*, 2012), this study focuses on suppliers belonging to the small and medium-sized enterprise (SME) category. In business literature, little attention has been paid to the identification of performance problems' root causes and suppliers' development activities in addressing them. However, the literature indicates that it is beneficial for managers to take time to identify and understand the root cause of any problem accurately, no matter how large or small the problem may seem (Arnheiter and Greenland, 2008), and to find the root cause before taking action (Finlow-Bates, 1998). Thus, the following research question is put forward: what are the root causes of a supplier's performance problems? The objective of this study is to determine the factors that might cause performance problems for supplier SMEs. The root cause analysis (RCA) concept is applied to achieve the study objective.

In the next section of the study, literature concerning supplier performance management and the RCA of suppliers' performance problems are analysed. In the third section, the research methods are developed and described. Then, in section four, the study results are reported and analysed. In section five, the findings are discussed and suggestions for further research are proposed, and in section six, the article is concluded with the limitations of the study.

LITERATURE REVIEW

Definitions

There are various definitions of RCA in the literature. Latino *et al.* define RCA as follows: “the establishing of logically complete, evidence-based, tightly coupled chains of factors from the least acceptable consequences to the deepest significant underlying causes” (Latino *et al.*, 2011). Andersen and Fagerhaug define RCA as “a structured investigation that aims to identify the true cause of a problem and actions necessary to eliminate it” (Andersen and Fagerhaug, 2006). The objective of the present study does not include the actions necessary to eliminate the problem causes. Therefore, in the context of this study, RCA is defined as a logically complete and evidence-based investigation that aims to identify the real cause of a problem (Latino *et al.*, 2011; Andersen and Fagerhaug, 2006). A problem is defined as a negative deviation from a performance norm or standard (Latino *et al.*, 2011). While the cause is the reason for the problem that the management has the ability to fix (Lehtinen *et al.*, 2011; Sarkar *et al.*, 2013), it is preferable to explain the causes with numerical values attached to them, and it is better to express them in a negative way (Sarkar *et al.*, 2013). RCA is an efficient method to detect new process improvement opportunities and develop improvement ideas (Lehtinen *et al.*, 2011). Thus, RCA is a proper method for performance problem cause detection before a particular action is taken.

Root cause analysis method

Latino *et al.* recommend that we should have a means of collecting data related to events that affect the performance of the stated objectives. Afterward, we must decide on criteria that will initiate the execution of an RCA and decide if RCA is required. The key to successful analysis is to make sure that the data and information to determine the causes of the problem are being studied (Latino *et al.*, 2011). The data must be collected, analysed, and compared in a way to reveal the causes and simplify further analysis (Ishikawa, 1976). An RCA team has to be assembled, and the team must review the problem and determine what data will be needed to determine the root causes. A logic tree can be utilised to evaluate hypotheses and specify root cause verification methods. Then, hypotheses regarding root causes must be verified, determined and grouped according to whether the cause is physical, human, or latent (Latino *et al.*, 2011). Ishikawa proposes the use of a cause-and-effect diagram to illustrate relationships between the cause and the problem (1976). The recommendation is that the causal factors should be grouped into work methods, materials, equipment, and measurement (Ishikawa, 1976). Practitioners tend to use brainstorming, cause-and-effect analysis, and the five whys or the 5W + 1H (who, when, where, why, what, how) methodology to determine the root cause (Reid and Smyth-Renshaw, 2012). Team members are asked five ‘why’ questions to determine the root

cause (Ishikawa, 1976). Various authors have analysed RCA applicability and its pros and cons (Sarkar *et al.*, 2013; Lehtinen *et al.*, 2011; Emery, 2009; Iedema *et al.*, 2008; Arnheiter and Greenland, 2008; Finlow-Bates, 1998; Dobrusskin, 2016; Reid and Smyth-Renshaw, 2012). In this study, the cause-and-effect diagram is considered to be the most suitable method, and five 'why' questions are used to search for the root cause. The choice of the method is based on its simple use. The use of more sophisticated methods requires the training of the practitioners' expert group and repeated practice to achieve the objective of the RCA. In a further literature review, the factors that might influence the performance of suppliers are analysed.

Workforce performance

The productivity of the supplier's workers can influence the costs and thus the price of the product or service it provides. The theory of personnel economics predicts that pay based on output will induce workers to supply more output because of incentive effects. The productivity and average effort level of workers increases when moving from a fixed wage to piece-rate pay, and high-skill workers tend to select the piece-rate pay scheme (Lazear, 2000; Eriksson and Villeval, 2008; Franceschelli *et al.*, 2010). Other studies show that workers are insensitive to pay-for-performance exposure regarding working hours, intentions to quit, life, and job satisfaction (Allen *et al.*, 2017). However, intentions to quit and labour turnover might influence a supplier's performance. Studies show that voluntary labour turnover has negative consequences for profitability, productivity, and costs (McElroy and Morrow, 2001), and if the quit rate decreases, the firm's performance increases (Brown *et al.*, 2009). The cost of labour turnover will be highest for those companies whose production needs are complex and quality requirements are demanding (Eady and Nicholls, 2011). However, economic performance depends on many factors that vary according to the type of firm and related circumstances. It would be wise to work at least with a motivated threshold value, specific for a firm or industry, that indicates from which point onwards turnover can be considered as a negative indicator (Glebbeeck and Bax, 2004). It is also vital to know who leaves the firm and the type of work. High-performing workers' turnover has a strong negative impact on firms' return on equity (ROE) and return on assets (ROA), and firms which invest less in human capital would face a more substantial negative impact of high-performer turnover than those that invest more (Kwon and Rupp, 2013). However, the turnover of unskilled workers in a context with low hiring costs and losses in labour productivity has an inverted U-shaped relationship between employee turnover and performance (Siebert and Zubanov, 2009). Previous studies also show that job satisfaction, tenure (Breukelen *et al.*, 2004; Caillier, 2011), earning graduate degrees without career promotion (Benson *et al.*, 2004), co-workers' job embeddedness and job search behaviour (Felps *et al.*, 2009), gender composition in the workplace (Bygren, 2010), employer-provided training (Haines *et al.*, 2010), occupational commitment (Schmidt and Lee, 2008), and emotional exhaustion (Chau *et al.*, 2009) might cause voluntary labour turnover. Thus, voluntary labour turnover

might influence supplier performance in terms of profitability, productivity, and costs. The influence might be even more significant in SMEs that employ high-skill workers such as forest machine operators. To find out the root causes of high-skill workers' voluntary labour turnover in SMEs, the following hypotheses are put forward:

H₁: voluntary labour turnover is caused by:

- a) workers' dissatisfaction with the current shift work
- b) disregarding the evaluation of workers' professional skills
- c) non-compliance of salaries with work responsibilities
- d) complicated work requirements
- e) disregarding workers' training
- f) managers' lack of knowledge about the skills needed for employees
- g) high labour demand
- h) low confidence regarding professional skills
- i) lack of a premium on salaries for productivity
- j) lack of a premium on salaries for the quality of the work
- k) lack of desire to improve professional skills
- l) high discipline at work

Knowledge of managers

Considering that leaders must deal with various roles and duties, make sound decisions, solve problems, develop new ideas, and engage with partners and clients (Chan *et al.*, 2017), they need to have extensive knowledge of the functions that are important for the company. Companies might acquire the necessary management knowledge by hiring professionals in a particular field. However, SMEs have limited financial resources to hire knowledgeable professionals for their management functions, such as financial, quality, efficiency, and human resource management. Thus, insufficient expertise in management functions might be the root cause of suppliers' incapability of achieving performance objectives. To find out whether managers of high-performing suppliers have significantly better knowledge in a management function, the following hypotheses are put forward:

H₂: low-performance suppliers' managers do not have sufficient knowledge in:

- a) the development of a motivating remuneration system
- b) the management of employees' skills
- c) the company's financial management
- d) the management of a company's efficiency

e) quality management

H₃: low-performance suppliers' managers have difficulty in attracting professional employees.

Managers are asked self-appraisal questions (Alter, 2002; Shore and Tashchian, 2002) to evaluate their knowledge and test hypotheses.

Collaboration performance

Cooperation between buyer and supplier might lead to performance improvement, and lack of it could cause problems. Studies show that supply chain partners' intentions to invest in supplier development critically depend on the length of the contract period. Supplier development can be improved by dynamically extending the contract, thus avoiding the risk of being contractually tied for an unnecessarily long period (Worthmann *et al.*, 2016). Moreover, without the assurance of a long-term contract, a supplier is unlikely to make investments that would reduce the cost for one particular buyer and would constitute an unacceptable risk (Terpend and Krause, 2015). The influence of buyer commitment on supplier firm performance depends on which buyer cost reduction strategy is used (Yoon and Moon, 2017). Studies show that shared problem-solving with suppliers harms profitability and flexibility but does not significantly affect financial performance (Brito *et al.*, 2014), and social interaction ties do not directly influence cost reduction (Carey *et al.*, 2011). The buyer's communication process in evaluating the supplier does not ensure improved supplier performance unless the supplier is committed to the buying firm (Prahinski and Benton, 2004). Moreover, Modi and Mabert point out that evaluation and certification efforts are the most crucial supplier development prerequisites before undertaking operational knowledge transfer activities, such as site visits and supplier training (Modi and Mabert, 2007). In addition, the buyer can influence the supplier's commitment through increased efforts in cooperation and commitment (Prahinski and Benton, 2004), and collaborative inter-organisational communication is an essential factor to turn an organisation's efforts into supplier performance improvements (Modi and Mabert, 2007); also, information exchange with suppliers has a significant effect on profitability (Brito *et al.*, 2014). Accordingly, the length of the contract period, its extension conditions, and the commitment of both parties might influence the efforts in performance improvement activities. Additionally, it is argued that a limited contract term might reduce suppliers' efforts to improve their processes and invest in development. A limited contract term is particularly relevant for state-owned enterprises, for which the maximum contract term with suppliers is specified by law. Therefore, the following hypotheses are put forward:

H₄: a contract term limited by a five-year period significantly undermines low-performance suppliers' efforts to:

a) improve efficiency

- b) improve quality
- c) make proposals for cooperation improvement
- d) invest in workforce development
- e) invest in technological development

Given that voluntary labour turnover might negatively influence the performance of different companies (McElroy and Morrow, 2001; Brown *et al.*, 2009; Eady and Nicholls, 2011; Kwon and Rupp, 2013), hypothesis H₁ is tested studying 59 suppliers regardless of performance level, and employees are chosen as respondents. Voluntary labour turnover is attributed to ‘workforce factors’. However, to assess whether low performance of suppliers is caused by insufficient managerial knowledge (attributed to ‘managerial factors’, H₂ and H₃) or a limited contract term that undermines low-performance suppliers’ efforts (attributed to ‘contract-term factors’, H₄), executives of suppliers’ companies are chosen as respondents. In summary, the hypotheses derived from the performance-influencing factors are elaborated in the following model.

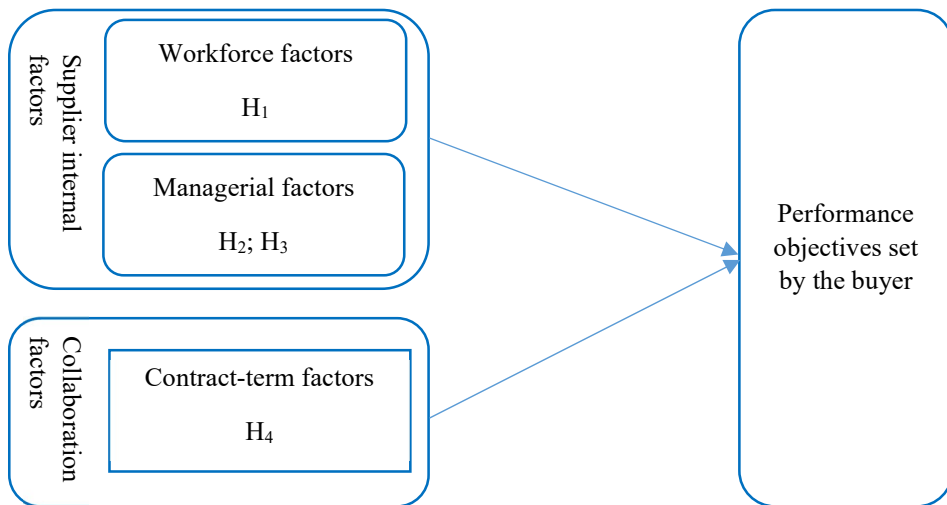


Figure 1 **Supplier performance-influencing factors**

METHODS

In this study, the performance data of harvesting (n=46), timber transportation (n=23), and chipping (n=3) service suppliers in the supply chain of JSC Latvia’s State Forests (LVM) are analysed. Based on the supplier’s performance data, a group of experts, including two executive directors and five process managers, defined the problems and their root causes (Latino *et al.*, 2011; Reid and Smyth-Renshaw, 2012). The Ishikawa diagram and 5Why

method were used (Ishikawa, 1976). The root causes were redefined as hypotheses and grouped into three groups: 1) workforce factors; 2) managerial factors; 3) contract-term factors. Hypotheses were verified by conducting a survey of suppliers' employees (n=594) and executives (n=59). Likert's 5-point scale is used in the questionnaire for most questions (Appendix 1). Pearson's chi-squared test is used for the analysis of employees' questionnaire data and testing hypothesis H₁, and the Mann–Whitney U test is applied for the analysis of the executives' questionnaire data and testing hypotheses H₂, H₃ and H₄. The study method is presented in Figure 2.

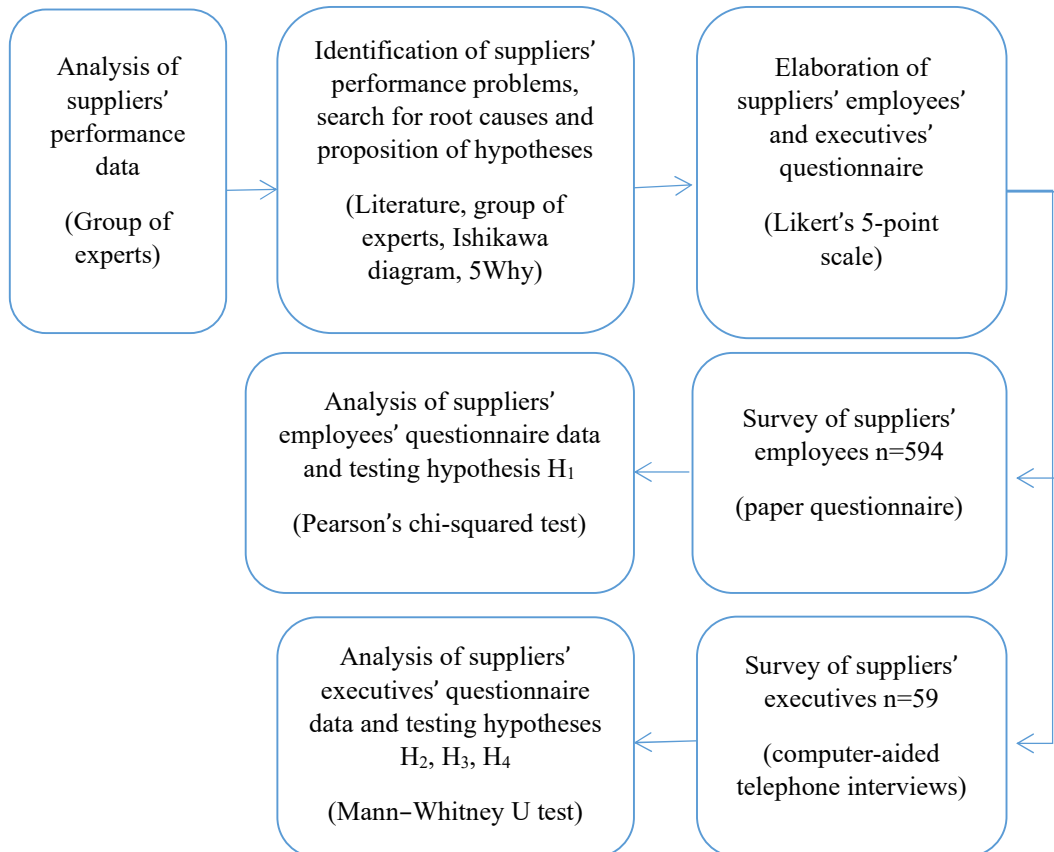


Figure 2 **Study method scheme**

RESULTS

The group of experts identified two main performance problems of suppliers: 1) 52% of suppliers do not achieve the labour productivity objectives set by the buyer; 2) 33% of suppliers do not achieve quality objectives set by the buyer. The hypotheses derived from

the root causes of the given performance problems are presented in Appendix 1. A lack of a qualified workforce is one of the root causes of performance problems, as 88% of executives point out that attracting skilled employees is hard or very hard. Thus, keeping qualified employees in the company is an important task for suppliers' managers. Employees' dissatisfaction with work might increase voluntary labour turnover and cause performance decline (McElroy and Morrow, 2001; Brown *et al.*, 2009; Eady and Nicholls, 2011). Therefore, employees' questionnaire data is analysed, and hypothesis H₁ is tested from the perspective of employees who replied that they would continue to work in their current job (1st group, score 4 and 5 on Likert scale, n=449), employees who have doubts about continuing work (2nd group, 3 on Likert scale, n=130), and those who will not continue to work (3rd group, 1-2 on Likert scale, n=15). The results are presented in Table 1.

Table 1

Work continuance/discontinuance correlation with other factors (n=594)

No.	Factor	Pearson's χ^2	<i>p</i> -value	1st group mean, (SD)	2nd group mean, (SD)	3rd group mean, (SD)
H _{1a}	Satisfaction with the current shift work	80.4	<.001	3.8 (0.7)	3.3 (0.9)	2.8 (1.1)
H _{1b}	Evaluation of employees' professional skills	38.8	<.001	3.6 (1.3)	3.2 (1.6)	2.2 (1.4)
H _{1c}	The salary corresponds with the work responsibilities	96.7	<.001	3.2 (0.8)	2.6 (0.8)	2.1 (1.2)
H _{1d}	Complication of the work requirements	25.2	.001	3.2 (0.9)	3.5 (0.8)	3.7 (1.1)
H _{1e}	Training to improve employees' professional skills	25.5	.001	3.8 (0.8)	3.4 (1.0)	3.2 (1.0)
H _{1f}	Direct manager's knowledge about the skills needed for employees	18.8	.016	4.0 (0.8)	3.8 (0.8)	3.3 (1.2)
H _{1g}	Easy to find another job	14.5	.070	3.5 (0.9)	3.6 (0.8)	3.7 (1.0)
H _{1h}	Confidence in professional skills	11.2	.081	3.7 (0.7)	3.7 (0.7)	4.0 (0.8)
H _{1i}	Premium on salary for productivity (nominal data, Yes or No)	4.5	.105	1.7 (0.4)	1.8 (0.4)	1.7 (0.5)
H _{1j}	Desire to improve professional skills	13.1	.110	3.9 (0.8)	3.8 (0.9)	3.5 (1.2)
H _{1k}	Premium on salary for the quality of the work (nominal data, Yes or No)	2.5	.281	1.8 (0.4)	1.8 (0.4)	1.7 (0.5)

H ₁₁	High discipline at the current workplace	3.1	.790	4.3 (0.6)	4.3 (0.6)	4.4 (0.6)
	Test for a difference among groups	Kruskal-Wallis H	p-value	1st group mean, (SD)	2nd group mean, (SD)	3rd group mean, (SD)
Grouping variable	To what extent do you want to continue working in your current job?	395.2	<.001	4.3 (0.5)	3.0 (0.0)	1.7 (0.5)

Sig. at a level of $p \leq 0.05$

The factors that significantly influence voluntary labour turnover comprise employees' dissatisfaction with shift work and salaries that do not correspond with work responsibilities along with suppliers' disregard of the evaluation of employees' skills, complicated work requirements, lack of training for employees, and the direct manager's insufficient knowledge about the skills needed for employees (hypothesis H_{1a, b, c, d, e, f} parts are accepted). This might lead to the leakage of skilled employees from suppliers, causing a supplier's performance decline. As seen in H_{1h} (Table 1), confidence in professional skills of employees who will not continue to work is even higher than for those who will continue to work. Moreover, employees who plan to leave their current work are younger, yet at the same time experienced in the forest sector, and have worked for a long time at their current company, 9 and 4 years, respectively (see Appendix 2). High demand for a workforce, which facilitates finding another job, does not have a significant influence on voluntary labour turnover (hypothesis H_{1g} part is rejected). However, p -value 0.07 indicates the trend that in a situation where it is easy to find another job, employees could leave the forest sector, causing workforce ageing problems, since those who plan to leave are younger. Furthermore, employees' confidence in their professional skills, desire to improve skills, and bonuses for the productivity and quality of the work do not significantly influence voluntary labour turnover. Moreover, high discipline at work does not cause employee willingness to leave their current job (hypothesis H_{1h, i, j, k, l} parts are rejected).

To identify the root cause of performance problems related to the supplier's management and limited contract term, data from an executive questionnaire is analysed. Suppliers are divided into two groups according to performance data: 1 – the best suppliers (n=11), who meet both quality and labour productivity objectives set by the buyer, and 2 – the rest of the suppliers (n=48), who do not meet the objectives completely. The difference between the two groups of suppliers is analysed, and the results are presented in Table 2.

Table 2

Suppliers' performance-influencing factors by management and limited contract term

No.	Factor	Type of supplier	Mean rank	<i>U</i>	<i>p</i> -value	Type of supplier mean, (SD)
H _{2a}	Knowledge in the development of a motivating remuneration system	1	31.8	244.0	.642	4.0 (0.4)
		2	29.6			3.9 (0.6)
H _{2b}	Knowledge in the management of skills for employees	1	28.7	250.0	.745	3.9 (0.5)
		2	30.3			4.0 (0.7)
H _{2c}	Knowledge in the company's financial management	1	28.8	250.5	.766	3.9 (0.7)
		2	30.3			4.0 (0.7)
H _{2d}	Knowledge in the management of a company's efficiency	1	32.2	240.0	.587	4.1 (0.7)
		2	29.5			4.0 (0.6)
H _{2e}	Knowledge in quality management	1	32.4	237.5	.559	4.1 (0.8)
		2	29.5			3.9 (0.7)
H ₃	Easy to attract professional employees	1	25.3	212.5	.271	1.5 (0.5)
		2	31.1			1.8 (0.8)
H _{4a}	Suppliers would increase their efforts for efficiency enhancement	1	24.1	199.0	.163	3.8 (1.3)
		2	31.4			4.4 (0.7)
H _{4b}	Suppliers would increase their efforts for quality improvement	1	26.4	224.0	.396	4.0 (1.2)
		2	30.8			4.3 (0.8)
H _{4c}	Suppliers would provide more proposals for cooperation improvement	1	30.3	260.5	.942	4.0 (1.3)
		2	29.9			4.2 (0.8)
H _{4d}	Suppliers would invest more in workforce development	1	25.0	209.0	.236	4.0 (1.2)
		2	31.2			4.4 (0.8)
H _{4e}	Suppliers would invest more in technological development	1	25.0	209.0	.219	4.1 (1.2)
		2	31.2			4.5 (0.7)
Control	Experience of a supplier in the forest sector	1	31.7	245.5	.708	17.5 (6.6)
		2	29.6			16.9 (5.6)

Sig. at a level of $p \leq 0.05$

Both groups of suppliers have similar experiences in the forest sector. There is no significant difference between the two groups of suppliers regarding the executives' self-appraisal of knowledge in management functions and their ability to attract professional employees (hypotheses H₂ and H₃ are rejected). However, the capability of their companies to achieve performance objectives in the same supply chain are different. Profit per employee for the first supplier group exceeds the second group by 318% (data from Lursoft database, 2017), and within the five-year period suppliers of the first group increased their share in the buyer's production volume by 3% annually (data from JSC Latvia's State Forests, 2017). Meanwhile, there is no significant difference between high

and low-performing supplier groups, i.e., a limited contract duration does not undermine low-performance suppliers' efforts to improve efficiency and quality, provide more proposals for cooperation improvement, and invest more in the workforce and technological development (hypothesis H₄ is rejected).

DISCUSSION

In this study, factors that might influence the performance of SMEs which provide production services for the buying company are analysed. The RCA concept is applied to determine factors that might influence a supplier's performance regarding their capability to achieve labour productivity and quality objectives set by the buying company. In the existing literature, it has been found that voluntary labour turnover might negatively influence the performance of a company (McElroy and Morrow, 2001; Brown *et al.*, 2009; Eady and Nicholls, 2011). First, it has been found that employees' dissatisfaction with shift work and salaries that do not correspond to work responsibilities along with suppliers' disregard of the evaluation of employees' skills, complicated work requirements, lack of training for employees, and the direct manager's insufficient knowledge about the skills needed for employees are the factors that significantly influence voluntary labour turnover and might lead to the leakage of skilled employees from suppliers, causing performance decline. Thus, the findings of this study contribute to the literature regarding voluntary labour turnover, supplementing the factors that might cause it. However, the finding that a lack of training for employees might lead to their departure contradicts the previous study by Haines *et al.* (2010), where it is argued that training employees might increase the voluntary labour turnover rate. The contradictory findings might arise from the different scope and context of the studies. The study by Haines *et al.* (2010) includes various industries, while this study is focused on one industry. Since entrepreneurship development tends to be dynamic and requires continuous reassessment (Sauka and Chepurenko, 2017), different voluntary labour turnover-influencing factors might be found in different countries and enterprise settings.

Second, it has been found that an executive's self-appraisal of management knowledge and the ability to attract professional employees is similar for both high and low-performing suppliers. Although executives' knowledge in management is similarly assessed, the capability of their companies to achieve performance objectives is different. Moreover, low-performing suppliers are more confident in their ability to attract professional employees, in the management of skills for employees, and in financial management. This raises the question of how an executive's high self-esteem regarding management knowledge influences the performance of a company. The answer to this question might be explained by the Dunning-Kruger effect. It is argued that unskilled people tend to overestimate their abilities; they have little awareness of their incompetence or lack of expertise (Kruger and Dunning, 1999; Dunning, 2011). Thus, executives of poorly

performing suppliers may have insufficient knowledge in the management of their companies, which limits the ability to improve the performance and competitiveness of the company. A lack of expertise in management may negatively influence the performance of the buying company (Parmigiani and Mitchell, 2005). Accordingly, the buying company should be aware of their suppliers' abilities and limitations (Lawson *et al.*, 2014) and decide to replace or develop the suppliers (Glock *et al.*, 2017), providing knowledge-sharing (Adams *et al.*, 2012). However, a lack of management knowledge among supplier managers was not directly proven in this study. This leaves an open question for further research: Does an executive's knowledge in management influence company performance, and if so, how?

Third, it has been found that limiting the contract period by five years does not limit low-performance supplier efforts to improve efficiency and quality, provide more proposals for cooperation improvement, and invest more in workforce and technological development. However, the mean values of supplier executives' answers indicate the importance of contract duration. The mean value of high-performing supplier executives' answers to all questions regarding limited contract term influence is 3.98 out of 5 or 80%, while low-performing suppliers' executives were assessed at the 87% level. There is a trend that low-performing suppliers' executives, more than high-performing competitors, consider contract duration to be a limiting factor for greater effort to improve efficiency and quality and invest more in the workforce and technological development. For the buying company, this trend needs to be considered in cases where alternative suppliers are not available. In this study, contracts of suppliers are limited to a five-year collaboration period. To obtain the next contract, a supplier has to participate in the buyer's open tender and compete with other suppliers. All suppliers have equal opportunities to obtain a contract. The buyer does not offer any advantages to suppliers whose performance in the fulfilment of the previous contract was higher than the others. Thus, this is a proper environment to test the influence of limited contract duration. However, such an environment excludes supplier development enhancement by dynamically extending the contract (Worthmann *et al.*, 2016). Nevertheless, further research could investigate how a shorter contract duration, up to five years, might influence supplier efforts to improve buyer-relevant performance; it could also look into what factors are influenced by a short-term contract duration, since we know that without the assurance of a long-term contract, a supplier is unlikely to make investments that would reduce cost for one particular buyer (Terpend and Krause, 2015).

CONCLUSIONS

1. This study has tried to determine performance-influencing factors that might cause performance problems for supplier SMEs. In carrying out RCA, factors that might affect performance were defined and grouped into three groups: (1) workforce factors, (2) managerial factors, (3) contract-term factors.

2. Workforce factors include lower-tier factors that might influence the leakage of skilled employees from suppliers, causing a performance decline. According to the literature, voluntary labour turnover might negatively influence the performance of a company (McElroy and Morrow, 2001; Brown *et al.*, 2009; Eady and Nicholls, 2011). This study attempted to reveal the factors that cause voluntary labour turnover. It was found that employees' dissatisfaction with shift work and salaries which do not correspond to work responsibilities, along with suppliers' disregard of the evaluation of employees' skills, complicated work requirements, the lack of training for employees, and the direct manager's insufficient knowledge about the skills needed for employees are the factors that significantly influence voluntary labour turnover and might lead to the leakage of skilled employees from suppliers, causing a performance decline.
3. Meanwhile, managerial factors include lower-tier factors related to an executive's knowledge in management functions and the capability to attract professional employees. There is no significant difference between high and low-performing supplier groups in terms of managerial knowledge and capability to attract professional employees.
4. Finally, contract-term factors were related to the argument that a limited contract period undermines suppliers' efforts to improve buyer-related performance (Terpend and Krause, 2015) and that supplier development might be enhanced by dynamically extending the contract (Worthmann *et al.*, 2016). This study shows that there is no significant difference between high and low-performing supplier groups in this regard, i.e., a limited contract duration does not undermine low-performance suppliers' efforts to improve performance.

LIMITATIONS

This study investigated performance-influencing factors of suppliers in the forest industry of Latvia. In other industries or clusters of industries and those in other countries, similar studies may reveal different or supplemental results because of a different context. Forest industry companies included in this study mainly employ manual workers. Therefore, factors influencing the voluntary labour turnover of knowledge workers (Drucker, 1959) might differ from the factors for manual workers. Thus, further research could investigate the difference in factors that influence voluntary labour turnover of knowledge and manual workers.

In this study, a supplier executive's knowledge in management was assessed by self-appraisal questions. Due to the Dunning-Kruger effect (Kruger and Dunning, 1999; Dunning, 2011), the influence of an executive's management knowledge on the performance of a company might be different using another knowledge assessment method.

The influence of contract duration on supplier efforts to improve performance and invest in development was studied in a supply chain where the buying company does not extend contracts with suppliers dynamically, instead allowing them to compete for the next contract, regardless of the performance in the fulfilment of the previous contract. Therefore, the influence of contract duration might be different from cases where the buying company extends contracts dynamically, thus enhancing the development of the supplier (Worthmann *et al.*, 2016).

Appendix 1

Suppliers' performance problems, their root causes and verification questions

P1 – 52% of suppliers do not achieve labour productivity objectives set by the buyer.

P2 – 33% of suppliers do not achieve quality objectives set by the buyer.

Problem	Root cause defined by experts	Hypothesis	Question for testing the hypothesis	Respondent	Factor group
P1; P2	C1-Exhausting shift work	H _{1a}	How satisfied are you with the current shift work?	Employee	Workforce factors
P1; P2	C2-Non-evaluation of employees' skills	H _{1b}	How often does the company you work for evaluate your professional skills?	Employee	
P1; P2	C3-Non-motivating pay	H _{1c}	To what extent does the salary correspond with your work responsibilities?	Employee	
P1; P2	C4-Complicated work requirements	H _{1d}	How complicated are the requirements of the current work?	Employee	
P1; P2	C6-Non-training of employees	H _{1e}	How sufficient is the training that the company provides for you?	Employee	
		H _{1k}	Assess your desire to improve your professional skills.	Employee	
P1; P2	C7-Direct managers lack knowledge about the skills needed for employees	H _{1f}	How good is your direct manager's knowledge about the skills you need for your profession?	Employee	
P1; P2	C8-High demand for a workforce in competing sectors	H _{1g}	How easy would it be for you to find another job?	Employee	
P1; P2	C9-Insufficient skills for employees	H _{1h}	How do you personally evaluate your professional skills compared to the average level in your profession?	Employee	
P1	C10-Employee pay is not dependent on productivity	H _{1i}	Are you receiving a premium on wages for labour productivity? (Yes/No)	Employee	
P2	C11-Employee pay is not dependent on quality	H _{1j}	Are you receiving a premium on wages for the quality of work? (Yes/No)	Employee	
P1; P2	C12-High job-enforcement discipline	H _{1l}	How high is the discipline in your current work?	Employee	

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(continued)

P1; P2	C13-Low employee motivation to work in the current job	Grouping variable	To what extent do you want to continue working in your current job?	Employee	
P1; P2	C14-Managers lack knowledge in the development of a motivating remuneration system	H _{2a}	Assess your knowledge in the development of a motivating remuneration system.	Executive	Managerial factors
P1; P2	C15-Managers have no skills management knowledge	H _{2b}	Assess your knowledge in the management of skills for employees.	Executive	
P1; P2	C16-Managers lack financial management knowledge	H _{2c}	Assess your knowledge in financial management.	Executive	
P1	C17-Managers have no efficiency management knowledge	H _{2d}	Assess your knowledge in the management of a company's efficiency.	Executive	
P2	C18-Managers lack quality management knowledge	H _{2e}	Assess your knowledge in quality management.	Executive	
P1; P2	C19-Lack of qualified employees	H ₃	How easy is it for you to attract qualified employees?	Executive	
P1; P2	C20-Limited contract period negatively influences suppliers' efforts	H _{4a}	If a service contract was not limited by a five-year period, how much would it affect the following efforts: 1)suppliers would increase their efforts in efficiency enhancement	Executive	Contract-term factors
		H _{4b}	2)suppliers would increase their efforts in quality improvement	Executive	
		H _{4c}	3)suppliers would provide more proposals for cooperation improvement	Executive	
		H _{4d}	4)suppliers would invest more in workforce development	Executive	
		H _{4e}	5)suppliers would invest more in technology development	Executive	

5-point scale answers, except for C10 and C11

Appendix 2

Mean values of suppliers' employee age and work experience in the forest sector and at the current company

Work continuance/discontinua nce	Age, years	Work experience in the forest sector, years	Work experience at the current company, years
Will not continue to work	34 (<i>n</i> =15) (<i>SD</i> 7.2)	9 (<i>n</i> =15) (<i>SD</i> 5.7)	4 (<i>n</i> =15) (<i>SD</i> 2.6)
Doubts about continuing work	41 (<i>n</i> =127) (<i>SD</i> 10.1)	14 (<i>n</i> =127) (<i>SD</i> 8.7)	6 (<i>n</i> =125) (<i>SD</i> 5.5)
Will continue to work	41 (<i>n</i> =447) (<i>SD</i> 10.2)	13 (<i>n</i> =446) (<i>SD</i> 8.5)	6 (<i>n</i> =445) (<i>SD</i> 4.9)

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