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Factors affecting growth and internationalization of micro-enterprises in a sparsely populated region: case South Savo, Finland

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Abstract

Micro-enterprises have recently received increased research attention due to their contribution to economic growth and employment, and an increasing amount of research has focused on studying their performance. The current objective was to study factors affecting the growth and internationalization of micro-enterprises, as well as the most important barriers for growth in the sparsely populated region of South Savo in Finland. Owners or managers of 108 micro-enterprises responded to a questionnaire probing variables representing aspects of growth, internationalization, innovation, networking, digital maturity, and business environment, among others. Statistical analyses including multiple regressions were used to analyze the data collected on quantitative rating scales. The results suggested that intention to grow and level of networking with other companies and public actors were directly related to actualized growth. Intention to grow was, in turn, affected by innovativeness, growth capability, intention for internationalization, and business environment. In addition, the level of innovativeness and intention for internationalization were related to actual level of internationalization. The most important barriers for growth selected by the participants were lack of time for development activities, threshold to hire new employees, and sufficiency of funding. The results were utilized in guiding regional development activities in the South Savo region.

Keywords: Micro-enterprise, Growth, Internationalization, Innovativeness, Networking

Introduction

Small and medium-sized enterprises (SMEs), including micro-enterprises, are often referred as the backbone of the European economy, representing 99% of all businesses in the European Union (EU). Many of them are enterprises that employ fewer than 10 persons and whose annual turnover or annual balance sheet total does not exceed 2 million Euros. These companies are defined as micro-enterprises, and they constitute close to 95% of European firms. Micro and small enterprises also employ almost half of the

employees in the EU area and produce more than one-third of added value (Eurostat, 2022).

Despite the significance of micro-enterprises to the European economy, there is still room for new research concentrating particularly on micro-enterprises (Saarela et al., 2018). Increasing understanding of the characteristics of micro-enterprises is important, because they have been found to differ distinctively from larger companies, particularly in terms of business capabilities and practices, owner-manager entrepreneur characteristics and their growth ambition, as well as the business environment (Gerghes et al., 2016). One major reason for low growth is that many micro-enterprises are imitative businesses operating in mature industries and serving local markets (Davidsson et al., 2010). However, even though studies suggest that the growth of a firm is partly externally determined, existing studies tend not to highlight environmental characteristics as being the most influential factors affecting growth (Davidsson et al., 2010).

Large portion of micro-enterprises have remained small. This can be partly explained with entrepreneurs' low desire to grow (Achtenhagen et al., 2017). Many micro-enterprises have traditionally chosen to operate in mature industries with non-unique business ideas serving largely local markets (Davidsson et al., 2010). Zastempowski (2022) discovered that micro-enterprises with more experienced key personnel are less likely to innovate new product or processes, possibly because such micro-enterprises typically have more traditional business models (Zastempowski, 2022). In other words, "the older the organization, the more bureaucratic and the less receptive it is to innovation" (Zastempowski, 2022). However, micro-enterprises wanting to grow have often failed in unleashing existing growth potential through business development, due to several challenges, such as lack of financial and human resources (Achtenhagen et al., 2017). Henley and Song (2020) have argued that policy design should be targeted to those micro-enterprises that are most likely to achieve the development path towards growth and productivity. These micro-enterprises would need support in many levels, including accessing knowledge from external and peer-to-peer sources to translate knowledge into appropriate innovation activity, and supporting to access international markets where smaller businesses are disadvantaged by absence of scale economies (Henley & Song, 2020). This calls for research focusing particularly on growth and the characteristics of micro-enterprises (Saarela et al., 2018; Gerghes et al., 2016).

In the absence of a unified theory of small business growth, models and approaches used have been fragmented and wide-ranging (Fadahunsi, 2012). Categorizations of different factors contributing to growth have been suggested in the literature. In a classic literature review addressing small firm growth, Davidsson et al. (2010) summarized that the growth of a micro-enterprise is influenced by both *internal factors and external factors.* Internal factors include the characteristics of the entrepreneur (e.g., motivations, experience, and skills), the characteristics of the enterprise itself (e.g., size and age) and the firm's strategy (e.g., use of technology, market positioning, and innovation). External factors include, for example, the growth of the industry and the dynamism of the region. External factors have an influence on internal factors. For example, entrepreneurial motivation is affected by local culture, values, and rivalry (Porter, 2011). Experiences and skills are also often gained locally. In addition, the strategies of companies are also highly affected by local conditions.

Wiklund et al. (2009) proposed five perspectives to small business growth, which were entrepreneurial orientation, the environment, strategic fit, resources, and growth attitude. In line with this categorization, Fadahunsi (2012) distinguished between entrepreneurial, organization, strategic, and environmental factors contributing to small business growth. Entrepreneurial factors include, for example, experience and motivation of the entrepreneur, organization factors include age, size and location, strategic factors include marketing and internationalization strategies, and environmental factors include different factors related to national, local, and sectoral environments.

Many would argue that a firm's success depends on its ability to innovate, and that this distinguishes a true entrepreneur from ordinary business owners (Zastempowski, 2022). Innovation has been found to be connected with business growth in a few classic studies (e.g., Freel & Robson, 2004) and more recently similar evidence has been presented on the benefits of innovations from national-level studies focusing on micro-enterprises. For example, Baumann and Kritikos (2016) identified a link between R&D intensity, innovation, and growth in productivity among German micro-enterprises. Similar findings have also been made in UK suggesting that R&D-related investments in micro-enterprises enhance innovations, which in turn have a positive effect on productivity and turnover growth (Luong & Hewitt-Dundas, 2020).

Based on a literature review, Zastempowski (2022) argued that factors determining innovation capability of a micro-enterprise could be grouped into personal characteristics (gender, age, educational background, experience/skills), organizational characteristics (know-how, work climate, structure, technology, individual activities), and external environmental characteristics (financial support, cooperation, competition). Zastempowski (2022) discovered that seven of these factors are significant determinants that explain the innovation capability of micro-enterprises, namely experience/skills (personal characteristics), having a marketing unit, good coordination of cooperation between employees, engagement in initiatives for solving social problems (organizational characteristic), financial support and intensive cooperation with research centers and with other companies (external environmental characteristics). Surprisingly, external financial support from public administration, and cooperation with other companies indicated a negative impact. Consequently, Zastempowski (2022) argued that micro-enterprises should be encouraged to cooperate with research centers in order to increase micro-enterprises' new-to-the-market product and process innovation and thus the level of innovation in a given region.

Studies of competitiveness and economic development have tended to focus on the nation as the unit of analysis, and on national attributes and policies as the drivers. As regional scientists and economic geographers have long understood, however, there are substantial differences in economic performance across regions in virtually every nation. This suggests that many of the essential determinants of economic performance are to be found at the regional level. Porter (1990, 2003, 2011) argues in his theory of national competitive advantage of industries that any company's ability to compete is based mainly on an interrelated set of location advantages that certain industries in different nations possess, namely: firm strategy, structure, and rivalry; factor conditions; demand conditions; related and supporting industries; government; and chance. Several studies have indicated that business development in urban

areas differs from sparsely populated areas. For example, there is recent evidence from Finland that micro-enterprises in sparsely populated areas have difficulties with growth management (Saarela et al., 2018). These findings suggests that the characteristics of the business environment need to be taken into account when investigating the growth of micro-enterprises.

One aspect highlighting the role of location affecting firm's growth is digitalization. Digitalization is related to the accelerating trend of globalization, and it enables companies easier access to global markets and labor force, among other benefits. It has transformed how firms organize for value creation, delivery, and capture during turbulent times and thus also provided new opportunities for micro-enterprises (Autio et al., 2021). Although digitalization has been argued to create new opportunities for the profitability and competitiveness, micro-enterprises in the rural areas have difficulties in capturing such benefits. One reason for this is the persistent and growing inequality of the availability and cost of connectivity, compared to the urban areas. Findings from a recent study suggest that the digital divide between urban and rural areas still exists and this creates difficulties for businesses in rural areas to be resilient in the face of economic challenges (Morris et al., 2022). Paradoxically, growth-seeking companies in the rural communities are most in need of improved digital connectivity in order to compensate for their remoteness, but they are the least connected (Salemink et al., 2017).

Better internet technologies, however, is not enough to narrow such digital divide. Companies in the rural areas also need capacity and capability to embrace the emerging technologies (Räisänen & Tuovinen, 2020), which has been argued to be key enabler of resource-efficient internationalization and business development (Reim et al., 2022). Business model of a micro-enterprise is typically built on the specific conditions of the region. Taking steps towards international markets often require changes in the company's business model, that could be supported with digital technologies. Reim et al. (2022) argue that micro-enterprises' challenges of developing their business model to international markets are related to value creation, value delivery, and value capture. Challenges of value creation are related to a lack of international market knowledge, difficult international marketing conditions, and insufficient international value propositions. According to Reim et al. (2022), these challenges could be mitigated by being present on the Internet and by using targeted online advertising. Challenges of value delivery are related to international collaboration, resource limitations for business development, and a lack of competence and skilled employees for internationalization (Reim et al., 2022). These challenges could be mitigated with digital technologies by advertising open positions all over the world and supporting online collaboration to increase understanding of current business (Reim et al., 2022). Finally, the challenges of value capture are related to the increased costs of international operation, and unstable revenues from international business activity (Reim et al., 2022). For these challenges, digital technologies could be used to lower the costs of international business communication and to monitor the status of offered services remotely with sensors (Reim et al., 2022). The ability to take advantage of these digital opportunities is another source of inequality compared to the urban regions. On a general level, average levels of education and skills are lower in the rural areas and

this has a negative impact on adoption and use of technologies (Salemink et al., 2017). These findings suggests that entrepreneurs' views related to digitalization need to be taken into account when investigating growth of micro-enterprises.

The aim of the current research was to examine factors that affect the growth and internationalization of micro-enterprises in the sparsely populated region of South Savo, Finland, using questionnaire methods. This information was used by regional developers to guide the public support actions for micro-enterprises and the results were also presented to the enterprises to support their own growth and internationalization efforts. The factors studied included intention to grow, growth capability, intention for internationalization, innovativeness, networking, digital maturity and business environment. In addition, demographic information about the companies (e.g., size, age, growth) as well as the most important perceived barriers of growth were investigated.

Research concepts and hypotheses

Research variables were selected, and hypotheses were formulated for the current study based on existing theory and the analysis of the existing literature described above. The theory of planned behavior (Ajzen, 1985) was applied in the current study to investigate factors affecting *growth* and *internationalization* of companies. The theory of planned behavior suggests that behaviors are affected by behavioral intentions, thus *intention to grow* and *intention for internationalization* were selected as research variables for the current study. According to theory of planned behavior, behavioral intentions are affected by attitudes, perceived behavioral control (self-efficacy), and subjective norms. Perceived behavioral control refers to the degree to which a person believes that he or she can perform a given behavior. In the current study, perceived behavioral control is represented by the variables *growth capability* and *internationalization capability*. The participants' perceptions (attitudes) of the factors affecting intention to grow were also studied using four important concepts identified in the literature analysis: *networking*, *innovativeness*, *business environment, and digital maturity*. Subjective norms were not studied in the current study, as the goal was to study growth and internationalization on a company level, and subjective normative perceptions vary much based on the respondent. Thus, there were ten central concepts in the current study. The operationalization of the concepts as research variables is described in detail in the "Method" section.

Research hypotheses were formulated based on theory of planned behavior so that it was hypothesized that growth and internationalization are positively related to their respective behavioral intentions, and it was also hypothesized that the other main research variables are not directly related with growth and internationalization. Further, it was also hypothesized that intention to grow and intention for internationalization are positively related to growth capability and internationalization capability, respectively. Finally, it was hypothesized that networking, innovativeness, and (goodness of) business environment are all positively related to intention to grow and intention for internationalization. The research hypotheses are presented in Table 1 below.

Table 1 Research hypotheses

H1. The actual growth of micro-enterprises is positively related to their intention to grow
H2. The actual level of internationalization of micro-enterprises is positively related with their intention for internationalization
H3. The intention to grow in micro-enterprises is positively related with their growth capability
H4. The intention to grow in micro-enterprises is positively related with their internationalization capability
H5. The intention to grow in micro-enterprises is positively related with their level of networking
H6. The intention to grow in micro-enterprises is positively related with their level of innovativeness
H7. The intention to grow in micro-enterprises is positively related with the goodness of their business environment
H8. The intention to grow in micro-enterprises is positively related with digital maturity
H9. The intention for internationalization in micro-enterprises is positively related with their internationalization capability
H10. The intention for internationalization in micro-enterprises is positively related with their level of networking
H11. The intention for internationalization in micro-enterprises is positively related with their level of innovativeness
H12. The intention for internationalization in micro-enterprises is positively related with the goodness of their business environment
H13. The intention for internationalization in micro-enterprises is positively related with digital maturity

Method

Participants

Key representatives from 108 small businesses acted as participants in the study. All the participants stated that their companies are active companies operating in the South Savo region, Finland. 62 respondents reported their titles as managing directors, 22 respondents as entrepreneurs, 12 respondents as owners or co-owners, 6 respondents as directors of the board, and 6 respondents as other managers (e.g., director of development, director of business operations). Out of original 111 responses received, three responses were discarded from the current data due to quality of responses or the company not being a small business.

Procedure

An invitation letter to participate in the survey was sent by e-mail to 2895 active micro-enterprises based in South Savo region, whose e-mail addresses were found in the Finnish Vainu database of companies. Companies clearly outside the scope of the current study (e.g., housing co-operatives) were excluded. The invitation letter contained information about the purpose of the research and its aims. The respondents were motivated by the information that the survey results will be utilized in improving existing regional public services and developing new services to small companies. The respondents were also told that responses to the survey were anonymous, and all the information provided were analyzed confidentially. After the survey reported in this paper, the respondents were directed to another survey, in which it was possible for them to give information about their companies' development needs and enter their contact information for possible subsequent cooperation. It was clearly indicated that the two surveys were administered by different persons and the responses to the main research survey remained anonymous even if the respondent gave his or

her contact information in the second survey. The companies had about 3 weeks to respond to the questionnaire and a reminder e-mail was sent 5 days before the final survey deadline.

Tasks and materials

The survey was cross-sectional and it was implemented as an electronic survey and it was constructed using the Webropol online survey tool. A mixed methods design was used, in which quantitative scales were used as the primary method and they were augmented by qualitative questions. All the quantitative scales and demographic questions were mandatory for the respondents, and all qualitative comments were optional. On the first page of the questionnaire, the most important instructions of the invitation letter were repeated, and the respondents were required to indicate that their companies are active companies based on the South Savo region to enter the main survey. On the second page of the questionnaire, demographic information about the respondent and the company was asked. The respondent was first asked to type her or his job title (e.g., entrepreneur, chief executive officer, chief business officer). In the next six questions, the respondents were asked to select their company age in years (time since the company was established), branch of industry according to the European classification, regional specialization (if any), number of employees, annual revenue, and annual profit by selecting suitable options from the lists of options given. The options and the results from these demographic questions are presented in the "Results" section. In the last question of the page, the participants estimated the percentage distribution of the company revenue in the South Savo region, other regions in Finland, and international revenue (exports).

Page three contained 15 evaluations about company growth, intention to grow, growth capability, networking, and internationalization. In the first three evaluations concerning growth, the respondent was asked to estimate changes in sales, profit, and number of employees during the period of past three years (scale: 1 = decreased significantly–9 = increased significantly). Sales and employment are widely used indicators of growth in previous literature according to a review, and profit has been also used relatively often as a growth measure (Dobbs & Hamilton, 2007).

In addition, the respondent was asked to select any barriers of growth from a list and provide optional free-form qualitative comments about growth and its barriers and enablers. There were also ten statements on intention to grow and growth capability, networks, and internationalization, which were evaluated on a 1–9 Likert scale (see Appendix A). Finally, the respondent had a possibility to provide optional free-form qualitative comments about networks and internationalization and their barriers and enablers.

Page four contained 16 questionnaire items. First, the respondent was asked to select an innovativeness level for his/her company from five options (representing innovators, early adopters, early majority, late majority, and laggards) following the diffusion of innovation framework by Rogers (2010). These options were coded to a 1–5 scale, respectively, so that, for example, innovators received a score of 5, and laggards a score of 1. There were also 12 statements, which used the 1–9 Likert scale. Nine statements probed aspects of digital maturity (culture, technology, organization, and customer insight)

following the ideas presented in the digital maturity model 4.0 by Gill and VanBoskirk (2016). In addition, there were three open-ended questions, in which the respondents had possibility to give free-form qualitative comments related to their qualitative ratings.

On page five, there were nine statements (scale: 1–9 Likert) probing aspects of the company's operational environment following the Porter's (1990, 2003, 2011) diamond model. The favorableness of the company's conditions along the four aspects of the model (factor conditions; demand conditions; firm strategy and rivalry; and related and supporting industries) were probed with two statements each. In addition, there was one statement, which probed the effect of public administration (coined government by Porter). Finally, there was an optional qualitative question to obtain free-form qualitative information related to the company's operating environment.

The questions probing company basic information on page 2 and all the quantitative ratings on subsequent pages were all mandatory for the respondent, while all the qualitative comment fields related to the quantitative ratings were all optional for the respondent. All the statements used are presented in Appendix A.

Data analysis

The normality of the data studied using 1–9 scales was examined using the Lilliefors adaptation of the Kolmogorov–Smirnov test, which suggested that the questionnaire data gathered were not normally distributed. Consequently, Friedman's rank tests were used to compare the participants' ratings across multiple categories for significant differences and Wilcoxon's matched pairs signed ranks tests were used in pairwise comparisons. Bonferroni corrected significance levels are presented in the results of the pairwise comparisons. Cronbach's Alpha scores were calculated to estimate the reliability of the scales consisting of multiple items. Multiple regressions were used to analyze the ability of a set of independent variables to predict the dependent variables (growth, intention to grow, and internationalization). Indicators of multicollinearity (tolerance and variance inflation factors) were well within acceptable limits (tolerance > 0.25; variance inflation factor < 10) in all reported regression analyses. The optional qualitative data were only acknowledged, not analyzed systematically due to the relatively small amount of data received per question.

Results

Participating companies

The basic demographic information concerning the participating companies is presented in Table 2. The table presents the distribution of the selected alternatives concerning age of the company, number of employees, revenue, and profit. The most typical participant in the questionnaire was an individual entrepreneur, whose company had been operational for 11–20 years, annual revenue was below 50,000€, and annual profit was below 10,000€.

The participating companies were quite evenly spread across different industries according to the NACE classification used in the European Union. The most frequent domains were S Other Service Activities (19 companies); F Construction and Q Human Health and Social Work Activities (10 companies); M Professional, Scientific and Technical activities (9 companies); C Manufacturing, G Wholesale and retail trade, and I

Table 2 Demographic information about the participating companies

Variable	Number of companies	Share of companies (%)
Age of company		
Less than 1 year	6	5.6
1–2 years	14	13.0
3–5 years	17	15.7
6–10 years	18	16.7
11–20 years	33	30.6
20–50 years	17	15.7
Over 50 years	3	2.8
Number of employees		
1	53	49.1
2–5	39	36.1
6–10	13	12.0
11–20	3	2.8
Revenue		
0–50,000 €	35	32.4
50,000–100,000 €	19	17.6
100,000–200,000 €	15	13.9
200,000–500,000 €	17	15.7
500,000–1,000,000 €	14	13.0
Over 1,000,000 €	8	7.4
Profit		
Negative	14	13.0
0–10,000 €	34	31.5
10,000–50,000 €	32	29.6
50,000–100,000 €	20	18.5
100,000–200,000 €	5	4.6
Over 200,000 €	3	2.8

Accommodation and Food Service activities (8 companies). The only domains in the classification without any participating companies in this study were B Mining and quarrying, O Public administration and Defence, and T Activities of Households as Employers.

The results concerning the estimated distribution of revenue of the participating companies between the South Savo region, rest of Finland, and other countries suggested that more than half of the revenue came from the South Savo region. The exact figures were: South Savo region 58.2%, rest of Finland 39.9% and other countries 10.6%.

Descriptive results

The growth reported by the participating companies during the past few years (mean and standard error of the mean, SEM) is presented in Table 3. On average, the companies reported slight growth in both revenue and profit. For personnel, the ratings landed on average in the middle of the scale, which indicated no change in number of personnel. When interpreting this result, the large number of solo entrepreneurs has to be taken into account. Among all the participating companies, both intention to grow (aiming at

Table 3 Results related to growth-related variables

Growth (scale 1–9)	Mean	SEM
Growth of revenue	5.8	0.19
Growth of profit	5.6	0.19
Growth of personnel	5.0	0.16
Growth (average)	5.5	0.15
Intention to grow	5.5	0.24
Growth capability	5.9	0.18

Table 4 Barriers of growth selected by the companies

Barrier of growth	Number of companies
Lack of time for developing the company	39
Threshold for hiring additional personnel	36
Sufficiency of funding	34
Rivalry circumstances	26
Lack of motivation to grow	23
Other barriers suggested by participants[a]	22
Lack of marketing strategy of marketing skills	17
Location of company	16
Lack of distribution channels of others business partners	14
There is no-one who would continue as the entrepreneur in the future	10
Lack of know-how	9
Manageability of the organization and challenges related to management	6

[a] E.g., availability of qualified workforce, availability of suitable premises, market situation

growth and willingness to accept the related risks) and growth capability (growth strategy and resources) were also estimated to be slightly above average (Table 3).

In the data, there were 21 companies, which had a growth score of 7 out of 9 or bigger, and these companies were investigated closer. The growth companies were quite evenly spread to different industries, e.g., construction (4 companies), information and communication (3), real estate (3), health and social work (3), and other services (3). When the ages of the growth companies were examined, it turned out that growth companies were younger than average (10 years or younger: 17 companies; more than 10 years: 4 companies). Most of the growth companies (15/21) employed more than one person. Eight of the 21 growth companies had already reached an annual revenue of at least 500,000 €. The annual profits of the growth companies were moderate. Among the 21 growth companies, only one company made a profit of more than 100,000 €, and only one company had a negative profit.

The barriers of growth selected by the companies from the options provided in the questionnaire are presented in Table 4. The options were barriers identified in previous national research (i.e., Liukko et al., 2006; Tornikoski et al., 2011). In addition, the companies had a possibility to name other barriers relevant to them.

The level of networking among the participating companies with other companies and public organizations is presented in Table 5. Networking with companies was

Table 5 Internationalization and level of networking with companies and public organizations

	Mean	SEM
Internationalization (scale 1–9)		
Internationalization (current level of)	3.1	0.27
Aims at internationalization	3.3	0.26
Internationalization in strategy	2.7	0.25
Intention for internationalization (average)	3.0	0.25
Networking (scale 1–9)		
Networking with other companies	5.9	0.22
Networking with public actors	3.8	0.25
Networking (average)	4.8	0.20

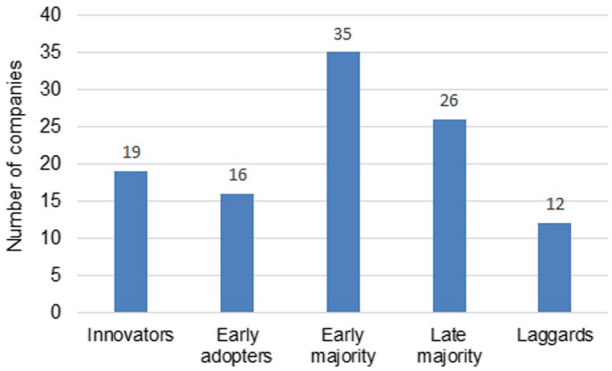

Fig. 1 Level of innovativeness

estimated to be relatively high with companies, but clearly less than average with public organizations. The difference between these two ratings was significant ($Z = 6.5$; $p < 0.001$). It should be noted that in Finland most higher education and research institutions are public organizations. The level of internationalization at the time of responding to the questionnaire as well as intention for internationalization is also presented in Table 5. There were no statistically significant differences between the two ratings ($Z = 0.8$, $p = 0.43$).

The results regarding the level of innovativeness using the model by Rogers (2010) in relation to other Finnish companies are presented in Fig. 1. Early majority with 35 companies was the most common group in the adoption of innovations and technology reported by the companies. Only 38 out of 108 companies categorized themselves as late majority or laggards.

The results concerning the digital maturity level as reported by the companies following the model by Gill and VanBoskirk (2016) are presented below in Table 6. There was statistically significant variation among the four categories of digital maturity $X_F^2 = 32.4$, $p < 0.001$. The participants gave higher ratings for customer orientation than both digital technology utilization $Z = 3.2$, $p < 0.01$ and digital culture (digitalization in company strategy) $Z = 5.0$, $p < 0.001$. In addition, utilization of digitalization in processes $Z = 4.4$, $p < 0.001$ and digital technology utilization $Z = 3.5$, $p < 0.001$ were both given significantly higher ratings than digital culture (digitalization in company strategy).

Table 6 Dimensions of digital maturity and business environment

	Mean	SEM
Digital maturity (scale 1–9)		
Organization	5.2	0.22
Culture	4.4	0.22
Technology	4.9	0.22
Customer orientation	5.7	0.20
Digital maturity (average)	5.0	0.18
Business environment (scale 1–9)		
Demand conditions	6.9	0.16
Strategy, structure, and rivalry	6.3	0.14
Factor conditions	5.5	0.16
Related and supporting industries	5.9	0.17
Public administration	4.9	0.21
Business environment (average)	6.0	0.10

Table 7 Results of multiple regression analyses with growth and internationalization as dependent variables

Variable	Growth			Internationalization		
	B	SE	β	*B*	SE	β
Intention to grow	0.167	0.073	0.264*	0.65	0.068	0.057
Growth capability	0.064	0.087	0.075	− 0.32	0.081	− 0.021
Intention for internationalization	− 0.083	0.069	− 0.134	0.903	0.065	0.820***
Networking	0.217	0.078	0.279**	− 0.112	0.073	− 0.081
Innovativeness	0.014	0.137	0.011	0.344	0.128	0.150**
Business environment	− 0.041	0.149	− 0.028	− 0.191	0.139	− 0.072
R^2		0.147			0.767	
F (6, 101)	2.89*			55.29***		

*Significant at $p < 0.05$; **$p < 0.01$; ***$p < 0.001$

The companies' average ratings of their business environment according to the model by Porter (1990, 2003, 2011) are also presented in Table 6. There was statistically significant variation between the four conditions of the Porter's diamond model $X^2_F = 32.4$, $p < 0.001$. Demand conditions were given higher ratings than firm strategy, structure and rivalry $Z = 3.4$, $p < 0.01$, factor conditions $Z = 6.0$, $p < 0.001$, and related and supporting industries $Z = 4.4$, $p < 001$. In addition, firm strategy, structure, and rivalry $Z = 4{,}0$, $p < 0.001$ and related and supporting industries $Z = 2.7$, $p < 0.05$ were both given higher ratings than factor conditions. The scale, which received lowest individual average score was about availability of skilled workforce ($M = 4.5$). In addition to the four central conditions in the diamond model, which received mostly positive ratings, the effects of public administration (representing government of the Porter's model at the regional level) were also rated and the average ratings were slightly below the middle of the scale.

Factors affecting growth and internationalization

The results of the multiple regression analyses with growth as dependent variable are presented in Table 7. The growth of the companies in the past three years was

significantly affected by intention to grow and level of networking, while internationalization was explained by intention for internationalization, as well as innovativeness.

Digital maturity was clearly not connected to any of the main dependent variables of (growth, intention to grow, internationalization, and intention for internationalization) in the initial analyses, and it was consequently dropped out of the multiple regression analyses presented above.

Following the principles of path analysis, further multiple regression analyses were performed for the two main variables, namely intention to grow and intention for internationalization with the remaining five variables as independent variables. The results of the regression analysis with intention to grow as dependent variable are presented in Table 8. In the analysis, it was found that the four variables of growth capability, internationalization capability, innovativeness, and business environment were significantly related to growth intention among the participating companies. Networking, which was directly related to growth, was not significantly related with intention to grow. A similar multiple regression analysis was carried out with intention for internationalization as dependent variable. In this analysis $F\,(4,103) = 5.59$; $p < 0.01$; $R^2 = 0.178$ the only independent variable significantly related with intention for internationalization was innovativeness $\beta = 0.303$; $p < 0.01$. Growth capability, business environment and networking were not significantly related with intention for internationalization.

Results by research hypothesis

The results above showed a significant positive relationship between growth and intention to grow, as well as between internationalization and intention for internationalization. Thus, hypotheses H1 and H2 were accepted. Growth capability, internationalization capability, innovativeness, and business environment were all positively related with intention to grow, thus, hypotheses H3, H4, H6, and H7 were accepted. Innovativeness was positively related with intention for internationalization, thus H11 was accepted. There was not enough evidence to support H5 (intention to grow is positively related with their level of networking). Instead, a positive relationship was observed between level of networking and perceived actual growth. There was also not enough evidence to support H9, H10, H11, and H12, which suggested that growth capability, internationalization capability, innovativeness, and business environment were positively related with intention for internationalization. Finally, digital maturity was not connected with

Table 8 Results of the multiple regression analysis with intention to grow as dependent variable

Variable	Intention to grow		
	B	**SE**	**β**
Growth capability	0.368	0.112	0.274**
Internationalization capability	0.414	0.085	0.425**
Networking	0.067	0.106	0.055
Innovativeness	0.419	0.182	0.207*
Business environment	0.397	0.199	0.170*
R^2		0.359	
F (5, 102)	11.43***		

*Significant at $p < 0.05$; **$p < 0.01$; ***$p < 0.001$

intention to grow or intention for internationalization and consequently there was not enough evidence to support H8 and H13 based on the current data.

Effects of demographic variables

In addition to regression analyses, pairwise Mann-Whitney U comparisons were carried out to study the effects of background variables, such as company age, number of employees, revenue, and geographic distribution of revenue to the main variables on a general level. The results showed that younger companies (max. 10 years, $n=55$) reported significantly larger growth $U=882.5$, $p<0.01$ and higher digital maturity $U=1088.0$, $p<0.05$ than older companies (>10 years, $n=53$). Companies with more than one employee ($n=55$) reported larger growth $U=1045.0$, $p<0.05$, reported higher level of networking $U=963.0$, $p<0.01$, and evaluated the business environment of the company as better $U=1088.0$, $p<0.05$ when compared to one employee companies ($n=53$). Companies with annual revenues of more than 100,000 € ($n=54$) reported higher intention to grow ($U=1040.0$, $p<0.05$) than companies with annual revenues of less than 100,000 € ($n=54$). Companies, which reported earning their revenue mostly from customers outside their own region ($n=45$), reported higher intention to grow $U=1040.0$, $p<0.05$, intention for internationalization $U=627.5$, $p<0.001$, and current level of internationalization $U=591.0$, $p<0.001$ than companies, which reported earning their revenue mostly from customers within their own region (the South Savo region, $n=63$).

Reliability analysis

Cronbach's α scores were calculated for the all the constructs, which were measured using multiple scales. For the growth and internationalization-related variables, the scores were as follows: growth $\alpha=0.79$, intention to grow, $\alpha=0.86$, capability for growth $\alpha=0.70$, and intention for internationalization $\alpha=0.95$. For digital maturity the Alpha values were: culture $\alpha=0.82$, technology $\alpha=0.75$, organization $\alpha=0.86$, and customer insight $\alpha=0.79$. Finally, for business environment, the values were as follows: demand conditions $\alpha=0.54$, firm strategy, structure and rivalry $\alpha=0.74$, factor conditions $\alpha=0.73$, and supporting industries $\alpha=0.77$. Thus, all of the scores were on an acceptable level, except for the demand conditions aspect of the business environment, for which the score was on a questionable level.

Discussion

The results of the current study emphasized the importance of networking and innovativeness in explaining the growth and internationalization of micro-enterprises operating in sparsely populated areas. Among the current sample of companies, the level of networking with other companies and public actors was directly related to actualized growth. The level of innovativeness was in turn directly related to actualized internationalization of the companies. In addition, innovativeness was a predictor of intention to grow, alongside growth capability, intention for internationalization, and business environment. The internationalization of micro-enterprises was also related to intention to grow together the with innovativeness of the firm. The most important barriers for

growth identified in this study were: lack of time for development activities, threshold to hire new employees, and sufficiency of funding.

In line with the reviews of factors affecting growth and internationalization (Davidsson et al., 2010; Fadahunsi, 2012; Wiklund et al., 2009; Zastempowski, 2022), we found that a combination of different kind of factors affected growth and internationalization of micro-enterprises in the target region. Intention to grow and intention for internationalization can be seen as internal entrepreneurial factors, and age and size as internal organizational factors. Level of innovativeness, which can be seen as a strategic factor, predicted internationalization and intention to grow. Level of networking, which can also be seen as a strategic factor, was related with actual growth. Business environment as an external and environmental factor also predicted intention to grow. It should also be noted that characteristics of the entrepreneur (e.g., education and experience) were not studied in the current research.

Somewhat surprisingly, digital maturity was not related with growth and internationalization-related variables in the current data. In the target region, many micro-enterprises are companies focusing on local markets, and many of them have not utilized possibilities offered by globalization through digitalization. The results seem to be in line with Morris et al. (2022), who argued that a digital divide still exists and rural sparsely populated area may face challenges due to the limited use of the digital technology in the large sense. Another explanation may be methodological. In the current study, an approach using central aspects of the well-known digital maturity framework and methods presented by Gill and VanBoskirk (2016) was adopted. While it is not especially designed for micro-enterprises, its four main dimensions have been suggested to be also important in the context of micro-enterprises (see e.g., Kuusisto et al., 2021). However, there is a chance that these methods did not capture the essence of digital maturity for the current target group (micro-enterprises in a sparsely populated region).

The current results indicated that the self-reported level of innovativeness according to Rogers' theory on diffusion of innovations (2010) predicted intention to grow and level of internationalization. This is in line with Love et al. (2011), who suggested that business growth is related directly to both the extent of firms' service innovation as well as the diversity of innovation. However, Love and Roper (2015) noted that evidence on the association between growth and innovation specifically among SMEs is more limited, often characterized by small sample sizes and relatively simplistic analysis. Thus, the current results contribute towards understanding the importance of innovation to company growth also among the smallest companies and in the context of sparsely populated areas. Importantly, they are also in line with European national studies (Baumann & Kritikos, 2016; Luong & Hewitt-Dundas, 2020), which also found a link between innovation and growth in micro-enterprises. Based on the current results, Rogers' (2010) framework on diffusion of innovation seems to offer a suitable tool for studying the perceived innovativeness level of micro-enterprises.

The finding that networks are positively associated with growth is not supported by the entire body of existing research. In a classic study, Brüderl and Preisendörfer (1998) noted that previous studies did not consistently find positive network effects on growth. However, in line with the current results, their own results indicated that network support increases the probability of survival and growth of newly founded businesses. The

link between firm growth and networks has been recognized in several other studies (Davidsson et al., 2010), but not in all the studies examining network support and growth. The current results contribute towards the view that networking is very essential for micro-enterprises in a sparsely populated area, in which geographical distances and limited engagement in globalization may pose barriers for networking.

More than half of the respondent companies were over 10 years old and have remained as a micro-enterprise. This finding is in line with the statement by Davidsson et al., (2010) arguing that "most micro-enterprises start small, live small and die small". Gathered characteristics of the respondents also indicated that the majority of the respondents operated largely locally. Turnover originating from international business and the intention to expand to international markets was low. This finding resonates with the argument that many entrepreneurs have only modest growth aspirations, which can increase as they become more familiar with their true abilities (Davidsson et al., 2010).

In our sample, those micro-enterprises that were established less than 10 years ago performed better in terms of growth and digital maturity. This finding resonates with studies showing that firm age is negatively related to growth and that young firms tend to be more entrepreneurial than older firms, benefitting from more flexible working environments and less rigid routines (Davidsson et al., 2010). We also found that micro-enterprises with more than one employee grew faster, were better networked, and estimated their business environment be more viable compared to entrepreneurs working alone. The results of Blackburn et al. (2013) suggested that size and age of enterprise dominate small business growth and performance and are more important than strategy and the entrepreneurial characteristics of the owner. In the current study, besides size and age, strategic factors such as innovation and networking, as well as the entrepreneurs' and managers' growth intentions were found to be important. Thus, the current results cannot be seen to fully support the results of Blackburn et al. (2013) in the context of micro-enterprises and sparsely populated areas.

Most mentioned barriers of growth in our study were in descending order: lack of time for business development, high threshold for hiring employees, and lack of finance. These barriers are in line with findings from past studies. Since the owners of micro-enterprises are typically responsible for both developing the business and dealing with daily operational issues, their time is often mostly spent on day-to-day survival, leaving too little time for business development (Faherty & Stephens, 2016; Saarela et al., 2018). Consequently, business development depends largely on the owner's personal abilities (Achtenhagen et al., 2017), that may constrain the development of micro-business if abilities are underdeveloped (Gherhes et al., 2016). Absence of human resources capabilities have been said to be a recurrent issue of micro-enterprises, often leaving them to be unprepared or unwilling to recruit new employees (Gherhes et al., 2016). Lack of finance has been recognized as one source of resource scarcity constraining development of micro-enterprises (Saarela et al., 2018). Gherhes et al. (2016) suggested that, in order to mitigate this challenge, financing options need to be tailored for micro-enterprises and made accessible when growth opportunities arise.

The current research has some limitations, which should be acknowledged before making inferences based on the results. The current sample of more than 100 small enterprises was quite diverse, but it is possible that the sample does not optimally

represent micro-enterprises of the target region, as it was not possible to use a random selection of companies in the context of the current online questionnaire. There are also some limitations concerning the generalizability of the results. The current study was carried out within a single province in Finland, which is characterized by long distances, small towns, agricultural activity, and less than average GDP within its own country. Thus, the results cannot be assumed to be directly applicable in other sparsely populated regions nationally or internationally, with different operating environments for businesses. In the current results concerning the South Savo region, the positive effects of the main variables such as the level of networking and the level of innovativeness were quite clear, and we suggest that they are worth studying as potentially central variables in other similar regions.

The current study was carried out before the war between Russia and Ukraine, which thus did not have any effects on the results. In addition, the temporal scope of the study was selected so that the effects of the great recession in Europe and the debt crisis were largely over in Finland. However, when the study was carried out, the COVID-19 pandemic was not fully over, and it is very likely that the global pandemic affected the respondent companies. Even though infection rates were low in the South Savo region, part of industries had switched to remote or hybrid work, and for example, the hospitality industry was clearly affected during the pandemic. It should be noted that the level of internationalization was low in the region even before the pandemic. Overall, the effects of COVID-19 were not clearly visible in the current results, as most companies reported making profit and were also slightly optimistic about future growth just like in normal times. Nevertheless, when making conclusions based on the current study, the context of the study has to be taken into account as a limitation in the generalizability of the results.

Another possible limitation concerns the accuracy of the participants' estimations given in the questionnaire. The main research variables studied the participants' subjective perceptions of the variables studied, and it may be that in some cases that the respondent does not have the full information about the issue studied or his/her perceptions also express attitudes such as optimism or pessimism. It should also be noted that by using linear regression based methods in the analysis, it was only possibly to study linear relationships between variables, omitting possible nonlinear effects.

The current study has some practical implications. Our motivation for the current study was the utilization of results in regional development in the target region. In the results, networking was found to be directly related with growth, which highlights the utility of arranging support actions such as in-person or online networking events, which bring new partner opportunities for micro-enterprises. The internationalization level of the companies was generally low, which highlights the need for support for more internationalization and export know-how and international connections for the local companies. According to the results, the weakest aspect of the local business environment was factor conditions and especially the availability of skilled labor. This highlights a strong need for developing more versatile and high-quality education possibilities in the region. Finally, innovativeness was found to be an important factor in the current study. While the companies rated their innovativeness levels as relatively high on average, there is still a big group of more reactive, imitative businesses among

local micro-enterprises, which benefit from, for example, innovation workshops, design jams, or other innovation and ideation events. These kinds of events can also support networking besides innovation.

Future research is still needed to understand all the factors and interrelations affecting central variables such as growth and intention to grow especially among micro-enterprises and the specific region types such as different sparsely populated areas. In the current study, the R^2 indicators of the regression analysis suggested that a large part of the variations in the dependent variables was explained by other factors than those incorporated into this study, which remain a research topic for the future. Furthermore, the results on digitalization call for further research. How could micro-enterprises of remote regions be motivated to take the full advantage of the digital tools that they already have and participate in the global markets in order to grow? In addition, from a regional development perspective it would be highly useful to study the effectiveness of different public interventions and practical actions (such as those described above) in boosting, for example, growth, internationalization, innovations, and networking of micro-enterprises in practice. This information is largely missing at a larger, regional level.

In summary, the results of this study emphasize the importance of strategically increasing innovativeness and networking of micro-enterprises, as well as growth intentions of managers of micro-enterprises. Love and Roper (2015) carried out an extensive review of internal and external enablers of innovation, which can be used as a framework for strategically increasing the innovativeness level of companies. Growth opportunities can be highlighted, and growth ambitions stimulated by supporting the development of key capabilities and the implementation of key practices (Gherhes et al., 2016). Achtenhagen et al. (2017) have suggested three key business development activities to support growth of micro-enterprises, including talent management, securing access to capital and developing suitable organizational structures and processes. From the viewpoint of micro-enterprises participating in this study, these suggested business development activities are relevant, and they address the most common growth barriers identified in this study.

Appendix A: Statements used in the survey

Concept	Statements
Growth	Revenue of the company: (during the past three years) Profitability of the company (annual profit/loss): (during the past three years) Number of employees: (during the past three years)
Intention to grow	Our company aims at growing systematically during the next few years Our company is ready to take risks to achieve growth
Growth capability	Our company has a clearly defined growth strategy and plan Our company has adequate resources, know-how, and employees for growth
Networking	Our company is widely networked with other companies Our company is widely networked with public (e.g., research and education) organizations
Internationalization	Internationality has currently a central role in our company's business

Concept	Statements
Intention for internationalization	Our company aims systematically at more internationality during the next few years Our company has a clearly defined internationalization strategy, which supports internationalization
Digital maturity: Organization	We have a clear process in the adoption and utilization of digital technologies We have versatile digital skills within the own organization
Digital maturity: Strategy	We think that the success of our company depends on how well we succeed in the utilization of digital technologies We have a digitalization strategy, which is easy to put into words and communicate internally and externally
Digital maturity: Technology	Digital tools enable the innovation, cooperation, and mobility of employees in our organization Our practices and budget regarding digital technology are flexible
Digital maturity: Customer orientation	In our company, customer experience is systematically designed both in physical and digital channels Our company gathers systematically information about customer needs and the user experience of products and services Customer insights guide our strategy and development of products and services
Demand conditions	Our products or services have a large customer base Our clients have specialized needs and responding to them develop us as a company
Firm Strategy, Structure, and Rivalry	Our business faces hard local or national competition Our company's current management and strategy can respond well to challenges caused by competition
Factor Conditions	The availability of competent workforce is good from the perspective of our company The infrastructure of the operating environment (e.g., technical infrastructure; transport and communications) of the company is good from the perspective of our business
Related and supporting Industries	In the operating environment of our company, there are other companies, which directly support the business of our company (e.g., suppliers or service providers) In the operating environment of our company, there is a lot of competitive activity in other domains indirectly related to the business of our company
Government	Public government has a positive effect on the business of our company

A nine-point Likert scale (1 fully disagree–9 fully agree) was used for studying all the other concepts listed in the Appendix except growth. The three evaluations probing growth used a nine-point scale (1 decreased significantly–9 increased significantly).

Abbreviations

EU European Union
GDP Gross Domestic Product
SEM Standard error of the mean
SME Small or medium-sized enterprise

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Author contributions

TP: writing—original draft and revision; literature survey; research design; recruiting participants; methodology; data analysis. SJ: writing—original draft and revision; literature survey; research design. TK: recruiting participants; research design; literature survey. HM: research design; literature survey. All authors have read and approved the final manuscript.

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Availability of data and materials
The dataset used and analyzed during the current study and the full questionnaire form are available from the corresponding author on reasonable request.

Declarations

Competing interests
The authors declare that they have no competing interests.

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