

Nature-based tourism and community resilience: Framework and application with a firm perspective

Research paper



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Abstract

There is a substantial and growing literature on the resilience of firms and destinations within tourism. Building on the concepts in Lindberg, Forbord, and Sivertsvik (2021), this study complements that literature by empirically assessing nature-based tourism's (NBT's) potential contribution to the resilience of destination communities via the factors that may affect that contribution. The study is based on a country-level assessment in Norway using quantitative and qualitative data derived from NBT firms, a new scale for understanding the contribution associated with firm-community relationships, and an evaluation of how firm motivations and life cycle stage may affect the contribution. Results indicated NBT makes a modest contribution overall, but that contribution may be more substantial in some aspects (e.g., with respect to catalyzing business networks and community identity) and in some communities (e.g., smaller communities where NBT potentially represents a larger part of the local economy). Some aspects of this contribution were predicted by firm motivations and life cycle stage. For example, firms in the growth stage may make larger contributions than firms in the decline stages.

Key words

Nature-based tourism; tour operators; community resilience; social capital; firm life cycle stage; firm motivation

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1. Introduction

Tourism firms, and the communities in which they operate, face challenges ranging from climate change to pandemics to natural disasters to economic recessions and beyond. Their ability to adapt and thrive in the face of those changes – their resilience – has attracted substantial societal, political, and theoretical interest (Cutter et al., 2014; Ntounis et al., 2021; Walker & Salt, 2012). Nature-based tourism (NBT) potentially contributes to the resilience of communities, especially in rural areas, via mechanisms such as enhancing economic diversity and social capital.

In the tourism literature, coverage of resilience often focuses on the resilience of tourism firms, destinations, or both (e.g., Becken, 2013; Butler, 2017; Cheer & Lew, 2018; Engeset 2020; Hall et al., 2018; Ntounis et al., 2021). That perspective on resilience is important. It also is important to understand tourism's contribution to the resilience of the communities in which tourism occurs. How does tourism affect the ability of these communities to thrive in response to the same stressors that affect the industry? McCool (2015, p. 233) argued that the 'principal question facing tourism in the 21st century is the extent to which it can contribute to the resilience of communities.'

Several authors, in tourism and beyond, have noted the value of theoretical coverage of community resilience, but also the importance of – and current lack of – operationalization and quantitative empirical evaluation (Becken, 2013; Brown, 2016; Cheng & Zhang, 2020). Empirical evaluation of community resilience is challenging, especially when the focus goes beyond the economic dimension. As a result, many studies have relied on secondary data reflecting factors potentially affecting resilience or primary data on stakeholder perceptions of resilience or factors affecting it. Empirical evaluation is even more challenging when the focus is on the contribution of a specific sector, such as tourism in general or nature-based tourism in particular.

The present study, like others, is limited by these challenges, but it provides a path toward empirical evaluation. It presents a framework for evaluation, a mixed-methods application based on nature-based tourism in Norway, and utilization of the framework to assess how firm characteristics may affect NBT's contribution to community resilience.

Some of the present analyses, such as assessment of NBT employment, are similar to others appearing in the literature. However, we contribute to the literature through analyses across multiple topics and integrated assessment within a community resilience framework. In addition, the survey data provided a country-level perspective and a level of detail on NBT firm employment and revenue that, to our knowledge, has not previously appeared in the literature. Moreover, we developed a 9-item community relationship scale to better understand the nature of firm relationships in the community. Lastly, we assessed the role of firm characteristics, notably motivations (priorities) and life cycle stage, to better understand the characteristics that may affect NBT's contribution to community resilience.

1.1. Conceptualizing and measuring community resilience

Assessment of tourism's effect on community resilience depends on how resilience is conceptualized and measured. Definitions of resilience abound, including 'the ability of groups or communities to cope with external stresses and disturbances as a result of social, political and environmental change' (Adger, 2000, p. 347). As used here, community resilience refers to a community's ability to thrive in the face of change (Lindberg & Swearingen, 2020; Steiner et al., 2016). The present conception of community resilience is inclusive of various pathways, including resisting the negative effects of change, adapting to change, or undergoing more fundamental transformation (Norris et al., 2008; Ntounis et al., 2021; Walker & Salt, 2012).

An ‘of what, to what’ approach can clarify evaluations. The present focus is on resilience of geographic communities and associated natural environments, primarily to slow-onset changes such as economic and demographic changes (e.g., resilience to economic recession, sector-specific economic decline, or out-migration). The interplay between tourism development and these types of slow-onset changes occurs in multiple rural contexts around the globe (Cheer, 2018; Maclean et al., 2013; Sisneros-Kidd et al., 2019).

Specification of the ‘of what, to what’ aspect clarifies resilience, but its measurement remains challenging, and quantitative evaluation of community resilience is uncommon (Brown, 2016; Cheng & Zhang, 2020). Existing data may allow assessment of resilience in the economic dimension at the national or subnational level (e.g., Martin & Gardiner, 2019; Ringwood et al., 2019), but such data are rarely available at the level of non-urban individual communities. Data suitable for directly assessing non-economic resilience are rarely available at any spatial level (see Burton 2015 for an example). Put simply, it is difficult to assess thrive-oriented community resilience – and even more difficult to assess the contribution of tourism to this resilience, let alone the contribution of nature-based tourism as a subset of tourism.

The resilience of the tourism industry has been evaluated (Ntounis et al., 2021; Prayag et al., 2020). The economic resilience of the industry may contribute to the broader economic resilience of the communities in which they operate, though Cheng and Zhang (2020, p. 2605) observe the lack of empirical evaluation even in the relatively straightforward economic dimension (‘any evidence of whether tourism development can effectively stimulate economic recovery following a disaster shock or not has been mostly overlooked’). The lack of empirical literature similar to Burton (2015) but focused on the contribution of tourism to non-economic community thriving is even more apparent.

1.2. Tourism and factors affecting community resilience

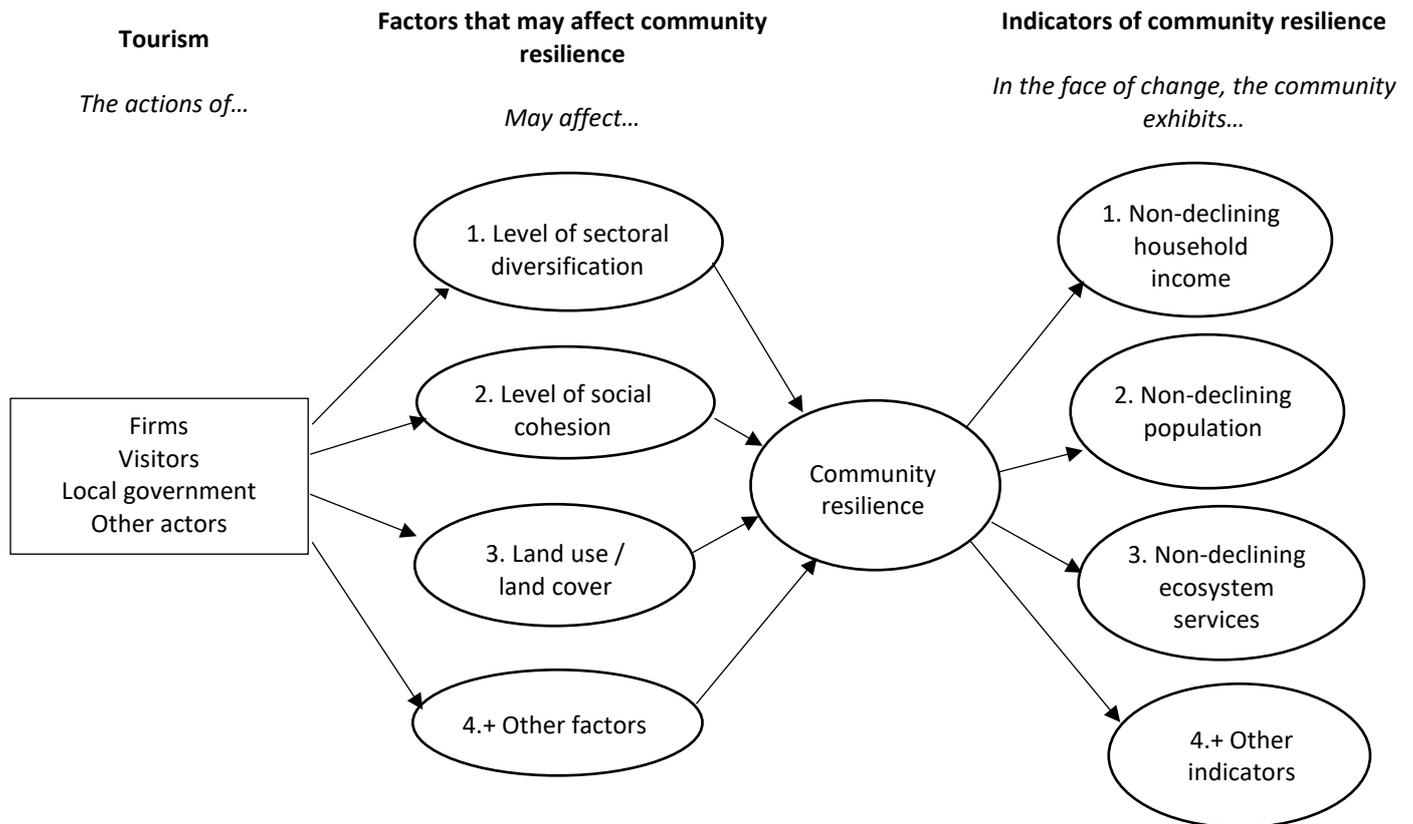
Given the difficulty of quantitatively assessing community resilience across time, location, and type of change, many community resilience measures utilize metrics reflecting factors potentially affecting resilience rather than resilience *per se* (Lindberg & Swearingen, 2020). Examples include Clark-Ginsberg et al. (2020) based on primary data and Cutter et al. (2014) based on secondary data.

Alternative approaches include focusing on principles that potentially affect resilience, such as fostering complex adaptive system thinking (Cheer & Lew, 2018; Stockholm Resilience Centre, 2014). In that approach, tourism would affect resilience insofar as it positively or negatively affects the principles, including the level of complex adaptive systems thinking.

To make analysis tractable, the present study focuses on tourism’s effect on the affecting factors, with affecting factors derived from the literature (e.g., Norris et al., 2008; Martin & Sunley, 2015). This is illustrated in Figure 1 and is consistent with approaches focused on resilience surrogates (Becken, 2013).

To organize the presentation, tourism’s relationship with factors affecting resilience is grouped into economic, social, and ecological dimensions. Thus, the sectoral diversification factor might affect the economic dimension of community resilience, as indicated by the ability of the local economy to thrive (e.g., sustain average household income) in the face of change (e.g., a recession or sector-specific downturn). Figure 1 presents an illustrative set of factors and indicators.

Figure 1. Model for assessing tourism's contribution to community resilience



As with sustainability, resilience conceptualizes the interdependence of social, economic, and ecological systems. The 'triple dimension' approach can be useful for categorizing and considering factors affecting resilience, but the simplification should be kept in mind. For example, sectoral diversification also may affect, and be affected by, social cohesion. In addition, tourism's contribution to farm income may sustain rural agriculture that, in turn, sustains social cohesion (Stotten, 2020).

1.2.1. Economic dimension

Job creation is a central reason why communities embrace tourism, including nature-based tourism. At the community level, NBT enhances economic diversity relative to a reference alternative of no tourism. Economy-wide recessions and sector-specific declines occur periodically, but diverse economies are more likely to be resilient because some sectors may be less affected than others. As Maclean et al. (2013, p. 151) observed, a 'regional economy that is over-reliant on a small number of major industries has an increased risk of impacts from national and global events.' By providing an additional sector in local economies, NBT can enhance diversity and potentially economic resilience (Cheer, 2018; Martin & Sunley, 2015).

At the household and individual level, NBT may enhance livelihood diversity (Avila-Foucat & Rodríguez-Robayo, 2018; Bires & Raj, 2020). In addition, some employees prefer part-time and seasonal jobs, such that there may be benefit in diversity across types of tourism jobs (full-time, part-time, and seasonal) (Steiner & Atterton, 2015). For example, Stotten (2020) noted that winter tourism in the European Alps provides seasonal employment opportunities for farm laborers during a slack period for farming. Nonetheless, full-time jobs may be important not only for employees but also because such jobs may be most likely to contribute to net migration and associated employee

contributions to community (e.g., provision of human and social capital, as well as a stronger population base to sustain community infrastructure).

1.2.2. Social dimension

The social dimension is broad and includes NBT's effects with respect to 1) social capital and social cohesion, 2) community donations and leadership, and 3) migration and its effect on the above aspects.

Much of the community resilience literature focuses on the role of social capital, defined here as the networks and resources available to people through their connection to others (Aldrich, 2012; Norris et al., 2008). The tourism literature on social capital often focuses on its role in the success of firms or destinations (Soulard, 2018), but tourism may affect social capital in the community more widely (Moscardo et al., 2017). Due to the nature of NBT firms, owners and employees may be especially gregarious and involved in local communities, thereby enhancing community-level networks and social capital.

Social cohesion is used here to refer to the sense of connectedness and solidarity among community members. It is similar to social capital, but, as described by Cagney et al. (2016:2), it is 'more than a network of personal connections and involves a broader sense of attachment to the community.' Some authors have noted tourism's potential to enhance social cohesion (Kamble & Bouchon, 2016), while others have observed that tourism may reduce social cohesion (Sisneros-Kidd et al., 2019).

Overlapping with contribution to social capital and social cohesion is contribution of product, money, time, and/or leadership to local organizations and institutions. Firms and employees may make cash donations, serve as volunteers, and act as role models and catalysts for change. Steiner and Atterton (2015, p. 38) quoted one of their respondents: 'We're leaders ... when there is something that can happen in your district we are the ones who bring the people together to make it happen.'

Out-migration is a stressor in many rural communities, and the provision of tourism-related employment opportunities may reduce out-migration and depopulation (Steiner & Atterton, 2015, p. 37; Stotten, 2020). In turn, reduced out-migration may limit the loss not only of human and social capital but also of facilities and services, such as schools and community centers. In-migration stimulated by employment opportunities may be complemented by in-migration stimulated by increased awareness of the region due to NBT marketing and visits.

1.2.3. Ecological dimension

Tourism can contribute to wildlife disturbance, habitat loss, greenhouse gas emissions, and other factors that may negatively affect ecological resilience, including effects on natural areas within an inclusive geographic scope of community resilience (Gössling, 2002; Velli et al., 2019). Conversely, tourism potentially affects ecological resilience by supporting environmental preservation. Tourism can raise visitor appreciation of, connection to, and support for the natural world, which may stimulate financial or other contributions to natural area protection and management (Buckley, 2011; McLanahan, 2020). In particular, tour guides and other NBT firm employees potentially catalyze visitor engagement in pro-environmental behavior, either onsite or post-trip; however, research on such effects is limited and with mixed results (Biggs et al., 2012; Poudel & Nyaupane, 2013; Weiler & Kim, 2011).

Tourism can catalyze support for natural area protection among residents who see how such areas attract visitors and therefore generate local economic benefit (Liu et al., 2014). In addition, tourism can provide an ecological parallel to occupational plurality. The relationship between land-use / land-cover and ecological resilience can be complex, and detailed analysis is beyond the scope of the present study. Nonetheless, by providing a complementary source of income (Stotten, 2020), NBT may help sustain land in relatively undeveloped forms, and thus help sustain the ecological benefits those lands provide. The provision of complementary income also may reduce pressure to intensively harvest natural resources in a manner that would cross ecological thresholds. Using concepts from Walker and Salt (2012, Figure 3), NBT can shift an *economic* threshold, reduce the likelihood that it is crossed, and thereby reduce the likelihood of crossing an *ecological* threshold (see also Kelly et al., 2015).

In some regions, such as southern Africa, tourism revenue directly catalyzes conservation of natural areas and wildlife on private land (Lindberg et al., 2003). In the European context, Cocca et al. (2012) found that tourism development may support retention of land for agricultural purposes, which can preserve species-rich habitats such as hay meadows and ponds (Aune et al., 2018; Fjellstad & Dramstad, 1999; Velli et al., 2019).

1.3. The role of firm characteristics

Many firm characteristics potentially predict variation in contribution to community resilience, with this study focusing on firm life cycle stage and firm priorities. Perkins and Khoo-Lattimore (2020) observed that firms face different challenges across life cycle stages, with associated variation in firm actions, such as degree of collaboration with other businesses. For example, firms in growth stages may more actively engage in collaboration relative to firms in stages reflecting maturity or decline (see also Strobl & Kronenberg, 2016). This variation in commitment to collaboration may affect the degree of contribution in the social dimension. Likewise, firms in start-up or decline stages may make less of a contribution in the economic dimension than do firms in growth or maturity stages.

There is a growing literature regarding the motivations (priorities) of tourism firms, including of rural or nature-based tourism firms in the Nordic region (Stensland et al., 2021). Research has found that many rural or NBT firms are led by lifestyle or 'values-based' entrepreneurs (Iversen & Jacobsen, 2016) whose priorities may include firm financial success but often also outcomes that are consistent with resilience at the community level and beyond (e.g., supporting local communities and environmental conservation) (Ateljevic & Doorne, 2000; Stensland et al., 2021). Biggs et al. (2012) found that lifestyle values of NBT firms operating on Australia's Great Barrier Reef predicted some firm-level conservation actions, but not others. The present focus is whether motivations (priorities) include outcomes that potentially enhance community resilience. For example, a priority on promoting client connection to, and care for, the natural world may lead to an increase in client pro-environmental behavior. A priority on growing the number of firm employees may contribute to number of full-time positions and, ultimately, community economic diversity and population stability.

2. Methods

2.1. Context

Norway has income per capita levels among the highest in the world, but rural communities in Norway often face stresses similar to those in other countries. Changes in rural communities include employment declines in traditional economic sectors combined with demographic change, notably out-migration to urban areas – especially among young residents, which results in an ageing population (Sae-Khow Hasselberg, 2016; Statistics Norway, 2018). There is interest in tourism's role

as an economic sector in rural areas in Norway and other countries (Cheer et al., 2018; Fredman et al., 2021).

The present analysis was based on an online survey of all identifiable NBT firms in the country and on semi-structured in-depth interviews with 24 managers in NBT firms and related organizations across three case study areas that represent diversity in natural environments, demography, primary industries, and types of tourism: Hardanger, Trysil, and Varanger. Hardanger is primarily a summer destination in western Norway that is widely known for its mountains, glaciers, waterfalls, fjords, and fruit farms. Trolltunga (the troll's tongue) has become an iconic nature destination due to tourist-generated photos on social media; it attracted 90,000 visitors in 2019 (Rokkan, 2020).

Trysil is primarily a winter destination in the eastern part of Norway, with one of the larger downhill ski areas in Scandinavia. The region is working to expand the summer season through fishing and mountain biking. Varanger is a northeastern outpost of Norway, in an arctic environment with unique geology, vegetation, and wildlife; most of the Varanger peninsula is protected as a national park. Varanger is primarily a spring and summer destination popular for snow-kiting, recreational fishing, and, increasingly, birding. See Fredman and Haukeland (2021) for additional case study site information.

2.2. Methods and measures

The online survey sample included firms offering fee-based nature activities and experiences, with firms identified via regional destination marketing organizations and internet searches. Survey invitations were distributed in 2017 via email, with reminders by email and text message; the survey closed in 2018. Of the valid sample of 1,614 firms, 558 completed the survey, for a response rate of 35 percent. A non-response phone survey of 35 firms, covering a sub-set of questions, did not indicate systematic non-response bias. Some of the content presented here was based on responses in a split sample of 295 firms, and some observations were excluded due to missing values on specific questions.

The 24 semi-structured interviews were conducted in 2017 and 2018, with firms selected based on engagement in nature-based activities in the respective locations. Whereas the online survey excluded farm stays and facilities such as ski resorts, the interviews included a ski resort. Except for this ski resort, all interview informants represented small NBT firms with fewer than five employees. Several of the interview informants were the firms' owners in addition to being managers. Most of the interviews were conducted face-to-face at the firms' locations or nearby, with three of the 24 conducted via Skype. Interviews lasted between 60 and 90 minutes, with content recorded and transcribed, then coded and analyzed using NVivo software.

The survey provided a national-level overview while the interviews provided complementary examples of specific ways in which NBT firms can affect various aspects of community resilience. The present analysis was based on self-reports from NBT firms and related organizations with respect to questions regarding their effect on factors potentially affecting community resilience (Figure 1).

With respect to survey measures used in the analysis, the appendix provides full question wording, descriptive statistics, and descriptions of created variables. Firm life cycle stage was reported in the following categories: start-up, growth, maturity / stability, and decline / downsizing (Miller & Friesen, 1984). Firm motivations were assessed across 13 listed priorities and an open-ended 'other' category, with a 7-point response scale from 1 = Very low priority to 7 = Very high priority. The priorities used in the present analysis included 'growing the number of employees,' 'sharing nature values with clients,' and 'contributing to sustainable tourism development.'

Firms reported full-time equivalent employment (FTEs) in each of three categories: full-time, part-time across the year, and seasonal. Some firms engaged in both nature-based tourism and other activities, and respondents were asked to report FTEs specifically related to NBT. Firms reported revenue in Norwegian kroner. As of January, 2022, 1 USD equaled 8.8 NOK and 1 EUR equaled 10.0 NOK.

The survey included a scale of nine listed statements (items) reflecting the relationship between firms and local communities. Responses were on a 7-point scale from 1 = Not at all, 7 = To a large degree.

With respect to land use, respondents indicated the ownership of land utilized in their offering of nature-based activities, with categories reflecting private ownership (land owned by the firm or by other private entities), public ownership, or other ownership. Respondents reporting use of private land were then asked whether the land would be 1) sold or 2) used differently if the land owner did not receive revenue from NBT.

3. Results

The following presents results of the survey and interviews, organized by dimension.

3.1. Economic dimension

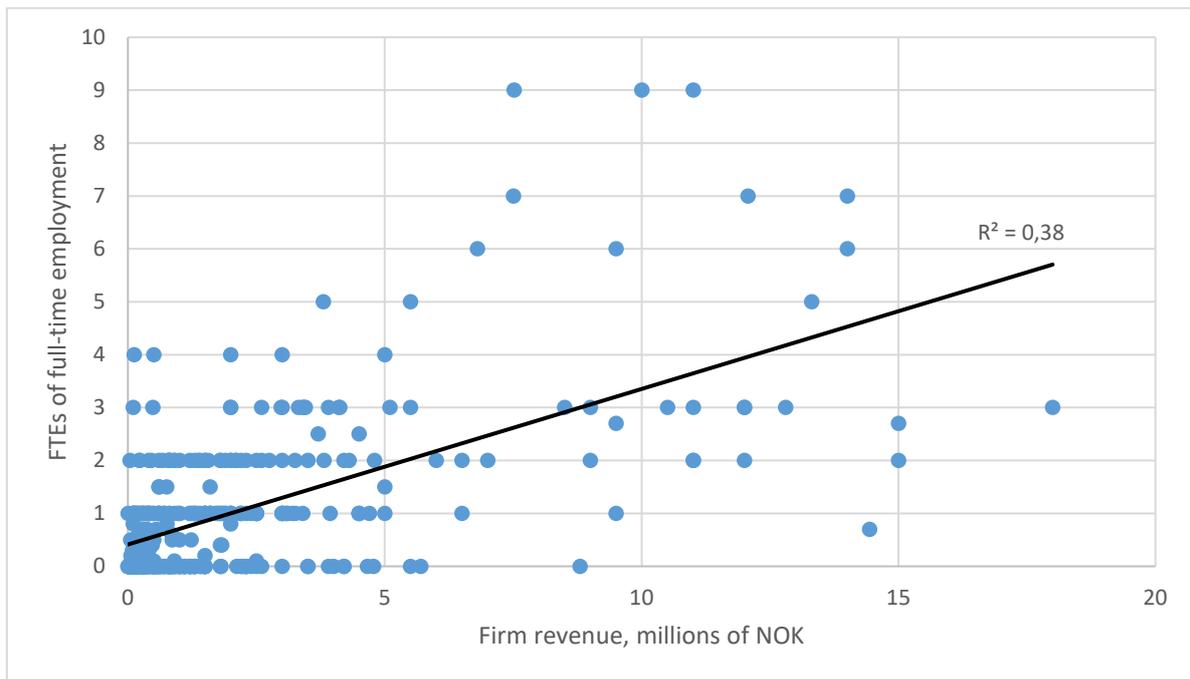
Employment data were not collected during the interviews, but the role of full-time employment was addressed. For example, the summer destination of Hardanger has been working to develop winter tourism products and activities:

If you manage to ... get customers throughout the year, it will provide a foundation for jobs and residence in the districts. If you do not get it, then it will forever become a nomad-based [workplace] that contributes less to local value creation and local employment and settlement. To really fulfill the potential in relation to local community development, it is all about creating year-round jobs and year-round activity. (C5)

Based on firm survey responses, the median number of full-time equivalent employees (FTEs) was 1.5 across full-time, part-time across the whole year, and seasonal employees combined. This included inactive firms (9 percent of the sample) that reported zero FTE for the year. When those firms were excluded, the median increased to 2.0. Averaged across active firms, the largest portion of FTE (40 percent) reflected full-time employment, with a quarter of FTE (26 percent) reflecting part-time employment and almost a third (34 percent) reflecting seasonal employment.

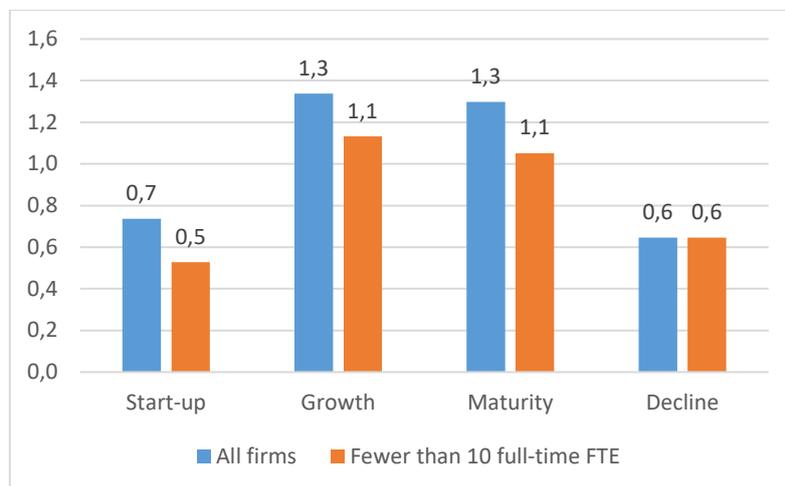
Figure 2 illustrates the relationship between firm revenue, in millions of Norwegian kroner, and FTEs specifically of full-time employment. To better visualize the relationship for the majority of firms, the figure excludes eight observations with values of 1) 10 or greater for FTE or 2) 20 million NOK or greater for revenue; additional analyses are presented in the appendix. The Pearson correlation for the observations shown in the graph was 0.62 ($p = 0.000$). As expected, full-time FTEs increase with firm revenue. The presence of non-integer values for FTEs may reflect factors such as firms hiring or releasing full-time employees during the year.

Figure 2. Firm revenue and FTEs of full-time employment



As shown in Figure 3, there was a clear pattern between firm life cycle stage and FTEs of full-time employment, with mean FTE increasing across firms in the start-up to growth and maturity stages, then decreasing for declining firms. However, this relationship was statistically significant only for smaller firms, with fewer than 10 FTEs of full-time employment (ANOVA, $F = 2.9$, $p = 0.036$); it was not significant for the full set of firms (ANOVA, $F = 1.2$, $p = 0.327$).

Figure 3. Firm stage and mean FTEs of full-time employment



Results of ordinary least squares regression with full-time FTE as the dependent variable and both NBT revenue and priority on growing the number of employees as independent variables indicated that firm revenue (coefficient 0.38, $p = 0.000$), rather than firm priority to grow employee numbers (coefficient 0.02, $p = 0.729$), was the more direct predictor of full-time FTE (model $R^2 = 0.46$, $F = 165$, $p = 0.000$). These results were consistent with the expectation that hiring is facilitated more by the revenue needed to cover salary than by firm motivations *per se*.

3.2. Social dimension

The previous quote from Hardanger reflected the link between economic contribution and social contribution, as jobs (especially year-round jobs) may increase population and contribute to community development more broadly. Interview results indicated broader contributions to local communities. For example, a firm in Varanger observed:

I have put [the local town and the region] on the map and for that I obtain much goodwill... You have to team up with the local society – whether it is sponsoring a women’s choir or the wrestling club. You must never say no. (A6)

These interview results were consistent with survey results, including responses to the nine statements (items) reflecting the relationship between NBT firms and local communities. Table 1 presents factor analysis results (principal components with Varimax rotation), with items sorted by mean. Results generally indicated simple structure, with each item loading primarily on either the ‘business relationship’ factor or the ‘broader relationship’ factor. Each factor explained approximately a third of the variance, with associated Cronbach’s alpha values falling in the ‘good’ range.

Table 1. Firm-community relationships

1 = Not at all, 7 = To a large degree

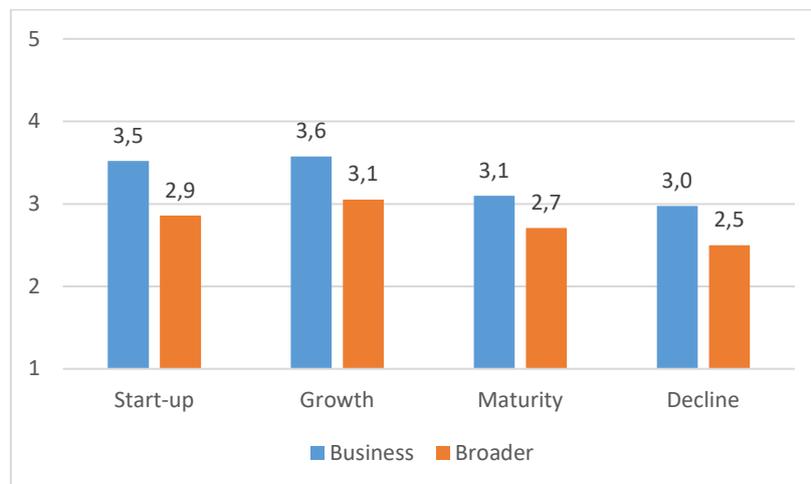
Item	Item mean	Factor	
		Business	Broader
The local community is a part of the attraction for the firm	3.6	0.77	0.23
The local community is important for us because it facilitates tourism with areas, paths, information, and in other ways	3.5	0.81	0.21
The firm catalyzes increased cooperation between other business professionals in the local community	3.4	0.82	0.30
The firm helps strengthen the community's identity	3.3	0.25	0.79
Others in the local community would say I have an above average personal network within the community	3.1	0.30	0.66
The firm catalyzes increased connection between other companies in the local community and government actors	3.0	0.73	0.35
The firm provides a meeting place for local residents	2.7	0.36	0.74
The firm supports local non-profit organizations (such as sports teams) with money, products, work, and other ways	2.6	0.13	0.71
Others in my local community would say that the firm contributes to cohesiveness in the town	2.5	0.32	0.80
Variance explained, percent		32	34
Cronbach's alpha, shaded items		0.84	0.85

With respect to relationship magnitude, the ordering by item mean indicated symbiosis, with the strongest relationships being business-oriented. The local community was reported to contribute to the success of tourism, as reflected in responses to the first two items. Conversely, many respondents indicated that their firms contribute to the community in both business and broader relationships, though the degree of the contribution varied across topics. For example, firms reported that they help strengthen community identity and cooperation between business

professionals, but their contribution to cohesiveness or to providing a meeting place or funding for local non-profit organizations was less strong.

The strength of these relationships varied by firm stage, as illustrated in Figure 4. Firms in their start-up stage or growth stage reported stronger business relationships (mean of the four shaded items in the business factor) relative to firms in maturity or decline stages (ANOVA, $F = 4.6$, $p = 0.003$). This finding from survey responses was consistent with findings from interviews, in which some managers reported that collaboration with others was more important in the initial stage of the business. There also was an association between firm stage and broader relationships, though it was marginally nonsignificant at $\alpha = 0.05$ (ANOVA, $F = 2.6$, $p = 0.054$).

Figure 4. Firm stage and mean business and broader relationships
1 = Not at all, 5 = To a large degree



With respect to the association with firm priorities, prioritization on contributing to sustainable tourism development was positively correlated with both mean business relationships (Pearson correlation = 0.41, $p = 0.000$) and broader relationships (Pearson correlation = 0.28, $p = 0.000$).

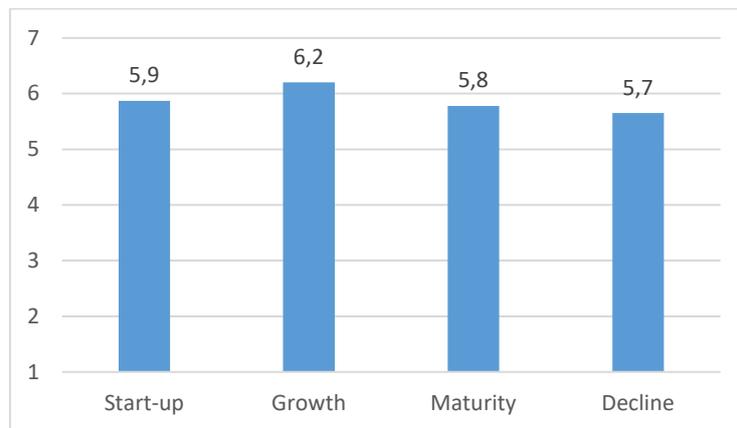
3.3. Ecological dimension

The importance of instilling nature values in clients was noted by interview respondents, with one observing:

I have had an environmental protection motivation, where I have a philosophy that nobody wants to save something that you do not use or have a relation to. (B8)

In reporting their firm priorities in the survey, almost three-quarters (73 percent) of respondents reported that 'Share perspectives on nature values with clients' was a high priority (response of 6 or 7 on a 7-point scale of priority). As reflected in Figure 5, there was a modest but statistically significant relationship between firm stage and motivation to share nature values (ANOVA, $F = 4.0$, $p = 0.008$).

Figure 5. Firm stage and mean priority of sharing nature values with clients
 1 = Very low priority to 7 = Very high priority



With respect to the potential land use / land cover effects of NBT, 73 percent of surveyed respondents reported using their own land or other private land for their NBT activities. Less than one tenth (9 percent) of these 73 percent indicated they believed the private land would be sold in the absence of NBT, with 70 percent indicating it would not be sold and 22 percent indicating they did not know. A larger portion (16 percent) believed the land would be used differently, with 60 percent indicating it would not be used differently and 24 percent indicating they did not know. Note that farm stay firms were excluded from the survey sample; inclusion of such firms likely would increase tourism's contribution associated with reducing agricultural abandonment.

Open-ended responses describing the expected alternate land use included a range of uses, including agriculture, timber production, and vacation homes. Detailed ecological evaluation was beyond the scope of this project, but results suggest a modest potential contribution of NBT toward preserving land-use / land-cover in a relatively natural state. Firm stage was not a statistically significant predictor of reports regarding either sale or alternate land use (crosstab Pearson chi-square for sale was 10.8, $p = 0.093$; for alternate use it was 2.3, $p = 0.886$).

The present focus was on the perspective and actions of firms and their clients. However, NBT can affect how local residents view natural resources, with one Varanger interview respondent observing a change among local residents:

Local people are now much more engaged. They see that people from abroad come and visit us because of the birds, and that this represents a value. This also increases the interest and knowledge among local people about nature in this area. For example, they now observe and report birds much more. (A4)

4. Discussion

Resilience provides an important lens for understanding variation in the ability to thrive in the face of change, as well as factors that may enhance that ability. However, it is challenging to quantitatively assess community resilience in its most fundamental form of thriving in the face of change. Data on community thriving generally are unavailable across communities and time, especially when one goes beyond urban communities and the economic dimension. The challenge of assessing community resilience constrains the ability to evaluate tourism's contribution to that resilience, let alone the contribution of nature-based tourism in particular.

Given the dearth of data on community resilience, this report presented a framework for evaluating nature-based contribution indirectly, via factors potentially affecting community resilience. It illustrated the framework using a mixed-methods empirical evaluation in Norway, with a specific assessment of how firm characteristics might affect NBT's contribution.

A significant commitment of resources may allow quantitative assessment of thriving over time and geography. The specific contribution of tourism to that thriving can then be assessed, keeping in mind the potential for confounding factors (e.g., if thriving across communities positively correlates with level of tourism development across communities, is thriving the result of tourism development or are both the result of other factors?).

In the absence of that assessment, the framework presented here, focused on contribution to affecting factors, can be used to provide insight into tourism's potential contribution to community resilience. The present case study illustrates evaluation using that framework. Nonetheless, it also illustrates that assessing contribution to affecting factors remains difficult, despite being more tractable than directly assessing contribution to community resilience.

With respect to the economic dimension, NBT firms make modest, but positive, contributions to local economies, thereby enhancing sectoral diversity relative to a 'non-tourism' economy. Referring to Figure 1, the actions of tourism firms enhance sectoral diversification, a factor that potentially affects community resilience, with one potential indicator of this resilience being non-declining average household income over time.

Full-time employment represented the largest single portion of combined employment, but part-time or seasonal employment also represented large portions. The literature notes the value of part-time and seasonal employment, but the literature and interview responses in the present study also stress the importance of full-time employment that facilitates year-round residence in rural communities and associated contributions to community resilience in the social dimension.

Approaches to increasing the number of full-time employees include increasing overall visitor flows or developing visitor opportunities to increase flows specifically in low and shoulder seasons. The number and temporal distribution of a destination's nature-based tourists depend on multiple factors, including available natural attractions and access relative to markets. Nonetheless, the present interview results illustrate that communities can prioritize full-time employment through destination product development, as well as through coordination across firms. For example, if a ski resort does not develop summer activities itself, it may work with firms that offer summer activities to provide year-round employment. Such efforts may benefit the firms through employee continuity and may contribute to community resilience through employment stability and associated incentive for employee residence in the community.

Results indicated a relationship between firm life cycle stage and full-time FTE among firms with fewer than 10 full-time FTE (though not among all firms). Firms in growth and maturity stages had approximately twice the level of full-time FTE than firms in start-up or decline stages. Results also indicated a modest correlation between strength of a firm's priority on growth in FTE and full-time FTE. However, firm revenue appears to be the main facilitator of full-time FTE. Taken together, results suggest that, from a community perspective, the goal is to facilitate growing or mature NBT firms with substantial revenue; firm motivation to grow employment is of secondary importance.

Interview responses indicated diverse contributions of NBT firms in the social dimension, from sustaining town centers to enhancing community identity and supporting community organizations. Survey responses reinforce some of these contributions while recognizing the potentially symbiotic

relationship between the community and the industry. Firms contribute, for example, by catalyzing connections within the business community and enhancing community identity. Contributions to social cohesion exist but are modest relative to contributions in other areas. Results indicate the firm relationship scale functioned well, with two distinct factors explaining 66 percent of the variance across the nine included items.

Referring to Figure 1, tourism firms apparently have a modest impact on level of social cohesion and thus on community resilience through that affecting factor. Firms apparently have a more substantial impact on catalyzing connections within the business community. This is not included in the illustrative list of affecting factors in Figure 1, but it represents an affecting factor that strengthens business networks and thereby potentially contributes to community resilience. This effect on community resilience may ultimately be reflected in indicators such as non-declining income and non-declining population.

Consistent with Perkins and Khoo-Lattimore (2020), firms in start-up or growth stages reported stronger business-oriented relationships than firms in maturity or decline stages. A similar pattern existed for broader relationships, but the association was not statistically significant. Firm priority on contributing to sustainable tourism development was a significant predictor.

All firms potentially contribute to factors affecting community resilience, but results suggest that firms in the growth stage, and particularly those placing high priority on supporting sustainable tourism development, make the strongest contribution. Given the small size of many NBT firms, these contributions may be modest in larger communities. Nonetheless, even modest contributions of human, social, and financial capital can be important in smaller communities.

With respect to the ecological dimension, results suggested a modest potential contribution to resilience due to effect on land-use / land-cover. NBT's contribution in Norway inherently may be more limited than in countries with different balances of visitor flows and alternate land uses. Firms potentially make a broader contribution due to firm goals of enhancing nature values and connections among visitors. Given the modest contribution to land use / land cover, the contribution to community resilience as reflected in non-declining levels of ecosystem services may be modest via that mechanism. The contribution via enhancing nature values and connections may be stronger.

Priority on sharing nature values was strong across all firms, but there was a statistically significant difference across life cycle stages, with firms in the growth stage most likely to have this priority. Strong firm commitment to enhancing client awareness of, and support for, nature values does not necessarily translate to client pro-environmental behavior (Kim & Coghlan, 2018; Poudel & Nyaupane, 2013; Weiler & Kim, 2011), but such commitment at least provides a starting point for affecting client attitudes and behavior.

In summary, NBT is not a panacea for promoting rural community resilience, as it may play limited or non-existent roles in many communities. Moreover, though the tourism sector often has been resilient in response to diverse changes, COVID-19 is a reminder that it is not resilient to all changes. Nonetheless, study results indicate that NBT can contribute to community resilience; in some communities, this contribution may be substantial.

Awareness that tourism potentially contributes to resilience not just through employment, but also through broader mechanisms, may inform governmental policy decisions. Likewise, awareness of the potential effect of firm stage and firm priorities on this contribution can inform policy decisions, including those relating to governmental support. For example, government financial or other support might be targeted toward firms whose current or potential life cycle stages and priorities

are associated with relatively high contributions to community resilience. At the firm level, conceptual and empirical evaluation of industry contributions to community resilience can help firms understand their contribution and target ways to increase it.

At the conceptual level, this report clarifies the relationship between nature-based tourism (and tourism generally) and community resilience. In doing so, it provides a more tractable approach for quantitatively assessing NBT's contribution, albeit indirectly. Nonetheless, limitations remain. Results inevitably depend on the characteristics of NBT in the study area, in this case Norway as a whole and, for the interviews, the three case study sites in particular. Results also depend on this study's scope and methods. Resilience is complex and multifaceted, and this analysis evaluated NBT's potential effect on only a limited number of factors that might affect community resilience. In addition, it relied on the perceptions and reports primarily of representatives of NBT firms and secondarily (in the interviews) of other stakeholders closely involved in tourism.

Future studies might cover more breadth while focusing more intensively only a particular community or small set of communities. Alternatively, they might cover more depth by focusing on a narrow set of affecting factors. Most affecting factors will rely in part or in whole on perceptions and reports of stakeholders. Even apparently objective factors, such as contribution to land use / land cover, rely in part on perceptions and judgments, such as the type of land use that would occur in the absence of NBT. Nonetheless, evaluation of additional factors, as well as data collection from more diverse stakeholders, can extend the foundation provided here and contribute to a fuller picture of NBT's effect on community resilience.

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Appendix: Survey question wording, descriptive statistics, and additional analyses

The following are English translations of the Norwegian survey questions, as well as associated descriptive statistics and additional analyses. The variables are numbered for ease of reference; variable numbers do not reflect sequence in the questionnaire.

Firm life cycle stage and land use questions, nominal or ordinal response

V1. Which of the following stages best describes the firm's work in nature-based tourism?

- Start-up (13%)
- Growth (44%)
- Maturity / stability (40%)
- Decline / downsizing (3%)

There were 516 responses. Three of those responses reflected a liquidation stage and were excluded from the analysis due to the small number of observations.

V2. On which type of land ownership do the firm's nature-based tourism offerings occur? Multiple responses allowed.

- Undeveloped land owned by the firm
- Land in other private ownership
- Etc.

There were 273 responses. One or both of these two private land categories was selected by 73% of respondents.

V3. Would the private land you use be sold if the land did not generate revenue from nature-based tourism?

- Yes (9%)
- No (70%)
- Don't know (22%)

This question was only asked of the 73% indicating use of private land.

V4. Would land use be different on the private land you use if the land did not generate revenue from nature-based tourism, such as in the form of increased harvest, hydropower development, or other changes?

- Yes (16%)
- No (60%)
- Don't know (24%)

This question was only asked of the 73% indicating use of private land.

Firm motivations, interval response

Question and response wording	N	Mean	SD	Skew
<i>V5. How high or low does the firm prioritize the following goals in its work in nature-based tourism? 1 = Very low priority to 7 = Very high priority</i>				
a. Growing the number of employees	514	3.8	2.0	0.1
b. Sharing nature values with clients	531	6.0	1.3	-1.3
c. Contributing to sustainable tourism development	527	5.9	1.3	-1.4

Firm employment and revenue questions, interval response

The V6a and V6b variables were computed by researchers based on responses across the full-time, part-time, and seasonal categories. Variable V6 observations with missing values for all three categories (full-time, part-time, and seasonal) were excluded from the analysis. When an observation had a missing value for one or two categories, but not all three, the missing value was converted to zero. When an observation had zero values for all three categories, the firm was assumed inactive during the reporting year from an employment perspective.

The employment and revenue variables exhibited substantial skew due to values in the right tail of the distributions. Therefore, analyses using the original variables were supplemented by analyses using modified variables. Variables V6d and V7b reflect the original interval scale but exclude observations with the highest values. Variables V6e, V6f, and V7c (next section) reflect transformation to ordinal variables.

Question and response wording	N	Mean	SD	Skew
<i>V6. For the most recent accounting year, approximately how were the firm's FTE associated with nature based tourism split across the following categories? Full-time, part-time across the whole year, seasonal.</i>				
a. Sum of full-time, part-time, and seasonal; includes inactive firms	462	3.5	5.7	4.2
b. Sum of full-time, part-time, and seasonal; excludes inactive firms	422	3.9	5.8	4.1
c. Full-time FTE; includes inactive firms	462	1.2	2.4	6.8
d. Full-time FTE; includes inactive firms; excludes firms with full-time FTE of 10 or more	456	1.0	1.4	2.6
<i>V7. What was your revenue in the most recent accounting year?</i>				
a. All firms (in million NOK)	464	2.3	4.6	4.6
b. Excludes firms with revenue of 20 million NOK or more	457	1.9	2.9	2.8

Firm employment and revenue ordinal variables created due to skew (see table of original variables above)

V6e. This variable was created from V6a and reflects the sum of the firm’s FTE across full-time, part-time, and seasonal categories combined.

- 0 to 0.49 (20%)
- 0.50 to 1.49 (25%)
- 1.50 to 2.99 (19%)
- 3.00 to 9.99 (26%)
- 10.00 or more (10%)

V6f. This variable was created from V6c and reflects the firm’s full-time FTE.

- 0 (40%)
- 0.01 to 0.99 (11%)
- 1.00 (25%)
- 1.01 to 2.99 (13%)
- 3.00 or more (11%)

V7c. This variable was created from V7a and reflects annual firm revenue in million NOK.

- 0 to 0.19 (20%)
- 0.20 to 0.49 (18%)
- 0.50 to 1.49 (25%)
- 1.50 to 4.99 (26%)
- 5.00 or more (10%)

Firm relationship with local communities, interval response

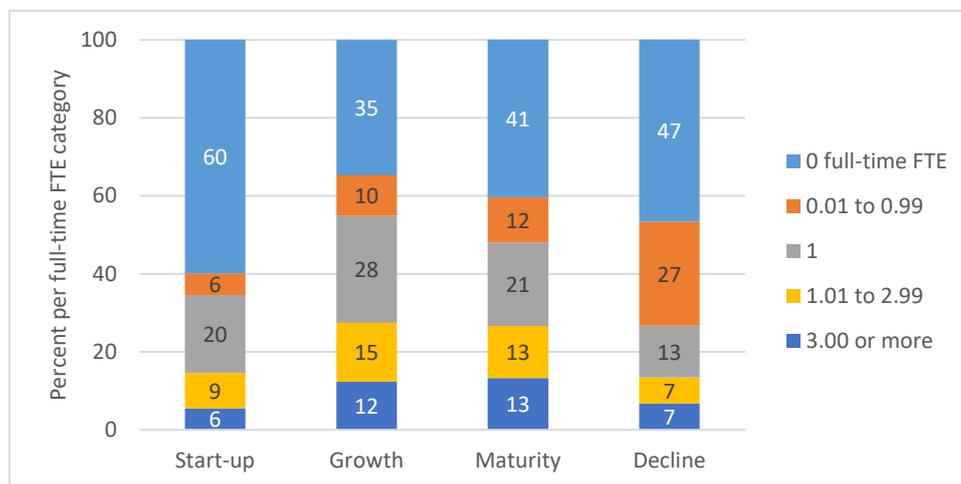
Question and response wording	N	Mean	SD	Skew
<i>V8. We are interested in the significance of nature-based tourism in local communities and your firm in that context. To what degree do you agree with the following statements? 1 = Not at all to 7 = To a large degree</i>				
a. The local community is a part of the attraction for the firm	281	3.6	1.3	-0.6
b. The local community is important for us because it facilitates tourism with areas, paths, information, and in other ways	280	3.5	1.4	-0.4
c. The firm catalyzes increased cooperation between other business professionals in the local community	281	3.4	1.3	-0.3
d. The firm helps strengthen the community's identity	274	3.3	1.3	-0.3
e. Others in the local community would say I have an above average personal network within the community	273	3.1	1.2	-0.2
f. The firm catalyzes increased connection between other companies in the local community and government actors	276	3.0	1.2	0.0
g. The firm provides a meeting place for local residents	275	2.7	1.3	0.4
h. The firm supports local non-profit organizations (such as sports teams) with money, products, work, and other ways	272	2.6	1.3	0.4
i. Others in my local community would say that the firm contributes to cohesiveness in the town	276	2.5	1.2	0.4

Additional analyses

The manuscript text includes analysis of the relationship between firm revenue, in millions of Norwegian kroner, and FTEs specifically of full-time employment, excluding eight observations with values of 10 or greater for FTE or 20 million NOK or greater for revenue. The Pearson correlation for that analysis, with data shown in Figure 2, was 0.62 ($p = 0.000$). The correlation for all observations was 0.65 ($p = 0.000$). Due to skew in the original variables, the analysis was repeated using income and employment categories (variables V7c and V6f, with all observations); the crosstab Pearson chi-square was 215.7, $p = 0.000$.

The relationship between firm life cycle stage and FTEs of full-time employment in the manuscript was based on treating FTE as an interval variable (Figure 3 in the manuscript). The analysis was repeated using full-time FTE categories (variables V1 and V6f, full set of firms), with results shown below in Figure A1. A pattern is visually apparent, but it was statistically nonsignificant at $\alpha = 0.05$ (the crosstab Pearson chi-square was 18.8, $p = 0.093$).

Figure A1. Firm stage and full-time FTE categories



As noted in the manuscript, there was a relationship between the priority firms placed on growing the number of employees and the number of FTEs in full-time positions (Pearson correlation of 0.14, $p = 0.004$). Treating both variables as ordinal (V5a and V6f) led to a crosstab Pearson chi-square of 35.0, $p = 0.068$.