Broadening the scope of resources in nature: an explorative study of nature-based tourism firms

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ABSTRACT
Nature-based tourism firms and other stakeholders often compete for the same resources. Knowledge of and access to resource bases are therefore essential for firms’ success. Nature-based tourism firms operate in nature areas, which, for the Nordics, may include human-made objects and intangibles. In this study, we therefore adopt a broad approach towards the concept of natural resources and include human-made, social, and cultural resources, termed resources in nature. Based on 558 survey responses, we analyse the dependence on resources in nature for three types of nature-based tourism firms in Norway. Intangible resources, such as silence, views, and other sensory qualities, are generally the most essential resource group for the firms, together with special biotopes and unique and iconic landscapes and areas. Cultural resources are also of certain importance to the firms. This study contributes to knowledge-based management and the prioritization of resources essential for the nature-based tourism industry.

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Introduction
Resources in nature are believed to hold unrealized tourism potential, although limited knowledge exists on how and under what circumstances this potential can be exploited (Fredman & Tyrväinen, 2010). Nature-based tourism (NBT), here defined as tourists’ activities in natural areas (Fredman et al., 2009), strongly depends on resources in nature (Fredman & Wall-Reinius, 2012; Priskin, 2001), and NBT firms rely on a broad range of resources in nature to facilitate tourist experiences (Fossgard & Fredman, 2019). The pool of resources in nature influences the outcome of the NBT sector (Marcouiller, 1998), and the sector, in turn, affects resource management and local value creation (Lee, 1997).

The range of NBT products is wide in terms of both activities – for example, consumptive, recreational, experiential, or cultural – and the composition of attractions, food, accommodation, transport, and services (Lundmark & Müller, 2010; Stensland et al., 2018). Nature-based firms’ lifestyle and small-scale characteristics make them vulnerable to resource
deficiency, which may constrain entrepreneurial success, and resources in nature are thus highly significant for fulfilling such firms’ business goals (Lundberg & Fredman, 2012; Lundmark & Müller, 2010; Stensland et al., 2014). As a consequence, resource quality and potential must be assessed for the development and management of tourism products (Alaeddinoglu & Can, 2011). In the context of NBT, human-made physical resources, such as cultivated landscapes, infrastructure, and purpose-built attractions, are co-located with natural resources (Marcouiller & Prey, 2005; Margaryan & Fredman, 2016). Thus, in this paper, human-made resources in nature are included in the term resources in nature.

NBT is expected to contribute to growth and employment in rural areas. However, other stakeholders are dependent on the same types of resources and land, for example, wind turbines, hydropower, mining, agriculture, forestry, and second-home development (Connell et al., 2017; Kytzia et al., 2011; Margaryan, 2016). This requires the management and prioritization of resources; thus, as one of many stakeholders, the NBT industry needs a clear picture of which resources are important (Fredman & Tyrväinen, 2010). In this study, we contribute to this picture by identifying three types of NBT firms and analysing their dependence on resources in nature.

The value of resources in nature

It is the combination of natural resource features and human needs and the capability to utilize these resources that gives value to an otherwise valueless ‘[…] combination of rock, soil, and trees’ (Clawson & Knetsch, 1966, p. 7). This value is not solely economic, but also emotional, social, and cultural, as humans connect to and interact with natural elements (Faarlund et al., 2007; Kellert, 1997; Powell et al., 2009). Through outdoor recreation, the economic and social acceptance of using specific resources in nature to perform activities bestow upon these resources social, cultural, and economic value (Aanesen et al., 2018; Clawson & Knetsch, 1966; Margaryan et al., 2018; Navrud & Strand, 2018). As a consequence, when recreational activities are organized and charged for by tourism firms (Margaryan & Fredman, 2017), the commercial value of the resources, as inputs to the tourism production process, increases (Dissart & Marcouiller, 2012; Smith, 1994), which also is recognized through the experience economy (Jensen & Prebensen, 2015; Pine & Gilmore, 2015).

Tourists’ experiences are characterized by personal, engaging, entertaining, extraordinary, and intense involvements with tourism staff, fellow customers, and the surrounding environment (Alsos et al., 2014; Mossberg, 2007; Richins & Hull, 2016). The NBT environment, or experiencescape, is a multidimensional combination of areas, physical and cultural objects, social interaction, sensory elements, and historical uses of nature (Fossgard & Fredman, 2019; Lindberg et al., 2014). NBT firms organize these natural and human-made tangible and intangible elements to facilitate the physical, cultural, and social aspects of the tourists’ experiences (Arnould & Price, 1993; Lindberg et al., 2014). As a consequence, the firm occupies an essential role in identifying and organizing the resources anticipated as necessary for the desired experience.

Nature-based tourism activity categories

Natural tourism products and the activities from which they are derived can be categorized as either consumptive or non-consumptive (Fredman & Wall-Reinius, 2012; McKercher, 2016).
Examples of consumptive activities are hunting (Honey et al., 2016), angling (Stensland, 2010), and the gathering of berries or plants (Everett, 2007), while biking, hiking, skiing, bathing, and kayaking are examples of non-consumptive activities (McKercher, 2016). Since consumptive activities originate in the traditional harvesting of wild foods and wildlife, the sustainable management and harvest of these resources are crucial for sustained tourism product delivery. In some parts of the world, such as the Nordic countries and much of Europe, hunting and freshwater fishing are private property rights belonging to landowners, who decide how many permits they issue and to whom (Stensland, 2010), thereby giving a possibility to control the resources required for the responsible planning and facilitation of tourists’ experiences (Fennell, 2008; Lundberg & Fredman, 2012). Non-consumptive recreation activities often originate in outdoor recreation or sports activities without any ‘consumptive’ component (English et al., 2000). Some activities, such as wildlife watching, have a similar dependence on wildlife management as do fishing and hunting tourism (Margaryan & Wall-Reinius, 2017), whereas others, such as biking and climbing, are more aptly described as using nature areas as a ‘stage’ (Arnegger et al., 2010). For both consumptive and non-consumptive activities, users share the need for legal access to nature areas. This access is granted through the use of public lands (depending on the country, firms may require concessions or permits to operate on public lands), landowner agreements, or, as in the Nordic and many other European countries, the right of public access to private lands (Sandell & Fredman, 2010).

Methods and data

Data collection and questionnaire development

For mapping the NBT firms registered in Norway, we employed the same definitions and sampling methods as in prior studies of nature-based tourism firms in Sweden and Norway (Fredman & Margaryan, 2014; Margaryan & Stensland, 2017; Stensland et al., 2014). Each regional destination marketing organizations in Norway was contacted and asked to provide a list of NBT firms in their region. NBT firms were defined as ‘commercial firms offering activities or experiences in nature against payment’. In addition, we conducted internet searches (Google) with specific keywords, such as nature experiences, NBT, and various activities. The survey was sent via email using Questback software in the spring and fall of 2017. Reminders (by email and text message) and contact with the firms provided information about firms being shut down or not fitting our definition, as well as incorrect contact information. We received 585 responses out of a valid sample of 1,614, a response rate of 34.6%, of an estimated population of between 2,000 and 3,500 firms (Stensland et al., 2018). We checked for non-response bias in several ways (Needham & Vaske, 2008). First, we compared the county-wise (Norway has 20 counties) distribution of firms in our sample (n = 558) with the population (n = 1,614). A Pearson chi-square test showed no significant differences between the two samples. Second, a non-response survey by phone, with answers from 35 random firms on selected questions from the questionnaire, did not indicate systematic bias.

Variables

Questions on business segments and characteristics were similar to or adapted from previous surveys of NBT firms in the Nordics (Fredman & Margaryan, 2014; Margaryan &
Stensland, 2017; Stensland et al., 2014). A new question concerning resources in nature were introduced in this study comprising 13 groups of resources, whereof six concerned the natural context, in various scales: unique/iconic landscapes/areas; specific natural phenomena; silence, sights, other sensory qualities; wilderness areas; special natural biotopes; and specific species. Four variables addressed the cultural and social context: public access/freedom to roam; cultural heritage, art, installations; local stories; and proximity to urban areas. Finally, three variables concerned facilitated resources: trails, paths, traces; rudimentary accommodation; and high-comfort accommodation. Measurements were Likert-type scales, with only the endpoints – 1 (not important) and 7 (very important) – given verbal labels.

Data analyses

Data was analysed using SPSS. A cluster analysis was run to segment the firms according to dependence on 11 different business segments (cf. Table 1). The cluster analysis was conducted in a two-step process, as recommended by Hair et al. (1998, pp. 497–515). The first step was a hierarchical cluster analysis (Ward’s method) to find the best number of clusters and initial seed points (cluster centroids), followed by a non-hierarchical K-means cluster analysis. Several cluster solutions were tested through different types of cluster analyses. A three-group-cluster solution was deemed stable, with distinct differences between clusters. ANOVA with Bonferroni’s post hoc tests and Pearson chi-square test were run to compare the three clusters on different variables.

Primary tourism activities (Appendix 1), were categorized into either consumptive or non-consumptive activities (McKercher, 2016). The majority of the firms delivered two or more activities, and for these, we chose the most commercially most important activity. All respondents received two questions concerning activities: (A) a listing of all activities (with sub-products) the firm offered and (B) a ranking of the three activities most

Table 1. A classification of nature-based tourism firm types based on business segments.

| Business segments                  | All          | Guided activity firms | Hospitality facilitators | Activity package firms | F*       | Post hocb |
|------------------------------------|--------------|-----------------------|--------------------------|------------------------|----------|-----------|
| Guided activities                  | 4.09 (2.48)  | 5.37 (2.14)           | 1.79 (1.32)              | 5.16 (2.01)            | 182.2*** | 1,3 > 2   |
| Self-guided activities             | 4.01 (2.40)  | 2.02 (1.53)           | 5.21 (2.04)              | 4.71 (2.09)            | 125.1*** | 2,3 > 1   |
| Sale of outdoor equipment          | 1.70 (1.30)  | 1.51 (1.21)           | 1.42 (0.87)              | 2.08 (1.38)            | 13.0***  | 3 > 1,2   |
| Organizing events in nature        | 2.88 (2.10)  | 2.66 (1.97)           | 1.69 (1.10)              | 4.27 (2.11)            | 77.0***  | 3 > 1,2   |
| Accommodation                      | 5.03 (2.36)  | 2.41 (1.83)           | 6.39 (1.30)              | 6.13 (1.38)            | 320.1*** | 3 > 1,2   |
| Transportation                     | 3.21 (2.24)  | 2.18 (1.70)           | 2.25 (1.68)              | 5.16 (1.88)            | 129.1*** | 3 > 2,1   |
| Meal service/catering              | 3.64 (2.29)  | 3.09 (2.04)           | 2.57 (1.97)              | 5.55 (1.66)            | 95.2***  | 3 > 1,2   |
| Tour packaging                     | 3.26 (2.29)  | 2.83 (2.01)           | 1.86 (1.47)              | 5.12 (1.90)            | 120.3*** | 3 > 1,2   |
| Information services               | 3.24 (2.16)  | 2.35 (1.90)           | 2.58 (1.77)              | 4.70 (1.90)            | 66.7***  | 3 > 2,1   |
| Agriculture and forestry           | 2.50 (1.97)  | 1.63 (1.35)           | 2.74 (2.12)              | 2.98 (1.96)            | 22.8***  | 3 > 1,2   |
| Commercial fishing                 | 2.45 (2.03)  | 1.24 (0.78)           | 2.74 (2.14)              | 3.26 (2.07)            | 50.9***  | 3 > 2,1   |
| N                                 | 440          | 152                   | 160                      | 128                    |          |           |
| %                                 | 100          | 35                    | 36                       | 29                     |          |           |

Numbers shown as mean (standard deviation). Numbers in bold are high scores defining the clusters. **p < 0.01. Question asked: ‘How significant are the following business segments for the firm’s total income? Not important (1) - Very important (7)’. 

*Comparison of cluster average was done by one-way analysis of variance (ANOVA).

bCluster by cluster comparison using Bonferroni’s post hoc analysis. The symbol > denotes significant differences between clusters at 5% level.
important to the firm’s turnover. In addition, half of the respondents, selected at random (C), were asked which activities they included in the firm’s best-selling products (in volume). On all of these questions, respondents could choose from a list of 51 predefined activities or specify other activities. Not all respondents answered each survey question. The following algorithm was used to determine the prime activity: the answer to (B), alternatively to question (C), and finally to (A). For question (A), the respondent could choose several activities. Here, the chosen activity with the most sub-products was selected.

In the principal component analysis (PCA) of the resource questions (using Varimax rotation with Kaiser normalization), the variables rudimentary accommodation and comfortable accommodation resulted in unclear components and were consequently excluded. A theoretical distribution of the remaining 11 variables suggested four components, while the PCA, with eigenvalue of 1, proposed three indistinct components. The analysis accordingly concluded in four components with acceptable internal reliability. Results and statistics from the PCA are reported in Table 3.

Limitations

We have likely failed to identify every NBT firm in Norway. Destination marketing organizations primarily have overviews of their members. Many landowners earn at least some income from the leasing of hunting/fishing rights and accommodation on their lands. There are more than 150,000 properties with hunting and fishing rights in Norway (Statistisk sentralbyrå, 2018); many of these do not consider themselves tourism businesses, and there is reason to assume that our method has not found all those engaged in tourism. Smaller firms, being less professional, have a lower presence on the internet (Caniëls et al., 2015), which indicates some bias to our findings. Regardless, we believe that ours is a valid sample of the most active firms in the NBT sector.

Results

We identified three similarly sized clusters of NBT firm types, named after their primary business segments, as follows (see also Table 1): guided activity firms scored high on guided activities and low on the other 10 business segments. These respondents were typical guide firms offering day trips with no or few other services. Hospitality facilitators scored high on the self-guided activities and accommodation segments. Here, we find accommodation establishments based on self-catering and self-guided activities, for example, hunting or fishing firms. Activity package firms scored high on the majority of business segments. Typical activity package firms offered comprehensive packages with combinations of activities, accommodation, food, and transport. Scores on the segments sale of outdoor equipment, agriculture and forestry, and commercial fishing were low for all three firm types.

Firm characteristics

The revenue from NBT products (NBT revenue) was significantly higher for activity package firms (390 k€) compared to hospitality facilitators (120 k€), with guided activity firms (258 k€) between the two (Table 2). The NBT revenue comprised almost 70% of total
### Table 2. Nature-based tourism firm types’ characteristics.

| Characteristics                  | N   | All                     | Guided activity firms | Hospitality facilitators | Activity package firms | F^a | Post hoc^b |
|----------------------------------|-----|-------------------------|-----------------------|--------------------------|------------------------|-----|------------|
|                                 |     |                         |                       |                          |                        |     |            |
| **Corporate level**              |     |                         |                       |                          |                        |     |            |
| Revenue nature-based tourism (NBT) (k€) | 460 | 242 (479)               | 258 (549)             | 120 (228)                | 390 (661)              | 8.6*** | 3 > 2     |
| NBT revenue of total (%)         | 540 | 62 (32)                 | 68 (34)               | 55 (33)                  | 67 (27)                | 7.9*** | 1,3 > 2   |
| NBT full-time positions          | 397 | 1.4 (2.6)               | 1.6 (3.4)             | 0.7 (1.2)                | 1.9 (2.9)              | 5.2*** | 3,1 > 2   |
| Years operating within NBT       | 536 | 17.5 (19.4)             | 12.8 (13.4)           | 23.3 (23.1)              | 16.3 (18.7)            | 11.8*** | 2 > 3,1   |
| Foreign customers (%)            | 473 | 47 (34)                 | 39 (34)               | 54 (36)                  | 46 (29)                | 6.3*** | 2 > 1     |
| Use own property nature areas^c (%) | 227 | 44                      | 24                    | 54                       | 23                     | –     | –          |
| **Manager/owner level**          |     |                         |                       |                          |                        |     |            |
| Income from firm (%)             | 510 | 50 (39)                 | 56 (40)               | 39 (35)                  | 54 (38)                | 8.3*** | 1,3 > 2   |
| Part of full-time equivalents (%)| 510 | 67 (34)                 | 69 (34)               | 59 (36)                  | 71 (33)                | 4.2**  | 3 > 2     |
| Years in firm                    | 558 | 11.8 (9.6)              | 10.0 (8.1)            | 13.7 (10.1)              | 10.2 (8.7)             | 8.1*** | 2 > 3,1   |
| Age                              | 519 | 51.6 (11.2)             | 47.6 (10.8)           | 55.0 (11.2)              | 50.4 (10.5)            | 17.4*** | 2 > 3,1   |
| Education level^d                | 526 | 3.7 (1.3)               | 4.1 (1.2)             | 3.6 (1.3)                | 3.6 (1.2)              | 6.2*** | 1 > 2,3   |
| **Business goals^e**             |     |                         |                       |                          |                        |     |            |
| Maximize income                  | 524 | 4.4 (1.7)               | 4.0                   | 4.4                      | 4.8                    | 8.2*** | 3 > 1     |
| Grow in full-time equivalents    | 514 | 3.8 (2.0)               | 3.8                   | 3.1                      | 4.4                    | 15.2*** | 3 > 1 > 2 |
| Independence                     | 526 | 5.5 (1.4)               | 5.5                   | 5.3                      | 5.8                    | 4.5**  | 3 > 2     |
| Interesting job                  | 533 | 6.0 (1.3)               | 6.1                   | 5.6                      | 6.3                    | 12.9*** | 3,1 > 2   |
| Utilize local resources in nature| 531 | 5.9 (1.5)               | 5.6                   | 5.7                      | 6.3                    | 7.9*** | 3 > 2,1   |
| Social contact with customers     | 534 | 5.7 (1.4)               | 5.4                   | 5.5                      | 6.2                    | 14.3*** | 3 > 2,1   |
| Give guest valuable nature experiences| 538 | 6.5 (0.9)               | 6.6                   | 6.2                      | 6.7                    | 10.4*** | 3,1 > 2   |
| **Activity category^f**          |     |                         |                       |                          |                        |     |            |
| Consumptive^g (%)                | 162 | 40                      | 9                     | 76                       | 30                     | –     | –          |
| Non-consumptive^h (%)            | 177 | 60                      | 91                    | 24                       | 70                     | –     | –          |
| **N**                            | 401 | 133                     | 153                   | 115                      | 70                     | –     | –          |
| **%**                            | 100 | 33                      | 38                    | 15                       | 7                      | –     | –          |

Numbers shown as mean (standard deviation).

***p < 0.01 **p < 0.05.

^aComparison clusters was done by one-way analysis of variance (ANOVA).

^bCluster by cluster comparison using Bonferroni’s post hoc analysis. The symbol > denotes significant differences between clusters at 5% level.

^cPearson Chi-Square X^2 = 16.778, df = 2, p < 0.01.

^d1=Primary school, 2=Secondary school, 3=Vocational education (2 years), 4=University college/university (3 years), 5=University (3+ years). Pearson Chi-Square X^2 = 27.924, df = 8, p < 0.01.

^eHow high or low does the firm prioritize the following objectives in its work on nature-based tourism? Very low priority (1) – Very high priority (7).

^fPearson Chi-Square X^2 = 139,696, df = 2, p < 0.01.

^gE.g. fishing, hunting, berry picking.

^hE.g. hiking, cross country skiing, rowing, yoga, mountain biking, ski-touring, kiting, climbing.
firm revenue for guided activity firms and activity package firms, while it was slightly over 50% for hospitality facilitators. Similarly, the NBT full-time positions in NBT was lower (0.7) for hospitality facilitators compared to the other two firm types (1.9 for activity package firms and 1.6 for guided activity firms). The hospitality facilitators had significantly longer experience (23.3 years) in the nature-based tourism sector than guided activity firms (12.8 years) and activity package firms (16.3 years). Between-cluster differences also applied to income, workload, and experience on the manager/owner level. The share of the manager/owner's total income received from NBT was about 55% for guided activity firms and activity package firms and slightly below 40% for hospitality facilitators. Managers/owners of guided activity firms and activity package firms had approximately 70% of a full-time equivalents in the NBT business, while the corresponding number for hospitality facilitators was 59%. Hospitality facilitator managers/owners were older and had more years of experience in the firm than the other two firm types. The management of guided activity firms on average, had a higher education level compared to hospitality facilitators and activity package firms. To summarize, the firms, in general, had NBT as their prime source of income.

As shown in Table 2, guided activity firms had the largest share of non-consumptive activities (91%), and consumptive activities were less important to this firm type (9%). Hospitality facilitators had the largest share of consumptive activities (76%), and the lowest share of non-consumptive activities (24%). For activity package firms, the activity categories were more evenly distributed, with non-consumptive activities as most important (70%) and consumptive as least important (30%). See Appendix 1 for a complete list of activities.

Firm resource dependencies

The PCA of the resource question resulted in four components: (1) nature and landscapes, (2) movement and senses, (3) cultural resources, and (4) phenomena and species (Table 3). The activity package firms generally scored higher than the other two firm types on the majority of components and variables while the hospitality facilitators, in general, had the lowest scores. Although scores were higher for the activity package firms, the internal scoring (ranking) of components differed somewhat between firm types.

The component movement and senses included sensory resources, such as views and silence, as well as the right to use paths and tracks and move freely in nature. The hospitality facilitators and the guided activity firms had this as their most important resource component, while activity package firms scored this second highest, after nature and landscapes. The variable silence, sights, other sensory qualities scored highest (5.7 of 7) of all resource variables across firm types. The component nature and landscapes comprised large-scale resources, unique landscapes and areas, wilderness, and special biotopes, such as forest, sea, and mountains. This component and the included variables scored in the same high range as the prior component. Special biotopes was the most important variable for all firm types in this component. Phenomena and species included certain species, as well as the specific phenomena as northern lights and weather. Overall, this component was scored somewhat lower than the two previous ones by hospitality facilitators and the guided activity firms, while for activity package firms the score was nearly in the same range as for the two previous components. The variable specific species was scored
Table 3. Resources important for delivery of nature-based tourism activities per firm type.

| Resource components                      | N   | Guided activity firms | Hospitality facilitators | Activity package firms | Post hoc\(^b\) | Factor loading | Cronbach alpha per component | Alpha if item deleted | Variance explained (%) |
|------------------------------------------|-----|-----------------------|-------------------------|------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------|
| Comp. 1: Nature and landscapes          | 250 | 4.86 (1.72)           | 4.77 (1.75)             | 4.39 (1.78)            | 5.52 (1.44)    | 7.3***         | 3 > 1.2                     | 0.80                  | 37.2                   |
| Wilderness areas                        | 237 | 4.26 (2.15)           | 4.33 (2.24)             | 3.74 (2.21)            | 4.95 (1.78)    | 4.9***         | 3,1 > 2                     | 0.66                  | 0.81                   |
| Unique/iconic landscapes/areas          | 241 | 5.00 (2.03)           | 4.93 (2.00)             | 4.52 (2.16)            | 5.75 (1.72)    | 6.0***         | 3 > 2                      | 0.84                  | 0.67                   |
| Special biotopes (forest, mountain, sea)| 237 | 5.23 (1.87)           | 5.13 (2.01)             | 4.67 (1.93)            | 5.84 (1.49)    | 6.1***         | 3 > 2                      | 0.80                  | 0.69                   |
| Comp. 2: Movement and senses            | 254 | 4.93 (1.51)           | 5.01 (1.49)             | 4.67 (1.51)            | 5.28 (1.36)    | 2.8*           | 3,1 > 2                     | 0.61                  | 11.2                   |
| Trails, paths, traces                   | 241 | 4.21 (2.17)           | 4.06 (2.19)             | 3.94 (2.25)            | 4.84 (2.02)    | 3.2            | 2                          | 0.60                  | 0.47                   |
| Silence, sights, other sensory qualities| 245 | 5.72 (1.57)           | 5.80 (1.63)             | 5.68 (1.51)            | 5.93 (1.44)    | 0.4            |                            | 0.77                  | 0.57                   |
| Public access/freedom to roam           | 240 | 4.80 (2.23)           | 5.17 (2.32)             | 4.25 (2.09)            | 5.02 (2.12)    | 3.3**          | 1 > 2                      | 0.66                  | 0.47                   |
| Comp. 3: Cultural resources             | 250 | 3.80 (1.57)           | 3.68 (1.44)             | 3.10 (1.33)            | 4.57 (1.48)    | 17.0***        | 3 > 1.2                    | 0.66                  | 10.7                   |
| Cultural heritage, art, installations   | 239 | 3.27 (1.96)           | 3.06 (2.03)             | 2.77 (1.71)            | 4.14 (1.89)    | 8.8***         | 3 > 1.2                    | 0.76                  | 0.44                   |
| Local stories                           | 244 | 4.66 (1.98)           | 4.88 (1.81)             | 3.67 (1.88)            | 5.42 (1.72)    | 15.3***        | 3,1 > 2                    | 0.45                  | 0.57                   |
| Proximity to urban areas                | 238 | 3.35 (1.91)           | 3.09 (1.95)             | 2.95 (1.69)            | 4.03 (2.02)    | 5.9***         | 3 > 1.2                    | 0.81                  | 0.68                   |
| Comp. 4: Phenomena and species          | 244 | 4.25 (1.82)           | 3.65 (1.79)             | 4.05 (1.77)            | 5.15 (1.62)    | 12.7***        | 3 > 2,1                    | 0.46\(^c\)            | 7.5                    |
| Specific species                        | 234 | 4.37 (2.10)           | 3.47 (2.13)             | 4.42 (2.06)            | 5.14 (1.73)    | 11.2***        | 3,2 > 1                    | 0.72                  | 0.30\(^c\)            |
| Specific natural phenomena              | 235 | 4.09 (2.27)           | 3.89 (2.29)             | 3.56 (2.23)            | 5.11 (1.95)    | 8.3***         | 3 > 1.2                    | 0.69                  | 0.30\(^c\)            |

Numbers shown as mean (standard deviation).

\(^a\)Comparison clusters was done by one-way analysis of variance (ANOVA).

\(^b\)Cluster by cluster comparison using Bonferroni’s post hoc analysis. The symbol > denotes significant differences between clusters at 5% level.

\(^c\)Correlation (since less than three variables in component). Principal component analysis. Varimax with Kaiser normalization. KMO measure of sampling adequacy: 0.806. Bartlett’s test of sphericity: 617.24, df = 55, p < 0.01. Total variance explained by components 66.6%.

\(^*p < 0.1\), \(^**p < 0.05\), \(^***p < 0.01\).

‘How important are the following resources for the enterprise’s delivery of nature-based tourism activities in the area the firm operates in? Not important (1) – Very important (7).’
higher by both activity package firms and hospitality facilitators than guided activity firms. The final component, cultural resources, encompassed both tangible and intangible traces of human activity in nature, including art, heritage artefacts and stories, and proximity to urban areas. The relatively low component score across firm types indicates lower importance overall. However, the variable local stories was important to guided activity firms and activity package firms.

Discussion

In this study, we identified three types of NBT firms and analysed their resource dependencies. Activity package firms emerged as total suppliers of comprehensive packages, hospitality facilitators focused on accommodation and self-guiding, and Guided activity firms offered mainly guided activities. In general, these NBT firms depended on a complex combination of natural and human-made and material and immaterial resources in different scales, from large-scale landscapes, sights, silence, paths, trails, and phenomena to smaller scale resources, such as special biotopes, traces of human activity, scents, and tactile impressions. Dependence on resources varied, both in general and between firm types. The most important group of resources were sensory resources such as views and silence, regardless of the type of firm. For the other groups of resources, the firm types prioritized them differently, which in turn can be explained by firm characteristics.

Nature-based tourism firm types

The three types of firms represent various roles in the NBT system (Fredman & Tyrväinen, 2010). The NBT destination consists of a combination of large and small NBT firms that interact with traditional tourism firms, public and non-governmental organizations, populations, and other community stakeholders. Activity package firms are total suppliers of comprehensive packages, including activities, accommodation, food, transport, and so on. As stated in their business goals, activity package firms were more concerned than the other two firm types about building social relations with guests and providing customers with valuable experiences. Along with commercial goals, that is, to maximize income and growth in full-time positions, this suggests that activity package firms can be referred to as profit-driven experience firms, with strategic awareness of business goals and resource usage (Alsos et al., 2014). Hospitality facilitators focused on accommodation and self-guiding, had lower turnover and employment, a higher utilization of their own property, and products primarily based on consumptive activities, reflecting firm characteristics previously reported in studies of Norwegian landowners providing salmon fishing products (Stensland, 2010). Guided activity firms offered mainly non-consumptive activities. Although guiding is traditionally associated with support and safety, the guide also possesses an essential role as interpreter of nature and mediator of social interaction and immersion in NBT experiences based on any type of activity (Arnould et al., 1998). Such tasks require substantial engagement and job interest (Hansen & Mossberg, 2017), in which guided activity firms scored high. Combined with the low scores on profit-related business goals, this indicates that lifestyle was the driving force for this firm type (Lundberg & Fredman, 2012).
Resources in nature and nature-based tourism

The firms in this study were dependent upon a wide range of resources in nature. The four resource components identified comprise both tangible and intangible natural resources, as well as human-made resources. The most important component overall, movement and senses, underpins the definition of NBT as activities in nature (Fredman et al., 2009). Furthermore, this component illustrates the complexity and challenging aspects of the NBT experience, wherein firms optimally facilitate activity and simultaneously engage guests’ senses and awareness of natural and cultural surroundings (Fennell, 2008). Our senses are essential for how we perceive the world around us, which of course also applies to tourism activities, wherein sensory impressions affect the experience (Agapito et al., 2014). The resource variable silence, sights, and other sensory qualities received the highest score, both in total and for each of the firm types. The development of new ‘sport and play’ activities in NBT and outdoor recreation has led to discussions and conflicts, since these activities are often thought to use nature as only a backdrop (Arnegger et al., 2010). This survey shows, however, that resources with sensory qualities were important to all firms, regardless of activity type.

The freedom to navigate nature and simultaneously explore the immateriality of sights and silence has always been vital to Nordic NBT (Varley & Semple, 2015). In the same tradition, nature itself plays a key role, providing a vast backdrop of large landscapes, as well as pristine natural qualities, such as wilderness and unique biotopes, as expressed in the nature and landscapes component. The introduction of modern, fast, and technical activities has complemented the inactive observation of nature, and our results confirm that human senses and the freedom to navigate nature are critical in the NBT experience (Agapito et al., 2013; Gelter, 2007; Varley & Semple, 2015). The component phenomena and species related directly to the specific tangible and intangible base of many NBT products, such as northern lights safaris and hunting and fishing. This component illustrates the exposed position NBT firms might occupy, being dependent on a single or very few resources. Overall, the study supports the general assumption that NBT firms strongly depend on resources in nature (Arnould & Price, 1993; Fredman & Wall-Reinius, 2012; Lundberg & Fredman, 2012; Stensland et al., 2014).

Nevertheless, the cultural and social resources of the components movement and senses and cultural resources were significant. The tourism experience relates to and interacts with the physical, social, and cultural environment (Lindberg et al., 2014). In this study, firms recognized the importance of resources that influence the social and cultural aspects of guest experiences. Paths and trails are essential for movement, access, and egress, but they also provide opportunities for social interaction, in encounters with other people. The Norwegian and Nordic landscape is characterized by centuries of the traditional use of nature, such as agriculture, forestry, pasturing, hunting, and fishing, which is expressed in the human-influenced landscape, historic buildings, infrastructure and installations, local stories, and cultural artefacts (Daugstad, 2008). Cultural, historical, and narrative resources allow guests’ social and cultural preferences to resonate in their surroundings, thereby creating meaningful experiences (Andersson & Andersson, 2013; Lindberg et al., 2014). This supports the findings of Margaryan and Fredman (2016), who emphasize the importance of human-made resources for NBT. In other words, nature is not just a stage for an activity (Arnegger et al., 2010) but rather a holistic
context in which NBT firms can facilitate valuable, but still responsible, experiences comprising social interaction, the dissemination of environmental values, and respect for local culture and communities (Fennell, 2008).

General firm characteristics may illuminate variation in resource dependency between firm types. Activity package firms’ expansive business strategies may result in increased attention and dependence on resources in nature (Lundmark & Müller, 2010; Stensland, 2012), here observed in higher scores regarding the resource question (Dissart & Marcouiller, 2012; Smith, 1994). Likewise, hospitality facilitators’ lower scores may be explained by this firm type’s larger share of other income sources and lower work share in NBT, which suggests less involvement in NBT, expressed by lower dependence on and attention to resources in nature (Lundberg & Fredman, 2012).

The right of public access as a ‘meta resource’

In the Nordic context, the right of public access is a central feature for many uses of nature (Sandell & Fredman, 2010), and it comprises both a success factor (free access to resources in nature that can be used for commercial tourism activities) and an obstacle (free access for others that precludes the possibility of exclusive commercial exploitation) for Nordic NBT firms (Lundberg & Fredman, 2012; Stensland et al., 2014). This duality of the right of public access for tourism development is also highlighted by Vail and Hultkrantz (2000), who compare property rights in the US (no open access) to the Nordic context. In this study, guided activity firms consider the right of public access as significantly more important than do hospitality facilitators do. The reason for this may be twofold: both that hospitality facilitators have a lower share of area-demanding activities, but also that the consumptive activities they primarily offer, that is, hunting and freshwater angling, are of a character wherein it is beneficial to exclude others from harvesting the resource. More than half of the hospitality facilitators use their own nature property for their NBT activities, granting access to the land regardless of the public right of access.

Implications and future research

This study details the need for resources for nature-based tourism firm. This contributes to the understanding of how firms plan and facilitate responsible experiences, but also to knowledge of how nature-based tourism can affect natural and cultural resources (Arnould & Price, 1993; Fennell, 2008; Lindberg et al., 2014; Richins & Hull, 2016). The complex composition of resource dependencies introduces considerable potential for rivalry over resources and conflicts between stakeholder groups, ranging from mountain bikers disturbing hunters, to wind turbines disrupting views and pristine habitats. This study identifies resources vital for the NBT industry and supports policy decisions about resource use (Dissart & Marcouiller, 2012; Fossgard & Fredman, 2019; Fredman & Wall-Reinius, 2012).

This study is based on a coarse typology of NBT activities, which provides a general picture of the relationship between products and resources. NBT activities and the corresponding products can be divided along several dimensions, and further research should examine product–resource relations based on a more finely meshed typology of activities. Furthermore, it would be interesting to analyse how resource dependencies vary along
axes, such as firm locations (for example, urban vs. rural), operating seasons, collaboration and networks, and degrees of innovation.

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Appendix 1.

| Consumptive activities                                      | Non-consumptive activities                                      |
|-------------------------------------------------------------|---------------------------------------------------------------|
| Salmon, sea trout fishing                                  | Bird watching                                                |
| Inland fishing                                             | Boat sightseeing, cruise, sea rafting                        |
| Sea fishing                                                | Canoe on fresh water                                         |
| Small game hunting                                         | Canyononing                                                   |
| Big game hunting                                           | Caving                                                       |
| Hunting at sea (bird, seal)                                | Climbing / rope park                                         |
|                                                            | Cooking in nature                                            |
|                                                            | Cross country skiing                                         |
|                                                            | Cycling on the road                                          |
|                                                            | Diving, snorkelling                                          |
|                                                            | Dog sledding                                                 |
|                                                            | Expedition tours                                             |
|                                                            | Glacier hiking                                               |
|                                                            | Hiking / trekking (not climbing)                             |
|                                                            | Horse riding                                                 |
|                                                            | Ice skating                                                  |
|                                                            | Kayak on fresh water                                         |
|                                                            | Kiting on snow                                               |
|                                                            | Mountain biking                                              |
|                                                            | Nature photography                                           |
|                                                            | Nature studies                                               |
|                                                            | Northern lights tours                                        |
|                                                            | Parachute, paragliding, hang gliding                         |
|                                                            | Rafting                                                      |
|                                                            | River kayaking                                               |
|                                                            | Rock / ice climbing, high mountain climbing                  |
|                                                            | Rowing boat on fresh water                                  |
|                                                            | Rowing boat on saltwater                                     |
|                                                            | Sea canoeing                                                 |
|                                                            | Sea kayaking                                                 |
|                                                            | Ski / snowboard touring                                      |
|                                                            | Snowmobile tours                                             |
|                                                            | Snowshoeing                                                  |
|                                                            | Storm watching                                               |
|                                                            | Surfing (wave / wind)                                        |
|                                                            | Tobogganining                                                |
|                                                            | Tree top cabins, wilderness camp, igloos                     |
|                                                            | Via ferrata                                                  |
|                                                            | Watercraft                                                   |
|                                                            | Water safari                                                 |
|                                                            | Water skiing, wakeboarding                                   |
|                                                            | Wildlife safari on land                                       |
|                                                            | Yoga in nature                                               |

Nature-based tourism activity categories (Stensland et al., 2018).