# **RESEARCH ARTICLE**

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# Collaboration for organizational sustainability limits to growth: Developing a factors, benefits, and challenges framework

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### Abstract

Collaboration plays a key role in the contribution of organizations (civil society, corporate, and public sector ones) to sustainability; nonetheless, there has been limited research on collaboration elements, benefits, and challenges. A survey was developed for investigating collaboration for organizational sustainability (through elements, benefits, and challenges), to which 253 full responses were obtained. The survey responses were analyzed using Friedman tests, correlations, and multivariate statistical analyses. The results provide insights into the rankings of the elements, benefits, and challenges. The multivariate statistical analyses show that when organizations increase their collaboration on two element factors (business-oriented and society-oriented), there will be both benefits and challenges. The optimal solution to collaboration for organizational sustainability is where the factors are balanced in such a way that there are sufficient benefits but fewer challenges. If collaboration is unbridled, then the challenges will outweigh the benefits, thus there are limits to the implementation and growth of collaboration. From the analyses, the research proposes the "Organizational sustainability collaboration" framework dependent on the factors, the benefits, and the challenges obtained from collaborating, which can help organizations understand and better collaborate, so that benefits are maximized, and the challenges curtailed.

### KEYWORDS

benefits, business, challenges, collaboration, organisations, society, sustainability

#### INTRODUCTION 1

Organizations (civil society, corporate, and public sector ones [Holliday, Schmidheiny, & Watts, 2002; Kinnie, Hutchinson, Purcell, Rayton, & Swart, 2005]) have been instrumental in contributing to sustainability (Danter, Griest, Mullins, & Norland, 2000; Holliday et al., 2002; Jennings & Zandbergen, 1995). Such contributions are dependent on an organization's nature and purpose (Soyka, 2012), how they affect and are affected by their relation to the environment (Burnard & Bhamra, 2011), and its stakeholders (Govindan, Seuring, Zhu, & Azevedo, 2016; Seuring & Gold, 2013).

Several definitions of organizational sustainability have appeared. For Leon (2013), "a sustainable organization is an ethic and authentic economic entity that develops the appropriate structures and plans in order to become capable of achieving the objectives defined at the economic, environmental, and social levels and to ensure its growth through rational resource allocation." For Rodríguez-Olalla and Avilés-Palacios (2017), it refers mainly to environmental sustainability by efficiently and effectively maintaining results, generating knowledge, building capacity, establishing experiences with partners, and producing services and products. Lozano (2018) proposed organizational sustainability as: "The contributions of the organisation to sustainability's

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dimensions (economic, environmental, and social dimensions of today, as well as their inter-relations within and throughout the time dimension) through the incorporation of sustainability issues in the organisation's system elements, as well as change processes, and collaboration with its stakeholders to accomplish the organisation's goal or objective." The latter is the one used in this article, since it provides a more complete definition, and it explicitly emphasizes collaboration.

Collaboration plays a key role in helping organizations become more sustainable (Govindan et al., 2016; Lozano, 2007, 2008; Seuring & Gold, 2013; Wassmer, Paquin, & Sharma, 2014). Although there has been increasing research on the topic (e.g., Adams, 2013; Blomqvist, Hurmelinna, & Seppänen, 2005; Löfström, 2009; Witjes & Lozano, 2016), there is still limited research on collaboration elements, benefits, and challenges. This paper is aimed at providing insights into these factors.

The paper is structured in the following way: Section 2 discusses collaboration for organizational sustainability; Section 3 describes the methods used; Section 4 presents the results, discussion, and the development of the framework; and Section 5 provides the conclusions.

# 2 | A DISCUSSION ON COLLABORATION FOR ORGANIZATIONAL SUSTAINABILITY

Collaboration is a purposeful relationship in which all stakeholders work toward a shared outcome or goal (Gülbahar & Madran, 2009; Rubin, 2009). It relies on sharing and openness by using information, divergent insights, and spontaneity (Denise, 1999). Collaboration can also help organizations develop products and services (Camarinha-Matos, Afsarmanesh, Galeano, & Molina, 2009); however, it may lead to less efficient decision-making and conflicts over resources and technical issues (Troy, Hirunyawipada, & Paswan, 2008).

Collaboration entails sharing benefits and risks (Peterson, 2005). This usually provides more benefits to organizations than when they work on their own (Allred, Fawcett, Wallin, & Magnan, 2011). Collaboration harvests its benefits from differences in perspectives, knowledge, and approaches and from problem-solving (Lozano, 2007). In general, collaboration provides more benefits than challenges for organizations (Fadeeva, 2004; Genefke, 2000); however, in some cases, organizations achieve less from collaboration than they had expected (Wagner & Leydesdorff, 2005). Collaboration can help obtain an optimum for a

system, where each individual decision promises the best possible gain, but are constrained by other decisions that should also achieve the best possible gains, that is, they are interdependent (Lozano, 2007).

Collaboration is instrumental in developing more sustainable organizations (Govindan et al., 2016; Lozano, 2007, 2008; Seuring & Gold, 2013; Wassmer et al., 2014), through elements including: New technologies (Kishna, Niesten, Negro, & Hekkert, 2017); business models (Witjes & Lozano, 2016); recovery (reducing, reusing, and recycling resources) (Lozano, Carpenter, & Satric, 2013); innovation (McLachlan, Hamann, Sayers, Kelly, & Drimie, 2015); research and education (Caniglia et al., 2017); and links to the community (Murray & Zautra, 2012).

The benefits that organizations may obtain from collaboration when working to become more sustainable include: Optimizing financial and human capital; accessing markets and knowledge; enriching creativity; decreasing the time needed to accomplish objectives; making processes more efficient (Fadeeva, 2004); using action-orientated collaboration; ensuring benefits to all the players; reducing or removing conflicts; and transdisciplinary learning (Lozano, 2007).

The challenges that organizations may face from collaboration when working to become more sustainable include: Information (referring to who benefits, and the real, or hidden, agenda) (Graci, 2013); bargaining (how to split the gains) (Lozano, 2007); free riding (where those who choose not to participate still get the benefits) (Chilosi, 2003; Vaaland, 2004); coordination problems (Steensma, 1996); risk of jeopardizing important and unique resources (Genefke, 2000; Grimpe & Kaiser, 2010); conflicting needs (Lozano, 2007; Walsh & Maloney, 2007); relationship conflicts (Kumar & Van Dissel, 1996); data conflicts (Hertzfeld, Link, & Vonortas, 2006; Zafar & Kantola, 2019); value conflicts (Nudurupati, Bititci, Kumar, & Chan, 2011); structural conflicts (Vaaland, 2004); and operational dependencies between the activities of the different actors (Noll, Beecham, & Richardson, 2010).

### 3 | METHODS

A survey was developed for investigating organizational sustainability. The survey was applied using the online tool Qualtrics (2018). The data collection took place from May to November 2018. The survey consisted of six sections:



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Access markets and knowledge Enrich creativity Trans-disciplinary learning

More efficient processes Offering benefits to all the players Ability to optimise financial and human capital Being action orientated

Decreased time needed to accomplish objectives Reducing or removing conflicts





FIGURE 2 Ranking of benefits

obtained from collaboration by the

organizations [Colour figure can be

viewed at wileyonlinelibrary.com]

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- 1. Organization characteristics, including country of origin, size, and product service focus;
- Role of sustainability for the organization and role of the respondent in the company;
- Sustainability questions, such as the importance of environmental, economic, and social issues;
- Organizational change toward sustainability and incorporation of sustainability;
- 5. Collaboration for sustainability; and
- 6. Role of the supply chain.

This paper is focused on the collaboration questions from Part 5 of the survey.<sup>1</sup> The sustainability collaboration questions included: Collaboration elements and how much they collaborated in regard to these elements; benefits from sustainability collaboration; and the challenges they have faced. Most of the questions asked in the survey were assessed on a five-point scale (*definitely not to definitely yes*).

The survey was sent to the database of 5,299 contacts from different organizations through emails to targeted groups obtained from the Global Reporting Initiative (GRI) list and personal contacts. Three reminders were sent out, first in July 2018, second in September, and third in October 2018. From the total lists of contacts, 616 emails bounced back. From the total, 253 full responses were obtained, with a response rate of 4.77%.

The survey responses were analyzed using Friedman tests to rank the variables, comparison between benefits and challenges through correlations, and multivariate statistical analyses (including Principal Component Analysis [PCA] to reduce the number of variables, and cluster analysis to group the organizations according their type of collaboration) (see Bryman, 2004; Jupp, 2006; Saunders et al., 2007). The analyses were done using IBM SPSS 24 (IBM, 2016).

The internal validity of this research might have been limited by the survey, where some of the questions might not have been fully understood by the respondent, or they may not have offered a complete picture of collaboration for organizational sustainability, the benefits, and the challenges. The number of respondents (253) may not allow a complete generalization, applicable to all types of organizations. Thus, the generalizability of results to all organizations may be limited to the application of a nonrandom sampling procedure and the focus on companies listed in the GRI Disclosure Database, with additional input from personal contacts and "snowballing" methods. Generalizability could be improved by a study based on a randomly

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Information Bargaining problems problems Free (who (how to split Coordination Relationship Data Value benefits) gains) riding problems conflicts conflicts conflict													1	0.612 1	0.474 0.532 1	0.47 0.482 0.5261	0.547 0.525 0.473 0.619 1	0.49 0.515 0.401 0.505 0.571 1	0.419 0.426 0.393 0.398 0.47 0.554 1
k of pardizing cortant d unique Conflicting ources needs												5 1	91 0.61	57 0.456	57 0.359	3 0.424	62 0.538	.26 0.493	.16 0.415
Operational Operational dependencies Ris between the jeo activities of imp ry the different and actors res										F	0.501 1	0.49 0.5	0.427 0.3	0.374 0.3	0.262 0.3	0.374 0.3	0.344 0.3	0.34 0.3	0.312 0.3
g Trans- ving disciplinat									H	0.337	0.245	0.171	0.157	0.163	0.143	0.214	0.266	0.191	0.207
ig Reducin s to all or remor yers conflicts								4	0.509	0.334	0.215	0.224	0.199	0.131	0.214	0.2	0.294	0.227	0.214
Offerin benefit							1	0.597	0.563	0.287	0.262	0.189	0.217	0.193	0.172	0.187	0.262	0.227	0.231
Being action sses orienta						1	0.661	0.568	0.507	0.33	0.257	0.161	0.212	0.092	0.177	0.158	0.176	0.189	0.127
id ded More sh efficié s proce					1	0.65	0.548	0.498	0.385	0.321	0.232	0.135	0.207	0.105	0.186	0.051	0.157	0.214	0.198
Decrease time nee. to accompli				Ч	0.638	0.569	0.491	0.434	0.358	0.319	0.24	0.216	0.315	0.2	0.306	0.181	0.143	0.259	0.24
Enrich ge creativit			1	0.495	0.408	0.44	0.483	0.355	0.533	0.328	0.179	0.113	0.211	0.141	0.171	0.22	0.202	0.163	0.204
Access markets n and knowled		T.	0.58	0.471	0.406	0.398	0.384	0.242	0.377	0.298	0.23	0.147	0.186	0.145	0.141	0.121	0.096	0.147	0.107
Ability to optimize financial and huma capital	t.	0.591	0.489	0.559	0.477	0.422	0.378	0.385	0.422	0.3	0.236	0.198	0.268	0.152	0.206	0.199	0.211	0.214	0.217
	bility to optimize financial and human capital	ccess markets and knowledge	nrich creativity	ecreased time needed to accomplish objectives	1ore efficient processes	eing action orientated	iffering benefits to all the players	educing or removing conflicts	rans-disciplinary learning	perational dependencies between the activities of the different actors	isk of jeopardizing important and unique resources	onflicting needs	nformation problems (who benefits)	argaining problems (how to split gains)	ree riding	oordination problems	elationship conflicts	ata conflicts	alue conflicts

**TABLE 1** Correlations between the benefits and challenges of collaboration for organizational sustainability [Color table can be viewed at wileyonlinelibrary.com]

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selected sample drawn from the total number of organizations active in sustainability. Also, the respondents might have come from the top level of the organizations, which may result in a bias toward answers on the governance and management elements of the system.

## 4 | RESULTS AND DISCUSSION

Of the 253 responses, 152 were companies, 42 public sector organizations, 42 civil society organizations, and 17 preferred not to say. The responses about the size of the organization were; 47 with from 1 to 49 employees, 22 from 50 to 249 employees, 14 from 250 to 499 employees, 17 from 500 to 999 employees, 63 from 1,000 to 4,999, and 78 with more than 5,000 employees, while 12 did not know.

Four organizations had been actively engaged with sustainability for less than 1 year, 17 for between 1 and 3 years, 28 between 3 and 5 years, 65 between 5 and 10 years, 48 between 10 and 15 years, 81 more than 15 years, and 10 did not answer.

From all the respondents, 24 organizations offered only products, 44, mainly, products with some services, 25 equal number of products and services, 54 mainly services with some products, and 93 offered services only.

The respondents were from more than 40 countries, most of them from Europe, where the countries with most of the responses were Germany, Sweden, the Netherlands, Spain, and Belgium.

### 4.1 | Ranking analysis

The respondents pointed out which elements they collaborated on and to what extent. The elements were ranked in order of importance, using Friedman significance test (p < .01); innovation (5.81), education (5.47), services (5.42), and research (5.28) were the elements where they collaborate the most, whereas products (4.31) and business models (3.86) had the lowest values (Figure 1).

The respondents also indicated the benefits that they had obtained. Those benefits were ranked in order of importance, using Friedman significance test (p < .01). They were divided into three groups according to their ranking (see Figure 2):

- First group: Access markets and knowledge (5.73); enrich creativity (5.66); transdisciplinary learning (5.29),
- Second group: More efficient processes (5.15); offering benefits to all the players (5.06); ability to optimize financial and human capital (4.89); being action orientated (4.79), and
- Third group: Decreased time needed to accomplish objectives (4.32) and reducing or removing conflicts (4.11).

The respondents also indicated the challenges that they had experienced from sustainability collaboration. Those challenges were ranked in order of importance, using Friedman significance test (p < .01). They were divided into three groups according to their ranking (see Figure 3):

- First group: Operational dependencies between the activities of different actors (7.26); information problems (6.84); and conflicting needs (6.60),
- Second group: Coordination problems (6.37); risk of jeopardizing important and unique resources (5.95); value conflicts (5.82), and
- Third group: Relationship conflicts (5.82); data conflicts (5.56); bargaining problems (splitting the gains) (5.50); structural conflicts (5.45); and freeriding (4.96).

The rankings show the relative importance of the collaboration elements, benefits, and challenges for organizational sustainability, which provide more insights into the works of Lozano (2008), Seuring and Gold (2013), Niesten and Lozano (2015), and Govindan

### TABLE 2 Principal component analysis results

Collaboration on: 2 components extracted	Components and factor loadings				
Rotation method: Varimax with Kaiser Normalization). Variance explained: 56.88%	Business-oriented factor	Society-oriented factor			
Technology	0.775				
Products	0.715				
Innovation	0.679				
Business models	0.641				
Recovery (reduce, reuse, recycle)	0.578				
Education		0.880			
Research	0.728				
Community		0.662			
Benefits: One component extra Method: PCA). Variance explain	acted (Extraction ned: 57.20%	Factor loading			
Being action orientated		0.846			
Offering benefits to all the play	0.818				
More efficient processes	0.770				
Reducing or removing conflicts	0.751				
Ability to optimize financial and	0.731				
Transdisciplinary learning		0.727			
Access markets and knowledge		0.631			
Challenges: One component ex Method: PCA). Variance explain	tracted (Extraction ned: 52.11%	Factor loading			
Structural conflicts		0.818			
Relationship conflicts		0.790			
Coordination problems		0.768			
Data conflicts		0.763			
Bargaining problems (how to sp	lit gains)	0.730			
Value conflicts		0.709			
Free riding		0.698			
Operational dependencies betw the different actors	veen the activities of	0.601			
Risk of jeopardizing important a	nd unique resources	0.586			

# **TABLE 3** Scale reliability and construct validity

		KMO and	Bartlett's test of Sphericit	y	
			Bartlett's test of Sphericity		
Factors	Cronbach's alpha	КМО	Approx. Chi-squared	df	Sig
<b>Business-oriented</b>	0.743	0.774	569.943	28	0.000
Society-oriented	0.697				
Benefits	0.874	0.855	812.220	21	0.000
Challenges	0.883	0.893	948.461	36	0.000

### TABLE 4 Distances between final cluster centres

Cluster	No collaboration	Society-oriented n organizational collaboration	Business-oriented organizational collaboration	Optimal organizational collaboration	Wicked organizational collaboration
No collaboration					
Society-oriented organizational collaboration	2.769				
Business-oriented organizational collaboration	3.11	2.095			
Optimal organizational collaboration	3.597	1.806	1.859		
Wicked organizational collaboration	4.77	2.303	2.394	1.796	

Note: All the values are higher than Z = 1.645 (The Z-value for 90% confidence).

et al. (2016). The spread in each of the rankings shows that the difference between the highest ranked and the lowest is relatively small, which indicates that they are all important, albeit, some more so than others.

# 4.2 | Correlation between collaboration benefits and challenges

A correlation analysis was done to test whether the benefits and the challenges were independent or connected (see Table 1). The results show that the elements within the groups interrelate, but the elements between the groups do not interrelate. The results show positive correlations between different benefits, such as "ability to optimize financial and human capital" and "access markets and knowledge" (0.591), and between different challenges, such as "free riding" and "coordination problems" (0.526). The correlations between some benefits were higher than 0.6, such as between "being action oriented" and "offering benefits to all the players" (0.661). These results highlight that these two groups are independent of each other.

### 4.3 | Reducing the number of variables

Four factors were obtained from the PCA from the collaboration elements (which were subdivided in two, based on their items), benefits, and challenges, in order to reduce the number of variables (Table 2): 1. Collaboration elements:

- a. Business-oriented factor, composed by collaboration on technology, products, innovation, business models, and recovery, and
- b. Society-oriented factor, composed by education, research, and community.
- Benefits factor, that collates all benefits, except "enrich creativity" and "decreased time needs to accomplish objectives," which were removed for internal consistency, and
- 3. Challenges factor that is composed of all the challenges except two; "conflicting needs" and "information problems."

The Cronbach-alpha values ( $\alpha$  = 0.743, 0.697, 0.874, and 0.883, see Table 3) reflect the internal consistency of the scales (see Nunnally, 1978). The validity of the four constructs was tested using the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity. According to Kaiser (1974), values greater than 0.6 are acceptable. In this case, all the values are above 0.77. Bartlett's Test of Sphericity (Bartlett, 1954) was statistically significant at 99% level of confidence (p < .01) in all the cases, which confirms the validity of the constructs.

### 4.4 | Cluster analysis

*K-means* Cluster Analysis was conducted in order to detect how the organizations were grouped according to the collaboration factors,

the benefits, and the challenges, in order to identify homogenous groups of organizations. The analysis yielded five groups; labeled as "no collaboration," "society-oriented organizational collaboration," "business-oriented organizational collaboration," "optimal organizational collaboration," and "wicked organizational collaboration." The final centres of these five groups are sufficiently far enough from each other;

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#### TABLE 5 Cluster size

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Cluster	Cases	Percentage
No collaboration	17	7.52
Society-oriented organizational collaboration	43	19.03
Business-oriented organizational collaboration	67	29.65
Optimal organizational collaboration	60	26.55
Wicked organizational collaboration	39	17.26
Total	226	100

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the range of the distance was 1.796–4.770, in a standardized scale (Table 4).

*No collaboration*: the organizations that did not collaborate or hardly collaborated represented the 7.52% of the sample (Table 5). These barely had any benefits or faced any challenges (Table 6).

Society-oriented organizational collaboration: this group comprised 19.03% of the sample (Table 5). These organizations collaborated on society-oriented issues, and they did not collaborate (or hardly collaborated) on business-oriented issues. Their benefits and challenges, if they existed, were low (Table 6).

Business-oriented organizational collaboration: this group represented 29.65% of the sample (Table 5). In this case, the organizations collaborated on business-oriented issues, and they did not collaborate (or hardly collaborate) on society-oriented issues. The benefits and challenges, as in the previous group, if any, were low (Table 6).

*Optimal organizational collaboration*: this group comprised 26.45% of the organizations (Table 5). These organizations were characterized by collaboration in both factors (business-oriented issues and society-

**TABLE 6** Cluster scoring [Color table can be viewed at wileyonlinelibrary.com]

	Clusters				
	No collaboration	Society-oriented organizational collaboration	Business-oriented organizational collaboration	Optimal organizational collaboration	Wicked organizational collaboration
Business-oriented factor	-1.54025	-1.03888	0.37999	0.37190	0.66947
Society-oriented factor	-0.67466	0.46008	-1.06092	0.56776	0.69912
Benefits factor	-2.00201	-0.30527	-0.18136	0.55940	0.81910
Challenges factor	-1.55138	0.25081	0.03710	-0.46567	1.28171



**FIGURE 4** Organizational sustainability collaboration framework, where blue indicates an increase on the society-oriented factor, orange on the business-oriented factor, green on the benefits, and red on the challenges [Colour figure can be viewed at wileyonlinelibrary.com]

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oriented issues). They had benefits and faced few challenges (Table 6). This indicates that this level of collaboration, in both factors, seems to be optimal.

Wicked organizational collaboration: the organizations that were part of this cluster represented 17.26% of the sample (Table 5). As with the organizations included in the previous group, these were characterized by collaboration on both business-oriented issues and society-oriented issues, but, in this case, they collaborated much more on the business issues than the previous group (Table 6). As result of this, they obtained more benefits, but the challenges were considerably higher than in the "optimal collaboration" group.

The cluster analysis shows that organizations which collaborate at a higher level on business-oriented and society-oriented factors obtain higher benefits, but they also have to face many challenges (strengthening the arguments of Fadeeva, 2004; Genefke, 2000; and Wagner & Leydesdorff, 2005). This provides more specificity on the collaboration phases for organizational sustainability by considering the search for an optimum through the co-dependencies of the factors, benefits, and challenges (as posited by Lozano, 2007), as well as expanding it to the three types of organizations (civil society, corporate, and public sectors).

The aforementioned analyses serve to propose the "Organizational sustainability collaboration" framework, as illustrated in Figure 4. This shows that the five stages of collaboration are dependent on the two collaboration factors (society-oriented and business-oriented), as well as the benefits and challenges obtained from collaborating. The figure shows that the best alternative is the "Optimal collaboration," where the factors are almost equal for benefits, but with few challenges. Figure 4 also shows that when there are no limits to collaboration, then the challenges increase considerably, where blue indicates an increase on the society-oriented factor, orange on the business-oriented factor, green on the benefits, and red on the challenges.

### 5 | CONCLUSIONS

Civil society, corporate, and public sector organizations have been instrumental in contributing to sustainability, where collaboration plays a key role; nonetheless, there has been limited research on collaboration for organizational sustainability. This paper provides insights into the elements, benefits, and challenges for this.

A survey was developed for investigating collaboration for organizational sustainability and submitted to 5,299 contacts, eliciting 253 full responses. These responses were analyzed using Friedman tests to rank the variables, comparison between benefits and challenges through correlations, and multivariate statistical analyses (including PCA and cluster analysis).

The results provide insights into the ranking of the elements, benefits, and challenges of collaboration for organizational sustainability. The results also show that an intensification of collaboration increases benefits and challenges but only up to a point, where more collaboration leads to some increase of benefits but a much larger increase in challenges. The results serve to validate the proposed "organizational sustainability collaboration" framework, which shows the five stages of collaboration dependent on the two factors (society-oriented and business-oriented), producing the optimal benefits, with minimized challenges, obtainable from collaboration.

The "organizational sustainability framework" can help leaders and managers to better engage with the collaboration elements (balancing the business-oriented and society-oriented factors) in order to maximize the benefits and cope with the challenges, so that they do not reach the "wicked collaboration."

The optimal solution of collaboration for organizational sustainability is where the factors are balanced in such a way that there are sufficient benefits, but fewer challenges ("optimal collaboration"); however, if collaboration is excessive, then the challenges increase significantly, and, thus, there are limits to growth of collaboration. With apologies to Robert Burns: The best-laid collaboration for organizational sustainability can go awry, if allowed to grow unbridled.

Further research should be carried out, for example, on: the best strategies to achieve the "optimal" collaboration solution; the impacts of collaboration on stakeholders; a multistakeholder collaboration system; and, the effects that collaboration has on the other elements of the organization system.

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### ENDNOTE

<sup>1</sup> Other sections of the survey are analysed in other papers published (see Barreiro-Gen & Lozano, 2020; Lozano, 2020; Lozano & Garcia, 2020) and under preparation.

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