

## ***Knowledge management in non-governmental organizations (NGOs)***

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**Abstract:** *The purpose of this study is to identify factors that influence knowledge management and evaluate its effectiveness in non-governmental organizations in the context of an integrative-oriented approach. The assessment framework for knowledge management effectiveness offered in this study permits the evaluation of decision-making alternatives and their impact on the effectiveness of knowledge management. The analysis of knowledge management effectiveness was performed using a coefficient-based assessment method on practices such as knowledge creation, knowledge acquisition, and knowledge attraction. The assessment framework incorporates both rational and asymmetry-driven styles in the decision-making practice. The study involved six non-governmental organizations of various specializations from across the globe.*

*The majority of non-governmental organizations showed an upward trend in the knowledge management effectiveness over the past five years. The knowledge creation asymmetry was established. The analysis of knowledge management alternative revealed that five out of six non-governmental organizations should continue those process that were effective at the time of the study and only one organization needs to move to a practice that was less effective during the research period. The major finding is that actions aimed at enhancing the least effective practice will fail to be as effective as the asymmetry-driven decision, even if they ensure a double increment.*

**Keywords:** competence, asymmetry, rationality, human resources, intellectualization, innovation.

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## **Introduction**

In modern business environment, multiple players saddled with the need to function effectively tend to abandon the classic resource-based way of doing business in the favor of knowledge management processes. Knowledge management, sometimes referred to as the ‘corporate memory’, in this context may be understand as a process of consciously and systematically collecting, organizing, exchanging and analyzing the knowledge of an organization in terms of resources, documents (Tsindeliani, 2019), knowledge and skills of its partners (Hebibi L., Raimi N., Miličićević R., 2019). This concept has attracted a great deal of attention from knowledge-generating non-governmental organizations (NGOs) that are confronted with the challenge of changing personnel structure.

Furthermore, advantages such as competitiveness and long-term sustainability grow from the effective capitalization of knowledge. This put knowledge management at the forefront of scientific interest and business practice, where it became a multi-level imperative of economic development. Not only knowledge management is a competitive advantage, it is also a necessity in the context of increasing globalization and market turbulence. Therefore, today there is an objective need for the formation of the ability of NGOs to reproduce, attract, and effectively use relevant knowledge. This motivates NGOs to acquire the possibility of increasing the level of adaptation, operational response and enhancing competitive advantages, aligning the internal capabilities of their development with the external challenges of the business environment in which they operate. The presence of an effective knowledge management system in NGOs is becoming one of the main factors of flexibility and adaptability to changes in business conditions, programming of these changes, as well as ensuring competitive advantages and market positions, as well as effective development both at the national and global levels. At the same time, the applied aspects of knowledge management in NGOs require quite reasonable management decisions on the implementation of effective processes and mechanisms. The latter determined the direction of the study in order to fill this gap.

### **1. Literature review**

Knowledge management is a key tool in optimizing a company's knowledge economy. It encompasses human resource practices, technology, culture, and organizational structures (Liu S., 2020). The current knowledge management frameworks combine the knowledge management processes with the knowledge management enablers. Organizations that use these frameworks should have a basic understanding of knowledge operations and infrastructures (Kelly P., 2018). Furthermore, knowledge management mechanisms are employed by organizations to promote the consistent use of knowledge (Abubakar A., Elrehail H., Alatailat M., Elçi A., 2019). What are having a direct positive effect in generating competitive advantages are the knowledge management infrastructure

capabilities, both technical and social (Nguyen T., Ngo L., Northey G., Siaw C., 2019; Shvydanenko O., Sica E., Busarieva T., 2019).

A sub-discipline of knowledge management - customer knowledge management - has dimensions of knowledge from customer, knowledge about customer, and knowledge for customer. The first two dimensions are crucial for operational performance, whilst knowledge for customer is the strongest indicator of innovation quality and speed (Taghizadeh S., Rahman S., Hossain M., 2018). Aside from that, there is a significant relationship between the various elements of intellectual capital and strategic knowledge and competency management (Fitri H., Nugraha A., Hakimah Y., Manihuruk C., 2019).

Non-profit, non-governmental organizations (NGOs) are important participants in the knowledge management process, especially those operating in multi-sector stakeholder ecosystems to reach the most vulnerable social groups of people (Gavurova B., Tuček D., Kovac V., 2019). Knowledge management exhibits new opportunities for environmental NGOs to achieve sustainable development goals. With this innovation, environmental NGOs will boost their adaptability and flexibility (Masuda Y. et al., 2018). Ethical leadership has a greater impact on the knowledge transfer, whilst dimensions of trust in leadership have a greater impact on the knowledge acquisition (Le P., Lei H., 2018; Al-Tkhayneh K., Kot S., Shestak V., 2019; Bencsik A., Tóbiás S. K., Machová R., 2018).

Most organizations have no explicit policy targeted at strategic knowledge management, and they tend to treat knowledge management on an operational level. While knowledge management offers a number of benefits, organizations seek a simple way to implement knowledge management initiatives. Organizations care to learn about specific knowledge management strategies and use them productively. Yet, they look for uncomplicated methods to understand and implement knowledge management policies (Deshpande M., 2018).

Knowledge acquisition, knowledge storage, and knowledge application practices have a significant positive effect on organization's innovation (Ode E., Ayavoo R., 2019). Although many knowledge management innovations have been produced, they largely focus on technical or structural aspects (Grcic Fabic M., Zekic Z., Samarzija L., 2016). At that, human motivation and individual willingness to share knowledge is somewhat overlooked (Wachowska M., 2014). This grows to become a problem since the employee as a sharer and receiver of knowledge must be properly motivated (Friedrich J. et al., 2020). Knowledge management and decision-making strategies are factors critical to organizations in the context of global economic digitalization (Baporikar N., 2020; Ivan M., 2013).

There are also studies focused on the problems of cross-functional knowledge sharing based on the development and testing of a cooperation model (Majewska M. & Szulczyńska U., 2014). In this case, the interaction of various focal points with knowledge exchange, the moderate impact of cross-functional competition on these interactions and the indirect effect of organizational innovation on the relationship of sharing various functional knowledge and the effectiveness of the functioning of companies are considered. Collaboration,

informal networking and common perception as coordination mechanisms are largely associated with cross-functional knowledge sharing, what cannot be said about formalization. In addition, there is a deterrent effect of cross-functional competition on collaboration and informal networking (Nguyen N. P. et al., 2018). Organizational innovation is partly a mediator in the relationship between knowledge sharing and company performance (Yang S. & Tsai K., 2019; Bencsik A. & Juhasz T., 2020).

For public health NGOs, there are several effective strategies for translating knowledge into action, including mentoring programs, professional communities, advisory groups, orderly learning, and comprehensive repositories of teaching aids and resources. However, there is no single effective roadmap for integrating the experience and research of NGOs in the field of disaster management. To prepare for and manage emergencies at all levels, effective long-term cooperation between representatives of science, politics and practitioners of NGOs is necessary in order to ensure a coordinated and timely distribution of resources available in different sectors or jurisdictions where they are most relevant (Généreux M., Lafontaine M., Eykelbosh, 2019).

Studies exploring organizational outcomes of NGOs such as innovation, organizational learning, and product quality are aimed at solving the challenge of effective knowledge management (Aymen R., Alhamzah A., Bilal E., 2019). Knowledge management can also be regarded as a management function, and knowledge itself - as a multidimensional critical resource. Organizational knowledge can provide superior results and long-term competitive advantage. However, the implementation of organizations' initiatives in relation to knowledge management is complicated by the fundamental problem of the multiplicity of knowledge conceptualization. In addition, insufficiently defined terminology and various academic interests associated with the organization of knowledge management have led to the emergence of a complex and fragmented set of research works (Bibi G. et al., 2020). The findings show that NGOs need a good decision-making policy to reach effective knowledge management. This study sought to create an integrative approach to knowledge management and assess its efficacy on NGOs by offering an assessment framework that incorporated both rational and asymmetry-driven styles in the decision-making practice.

## **2. Methods**

The analysis of knowledge management effectiveness in NGOs was performed on practices such as knowledge creation, knowledge acquisition, and knowledge attraction. The assessment framework is based on three knowledge management coefficients and encompasses three categories of indicators (indexes) that were used in the computation of those coefficients. Each category of indicators corresponds to a specific knowledge management practice and every indicator in the category measures the effectiveness of that particular practice. All indicators are showcased in Tables 1-3.

**Table 1. Indicators for the Effectiveness of Knowledge Management in NGOs - Knowledge creation**

Indicator (index)	Measurement	Designations
1. Knowledge creation		
Product/Service Range Update ( $I_{up}^a$ )	$I_{up}^a = \frac{V_{new}^s}{V_{total}^s}$	$V_{new}^s$ - the new product/service sales volume, thousand dollars; $V_{total}^s$ - the total sales volume, thousand dollars
Manager Training ( $I_{mt}$ )	$I_{mt} = \frac{Q_{pers}^{pr}}{N_{pers}}$	$Q_{pers}^{pr}$ - the number of education services (i.e., programs, courses, etc.) for senior and middle managers, unit; $N_{pers}$ - the number of senior and middle managers, unit;
Benchmarking Cost ( $I_{bench}$ )	$I_{bench} = \frac{C_{bench}}{C_{adm}}$	$C_{bench}$ - expenditures on benchmarking, thousand dollars; $C_{adm}$ - administrative expenses, thousand dollars.
Innovation Development ( $I_{itd}$ )	$I_{itd} = \frac{IT_{dev}}{T_{used}}$	$IT_{dev}$ - the number of innovative technologies generated by the NGO, unit; $T_{used}$ - the total amount of technologies employed by the NGO, unit.
Standardization in Management ( $I_{ms}$ )	$I_{ms} = \frac{Q_{st}^m}{Q_{bp}}$	$Q_{st}^m$ - the number of management standards being employed, unit; $Q_{bp}$ - the number of business processes that provide a basis for competitive advantage, unit.
Formalization of Management-related Knowledge ( $I_{km}^{form}$ )	$I_{km}^{form} = \frac{Q_{doc}^{km}}{Q_{doc}^{int}}$	$Q_{doc}^{km}$ - the number of knowledge management guidelines including guides to knowledge management competence assessment, unit; $Q_{doc}^{int}$ - the total number of in-house documents, unit.
Intellectual Assets Value ( $I_{via}$ )	$I_{via} = \frac{Q_{via}}{Q_{ia}^{total}}$	$Q_{via}$ - the volume of valued intellectual assets, unit; $Q_{ia}^{total}$ - the total intellectual assets volume, unit.
Methodological Framework to support Business Process Assessment ( $I_{bp}^{met}$ )	$I_{bp}^{met} = \frac{Q_{bp}^{met}}{Q_{ms}^{met}}$	$Q_{bp}^{met}$ - the number of guides to assess the key business process effectiveness, unit; $Q_{ms}^{met}$ - the total number of guides to assess the management system effectiveness, unit.

(Source: based on data from Centobelli P., Cerchione R., Esposito E., 2018; Papa A., Dezi L., Gregori G., Mueller J., Miglietta N., 2018; Kaiser F., Obermaier R., 2020).

**Table 2. Indicators for the Effectiveness of Knowledge Management in NGOs - Knowledge attraction**

Indicator (index)	Measurement	Designations
2. Knowledge attraction		
Partnership Base Development ( $I_{pd}$ )	$I_{pd} = \frac{N_p^{basic}}{N_p^{pre}}$	$N_p^{basic}$ - the number of strategic partners in a current period, unit; $N_p^{pre}$ - the number of strategic partners in a previous period, unit.
Best Practices Exchange ( $I_{exp}^{bp}$ )	$I_{exp}^{bp} = \frac{N_{ev}^{basic}}{N_{ev}^{pre}}$	$N_{ev}^{basic}$ - the number of joint conferences, seminars, exhibitions, and events with partners in a current period, unit; $N_{ev}^{pre}$ - the number of joint conferences, seminars, exhibitions, and events with partners in a previous period, unit.
Collaboration with Higher Education Institutions ( $I_{edu}^{act}$ )	$I_{edu}^{act} = \frac{N_{hedp}^{basic}}{N_{hedp}^{pre}}$	$N_{hedp}^{basic}$ - the number of higher education institutions having a collaborative relationship with NGO in a current period, unit; $N_{hedp}^{pre}$ - the number of higher education institutions having a collaborative relationship with NGO in a previous period, unit.
Outsourcing Cost ( $I_{out}^{cost}$ )	$I_{out}^{cost} = \frac{C_{out}}{C_{adm}}$	$C_{out}$ - expenditures on outsourcing, thousand dollars; $C_{adm}$ - administrative expenses, thousand dollars.
Financial Consulting Cost ( $I_{fcons}^{cost}$ )	$I_{fcons}^{cost} = \frac{C_{fcons}}{C_{adm}}$	$C_{fcons}$ - expenditures on financial consulting, thousand dollars; $C_{adm}$ - administrative expenses, thousand dollars.
Strategic Consulting Cost ( $I_{scons}^{cost}$ )	$I_{scons}^{cost} = \frac{C_{scons}}{C_{adm}}$	$C_{scons}$ - expenditures on strategic consulting, thousand dollars; $C_{adm}$ - administrative expenses, thousand dollars.
Business Coaching Expenditures ( $I_{bc}^{cost}$ )	$I_{bc}^{cost} = \frac{C_{bc}}{C_{adm}}$	$C_{bc}$ - expenditures on business coaches, thousand dollars; $C_{adm}$ - administrative expenses, thousand dollars.

(Source: based on data from Centobelli P., Cerchione R., Esposito E., 2018; Papa A., Dezi L., Gregori G., Mueller J., Miglietta N., 2018; Kaiser F., Obermaier R., 2020).

**Table 3. Indicators for the Effectiveness of Knowledge Management in NGOs - Knowledge acquisition**

Indicator (index)	Measurement	Designations
3. Knowledge acquisition		
Organizational Experience Acquisition ( $I_{ol}$ )	$I_{ol} = \frac{N_{ie}^{basic}}{N_{ie}^{pre}}$	$N_{ie}^{basic}$ - the quantity of integrations in a current period, unit; $N_{ie}^{pre}$ - the quantity of integrations in a previous period, unit;
Integration-driven R&D Base Growth ( $I_{R\&D}^{int}$ )	$I_{R\&D}^{int} = \frac{C_{R\&D}^{basic}}{C_{R\&D}^{pre}}$	$C_{R\&D}^{basic}$ - R&D spending in a current period, thousand dollars; $C_{R\&D}^{pre}$ - R&D spending in a previous period, thousand dollars.
Decline in Project Duration ( $I_d^{red}$ )	$I_d^{red} = \frac{D_{dp}^{basic}}{D_{dp}^{pre}}$	$D_{dp}^{basic}$ - project duration in a current period, month; $D_{dp}^{pre}$ - project duration in a previous period, month.
Integration ( $I_{bp}^{met}$ )	$I_{bp}^{met} = \frac{1}{I_{vint}}$	$I_{vint}$ - vertical integration index ( $I_{vint} \geq 0.7$ )
Enhancement of Innovation Activity ( $I_{act}^{inn}$ )	$I_{act}^{inn} = \frac{N_{ip}^{basic}}{N_{ip}^{pre}}$	$N_{ip}^{basic}$ - the number of innovative projects in a current period, unit; $N_{ip}^{pre}$ - the number of innovative projects in a previous period, unit;
Enhancement of Activity Diversification ( $I_{pdd}$ )	$I_{pdd} = 1 - I_{centr}$	$I_{centr}$ - centralization index ( $I_{centr} = 0.7$ )

(Source: based on data from Centobelli P., Cerchione R., Esposito E., 2018; Papa A., Dezi L., Gregori G., Mueller J., Miglietta N., 2018; Kaiser F., Obermaier R., 2020).

Based on the above indicators, the authors proposed to evaluate the knowledge management effectiveness based on the following ratios of knowledge management efficiency:

*Integrative Coefficient of Knowledge Creation, IC<sub>kc</sub>*

$$IC_{kc} = \sqrt{I_{up}^a{}^2 + I_{mt}^2 + I_{bench}^2 + I_{itd}^2 + I_{ms}^2 + I_{km}^{form}{}^2 + I_{via}^2 + I_{bp}^{met}{}^2} \quad (1)$$

This coefficient is composed from indicators that measure trends in innovative potential development and management system effectiveness with

regard to education, methodological support, knowledge management standards, and knowledge management outcomes obtained.

*Integrative Coefficient of Knowledge Attraction, IC<sub>ak</sub>*

$$IC_{ak} = \sqrt[2]{I_{pd}^2 + I_{exp}^{bp^2} + I_{edu}^{act^2} + I_{out}^{cost^2} + I_{fcons}^{cost^2} + I_{scons}^{cost^2} + I_{bc}^{cost^2}} \quad (2)$$

This coefficient is derived from indicators of partnership base development and collaboration as well as indicators measuring the economic outcomes of purchasing outsourcing, consulting and business coaching services.

*Integrative Coefficient of Knowledge Acquisition, IC<sub>ka</sub>*

$$IC_{ka} = \sqrt[2]{I_{oi}^2 + I_{R\&D}^{int^2} + I_d^{resd^2} + I_{bp}^{mst^2} + I_{act}^{inn^2} + I_{pdd}^2} \quad (3)$$

This coefficient is a measure of basic outcomes obtained by NGOs through the processes of accession, merger and acquisition. Among other indicators in the category, specialization index deserves particular attention.

*Integrative Index of Overall Knowledge Management Effectiveness*

$$IC_{total}^{km} = \sqrt[3]{IC_{kc}^2 + IC_{ak}^2 + IC_{ka}^2} \quad (4)$$

The analysis involved data on six NGOs: BRAC (Bangladesh), Ceres (USA), Connecting Up (Australia), Fagligt Internationalt Center – FIC (Denmark), Sheikh Saud bin Saqr Al Qasimi Foundation – Qasimi (UAE), SITAWI (Brasil). The main criterion for choosing these particular NGOs is that they are leaders not only at the national, but also international level. The formation of this criterion is associated with the ability to determine knowledge management experience for less developed NGOs, as well as access to information necessary for conducting the study. The second criterion is the choice of NGOs operating in various fields of activity. This is determined by the need to study the possibilities of increasing the effectiveness of knowledge management and comparing the results obtained in NGOs of different fields of activity. The third selection criterion is membership in different regions of the world. This is due to the expansion of the geographical boundaries of the study, as well as the identification of the knowledge management features of NGOs, as representatives of different regions of the world, in order to determine their global impact.

### 3. Results

Determining the level of effectiveness of knowledge management processes in NGOs under study was carried out in the relevant areas (creating their own knowledge, acquiring and attracting knowledge). To further determine the integral indices, calculations were carried out according to the initial data of organizations, according to the indicator system set out in Tables 1-3. The Qasimi data are shown in Table 4 as an example. Similar actions have been taken for other NGOs.

**Table 4. Indicators for the Effectiveness of Knowledge Management in Qasimi**

<b>Indicator (index)</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>1. Knowledge creation</b>					
Product/Service Range Update	7.62	5.42	5.07	9.45	10.24
Manager Training	3.26	4.92	3.11	5.38	5.11
Benchmarking Cost	7.67	6.85	5.32	7.21	9.05
Innovation Development	4.38	4.76	4.95	10.52	8.56
Standardization in Management	2.35	3.52	4.31	7.55	12.83
Formalization of Management-related Knowledge	18.71	16.67	16.02	17.89	19.69
Intellectual Assets Value	5.07	5.53	6.25	6.62	9.52
Methodological Framework to support Business Process Assessment	9.23	8.92	8.73	10.68	11.97
<b>2. Knowledge attraction</b>					
Partnership Base Development	8.21	7.25	8.68	8.52	8.06
Best Practices Exchange	4.51	2.69	3.27	3.91	4.37
Collaboration with Higher Education Institutions	8.62	5.33	6.49	8.26	8.52
Outsourcing Cost	3.77	1.08	2.05	3.74	3.12
Financial Consulting	5.39	5.26	6.17	5.08	5.42
Strategic Consulting Cost	2.75	1.28	2.94	2.11	2.07
Business Coaching Expenditures	6.28	6.52	6.06	6.24	7.51
<b>3. Knowledge acquisition</b>					
Organizational Experience Acquisition	6.75	10.31	6.94	17.91	19.05
Integration-driven R&D Base Growth	3.26	6.12	4.86	8.94	12.48
Decline in Project Duration	2.67	3.31	2.72	1.06	4.32
Integration-driven R&D Base Growth	5.38	6.23	6.59	9.95	11.49
Enhancement of Innovation Activity	4.35	5.15	5.35	6.47	8.62
Enhancement of Activity Diversification	1.71	3.82	2.98	5.83	8.98

*(Source: authors' calculations based on NGO data)*

## Knowledge management in non-governmental organizations (NGOs)

In order to identify the major trends in knowledge management effectiveness among the NGOs under consideration, the five-year data on knowledge creation, attraction and acquisition were exposed to analysis (Table 5).

**Table 5. The Key Indicators of Knowledge Management Effectiveness**

Indicator	NGO	2015	2016	2017	2018	2019
Integrative coefficient of knowledge creation, $IC_{kc}$	BRAC	12.87	18.46	15.24	16.88	18.87
	Ceres	4.76	2.66	2.99	6.00	5.40
	Connecting Up	2.48	18.26	21.45	25.73	26.36
	FIC	2.66	7.45	7.92	8.23	8.50
	Qasimi	24.76	22.88	21.88	28.56	32.75
	SITAWI	1.66	0.72	0.99	1.25	3.48
Integrative coefficient of knowledge attraction, $IC_{ak}$	BRAC	3.09	8.65	9.19	9.54	9.85
	Ceres	3.77	1.64	2.24	2.83	7.90
	Connecting Up	4.66	6.53	16.16	17.89	20.01
	FIC	8.75	12.55	10.37	11.48	12.83
	Qasimi	15.88	12.70	14.69	15.47	16.01
	SITAWI	5.71	7.81	8.25	8.03	14.59
Integrative coefficient of knowledge acquisition, $IC_{ka}$	BRAC	14.85	12.78	11.62	8.41	7.74
	Ceres	26.24	32.78	37.00	42.65	38.88
	Connecting Up	4.56	7.76	13.57	17.71	20.31
	FIC	17.66	13.77	6.20	7.82	21.82
	Qasimi	10.68	15.32	12.65	24.01	28.71
	SITAWI	9.17	3.98	5.45	9.69	15.54

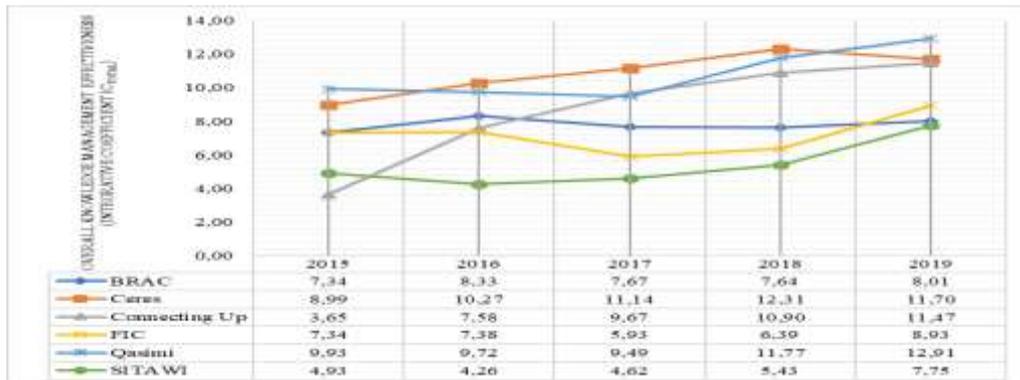
(Source: Authors' calculations)

All NGOs under study, barring BRAC, demonstrated improvement across all dimensions of knowledge management, whilst BRAC showed a double decrease of knowledge acquisition, which resulted from the application of a knowledge-attraction scheme to human resources. In other words, BRAC focused more on hiring knowledgeable people, rather than obtaining knowledge from external sources. It has tripled its knowledge attraction index since 2015. This undermined the need to acquire knowledge, for it has already been attracted and employed in the company. Overall, NGOs tend to knowledge creation, as evidenced by the presence of explicit objectives and low commercial interest.

Improving the effectiveness of knowledge management is vital for any NGO, as it directly affects the company's ability for development in modern conditions. Since data on single dimensions of knowledge management provide no

holistic understanding of the knowledge management effectiveness, the overall composite index was computed (Figure 1).

Figure 1. The Overall Knowledge Management Effectiveness Index



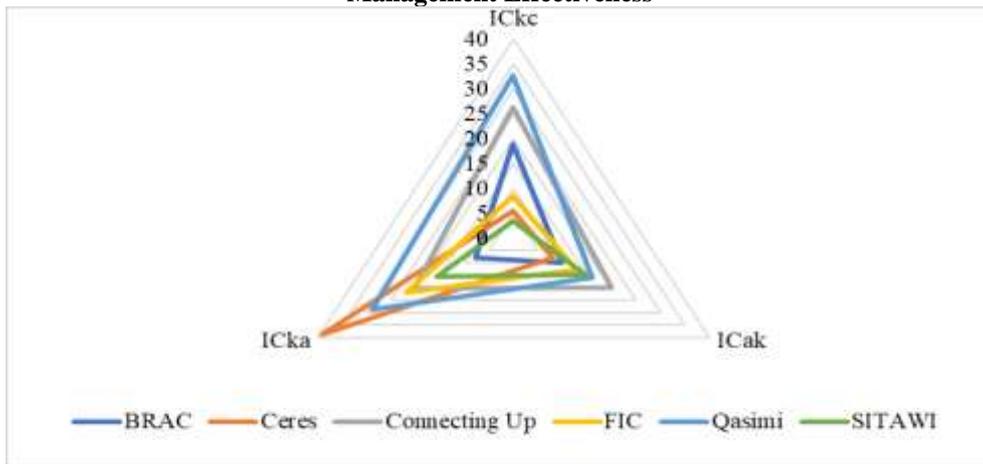
(Source: computed by the authors)

Despite a decrease in the knowledge acquisition rate in 2019, BRAC managed to improve its overall knowledge management performance by 9% as compared to 2015. Yet, the overall effectiveness index still was the lowest among the NGOs studied. The leader in the rapid knowledge management improvement was the Connecting Up with a more than double increment of the overall effectiveness index. Such a result was obtained thanks to the company's specialization and the active utilization of information technologies in attracting and acquiring knowledge. Connecting Up had a program to engage volunteers to help with various operations online such as data collection, the updating of critical information, and otherwise.

The leader in overall knowledge management effectiveness is Qasimi. Although this organization has been improving its knowledge management performance at a slower pace compared to other companies, it maintained a steady upward trend. Driven by the specificity of the company, the highest score was the knowledge creation. Qasimi has a focus on the advancement of economic, social and cultural domains of Ras al-Khaimah. This Foundation seeks to generate a world-class research on Ras Al Khaimah, engage community in its projects, and increase regional potential in the UAE.

To determine the knowledge management differential among NGOs, their knowledge management performance across the three studied dimensions was explored with the help of an asymmetrical triangle method.

Figure 2. The Asymmetrical Triangle Chart of Knowledge Management Effectiveness

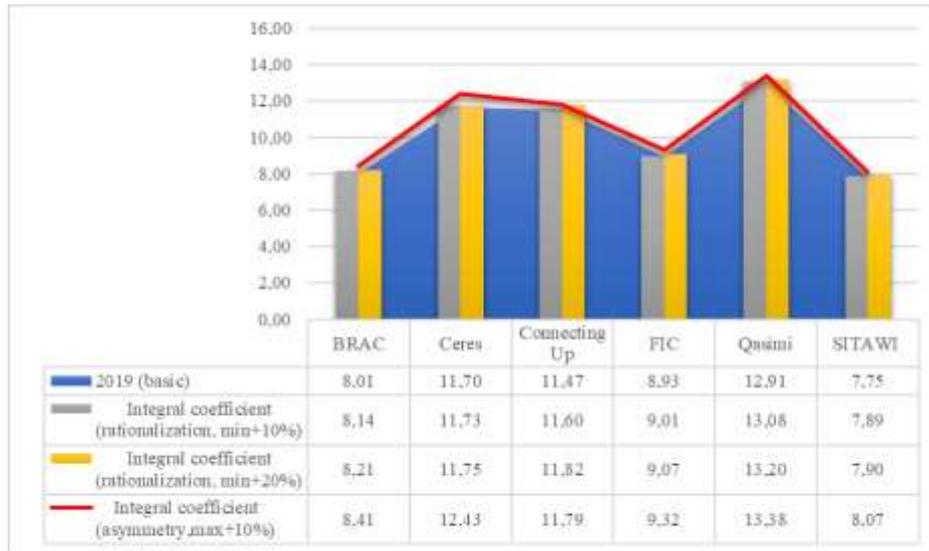


(Source: developed by the authors)

As it turned out, the majority of NGOs, most especially Qasimi, had knowledge creation asymmetry, although Qasimi was rather effective in both knowledge creation and knowledge acquisition. The knowledge acquisition asymmetry is a characteristic of Ceres, which resulted from the use of a sourcing-based development scheme.

Thus far, the rational decision-making styles are not always the most effective choices. To support this assertion, the impact of alternative knowledge management styles was explored. The impact analysis is based on the comparison of effectiveness forecasts against the base year of 2019. A total of three scenarios were addressed. The first scenario focuses on the enhancement of the most asymmetric (productive) practice. The second scenario is based on a rational approach and assumes that the least productive practice is enhanced by 10% so that all dimensions reach a sufficient level of effectiveness. Aiming to compare asymmetry-driven and rational approaches, the third scenario assumes that the least productive practice is enhanced by 20%. The results are shown in Figure 3.

Figure 3. Knowledge Management Effectiveness under Alternative Scenarios of Operational Performance



(Source: developed by the authors)

Five out of six NGOs will benefit more from focusing on the most effective process, whilst intensifying the least effective practice, even if it is double, will fail to be as effective as the asymmetry-driven decision. However, NGOs should take their specificities of performance into account, as in-company training is an activity that must be linked to knowledge creation, rather than knowledge acquisition and knowledge attraction. For example, Qasimi initially focused on education but then moved to more areas such as health and wellness, urban and community development, and arts and culture. Its top priorities are to win competitive international research grants, develop teacher and student professional development programs, and host the annual Ras Al Khaimah Fine Arts Festival. Connecting Up was the only organization to have better future with the knowledge acquisition that does not cause asymmetry, as this decision is projected to improve the overall level of knowledge management effectiveness more than a decision that is asymmetry-driven. Thus, the proposed assessment framework for knowledge management effectiveness permits the evaluation of decision-making alternatives and their impact on the effectiveness of knowledge management.

#### 4. Discussion

The current proposal contributes a deeper perception of the value of knowledge management and the rationale for making management decisions for NGOs. First, it took the knowledge-related analysis framework to build a model for organizational performance. Second, knowledge mechanisms and processes

guarantee operational success through asymmetric performance. The practical relevance of this study is that it offered a solution that can strengthen the chain of relationships between different dimensions of the knowledge management. The proposed approach takes into account the role of decision-making styles in knowledge generation to improve NGO effectiveness (Abubakar A., Elrehail H., Alatailat M., Elçi A., 2019).

Managers are responsible for managing organizations to achieve strategic goals. This requires not only a broad range of competencies but also room to apply them in the decision-making practice (Nunes F., Martins L., Mozzicafreddo J., 2018). Therefore, the present proposal has a limitation: the complexity of manager competence assessment.

The previously expressed opinion that transformational leadership is a predictor for product and process innovation in NGOs is to be questioned. Nevertheless, the relationship between transformational leadership and innovation (product and process) is mediated by the knowledge management infrastructure (Sahban M., 2019). Therefore, the effective knowledge management practices will drive NGOs to leadership through the enhancement of their abilities to transform and adapt.

The internal factors and initiatives of NGO development make up the core of knowledge creation through R&D. This core should be incorporated into the proposed approach, as it contributes to the generation of new and the replacement of outdated knowledge (Ode E., Ayavoo R., 2019).

The economic growth strategies of NGOs increasingly become knowledge-driven, which reflects the propensity of decision-makers towards gathering, storing, generating and applying both the existing and the new sources of knowledge. The present framework for knowledge management assessment is based on factors that establish themselves as drivers of sustainable growth, both national and international. These factors relate to the process of generating new knowledge as well as to the processes of accessing and adapting global knowledge to specific contexts (Zbucnea A. et al., 2019). This opens new opportunities for NGOs to create a knowledge-driven business model. The knowledge in this context is seen either as a strategic resource or as a key business asset.

A broad range of knowledge assets and approaches to the enhancement of knowledge management effectiveness challenge NGOs in the knowledge management practice. Moreover, different markets place different values on knowledge assets (Johannessen J., 2020). This complexity combined with the interdependence that characterizes global competition forces NGOs to acquire, develop and apply knowledge resources to achieve a competitive advantage, while responding to fluctuations of integrated development indicators (Boichenko K., Tepliuk M., Rekova N., Stashkevych I. Morkūnas M., 2019). Although knowledge is as important as other resources, it is not always prioritized to the same degree. Here, the organizational value creation upon the triangle type chart of knowledge management effectiveness is suggested (Gloet M., Samson D., 2020).

Although knowledge protection by NGOs is an essential component of organizational performance, an open processing of knowledge is required. Knowledge neglect and hiding will inevitably result in knowledge gaps (Roshayani A., Hisham M., Ezan R., Ruhaini M., Ramesh N., 2018). This, in turn, can adversely affect both organizational capability and organization's ability for task performance. Other implications include higher time and cost efforts for training and acquisition of knowledge that has already been possessed by employees (Zamir Z., 2019). This makes knowledge management a key factor in building a competitive advantage (Friedrich J. et al., 2020).

In NGOs that are successful in creating an appropriate organizational structure, employees can create a pleasant atmosphere for adjusting, educating, and achieving organizational goals. Failing to create such an environment, inability to make independent decisions, an unpleasant workplace and affirmation will result in the decline of profits, higher staff turnover and dissatisfaction (Madani M., Rungsisawat S., 2019).

## **5. Conclusion**

All NGOs under study, barring BRAC, demonstrated improvement across all dimensions of knowledge management. Despite a double decrease of knowledge acquisition in the favor of knowledge attraction operations, BRAC has improved its overall knowledge management performance. Still, its overall effectiveness index was the lowest among the NGOs studied. Overall, NGOs tend to knowledge creation, as evidenced by the presence of explicit objectives and low commercial interest. The leader in the rapid knowledge management improvement was the Connecting Up with a more than double increment of the overall effectiveness index. Qasimi leads on the overall knowledge management effectiveness thanks to a high score of knowledge creation. Both organizations own these achievements to their action programs. The majority of NGOs, most especially Qasimi, had knowledge creation asymmetry, whilst Ceres showed the knowledge acquisition asymmetry associated with the use of a sourcing-based development scheme.

The analysis of knowledge management alternatives revealed that five of six NGOs will reach better knowledge management if focus on effective, that is, asymmetric practices. Intensifying the least effective practice, even if it is double, will fail to be as effective as the asymmetry-driven decision. Connecting Up on the contrary was projected to benefit more from the enhancement of the least effective practice, that is, knowledge acquisition.

NGOs benefit from effective knowledge management. For example, the introduction of the proposed methodological approach allows NGOs to expand their influence on the level of knowledge management, in particular, to determine its actual direction: attracting, creating or acquiring knowledge. Based on the results obtained, an NGO can develop appropriate programs and projects to increase the effectiveness of knowledge management, compare their alternative

options, evaluate the possible impact on the development of the organization's potential, etc. It is also possible to justify the feasibility of implementing joint projects with partner NGOs or other organizations that affect the level of knowledge management to achieve a common goal. Integration in this direction will contribute to the formation of a positive synergistic effect that will affect the loyalty of end consumers, as a result of creating the value of NGOs directly for them and society as a whole.

The assessment framework for knowledge management effectiveness offered in this study permits the evaluation of decision-making alternatives and their impact on the effectiveness of knowledge management. The future research may consider the influence of organizational predictors for the utilization of the present proposal as well as expand the knowledge management dimensions of storage and protection.

### **Authors Contributions**

The author/authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

### **Conflict of Interest Statement**

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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