A Comparison Analysis of Knowledge Management Process in International and Local Non-Governmental Organizations Operating in North-east Syria

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***Abstract*—This study examines the knowledge management (KM) processes within International Non-Governmental Organizations (INGOs) and Local Non-Governmental Organizations (LNGOs) operating in Northeast Syria (NES). We employ a quantitative approach by using survey methodology that comprises 34 items and measures four key KM processes: Building knowledge, holding knowledge, pooling knowledge, and using knowledge. The survey was internet-based and distributed to both INGOs and LNGOs employees in NES Through a multi-stage approach utilizing volunteer and convenience sampling techniques, which achieved 101 responses. Descriptive and inferential analyses were conducted, including reliability tests, and mean comparisons, and the Mann–Whitney U test was used for hypothesis testing by using Statistical Package for the Social Sciences v27. Results indicate significant differences in building and using knowledge between INGOs and LNGOs, with no significant differences in holding and pooling knowledge, which reflected in that INGOs exhibit a top-down approach to knowledge building, emphasizing learning from managers and experts. Conversely, LNGOs favor a more grassroots approach, highlighting innovation and improvement at the individual level. The study suggests that future research should explore the practical implications of KM processes within NGOs to enhance organizational performance and mission fulfillment. Specifically, an in-depth investigation into why LNGOs lag in holding knowledge compared to INGOs.**

***Keywords*—Building knowledge, Holding knowledge, Pooling knowledge, Using knowledge, Non-Governmental Organizations.**

I. Introduction

Due to the lack of governmental efforts in crisis areas, Non-Governmental Organizations (NGOs) aim to offer a range of multisector services, such as education, health, and shelter where they have little control over the demand for their services demand, so their capacity often falls short in meeting the overwhelming (Corfield et al., 2013). While knowledge is the most valuable resource owned by individuals and organizations (Oktari et al., 2023), the effectiveness of firms is associated with how they manage knowledge as a strategic resource (González-Illescas and Zaragoza-Sáez, 2023). Since NGOs deal with crises and face different situations that require strategic decisions, it is necessary to acquire critical knowledge quickly; therefore, it is important to develop a specific set of knowledge management (KM) practices to deal with crises (Corfield et al., 2013), however NGOs awareness of KM is still relatively very low (Ramlan et al., 2015).

KM in beginnings emerged as a managerial framework in the private sector (Corfield et al., 2013), aiming to make the enterprise act as intelligently as possible by realizing the best value of enterprise knowledge assets (Wiig, 1997), and overcoming the knowledge gap by knowing what she wants to know (Sunassee and Sewry, 2002). As its association with diverse performance measures across businesses became apparent, KM's significance grew extraordinarily (Zhang et al., 2022), This expansion transcended corporate boundaries, demonstrating its value across various sectors and industries (Ariffin et al., 2023; Fan and Beh, 2024). Notably, there has been a noticeable surge in KM adoption within public and NGO sectors as well (Corfield et al., 2013).

Since numerous organizations are transitioning into knowledge-based entities, knowledge and learning are described as the heart of development practice (Miković et al., 2020), which late the effective KM system in NGOs

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is becoming one of the main factors of flexibility and adaptability to changes in business conditions; yet, most organizations have no explicit policy targeted at strategic KM, and they tend to treat KM on an operational level (Yousif et al., 2020).

In the realm of NGOs, the significance of KM is undeniable. However, KM practices across organizations are influenced by various factors such as size, financial resources, and accessibility. Recognizing these divergences, this research aims to examine the KM practices within Local Non-Governmental Organizations (LNGOs) and International Non-Governmental Organizations (INGOs) operating in North-east Syria (NES). By delving into these practices, the study seeks to paint a comprehensive picture and identify differences that may offer valuable insights for both LNGOs and INGOs to enhance their KM practices and consequently amplify their impact. To methodologically address these objectives, two key research questions have been formulated:

RQ1: To what extent are LNGOs and INGOs in NES practice KM process?

RQ2: Are there any differences in practicing KM process (building knowledge, holding knowledge, polling knowledge, using knowledge) between LNGOs and INGOs operating in NES?

By addressing these questions, this research aims to contribute to the ongoing discourse on KM practices in NGOs, offering practical insights that can inform strategies for fostering effective KM within organizations committed to making a positive impact in the context of NES.

II. Literature Review

A. KM

Knowledge is what emerges from processing and managing information, and knowledge is considered the highest level of information (Wolski and Gomolińska, 2020), While studying Knowledge itself is not a new research area; studying KM as a process within business organizations is considered modern and facilitates the understanding of knowledge itself (Michalová and Sieber, 2023).

It is considered that the first appearance of KM was in the late seventies of the past century, and the first appearance of KM dates back to the year 1975 (Kuo, 2019) when a special issue of "Public Administration Review" included seven articles exploring various aspects of KM (Sabherwal et al., 2023). Then, at the first American conference on artificial intelligence (Edward Freigne Baun) pointed out his famous phrase "Knowledge is Power" and since that time, a new field of knowledge was launched under the name "Knowledge Engineering" With its birth, a new job was created, namely "Knowledge Engineer" and some of organizations started establishing KM programs. After that and with the publishing of Nonaka and Takeuchi's book "The Knowledge-Creating Company" knowledge takes on a dynamic nature as it is constantly moving within the organization. The third stage of KM appears, which is closer to the democratization and personalization of work and focuses more on heuristics known as internalization (Dalkir, 2023; Kelly, 2018; Kuo, 2019; Tzortzaki and Mihiotis, 2014). Now, KM is described as a dynamic social process which depends on organizational, technical, and personal dimensions (Jameel et al., 2021).

Due to the various fields of Scholarly delve into the study of KM, it has become difficult to determine a unified definition of KM, as definitions differ from one researcher to another, depending on the discipline, theory, and application field.

The American Center for Productive Quality has defined KM as strategies and processes for identifying, obtaining, and using knowledge to help an organization compete (Huang et al., 2011), (Al Ahbabi et al., 2018). KM also defined as a set of processes that aims to provide the right information to the right person at the right time to improve business. Grundstein defines KM: as activities and processes that improve the use and creation of knowledge in the organization (Grundstein, 2012), and Girard defines KM as the process of creating diverse information and knowledge for sharing and investing in the organization (Girard et al., 2015).

B. KM Process

Most literature refers to KM as a set of processes that aim to provide the right information to the right person at the right time (Massoudi and Birdawod, 2023), Cabeza-Pullés et al. defining KM processes as basic procedures that an organization takes to manage its knowledge resources, with appropriate tools, procedures, and connected practices (Cabeza-Pullés et al., 2020).

Several authors agree that the main dimensions of KM are the creation, transfer and application of knowledge (González-Illescas and Zaragoza-Sáez, 2023), as those elements are the minimum needed process for the KM (Dalkir, 2023), but we will rely on (Wiig, 1993) model which explained in (Fig. 1), Wiig model includes (Polling) which we consider as a very important aspect in KM process that transfer knowledge from individual knowledge into organizational Knowledge, by considering that element, we argue that KM process have more chance to succeed, as that KM to be successful

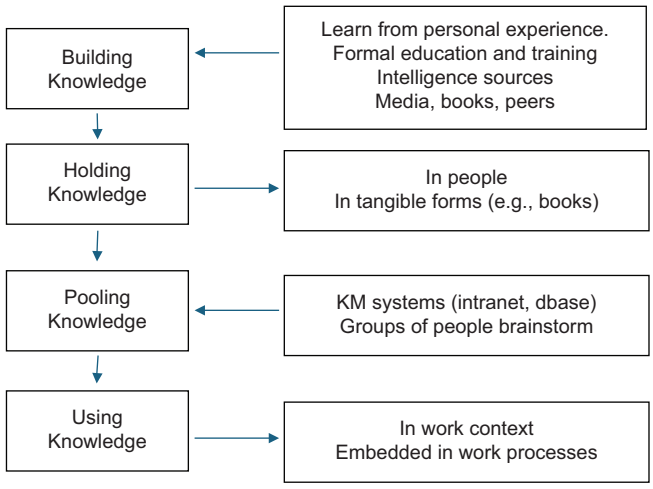

Fig. 1: Wiig's model for knowledge management process.
Source: (Dalkir, 2023) p.31.

it must contain a sufficient amount of process, not too big to be a more general or too small which may not bring enough synergy between workers (Dalkir, 2023).

As Wiig's model assists in achieving various goals of KM, the study will rely on Wiig's KM model which includes four major steps and below is an explanation for each element.

Building knowledge

Building knowledge is the organization's ability to obtain and retain it for use, and acquire knowledge from various sources, such as similar organizations, academic institutions, public and academic institutes, libraries, the internet, and other sources (Nafei, 2016), as building knowledge is a process of social interaction in which individuals exchange knowledge, resulting in the change of mental models (González-Illescas and Zaragoza-Sáez, 2023), knowledge resources have been identified as challenge for NGOs (Miković et al., 2020).

Holding knowledge

Holding knowledge is a set of procedures and systems for storing and managing knowledge, These systems are often information technology-based that support and enhance the storage and retrieval of operational knowledge, also This knowledge can reside in various forms, including, expert systems, written documents, documented procedures, and knowledge acquired by individuals and networks (Donate and Sánchez de Pablo, 2015).

Holding knowledge helps retain knowledge and ensure its presence within the organization since holding knowledge cares about the knowledge that workers have in their brains (Dalkir, 2023). Organizations face a great risk as a result of losing much of the knowledge carried by individuals who leave for one reason or another. Holding knowledge also focus on extracting knowledge and making it explicit, and recording it systematically for future uses, often through the implementation of knowledge repositories (Jarrahi et al., 2023).

Pooling knowledge

Pooling knowledge is the organization's ability to disseminate knowledge at the organizational level, and to every individual within each level of the administrative unit, whether through e-mail, meetings, training courses, or otherwise (Nafei, 2016). The process of pooling knowledge is the first step in the process of using knowledge, pooling knowledge throughout the organization is a prerequisite to applying it effectively in problem-solving and decision-making (Jarrahi et al., 2023), Without pooling knowledge, the organization will not obtain any significant benefit from knowledge, as KM is needed on three levels: Individual, groups, and organization (Dalkir, 2023). Knowledge progress is accomplished when knowledge flows from an individual's domain to the organization domain through groups (Idrees et al., 2023).

Using knowledge

Using knowledge refers to putting knowledge into practice after it has been built, and pooled (Jarrahi et al., 2023), Using knowledge enables organizations to use and benefit from knowledge in ways that improve their operations, enable them to develop new products, and generate new knowledge assets (Ode and Ayavoo, 2020), so knowledge is valuable asset for when applied within operations, and in case of NGOs the knowledge is not only identifying and documenting lessons learned or best practices, but also determining how to use the necessary knowledge at the proper time and place in order to create acceptable, accurate, and efficient actions (Oktari et al., 2023).

III. Research Methodology

A. Research Questions and Hypotheses

This study attempts to answer the following questions:

RQ1: To what extent are LNGOs and INGOs in NES practice KM process?

RQ2: Are there any significant differences in practicing the KM process (building knowledge, holding knowledge, polling knowledge, using knowledge) between LNGOs and INGOs operating in NES?

To answer the second question, main hypotheses developed for testing the differences between each element of the KM processes within the two studied organizations (LNGOs and INGOs) as below:

H1. μKMPI=μKMPL

While:

μKML: Population mean of KM Process in LNGOs.

μKMI Population mean of KM Process in INGOs.

Similar hypotheses were formulated for the remaining dimensions of KM processes (building knowledge, holding knowledge, pooling knowledge, and using knowledge) as that hypothesis been developed for all KM Process as below:

H1: There is a significant difference in the KM process between the INGOs and LNGOs operating in NES.

With below sub hypotheses:

H1.1 There is a significant difference in building knowledge between the INGOs and LNGOs operating in NES.

H1.2. There is a significant difference in holding knowledge between the INGOs and LNGOs operating in NES.

H1.3. There is a significant difference in polling knowledge between the INGOs and LNGOs operating in NES.

H1.4. There is a significant difference in using knowledge between the INGOs and LNGOs operating in NES.

B. Instrument

The instrument development process involved several key stages: First, a comprehensive review of existing literature was conducted, Drawing from (Budur et al., 2024; Wiig, 1993), the survey was designed to encompass various dimensions of KM processes. Then, to ensure the relevance and clarity of the survey, a panel of four experts evaluated the questions. Subsequently, a preliminary version of the survey was pilot tested with a sample of 30 participants. This pilot phase aimed to assess the survey's comprehensibility and ease of response. Based on feedback received, adjustments were iteratively made until the survey reached its final form,

comprising 34 items. These items measure the four key processes of KM, with an additional five items dedicated to collecting demographic information from respondents, and one open question to receive comments and further details from responders if they may want to add, the questionnaire was accompanied by a concise yet informative introduction outlining the study's objectives and emphasizing the voluntary nature of participation.

C. Sampling and Data Collecting

Due to the lack of specific data on the number of NGOs operating in NES, our sampling strategy employed a multi-stage approach utilizing volunteer and convenience sampling techniques. This method was chosen to effectively reach potential respondents. The research employed an internet-based survey conducted through the Google Form platform. Participants were recruited through the Institute of NES Youth Empowering, which facilitated the distribution of the questionnaire to a wide array of NGO employees in NES. The survey outreach efforts extended across various channels, including professional and private social media platforms like Facebook, WhatsApp, and email. Participants were also encouraged to share the survey with their colleagues. A total of 101 individuals, comprising employees from both LNGOs and INGOs, participated in the survey. To ensure data integrity, survey links were configured to allow only one response per respondent, thereby preventing duplicate participation. Respondents were asked to provide insights into their organization's current practices and evaluate the importance of specific practices using a five-point Likert scale.

D. Data Analysis

The data analysis process commenced with an assessment of scale reliability using Cronbach's alpha, a widely recognized measure of internal consistency. Subsequently, a comprehensive descriptive analysis was conducted on the responses to address the research questions. This analysis aimed to calculate the population means for each dimension of the KM process. Furthermore, normality tests were applied to the dataset to ensure robust statistical analysis to examine the differences and conduct comparative analyses. To assess these differences, the Mann–Whitney U test was employed to analyze mean discrepancies.

IV. Data Analysis and Discussion

A. Sample Analysis

As illustrated in Fig. 2, the total number of responders was 101, 55 from INGOs and 46 for LNGOS, INGOs have a higher proportion of male employees (39) 71% compared to females (14) 29%. However, the gender distribution in LNGOs is more balanced, with (21) 46% males and (23) 50% females. Furthermore, there are only a few individuals in both sectors who preferred not to disclose their gender 2 each.

Both sectors have a similar distribution of employees across age groups. Most employees fall within the age range of 31–35 in both INGOs (21) 38% and LNGOs (14) 30%. The distribution of years of experience is relatively similar between the two sectors. However, INGOs have a slightly higher number of employees with more than 10 years of experience (6) 11% compared to LNGOs, also, both sectors have a substantial proportion of employees with 1–5 years of experience, indicating a relatively young workforce overall.

Most employees in both sectors hold bachelor's degrees, with INGOs (41) 75% and (39) 85% in LNGOs. INGOs have a significantly higher number of employees with Postgraduate degrees (13) 24% compared to LNGOs (2) 4%, indicating a potentially higher level of education among employees in INGOs.

Overall, there are differences in demographic distributions between INGOs and LNGOs, in education levels and years of experience, and there are similarities in gender and age distributions.

B. Reliability Test

The questionnaire used in this study comprises 28 questions distributed across the four processes of KM and Cronbach's alpha was employed to ensure the reliability of the instrument. The overall Cronbach's alpha coefficient for the four KM variables is 0.95 which indicates the reliability of the scale for all KM processes. Further breakdown reveals the reliability coefficients for the individual variables: Building knowledge (0.92), holding knowledge (0.86), pooling knowledge (0.90), and using knowledge (0.89). These results indicate the high reliability of each aspect, as summarized in Table I.

C. Descriptive Analysis of KM Process

Building knowledge

As shown in Table II, the total mean of the building knowledge reveals a shared emphasis on activities by both INGOs and LNGOs, with LNGOs exhibiting slightly higher mean scores across most dimensions. The relative importance indicates that LNGOs attribute greater significance to these aspects compared to INGOs, as evidenced by their higher relative importance scores across most questions.

For INGOs, there appears to be less emphasis on organizing meetings among employees, as indicated by the lower mean score of 2.89, along with a low relative importance score of 57.8 for the item "The organization organizes meetings between different departments to create new knowledge among them." Conversely, there is a stronger focus on encouraging learning from managers, as indicated by the higher mean score of 3.36 for the item "The organization encourages all employees to learn from experts and higher managers."

In contrast, for LNGOs, the item with the lowest mean score is "The organization conducts research and development projects to create new knowledge," with a mean of 3.39 and a relative importance score of 67.8. Conversely, the item "The organization encourages individuals to innovate to improve the way they perform their tasks" achieved a higher mean

among building knowledge Items with a mean of 3.74 and a relative importance score of 74.8.

Furthermore, the standard deviation for building knowledge in INGOs is lower than that of LNGOs, suggesting that opinions within INGOs tend to be more consistent and standardized. Conversely, in LNGOs, opinions exhibit greater variation.

Holding knowledge

For holding knowledge, the means analysis shows that both LNGOs and INGOs rank highest among all KM processes as shown in Table III, reflecting their commitment to maintaining current and pertinent information across various domains, including procedures, services, suppliers, beneficiaries, and employees.

While INGOs tend to have slightly higher mean ratings across most aspects compared to the LNGOs, the differences are relatively minor. Specifically, the total holding knowledge mean rating for the INGOs stands at 4.15 with a standard deviation of 0.53. In comparison, the LNGOs mean rating is slightly lower at 3.97, with a standard deviation of 0.647.

Interestingly, when it comes to preserving information about funders, both LNGOs and INGOs exhibit lower mean ratings compared to other items in the holding knowledge variable.

Pooling knowledge

For pooling knowledge, the means analysis shows that both LNGOs and INGOs are in relative stages as shown in Table IV; yet, LNGOs demonstrate a higher total relative importance for pooling, standing knowledge at 73.8% compared to INGOs which is 66.8%.

Within INGOs, the item "We have effective communication with our colleagues" emerges as the highest mean of 3.69 and a standard deviation of 1.08. Conversely, "The organization

TABLE I
INSTRUMENT RELIABILITY TEST

Dimension	Number of items	Cronbach's alpha
Building knowledge	7	0.92
Holding knowledge	7	0.86
Pooling knowledge	7	0.90
Using knowledge	7	0.89
Knowledge management process	28	0.95

Source (Researchers based on the questionnaire data)

TABLE II
BUILDING KNOWLEDGE ITEMS

#	Item	International NGO			Local NGO		
		Mean	Standard deviation	Relative importance	Mean	Standard deviation	Relative importance
1	The organization does research and development projects to create new knowledge.	3	1.407	60	3.39	1.183	67.8
2	The organization encourages individuals to innovate to improve the way they perform their tasks.	3.31	1.153	66.2	3.74	1.255	74.8
3	The organization encourages all employees to learn from experts and higher managers	3.36	1.176	67.2	3.7	1.171	74
4	The organization encourages brainstorming and idea-generation activities	3.24	1.247	64.8	3.7	1.171	74
5	The organization organizes meetings between different departments to create new knowledge among them.	2.89	1.1	57.8	3.46	1.378	69.2
6	The organization takes "lessons learned" from other organizations working in the sector.	3.16	1.067	63.2	3.52	1.206	70.4
7	The organization does well-managed activities for knowledge generation.	3	1.106	60	3.41	1.222	68.2
Total	Building knowledge	3.17	0.931	63.4	3.55	1.04	71

Source (Researchers based on the questionnaire data)

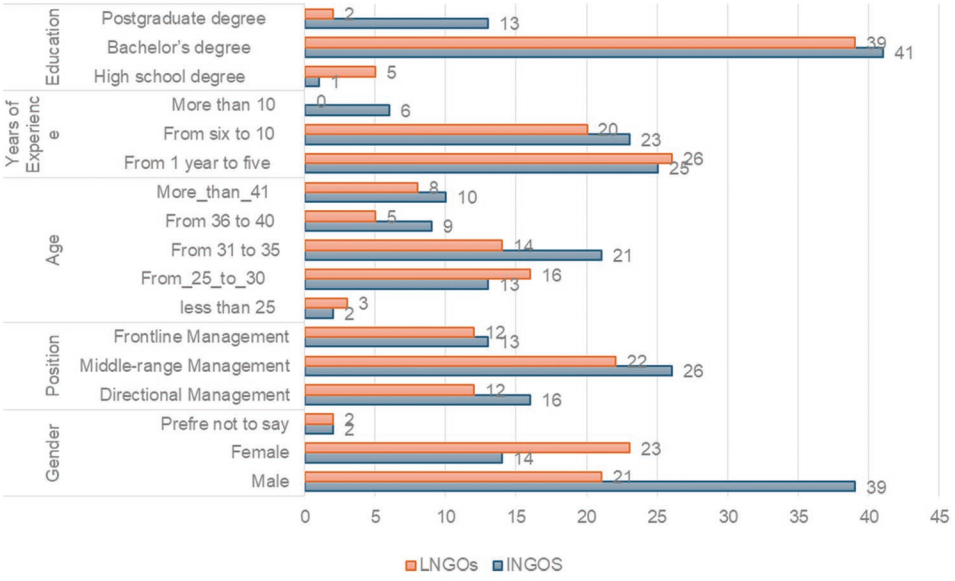

Fig. 2: Sample analysis. Source (researchers based on the questionnaire data).

emphasizes knowledge sharing with different colleagues" shows a lower mean of 3.16, accompanied by a standard deviation of 1.244.

Conversely, for LNGOs, "The organization encourages teamwork" shows the highest mean score of (4.17), coupled with a standard deviation of 1.06. In contrast, "We have effective communication with other departments" displays a lower mean of 3.41, alongside a standard deviation of 1.25.

Using knowledge

The standard deviation for the total items of using knowledge was notably low, as shown in Table V indicating a low level of consistency or uniformity among the data points which reflecting a difference in employees opinion on the using knowledge practices within the organization.

INGOs exhibit a high mean rating of 4.05 with a standard deviation of 0.84 for using knowledge, particularly in the item "Employees can utilize their knowledge and experience in task implementation (perform routine tasks)." Conversely, they show a lower mean (3.02) for the item "I describe my organization as a learning organization."

Conversely, LNGOs show a high mean (3.91) for the item "Employees reflect their knowledge in project implementation

TABLE III
Holding Knowledge Items

#	Item	International NGO			Local NGO		
		Mean	Standard deviation	Relative importance	Mean	Standard deviation	Relative importance
1	Activity-related information is codified and stored in organized databases.	4.45	0.538	89	4.17	0.677	83.4
2	The organization has an effective database (knowledge storage system).	4.13	0.747	82.6	3.8	0.91	76
3	The organization keeps up-to-date and relevant information about our funders.	3.98	0.933	79.6	3.76	0.899	75.2
4	The organization keeps up-to-date and relevant information about our procedures and services	4.13	0.795	82.6	3.98	0.856	79.6
5	The organization keeps up-to-date and relevant information about our suppliers.	4.02	0.5	80.4	4.02	0.715	80.4
6	The organization keeps up-to-date and relevant information about our beneficiaries.	4.18	0.641	83.6	4.02	0.856	80.4
7	The organization keeps up-to-date and relevant information about our employees.	4.16	0.764	83.2	4.07	0.827	81.4
Total	Holding knowledge	4.15	0.53	83	3.97	0.647	79.4

Source (Researchers based on the questionnaire data)

TABLE IV
Pooling Knowledge Items

#	Item	International NGO			Local NGO		
		Mean	Standard deviation	Relative importance	Mean	Standard deviation	Relative importance
1	The organization emphasizes knowledge sharing with different colleagues.	3.16	1.244	63.2	3.67	1.19	73.4
2	Employees can easily access the information-saving systems and get the needed knowledge.	3.2	1.253	64	3.07	1.23	61.4
3	The organization encourages teamwork.	3.78	1.1	75.6	4.17	1.06	83.4
4	We have effective communication with our colleagues.	3.69	1.08	73.8	3.83	1.27	76.6
5	We have effective communication with our managers.	3.65	1.15	73	3.91	1.22	78.2
6	We have effective communication with other departments.	3.25	1.14	65	3.41	1.25	68.2
7	We have good social relations (informal social activities).	3.42	1.18	68.4	3.8	1.2	76
Total	Pooling knowledge	3.34	0.88	66.8	3.69	1.01	73.8

Source (Researchers based on the questionnaire data)

TABLE V
Using Knowledge Items

#	Item	International NGO			Local NGO		
		Mean	Standard deviation	Relative importance	Mean	Standard deviation	Relative importance
1	Employees can utilize their knowledge and experience in task implementation (perform routine tasks).	4.05	0.84	81	3.83	1.01	76.6
2	The organization has an accurate process fordecision-making.	3.31	1.1	66.2	3.52	1.36	70.4
3	Employees are encouraged to implement what they know in their job-related activities (select relevant special knowledge to handle different situations)	3.55	0.959	71	3.54	1.04	70.8
4	The organization encourages employees to take initiative.	3.04	1.105	60.8	3.7	1.28	74
5	Employees reflect their knowledge in project implementation and service-providing procedures.	3.45	1.033	69	3.91	1.07	78.2
6	We reflect our organizational knowledge when we deal with stakeholders and beneficiaries.	3.67	0.795	73.4	3.87	0.934	77.4
7	I describe my organization as a Learning Organization	3.02	1.163	60.4	3.74	1.237	74.8
Total	Using knowledge	3.44	0.752	68.8	3.72	0.928	74.4

Source (Researchers based on the questionnaire data)

TABLE VI
KNOWLEDGE MANAGEMENT PROCESS

#	Variable	International NGO			Local NGO		
		Mean	Standard deviation	Relative importance	Mean	Standard deviation	Relative importance
1	Building knowledge	3.17	0.931	63.4	3.55	1.04	71
2	Holding knowledge	4.15	0.53	83	3.97	0.647	79.4
3	Pooling knowledge	3.34	0.88	66.8	3.69	1.01	73.8
4	Using knowledge	3.44	0.752	68.8	3.72	0.928	74.4
5	Knowledge management process	3.55	0.66	71	3.73	0.83	74.66

Source (Researchers based on the questionnaire data)

TABLE VII
TESTS OF NORMALITY

Variable	Organization type	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	Df	Sig.
KMP	International NGO	0.092	55	0.200*	0.972	55	0.231
	Local NGO	0.138	46	0.029	0.930	46	0.009
BK	International NGO	0.102	55	0.200*	0.979	55	0.445
	Local NGO	0.163	46	0.004	0.936	46	0.014
HK	International NGO	0.095	55	0.200*	0.966	55	0.124
	Local NGO	0.115	46	0.156	0.956	46	0.083
PK	International NGO	0.098	55	0.200*	0.970	55	0.186
	Local NGO	0.161	46	0.004	0.902	46	0.001
UK	International NGO	0.132	55	0.018	0.960	55	0.064
	Local NGO	0.163	46	0.004	0.913	46	0.002

Source (Researchers based on the questionnaire data), *This is a lower bound of the true significance. [a]Lilliefors Significance Correction. KMP: Knowledge management process, BK: Building knowledge, HK: holding knowledge, PK: Pooling knowledge, UK: Using knowledge, NGO: Non-Governmental Organizations

and service-providing procedures," while demonstrating a lower mean (3.52) for the item "The organization has an accurate process for decision-making."

KM process

The comparison of means for the main variables as shown in Table VI indicates that INGOs exhibit a notably higher emphasis on holding knowledge and lower means for the other aspects of KM process. Conversely, LNGOs demonstrate a parallel pattern with lower mean scores for building knowledge, followed by knowledge pooling, knowledge using, and knowledge holding.

It is noteworthy that an anonymous respondent affiliated with INGOs highlighted a specific challenge pertinent to their operational context by mentioning that: "we operate in a war zone and project implementation it's the priority, so we can't focus a lot on long term objectives such as staff learning and KM."

Testing hypothesis

Before proceeding with the mean comparison test, we conducted the data distribution test as shown in Table VII. For INGOs, since the sample size is more than 50, we employed the Kolmogorov-Smirnov test. The *P*-values for the Kolmogorov–Smirnov test exceeded the significance level of 0.05 for all KM variables. Thus, we fail to reject the null hypothesis, indicating that the data for INGOs exhibit a normal distribution. However, for LNGOs, with a sample size <50, the Shapiro-Wilk tests yielded, and the *P*-values were below 0.05 for all KM Variables. Consequently, we reject the null hypothesis, indicating that the data for LNGOs are not normally distributed.

Since one sample is normally distributed while the other is not, we will employ non-parametric tests to examine the mean differences.

Based on the results of the conducted normality tests, we proceeded with a Mann-Whitney U test to examine the mean differences between respondents from both INGOS and LNGOs as shown in Table VIII, and below are the results of the test for each hypothesis.

H1.1: There is a significant difference in building knowledge between the INGOs and LNGOs operating in NES.

The *P*-value for building knowledge is (0.032) less than the significance level of 0.05. Therefore, we reject the null hypothesis and conclude that there is a statistically significant difference in building knowledge mean between INGOs and LNGOs, and as a result, we accept the alternative hypothesis which declares that there is a significant difference in building knowledge between the INGOs and LNGOs operating in NES.

H1.2: There is a significant difference in holding knowledge between the INGOs and LNGOs operating in NES.

The *P*-value for the holding knowledge variable (0.153) is greater than the significance level of 0.05. Thus, we accept the null hypothesis, and the result is that: There is no significant difference in holding knowledge between the INGOs and LNGOs operating in NES.

H1.3: There is a significant difference in polling knowledge between the INGOs and LNGOs operating in NES.

The *P*-value for pooling knowledge is (0.087) >0.05, indicating no significant difference in knowledge pooling mean between INGOs and LNGOs, then the accepted hypothesis is There is no significant difference in polling knowledge between the INGOs and LNGOs operating in NES.

H1.4: There is a significant difference in using knowledge between the INGOs and LNGOs operating in NES.

The *P*-value associated with using knowledge is (0.019) <0.05, indicating a significant difference in knowledge usage mean between INGOs and LNGOs. And the accepted hypothesis is: There is a significant difference in using knowledge between the INGOs and LNGOs operating in NES.

H1: There is a significant difference in the KM Process between the INGOs and LNGOs operating in NES.

TABLE VIII
Mean Difference Test

Test type	BK	HK	PK	UK	KMP
Mann–Whitney U	950.500	1056.500	1014.500	921.000	1004.000
Wilcoxon W	2490.500	2137.500	2554.500	2461.000	2544.000
Z	−2.148	−1.428	−1.712	−2.351	−1.780
Asymp. Sig. (2-tailed)	0.032	0.153	0.087	0.019	0.075

Source (Researchers based on the questionnaire data), [a]grouping variable: organization type. KMP: Knowledge management process, BK: Building knowledge, HK: Holding knowledge, PK: Pooling knowledge, UK: Using knowledge

TABLE IX
Summary of Hypotheses Tests

H	Hypothesis	Status
H1.1	There is a significant difference in building knowledge between the INGOs and LNGOs operating in NES.	Accepted
H1.2	There is a significant difference in holding knowledge between the INGOs and LNGOs operating in NES.	Rejected
H1.3	There is a significant difference in polling knowledge between the INGOs and LNGOs operating in NES.	Rejected
H1.4	There is a significant difference in using knowledge between the INGOs and LNGOs operating in NES.	Accepted
H1	There is a significant difference in the knowledge management process between the INGOs and LNGOs operating in NES.	Rejected

Source (Researchers based on the questionnaire data), NES: Northeast Syria, INGOs: International Non-Governmental Organizations, LNGOs: Local Non-Governmental Organizations

The *P*-value for pooling knowledge is (0.75) >0.05, indicating no significant difference in KM process mean between INGOs and LNGOs, then the accepted hypothesis is: There is no significant difference in KM process between the INGOs and LNGOs operating in NES. However, it's important to mention that there are differences in building knowledge and using knowledge, while no significant differences in holding and pooling knowledge.

V. Conclusion

The analysis shows a high level of practicing the KM process in both sectors and while both recognize the importance of the KM process, evident from their highest rankings in KM processes, there are clear differences in how they practice each dimension.

In building knowledge items, INGOs, show a strong focus on learning from managers and experts as reflected in the higher mean score for this item. Which may indicate a top-down approach to building knowledge. Conversely, LNGOs emphasize innovation and improvement in task performance by individuals, with activities related to research and development scoring lower. This suggests a more grassroots approach to building knowledge within LNGOs, with a focus on innovation at the individual level.

While both sectors show a strong practice in holding knowledge which indicates the importance of storing and maintaining organizational knowledge. However, saving information about funders showed a lower mean for both sectors, pointing toward potential gaps in maintaining updated information about funders and indicating the need for more research about the capability of NGOs to maintain the funder's information and make it available for staff.

LNGOs show a higher emphasis on pooling knowledge, with a higher total relative importance placed on these activities compared to INGOs. This suggests that LNGOs may be more focused on collective knowledge sharing and collaboration among employees. INGOs, on the other hand, show a preference for effective communication within the organization but less emphasis on sharing knowledge across different departments or colleagues.

There are slight differences in using knowledge between the two sectors. LNGOs display a slightly higher mean in several aspects of using knowledge, especially in reflecting knowledge in project implementation and service provision. While INGOs show a higher interest in routine task implementation and lower interest in learning. This indicates a potential gap in integrating learning and knowledge into the organizational culture for INGOs.

As the hypothesis test shows the differences between the INGOs' and LNGOs' KM process are in using and building knowledge that supports our argument in the building knowledge analysis and shows that INGOs tend to emphasize top-down learning and have a stronger focus on holding knowledge, suggesting a potentially more structured but less collaborative approach to KM. They seem to prioritize operational efficiency in using knowledge but might lag in embedding a learning culture throughout the organization. Conversely, LNGOs demonstrate a stronger inclination toward pooling and using knowledge collaboratively, reflecting a more grassroots and inclusive approach. They show a slight advantage in innovating and applying knowledge in project implementation, which could indicate a more dynamic and flexible KM practice that is closely tied to their operational needs.

Future research should focus on exploring the practical applications of KM processes within NGOs, aiming to understand the direct impact on organizational performance and mission fulfillment. There is a particular need to investigate why LNGOs lag in holding knowledge compared to INGOs and how both types of NGOs can enhance their KM practices to better leverage their collective knowledge for greater impact.

VI. Contributions and Limitations

The research provides a comparative analysis of KM processes between INGOs and LNGOs operating in a crisis context, specifically in NES. By identifying significant differences in building and using knowledge, the study highlights the varying approaches and challenges faced by these organizations. Furthermore, the study shows the importance of adapting KM practices to the organizational context, demonstrating that INGOs tend to adopt a top-down approach while LNGOs prefer grassroots innovation. Third, this study adds to the limited research on KM in NGOs,

particularly in the context of crisis management, by providing empirical evidence on the effectiveness of different KM processes and offering practical insights for NGOs aiming to enhance their KM practices.

Besides the contributions, our research has limitations. We used the convenience sampling technique because of the lack of a framework that shows the number of NGOs working in NES, which may potentially limit the generalizability of the results to the broader population of INGOs and LNGOs operating in NES. The sample size, though adequate for the statistical tests performed, might still be considered relatively small for broader generalization. Finally, cultural and contextual factors unique to NES might influence KM practices differently than in other regions, limiting the applicability of these findings to other geographical contexts.

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