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KNOWLEDGE TYPES IN NON-PROFIT COLLABORATIONS: EXAMPLE OF MEXICAN FOOD BANK NETWORK

Dr. Alina Pukhovskaya,
University of Vitez;
Dr. Gianpaolo Vignali,
University of Manchester;
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President of the European Retail Academy (ERA)

Abstract

Major problem of food waste provoked a community response in a form of creation of food banks. Food banks are non-profit organizations that mainly collect food surplus in commercial sector and transfer it to food aid sector. Therefore, increase in their efficiency could have a substantial positive impact on society, while allowing food banks to serve more needy people. Introduction of knowledge management practices can help achieving the constant improvement that food banks aim. Moreover, existing research shows that knowledge exchange is beneficial not only within, but also across organizations. Knowledge becomes a critical strategic resource in inter-organizational collaborations, which needs to be managed in a structured manner. However, in order to manage it, all relevant knowledge has to be first identified and organized.

As a research unit was chosen the Mexican food bank network, which is one of the oldest and most developed food bank networks in the world. Data were collected through prolonged semi-structured interviews both at the network level (national service office) and member level (food banks) and reinforced with data from documentation. The identified knowledge was assigned to ten most relevant knowledge categories that unite fifty-three sub-categories of knowledge. Developed knowledge types are suggested as a basis for knowledge structure not only in food bank networks, but also in non-profit collaborations in general. It could be applied for organization of network knowledge during knowledge audit and further development of digital knowledge platform.

Keywords: inter-organizational knowledge management; knowledge types; non-profit; food bank network; collaborations.

INTRODUCTION

On average 1/3 of the global food is getting wasted on different stages of supply chain while billions of people are malnourished (FAO, 2011, FAO, 2016). The immense problem provoked a community response in a form of creation of food banks. Food banks are non-profit organizations (NPO) that mainly collect food surplus in commercial sector and transfer it to charitable food programs or directly to needy people (Starkey et al., 1998, González-Torre and Coque, 2016). Food banks can be seen as intermediate agents that connect donors and beneficiaries (Gentilini, 2013). Despite the common goal of feeding the vulnerable population, food banks have a variety of models depending on their environment (González-Torre and Coque, 2016). Moreover, for food banks, similar to other non-profit organizations (Guo and Acar, 2005), it is quite common to form collaborations. They have unusually homogeneous and structured way of networking with other food banks. This is also the case for the investigated Mexican food bank network (Bancos de Alimentos de México, BAMX), as pictured on Figure 1. Most of the food banks are members of national network organizations (Campbell et al., 2013) and the national networks are members of one of the location-based international networks, such as Global Food Banking Network, European Federation of Food Banks, Food Banking Regional Network, or Second Harvest Asia (Gentilini, 2013).
Nowadays food banks play a leading role in the food aid sector (Bazergh et al., 2016) and improving their efficiency can have a substantial impact on society and help meeting basic needs of more struggling families. Current research extends prior empirical studies (Lettieri et al., 2004, Reilly, 2005, Bedoya-Dorado, 2015, Cantu and Mondragon, 2016) and suggests knowledge management as a way to address the topic of efficiency. Zaid et al. (2012) write that in today’s knowledge economy, most organizations in all three sectors – private, public and social – have knowledge that has a potential to improve their performance.

To the best of our knowledge, existing research in the third sector overlooks the importance of inter-organizational knowledge management in non-profit collaborations. However, research on knowledge management practices in food bank networks can support the professionalization and sustainable growth of the sector.

LITERATURE REVIEW

Knowledge management field draws a clear line between data, information and knowledge. Data in organization can be compared to a set of facts or to a “content that is directly observable or verifiable” (Dalkir and Liebowitz, 2011; p. 9). Afterwards data are used as a raw material for generation of information. Davenport and Prusak define information similar to Zack (1999) as a message with meaning, which is transmitted as a physical document or in the process of communication. Information is stored in the books, databases and software programs (Drucker, 1993). Knowledge is richer and broader than information, but derives from it: “Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers” (Davenport and Prusak, 1998; p. 5). In order to take advantage from knowledge as an asset and turn it into sustainable competitive advantage it is important to be able to manage knowledge in a systematic way. Knowledge management (KM) is “the deliberate and systematic coordination of an organization’s people, technology, processes, and organizational structure in order to add value through reuse and innovation. This coordination is achieved through creating, sharing, and applying knowledge as well as through feeding the valuable lessons learned and best practices into corporate memory in order to foster continued organizational learning” (Dalkir, 2005; p. 3). In other words, KM means that the right knowledge needs to be available to the right people at the right time (Holsapple and Jones, 2004; p. 156). This permits to “maximize the enterprise’s knowledge-related effectiveness and returns from its knowledge assets” (Wiig, 1997; p. 1).

As previously mentioned, food banks form networks and, consequently, it is important to optimize the knowledge flow at the network level. Inter-organizational knowledge management (IKM) is a network-focused knowledge management (Carlsson, 2003), which addresses all stages of KM process between organizations. The purpose of IKM is to manage the knowledge exchange and co-creation of new knowledge (Blecker and Neumann, 2000, Lancini, 2015), which permit the organizations that form part of collaboration to gain a sustainable competitive advantage (Carlsson, 2003).

The aim of this paper is to outline a structure of knowledge base that can be used by entire food bank network, while addressing a challenge typical for any non-profit organization (Lettieri et al., 2004). Professional knowledge base can be built upon a formalized taxonomy of organizational knowledge. Taxonomy is a “hierarchical structure for organising a body of knowledge; it gives a framework for...
Understanding and classifying that knowledge – how to group it and how the various groups relate to each other” (Servin, 2005; p. 62).

In the opinion of Hume and Hume (2015) a large number of KM architectures and models were proposed in the recent years with an attempt to organize the KM activities available to organizations. These models helped organizations to “understand potential categories or divisions of knowledge and how knowledge can be managed” (Hume and Hume, 2015; p. 26). For instance, Binney (2001) suggests six types of knowledge: transactional, analytical, asset management, process, developmental, and innovation. Though the proposed approach is reasonable, however, according to Hume and Hume (2015) such an understanding of types of knowledge suits rather the mature for-profit organizations. Some other authors regard knowledge as an intellectual capital (Mårtensson, 2000, Roos et al., 1997, Kong, 2010a, Kong, 2015, Kong, 2010b, Kong, 2008, Kong, 2007, Kong and Prior, 2008, Choo and Bontis, 2002) and use corresponding taxonomy for assigning knowledge to one of the three categories (Kong, 2010b): human capital, structural capital and relational capital.

This study agrees with Hume et al. (2012) that immature third sector would rather benefit from a simpler and leaner practice-oriented framework, which could be partially derived from the corporate functional lines.

A popular classification of knowledge types in third sector is proposed by Lettieri et al. (2004), whose research shows that knowledge can be clustered into six main groups: accounting/administration; managerial/organizational; teaching/training; fund raising/public relation management/marketing; operational; and miscellaneous. Lettieri et al. (2004) suggest knowledge-taxonomy for NPO based on the results of case-study research and some proposals in for-profit literature, for example by Zack (1999) and Blackler (1995). The main contribution of Lettieri et al. (2004) is the recognition of miscellaneous knowledge, which is not directly used for carrying out daily activities, but has a hidden potential for performance improvement (Lettieri et al., 2004). Rathi et al. (2016) address the topic in a different way and speak about the knowledge needs in NPOs. It is a distinct angle in comparison to Lettieri et al. (2004), who identified the available knowledge in four in-depth case studies, not the knowledge needed. Rathi et al. (2016) conduct an extensive survey in total of 2800 NPOs in Canada and Australia and propose a detailed classification of knowledge, which is potentially relevant to every non-profit organization. It is an important contribution and practical framework, since any NPO can use the taxonomy proposed by Rathi et al. (2016) as a guide in the process of identification of own knowledge needs.

Knowledge needs have to be identified and documented as a first step of knowledge audit when NPO starts to develop a KM strategy. Rathi et al. (2016) propose 5 major categories and 28 sub-categories of knowledge types that are relevant to all non-profit organizations: knowledge about management and organizational practices; resource knowledge; community knowledge; sector-based knowledge; and situated knowledge. This study builds on and further expands the work of Rathi et al. (2016) in non-profit organizations, while applying their extensive framework of knowledge needs to non-profit collaborations.

**METHODOLOGY AND RESEARCH DESIGN**

This qualitative study was conducted in Bancos de Alimentos de México (BAMX), which is Mexican food bank network formed by over fifty members located throughout the country. The network is registered as Asociación Mexicana de Bancos de Alimentos A.C., which is a civil association. Due to its legal form, investigated network has a general assembly as a supreme body, board of directors as a representative body and supervisory committee as a supervisory body. Moreover, the network is structured as a federation. This model is characterised by an umbrella organization that supports, coordinates and provides services to several member organizations. The national service office (NSO), which is the umbrella organization of the network, is located in Mexico City from where they manage, for example, relationships with government and large corporations in food sector.

Geographical proximity to the organization allowed first carrying out a pilot study to test the initial conceptual model and then conducting a number of interviews in person. Data were collected through semi-structured in-depth interviews with the average length of one and a half to two hours.

Interviews in the national service office (NSO) were carried out with managers of every department. Six prolonged face-to-face interviews took place with logistics manager, nutritionist, government projects manager, information technologies manager, director of finances and administration, and manager of the capacity-building department. Two more Skype interviews were conducted with general director and fundraising manager. These interviews took place between November and December 2016. The network members were chosen based on two characteristics: region and involvement in governance structure. Therefore, after thorough discussion with the NSO team, two active regions were identified. Inside of each region, members were analysed and two cases were chosen based on their level of overall motivation and involvement into governance structure.
Details of the interviews conducted in the member organizations are summarized in the Table 1. These interviews took place between August and October 2017.

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Role in network governance</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director 1, Region 1</td>
<td>President of the food bank is on the board of the food bank network and represents the Region 1</td>
<td>Interview in person</td>
</tr>
<tr>
<td>Director 2, Region 1</td>
<td>Food bank is not represented on the board of the food bank network</td>
<td>Skype interview (video)</td>
</tr>
<tr>
<td>Director 1, Region 2</td>
<td>President of the food bank is on the board of the food bank network and represents the Region 2</td>
<td>Skype interview (video/audio)</td>
</tr>
<tr>
<td>Director 2, Region 2</td>
<td>Food bank is not represented on the board of the food bank network</td>
<td>Telephone interview (audio)</td>
</tr>
</tbody>
</table>

Table 1: Summary of interviews (network members). Source: Own elaboration.

To protect confidentiality of the participants to each respondent was assigned a code. Codes N01 to N08 correspond to the team of national service office (NSO), which is the umbrella organization of the network. Codes M01 to M04 are assigned to the network members. Other information that was considered confidential was coded as [Name of city], [Name of person], [Name of region] etc. The symbol of three dots in round brackets corresponds to a reduced phrase. The interviewer is given the code AP. Therefore, the remarks and clarifications of the interviewer are put in square brackets as [AP: remark].

Large amount of data gathered through interviews were transcribed verbatim and further analyzed with the help of thematic analysis. Moreover, this study adopted a specific version of thematic analysis – a “template analysis” as suggested by King (2004). The use of a priori codes and hierarchical organization of codes are the main characteristics of this technique (King, 2004).

**RESEARCH FINDINGS**

Research data confirm the applicability to the investigated network of all five knowledge categories suggested by Rathi et al. (2016) and listed in the literature review section. However, due to the specifics of the network structure, the first three categories of knowledge (knowledge about management and organizational practices, resources, and community) prove to be relevant at two levels of the network, which are:

1. Level of the network as organization (categories I, II, and III, Table 2) as visualised in the Figure 2. It is knowledge about the network as an entity.

![Figure 2: Visualisation of knowledge about network organization. Source: Own elaboration.](image-url)
2. Level of the network members (categories V, VI, and VII, Table 2) as visualised in the Figure 3. This knowledge is needed both for having a better insight into the state and activities of the network members and for accumulation and sharing of useful practices, resources, and contacts among them.

The other two categories suggested by Rathi et al. (2016) are about the sector (category IX, Table 2) and general environment (category X, Table 2), which are the same for the network organization and for the members.

Moreover, the research identifies two new categories that are relevant only for the network setting. One is knowledge about characteristics of the network members (category IV, Table 2), such as operative model, infrastructure, organizational structure and maturity. The other new knowledge category is the network-based knowledge (category VIII, Table 2), which is knowledge about the network itself: network dynamics, network experts and their knowledge, and the best practices in the network. All ten knowledge categories and fifty-three knowledge types are displayed in the Table 2.

<table>
<thead>
<tr>
<th>Knowledge types in non-profit collaborations</th>
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</thead>
<tbody>
<tr>
<td>I Knowledge about management and organizational practices of the network</td>
</tr>
<tr>
<td>I.1 Strategic management knowledge</td>
</tr>
<tr>
<td>I.2 Knowledge about organizational identity</td>
</tr>
<tr>
<td>I.3 Internal governance knowledge</td>
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<tr>
<td>I.4 Knowledge about processes and practices</td>
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<tr>
<td>I.5 Knowledge about products and services</td>
</tr>
<tr>
<td>I.6 Knowledge about the organization’s history</td>
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<tr>
<td>II Resource knowledge of the network</td>
</tr>
<tr>
<td>II.1 Knowledge about financial resources and sources of funding of network</td>
</tr>
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<td>II.2 Knowledge about product donations</td>
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<td>II.3 Knowledge about network tools and technologies</td>
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<td>II.4 Knowledge about network intellectual resources</td>
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<td>II.5 Knowledge about network human resources</td>
</tr>
<tr>
<td>II.6 Knowledge of other resources of network</td>
</tr>
<tr>
<td>III Community knowledge of the network</td>
</tr>
<tr>
<td>III.1 Knowledge about clients and customers</td>
</tr>
<tr>
<td>III.2 Knowledge about network volunteers</td>
</tr>
<tr>
<td>III.3 Knowledge about network donors</td>
</tr>
<tr>
<td>III.4 Knowledge about experts</td>
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<tr>
<td>III.5 Knowledge about other community partners and stakeholders</td>
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</tbody>
</table>

Figure 3: Visualisation of knowledge about network members. Source: Own elaboration.
<table>
<thead>
<tr>
<th>III.6</th>
<th>Cultural knowledge</th>
</tr>
</thead>
<tbody>
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<td>IV.1</td>
<td>Knowledge about operational model</td>
</tr>
<tr>
<td>IV.2</td>
<td>Knowledge about infrastructure</td>
</tr>
<tr>
<td>IV.3</td>
<td>Knowledge about organizational structure</td>
</tr>
<tr>
<td>IV.4</td>
<td>Knowledge about organizational maturity</td>
</tr>
<tr>
<td>V.1</td>
<td>Knowledge about characteristics of network members</td>
</tr>
<tr>
<td>V.2</td>
<td>Knowledge about management and organizational practices of network members</td>
</tr>
<tr>
<td>V.3</td>
<td>Knowledge about local activities and services</td>
</tr>
<tr>
<td>V.4</td>
<td>Knowledge about the organization’s history</td>
</tr>
<tr>
<td>VI.1</td>
<td>Internal governance knowledge</td>
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<tr>
<td>VI.2</td>
<td>Knowledge about processes and practices</td>
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<td>VI.3</td>
<td>Knowledge about products and services</td>
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<tr>
<td>VI.4</td>
<td>Knowledge about local activities and services</td>
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<tr>
<td>VI.5</td>
<td>Knowledge about the organization’s history</td>
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<tr>
<td>VII.1</td>
<td>Knowledge about management and organizational practices of network members</td>
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<td>VII.2</td>
<td>Knowledge about local clients and customers</td>
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<td>VII.3</td>
<td>Knowledge about volunteers</td>
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<td>VII.4</td>
<td>Knowledge about local donors</td>
</tr>
<tr>
<td>VII.5</td>
<td>Knowledge about other local community partners and stakeholders</td>
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<tr>
<td>VIII.1</td>
<td>Knowledge about network dynamics</td>
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<td>VIII.2</td>
<td>Knowledge about network experts</td>
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<tr>
<td>VIII.3</td>
<td>Knowledge of best practices in the network</td>
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<tr>
<td>VIII.4</td>
<td>Knowledge about network activities</td>
</tr>
<tr>
<td>IX.1</td>
<td>Domain-specific knowledge</td>
</tr>
<tr>
<td>IX.2</td>
<td>Knowledge about professional and industry standards</td>
</tr>
<tr>
<td>IX.3</td>
<td>Knowledge of best practices</td>
</tr>
<tr>
<td>IX.4</td>
<td>Knowledge about governing bodies</td>
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<tr>
<td>IX.5</td>
<td>Knowledge about collaborators, competitors and other organizations</td>
</tr>
<tr>
<td>IX.6</td>
<td>Knowledge of inter-organizational networks and networking</td>
</tr>
<tr>
<td>X.1</td>
<td>Bureaucratic directive knowledge</td>
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<tr>
<td>X.2</td>
<td>Regulatory knowledge</td>
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<tr>
<td>X.3</td>
<td>Political knowledge</td>
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<tr>
<td>X.4</td>
<td>Geographical knowledge</td>
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<tr>
<td>X.5</td>
<td>Economic knowledge</td>
</tr>
<tr>
<td>X.6</td>
<td>Recorded knowledge</td>
</tr>
<tr>
<td>X.7</td>
<td>Current affairs</td>
</tr>
</tbody>
</table>

Table 2: Fifty-three knowledge types in non-profit collaborations. Source: Own elaboration.
There is a lack of systematisation of knowledge in the investigated non-profit network. Although respondents mentioned every type of knowledge, most of this knowledge is neither centrally stored nor properly shared in the network, which is related to the lack of IKM mechanisms and tools such as knowledge platform.

I. KNOWLEDGE ABOUT MANAGEMENT AND ORGANIZATIONAL PRACTICES OF THE NETWORK

Based on the framework of Rathi et al. (2016) to this category belongs knowledge about goals, regulations, processes, services, and history. All five sub-categories of knowledge were found relevant at the network level. Moreover, data analysis shows that in case of a network organization also knowledge about organizational identity plays an important role.

I.1 Strategic management knowledge
Knowledge about organization’s philosophy, mission, objectives and goals that defines the strategic direction of the non-profit network: “Before starting, mission, vision, values and strategic imperatives are refreshed and the VP [AP: Vice President] directly passes this information to each of the regions” (N03).

I.2 Knowledge about organizational identity
Knowledge about organizational identity of the network includes the rules for using the brand, corporate image and colours. It is common for networks to be united under one brand in order to strengthen their public image and recognition in the community and sector. Therefore, knowledge about how to use the network branding is an important addition to this knowledge category: “banks started working under the same image, under the same brand and in fact we have a contract where we give banks permission to use this brand (...) and there is a policy on how they should use the colours, what they can move, what they cannot move” (N07).

I.3 Internal governance knowledge
This sub-category of knowledge unites internal policies, guidelines and standards for unified decision-making and operations in the network: “[Name of regulation] (...) talks about how it will be operated the distribution, collection, reception” (N07). In case of network, this type of knowledge also describes the governance structure: governing bodies (“network needs to explain us what’s up with its committees”, M02), their responsibilities (“I did not know who had each position, who did what”, M02) and representatives (“I was asking for an updated directory - with whom I should see what”, M04).

I.4 Knowledge about processes and practices
It is knowledge about everyday operational processes at the level of the network, which are recorded in manuals and embedded into routine: “there is also a manual by area” (N05).

I.5 Knowledge about products and services
This is knowledge about products and services provided by non-profit network: “The program itself has the axes of nutrition, depending on the food that has the recipe, it is explained to them, well, it already comes in the manual that was developed” (N08). In the investigated network, more specialised knowledge about products (food) and services (food distribution to beneficiaries) is rather concentrated at the level of the network members, who are the service providers.

I.6 Knowledge about the organization’s history
It captures knowledge about documented and shared history of the non-profit network: “The document explains a little bit what it [AP: network] is, an abstract, the history, the super important dates, a bit of history, what we do, the philosophy, values, where we are, how we operate, what we want to achieve, how it works, what is our organization chart” (N04).

II. RESOURCE KNOWLEDGE OF THE NETWORK

Knowledge about all five resources suggested by Rathi et al. (2016) was found relevant in the investigated organization at the network level. Additionally, the respondents brought to attention the crucial role of product donations as a network resource.

II.1 Knowledge about financial resources and sources of funding of network
It is knowledge about funding bodies and funding opportunities that identifies network: “this year I also made a systematisation of all convocations and government programs and we put them in Excel and we shared them with all the banks” (N04).

II.2 Knowledge about product donations
This sub-category of knowledge gathers knowledge about how to find and establish productive relationship with new and existing product donors (procurement): “to present the new donors that arrive and tell them what is the way to work with each of them, because each donor has their specifications for work and reports” (N01).

II.3 Knowledge about network tools and technologies
Knowledge about information and communication technologies is essential for efficient networks: “In 2014/2015 they did regional trainings to teach them how to use [Name of the network IT system]” (N05).
II. Knowledge about network intellectual resources
This sub-category of knowledge includes reports, publications, and statistics related to the non-profit network: “this is the full report of 2015 - message, vision, 2015 in figures, nutritional programs, financial statements, and the function of the network” (N07).

II.5 Knowledge about network human resources
This knowledge is about management of human resources in non-profit network: “we have a law firm that gives courses on how to handle a job termination without a risk for the banks” (N03). The network members emphasized a need for more formal training opportunities for new and existing staff of the network.

II.6 Knowledge of other resources of network
To this sub-category corresponds knowledge about infrastructural and physical resources of the network: “I have a program for building new banks. Last year we built eleven and this year I’m with five” (N04).

III. COMMUNITY KNOWLEDGE OF THE NETWORK
This knowledge is originated in the community served by the network organization. Rath et al. (2016) suggest that volunteers, experts, consultants, partners, clients, donors and other stakeholders form a part of the community. This study did not identify any new knowledge sub-categories at the network level.

III.1 Knowledge about clients and customers
This sub-category of knowledge includes demographics and statistics about the clients of the non-profit network. In case of the investigated network, this knowledge mainly captures socio-demographic data, since the network members establish the direct contact to beneficiaries: “they adopted a very long report of beneficiaries; they say that there are 120 questions” (N06).

III.2 Knowledge about network volunteers
This knowledge addresses the topic of management of the network volunteers, how to recruit and retain them. Investigated network manages in centralised manner the corporate volunteering, which is arranged through collaborations with large organizations: “He asks them [AP: food banks] to propose an agenda, and between them they agree, organize themselves, present it to the donor and the donor makes their adjustments” (N01).

III.3 Knowledge about network donors
It is knowledge about donors, which is not only their contact information and historical data, but also tacit knowledge gathered through work and interactions. Establishment of productive relationship with national donors is one of the priority tasks of the investigated network: “I actually giving attention to all the donors that have already been with us for years and I also have a goal of getting new donors” (N01).

III.4 Knowledge about experts
This knowledge is about subject-matter experts that may or may not be formally affiliated with the network, but form a part of the community and provide important insights. The investigated network has a number of specialised experts and consultants that can be approached by the network members: “They can contact them and, for example, (...) a tax attorney - any region can ask him for help and he gladly gives it to them. They also can talk with the law firm and with all the pleasure they give them the service, too” (N03).

III.5 Knowledge about other community partners and stakeholders
This sub-category of knowledge is about strategic partnerships with individuals and other organizations in the same social arena and interested in the mission or cause of the non-profit network: “with the main foundations of this country (...) we have a strong relationship” (N03).

III.6 Cultural knowledge
Knowledge about culture can have a significant impact on how NPOs operate in different communities. In case of the network, cultural differences should be anticipated in the moment of development and implementation of network activities and tools: “there are as many cultural differences as there are races in the country. For example, I can tell you that there is a difference between people from the north and from the south of the country” (N03).

IV. KNOWLEDGE ABOUT CHARACTERISTICS OF NETWORK MEMBERS
Knowledge about characteristics of network members is a new category of knowledge suggested for non-profit networks. This knowledge strongly depends on the sector where the non-profit network operates. Food banks are logistics-oriented non-profits. Therefore, knowledge about operational model and available infrastructure of the network members plays an important role.

IV.1. Knowledge about operational model
First knowledge sub-category is about operational specifics of the network members. For example, in the food bank network the members might distribute the food directly to beneficiaries or to the agencies, what has a serious impact on how the organization operates: “We do not focus on the city like other banks (...) 90% of the population that we serve -
outside of the municipality of [Name of the city]” (M03).

IV.2. Knowledge about infrastructure
This sub-category of knowledge is about infrastructure of the network members, such as type of owned transport, warehouse capacity, availability of a cold room. This knowledge has a great impact on the network logistics and distribution of food: “I can see that they do not have a cold room, but we can make a logistical plan so that not necessarily fruit and vegetables go through the fridge” (N02).

IV.3. Knowledge about organizational structure
Sub-category of knowledge about the organizational structure includes number of people employed by the network members, their positions, responsibilities and contact details: “From the map of BAMX I was taking the phone number and calling (...) the bank” (M04).

IV.4. Knowledge about organizational maturity
Knowledge about maturity of the network members should be taken into consideration in the process of decision-making at the network level. Maturity is defined both through formal diagnostics and certification that conducts network and through a subjective opinion: “The banks that are diagnosed in category A, B or C etc. will receive this training. Because the others are in another stage. This is how it should be - not all are equal, not all are in the same conditions” (M02).

V. KNOWLEDGE ABOUT MANAGEMENT AND ORGANIZATIONAL PRACTICES OF NETWORK MEMBERS

Four out of five sub-categories of knowledge suggested by Rathi et al. (2016) were confirmed for the investigated organization as relevant at the member level, which is the level of a single non-profit organization. Additionally was introduced one new sub-category of knowledge, which is about local activities, services and programs that has each network member apart of the centralised network activities.

V.1 Internal governance knowledge
This sub-category represents policy-related knowledge, including guidelines for executive decision-making and standards for operating procedures. Similarly, to the network level the sub-category of internal governance knowledge at member level is broader than described in the theoretical framework. First, internal governance knowledge also covers governance structure, such as number of the board members, length of their term on the board, frequency of the board meetings, and current president and director: “Generally we are informed that there will be elections or that there was a change of the board or president” (N03). Second, this sub-category describes governance practices and documentation: “we update and revise every year the constitutive acts and send out an “ideal” constitutive act so that the banks can implement it” (N03). Third, here belongs knowledge about compliance with internal regulations of the network, including regular network fee payments, correct reception and handling of the network donations: “We want to implement more and more for the banks to be in order with our administration team” (N04).

V.2 Knowledge about processes and practices
This is knowledge of everyday processes that might be formally documented in manuals or embedded into organizational routines. Operative knowledge of the network members is captured in the manuals: “We have passed our manual of procedures to smaller banks. This information exchange is super valuable and very positive” (M02).

V.3 Knowledge about products and services
It is knowledge about specifics of the products and services that provides the NPO. Since the network members are the service providers in the investigated network, they accumulate the most of the product (food) and service (food distribution to beneficiaries) knowledge: “[Name of the food bank] has a social worker named [Name of the person] - she is a darling and she has a lot of experience in the communities” (M01).

V.4 Knowledge about local activities and services
Every network member at the local level has knowledge about services and programs, apart of the centralised network activities. It is important to monitor activities of the member organizations in order to be able to identify similar projects in the network and support knowledge exchange: “They sent us a lot of bread, which is white bread. And we had too much left and (...) white bread is very bulky. So what we did - right now we are sending it to make breadcrumbs” (M03).

V.5 Knowledge about the organization’s history
Knowledge about documented history and history shared through anecdotes in the organization. History of foundation of the member organization has an impact on the network dynamics. In the investigated network, the association itself helped to establish some of the member organizations and others became members: “person who was responsible for leading BAMX at that time met a person from here (...) and that’s why a food bank was created here in the city. (...) it was very much related to the network of food banks because we were not a bank that was working before” (M02).
VI. RESOURCES KNOWLEDGE OF NETWORK MEMBERS

Four out of five sub-categories of knowledge suggested by Rathi et al. (2016) were confirmed as relevant for the investigated organization at the member level. No new knowledge sub-categories were identified in the regarded network.

VI.1 Knowledge about financial resources and sources of funding

It is knowledge of network members about access to funding opportunities at the local level: “I want to bring a same project to [Name of the city]. What is needed? How did you do it?” We chat and there it goes all the information, the whole project was sent to the bank that asked for it” (M04).

VI.2 Knowledge about tools and technologies

This sub-category of knowledge regards information and communication technologies in the member organizations: “I went to see how she does her warehouse control in the system (...) and to make some improvements to this same mode and replicate it in certain banks” (N06).

VI.3 Knowledge about intellectual resources

Broad category of knowledge that combines reports, publications, and statistics related to the organization. Any research, articles, publications initiated by the network members would be of benefit for the entire network: “We are working with the [Name of university] on the questions of subject matter; let’s say of socialization - social questions, social impacts, etc. And we are discussing to do a project to see how the bank impacts each of the families” (M01).”

VI.4 Knowledge about human resources

It is knowledge about management of human resources in organization. All network members regularly train large number of volunteers and have their own materials and techniques: “we let the banks show up, and say what they do, let them present their video, show them the areas of the bank” (N01).

VII. COMMUNITY KNOWLEDGE OF NETWORK MEMBERS

Four out of six sub-categories of community knowledge defined in the research of Rathi et al. (2016) were seen as relevant for the investigated network at the member level.

VII.1 Knowledge about local clients and customers

Knowledge about clients includes demographics, statistics, and more tacit knowledge about their perception of the NPO. Network members have direct interactions with beneficiaries, learn their stories and perceive their needs: “We are now, for instance, making a book (...) of testimonies that we have been gathering from people - how a donation has made a person or a family to change completely from a ruin to wealth” (M01).

VII.2 Knowledge about volunteers

It is knowledge about the ways of recruiting and retaining new volunteers at the local level. Operations of network members strongly depend on volunteers who represent about 80-90% of staff: “I believe the banks bit us in this, because they all have volunteers and by thousands” (N07).

VII.3 Knowledge about local donors

Knowledge about local donors of the network members includes their contact information, historical data, and tacit knowledge built through interactions: “The local donors are the ones that we get directly in the area” (M03).

VII.4 Knowledge about other local community partners and stakeholders

This knowledge is about strategic partnerships of the network members with individuals, businesses and other organizations active in the same social arena: “For example, right now we are doing a study, which was organized by the association to see how mature the banks (...) are. With a foundation called [Name of foundation], which is precisely dedicated to analysis of all the institutions” (M03).

VIII. NETWORK-BASED KNOWLEDGE

Network-based knowledge is a new category of knowledge that was identified in the investigated non-profit network during analysis of the data. This knowledge is about the network itself, about its dynamics, network experts and their knowledge, and the best practices in the network.

VIII.1. Knowledge about network dynamics

This knowledge is about the role that some of the members play and its effect on the network dynamics. Interview data show the importance of knowing and monitoring the changes in the dynamics in order to maintain the balance of the network: “There were changes of directors, changes of presidents and the association did not take care of this leader - that apparently was the best in the region - to keep on helping him/her to be the one who unites” (N01). Identification of key members and critical cases is equally important. Network leaders create the bone structure of the network, while strengthening the network culture and supporting the sharing of product and knowledge among the members. Meanwhile, the critical members obstruct the development of collaborative relationships in the entire regions.
VIII.2. Knowledge about network experts
This knowledge is about the experts that are affiliated with the network members (employees, members of the management team or board of trustees etc.). Other network members acknowledge these experts and reach out to them for advice. Their broad network-specific knowledge is mainly based on the long-term engagement with the subject inside of the NPO: “[Name of the food bank] has a social worker named [Name of the person] - she is a darling and she has a lot of experience in the communities (...) and she is really nice and also has many years in the bank” (M01). Network members emphasize the importance of support of network knowledge and creation of mechanisms for sharing their knowledge in the network: “among ourselves generating it and saying: “Well, Fulanito [AP: any person] is very good with the accounting questions”. We go and stick to him and we learn. To another one - regarding institutions, and another - for communities. Because the problems are the same everywhere” (M01).

VIII.3. Network-specific knowledge of network experts
It is knowledge of the network experts (discussed above) about their field of expertise. Network-specific knowledge of experts has a great significance for the network and should be codified before it gets lost through rotation of personnel. It is rather an exception that this knowledge is stored and shared: “In the staff of [Name of the city], for example, there is also a lady in the social work who (...) began to document, so she has “books”... she has really done “files” with practical questions for food safety and procedures that are already being institutionalized” (N03).

VIII.4. Knowledge of best practices in the network
Knowledge of the best practices has a high value in the network, since these are positive learning experiences of some network members that could be replicated in the rest of the network. When there is a lack of mechanisms for sharing the best practices then it is done rather informally: “when I went to visit banks, which needed something that I saw in the other bank (...) I try to be also an intermediary so that they can request some recommendations or good practices from another bank” (N02).

VIII.5. Knowledge about network activities
This knowledge is about centralised network activities, such as network programs and projects, meetings, events, and courses. It includes both the historical data, such as participants, place, date, and description of the activity: “[Name of the person] wanted to know if I had a document that summarizes the regional meetings that were held. So, I know from conversations that they were made and I have evidence of one, from one of the regions, but I do not know anything about the rest” (N05).

IX. KNOWLEDGE ABOUT SECTOR
Sector-based knowledge is defined by Rathi et al. (2016) as knowledge about the sector or industry where the NPO operates. It is knowledge external to organization and community, but still relevant to achieving organizational goals. Interview data show that this knowledge category also applies to a non-profit network. All six sub-categories of knowledge suggested by Rathi et al. (2016) and no new sub-categories were identified in the data.

In case of the investigated network, sector-based knowledge is knowledge about the food, social and food-banking sector. The entire network operates on the cross of the same sectors and would benefit from knowing more about them. This knowledge was identified both at the network and local level. Combination of knowledge at different levels would provide better picture of network’s interconnectedness with these sectors.

IX.1 Domain-specific knowledge
This is knowledge of internal and external subject matter experts related to specific profession or field both at the network and local level, including sector knowledge of the personnel in the member organizations: “we have a [Name of organization], which is a network of accountants who provide pro bono consulting on accounting and administrative matters to all banks in the network” (N03).

IX.2 Knowledge about professional and industry standards
It is knowledge about multiple policies, legislations and standards both within the non-profit sector and within industry they belong to. Since there are not many industry standards that concern food banks, this knowledge is mainly regarded at the network level: “The norms of social sector, let’s say, are more related to the administration. For example, what things that you make can cause you lose the deductibility” (N05).

IX.3 Knowledge of best practices
Knowledge of the best practices of the industry is gathered both at the network and at local level: “We have had meetings where we participated with foreign institutions, mainly FAO, World Bank, etc. to see what they are doing on food waste issues” (N03).

IX.4 Knowledge about governing bodies
This knowledge is about the functioning of the public sector and the best ways of interacting with government bodies at different levels on a day-to-day basis including the relationships developed by the network members with the local government: “this company is consulting us and they have taught me a lot about how to deal with the government agents and we have also tried to advise the banks on how to do it at the local level” (N04).
IX.5 Knowledge about collaborators, competitors and other organizations

It is knowledge about other organizations that are active in the same sector or industry and can be potential competitors or collaborators and have an impact on the success of the NPO: “now the World Bank is also functioning as an ally. Now we are doing a [AP: food] loss measurement study” (N04). This knowledge is gathered both at the network and at local level.

IX.6 Knowledge of inter-organizational networks and networking

This sub-category includes knowledge about formalized or informal networks that represent a space where domain-related knowledge freely circulates: “To share information of the global network of the banks. What is happening in the banks around the world (...). She summarizes and shares it with the banks” (M04). This knowledge is collected at the network and local level.

X. KNOWLEDGE ABOUT ENVIRONMENT

Data analysis proves that situated knowledge is relevant both for single non-profit organizations and for non-profit networks since it is concerned with the environment external to the organization. Therefore, this research follows the definition of Rathi et al. (2016) that situated knowledge is contextual knowledge about the environment in which the non-profit is embedded in. All seven sub-categories defined by Rathi et al. (2016) were identified in the data and no new sub-categories of knowledge were found. Situated knowledge is mainly gathered at the national level (due to the involvement of the NSO and network president with the federal government) and could be enriched with some input at municipal level. Having situated knowledge in more structured manner would help the governing bodies of the network to take it in consideration during the strategic planning.

X.1 Bureaucratic directive knowledge

This sub-category refers to knowledge about executive governmental decisions and actions resulting in policy changes that might affect the social sector and NPO: “to create laws to avoid food wasting. This is what our board is working on right now. And they have already put several initiatives in different local congresses” (N07).

X.2 Regulatory knowledge

This knowledge is about regulatory and compliance requirements for NPO in specific domain: “now with this alliance with the [Name of company], they send us alerts of changes or new legislations that have something to do with hunger” (N04).

X.3 Political knowledge

Political knowledge is relevant for long-term strategic planning, while changes in political climate can have implications on funding opportunities for NPOs: “I think that the most affected is the Government Projects area because they deal with the government for infrastructure and things like that” (N05).

X.4 Geographical knowledge

It is knowledge about physical surroundings of the community, such as location, ecology, climate and weather conditions among others: “For example, if we collect the eggplant in the south and send it to the north - well, they do not know what to do with it. This is where you begin to educate so that they know that it is a vegetable and that they can give it different uses” (N03).

X.5 Economic knowledge

This sub-category of knowledge is concerned with national and international economies, which in the long-term may have an impact on the NPO and should be considered during the planning: “What happens around is important and if it results that the minimum wage has just went up - well, “great”, but most of the people who are there are fisherwomen and day labourers” (N05).

X.6 Recorded knowledge

It is published knowledge external to organization and its community in form of the articles, research findings, archives, and databases: “we recently made a compilation in order to encourage banks to work more with their localities. In order to tell them: “In your city you have this poverty index and you are working with the twenty distant ones [AP: communities]”. It was a little bit to inform and motivate not to fight between banks for beneficiaries when in their own cities they are not even covering 100%” (N04).

X.7 Current affairs

This is knowledge about general trends that affect public perception and trends in the non-profit sector that potentially can have an impact on the network: “For me a tendency right-right now is the eating habits. All, I mean really all the companies (...), government, are trying to find programs that support this” (N08).
CONCLUSIONS AND LIMITATIONS

Current research represents a part of the larger PhD study that develops a detailed framework for implementation of inter-organizational knowledge management (IKM) in non-profit collaborations. This paper offers knowledge taxonomy consisting of ten predefined knowledge categories that unite fifty-three knowledge types. The categories were developed based on the study conducted in the Mexican food bank network.

Knowledge taxonomy is suggested as a basis for knowledge structure both in food bank networks and in non-profit collaborations in other sectors. It can be applied for development of technological knowledge platform that would permit managing network knowledge more efficiently. A centralised platform can help addressing some of the typical problems of NPOs, such as: instability of knowledge caused by rotation of personnel (Matzkin, 2008, Huck et al., 2011, Kong, 2007, Dalkir, 2009); reinvention of existing solutions, low accessibility of data and information, inefficient communication, accumulation of administrative paper documents and deficiency of record of best practices (Lettieri et al., 2004).

The findings of the thesis should be regarded in light of its limitations. First, study relies on a single unit of analysis and might lack generalizability. Research addresses this issue by disclosing and describing in detail specifics of the investigated organization permitting other researchers to have a complete picture of the case. Second limitation of the research is the low number of interviewed network members, namely four food bank directors. Mexican food bank network is a complex organization consisting of a large number of autonomous NPOs. The network members have varying models, maturity stages, working approaches, geographical, and economic conditions among others. Therefore, in order to obtain a complete picture of IKM in investigated non-profit network it would be beneficial to investigate a larger number of network members, what was not possible as a part of this research. Third, research was conducted in Global South and the findings might not be directly applicable to the NPOs in developed countries. It should be investigated in the future research.

Extension of the framework of Rathi et al. (2016) to the network context represents an important contribution to the definition of the IKM-NPO field, since this classification allows building a better understanding of knowledge needs in non-profit sector at multiple levels.

REFERENCES


