

General Interest

Exploring the Experiences of Members of the International Food Safety Authorities Network: An Interpretative Phenomenological Analysis

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ABSTRACT

The International Food Safety Authorities Network (INFOSAN) is a global network of national food safety authorities from 190 countries, managed jointly by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) that aims to facilitate the rapid exchange of information during food safety incidents. A three-phase study of INFOSAN was launched in 2019 to characterize and examine the network as a functional community of practice and determine its value systematically and rigorously from its members' perspectives. The first two phases of the study involved analyzing the INFOSAN Community Website and surveying of all of its members. The main objective of this third and final phase of the study was to understand the experiences of a small group of INFOSAN members as they relate to various dimensions of membership. A qualitative methodology was used to provide a deeper understanding of members' experiences and supplement the results from the first two quantitative study phases. Interviews were conducted with 10 INFOSAN members from 10 geographic regions, transcribed verbatim, and analyzed using interpretative phenomenological analysis. The results offer an understanding of INFOSAN members' experiences in the context of what participation in this global network means to them and relate to five themes concerning trust, learning, health protection, sense of community, and future potential. The findings suggest that focusing on outreach to sustain personal interest, training to improve technical capacity, and advocacy to obtain political buy-in are ways in which the INFOSAN Secretariat could enable participation and create value at the individual, organizational, and national level, respectively. Such engagement could translate into more effective international communication during urgent food safety incidents and fewer cases of foodborne illness worldwide.

HIGHLIGHTS

- Authenticity and reputation drive acceptance of information within INFOSAN.
- International collaborations create valued learning opportunities among members.
- Members view actions to safeguard the global food supply as noble endeavors.
- Shared ownership for INFOSAN facilitates mutual respect and collaboration.
- Accessing untapped potential is a significant motivating factor for members.

Key words: Food safety; In-depth interviews; International collaboration; International Food Safety Authorities Network; Qualitative methods; World Health Organization

The International Food Safety Authorities Network (INFOSAN) is a global network that aims to halt the international spread of contaminated food, prevent foodborne disease outbreaks, and strengthen food safety systems globally to reduce the burden of foodborne illness. Established in 2004, INFOSAN has since grown to include nearly 700 members from 190 countries in 2021 and is managed jointly by the Food and Agriculture Organization of the United Nations (FAO) and the World Health

Organization (WHO), with most operational functions led by the Secretariat at WHO. INFOSAN members are officially designated to represent national authorities with responsibilities for some aspects of food safety management across various sectors, including, for example, health, agriculture, environment, veterinary services, trade, standards, and education. One of the network's essential functions is to promote the rapid exchange of information during food safety-related incidents, including multicountry outbreaks of foodborne illness linked to a common food item and international recalls of food due to an identified human health risk (19).

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Since its inception, INFOSAN has reported many activities consistent with its objectives, most of which are documented in biannual activity reports published by FAO and WHO (5–8, 12). These include large-scale responses to serious international food safety emergencies, delivery of training and capacity-building workshops, and facilitation of emergency preparedness simulation exercises. In 2020, INFOSAN played a critical role in disseminating advice for food business operators and food safety regulators regarding coronavirus disease 2019 (COVID-19) and related food chain concerns (10, 11). However, despite a growing membership and an increase in activities in recent years, the lack of active participation among many members creates delays in information sharing during food safety emergencies. Delays could translate into late implementation of risk management measures and more foodborne illness cases that could have otherwise been prevented (24).

Rationale and objectives. In 2019, a review of INFOSAN published by Savelli et al. (24) concluded that the network would benefit from further exploration into members' experiences. In doing so, the INFOSAN Secretariat would better understand the values that members place on their experiences. A three-phase study of INFOSAN was subsequently launched in 2019, with the overall aim of exploring and describing the experiences of INFOSAN members concerning their participation in network activities to improve global food safety and prevent foodborne illness. The first phase of this research involved the descriptive analysis of the INFOSAN Community Website (ICW) (26), and the second phase involved a global survey of INFOSAN members (27). Results from the first two phases of the study have enabled the assessment of INFOSAN as a community of practice by providing systematic insights into the characteristics, performance, and opinions of members. They have also provided a broad understanding of members' perceptions of INFOSAN as a global communication tool for the prevention of foodborne illness, with the majority of members believing that INFOSAN prevents illnesses and saves lives. Results also demonstrate that nearly all members value participation in INFOSAN for a range of personal and professional reasons. Also, the results provided a ranking of barriers to participation in INFOSAN that reduce the engagement of some members. Upon completion of the second phase of the study, it was concluded that additional research would be helpful to explore in more depth some of the results with a subset of members to understand their experiences more profoundly and supplement the quantitative indicators with a qualitative narrative. Consequently, this article presents the results of the third and final phase of the study involving interviews with a subset of members. The complete study's research protocol, including details on all three phases, has been published by Savelli and Mateus (25). The main objective of this final phase of the study is to understand and interpret the experiences of a small group of INFOSAN members as they relate to various dimensions of INFOSAN membership.

METHODOLOGY

Design. This third and final phase of the study used a qualitative methodology to provide a deeper understanding of members' experiences and supplement the results from the first two quantitative study phases. Interpretative phenomenological analysis (IPA) is a qualitative research approach chosen because of its widespread use to explore how people understand and make sense of their experiences within their personal and social contexts (28). IPA includes due consideration for different components of one's lived experience, including the phenomenological (i.e., the study of direct experiences), the hermeneutic (i.e., the use of interpretation), and the idiographic (i.e., the focus on the individual). The various aspects of this study were fully informed by IPA, including the focus of the inquiry, preparation of the interview guide, recruitment of participants, administration of the interviews, and conduct of the analysis. Ethical approval was granted from the first author's Faculty of Health and Medical Ethics Review Committee and the WHO's Research Ethics Committee.

Recruitment and participants. Participants were recruited using convenience sampling (4) by directly asking for volunteers via e-mail to the entire INFOSAN. Recruitment was open for 2 weeks in October 2020. The recruitment goal was to include a minimum of 6 and a maximum of 12 participants in the study sample from different geographic regions. The purpose was not to represent the entire network; however, because INFOSAN is global, including participants from different regions was prudent to reveal a richer pool of experience than if all members were selected from a single region. Also, a sample size within this range allows for examining similarities and differences between individuals without producing an overwhelmingly large amount of qualitative data that could not be managed within the confines of the study timeline. The sample of participants was restricted to INFOSAN members registered for a minimum of 2 years at the time of interviewing to ensure both a reasonable level of experience from which to draw and a certain degree of homogeneity among participants. The sample was also limited to those who spoke English due to limited funding for research conduct (including translation and interpretation) and limited time for collecting and analyzing data in other languages. Following the 2-week period during which time members volunteered, 10 participants (including 3 males and 7 females) were selected (Table 1).

When more than one person volunteered from the same country or geographic area, the person who had been an INFOSAN member longer was selected. Eight individuals (including five males and three females) who volunteered for phase 3, but were not selected, were e-mailed individually and provided with an explanation about how the selection was made. Upon confirmation of the interview dates and times, participants were reminded by e-mail of the study's primary objective and the general dimensions under which some of the questions would fall. It also was explained that the interview would only be semistructured

TABLE 1. *Characteristics of participants recruited for study phase 3*

Pseudonym	Geographic area	Length of membership (yr)
Amanda	North America	2.7
Brianna	Caribbean	4.0
Carlos	South America	5.5
Dina	Europe	7.3
Elias	Middle East (Mediterranean)	10.8
Fatima	Middle East (Gulf)	4.2
Gabriel	Africa	2.7
Hana	South Asia	6.3
Izzy	East Asia	5.8
Jessica	Pacific	6.8

to allow their experiences to guide the discussion; therefore, no questions were shared in advance. Before commencing their interview, recruited participants read, signed, and returned a consent form by e-mail. As an introduction to each interview, participants were informed they could withdraw from the study until 2 weeks after their interview.

Data collection. The authors developed the interview guide by following the recommendations of Smith et al. (28), with the first author taking the lead and discussing and informally piloting it with two WHO staff colleagues working in the INFOSAN Secretariat. The interview guide contains primarily open-ended questions, inviting participants to reflect on various aspects of their experiences as an INFOSAN member. The complete interview guide is presented in Supplemental File S1. Given the participants' geographic distribution, the interviews were conducted online using WebEx video conferencing software during October and November 2020. The interviews were digitally recorded and subsequently transcribed verbatim by the first author. Interview duration ranged from 30 to 65 min ($M = 46$ min). Participants were not compensated for their participation. The participants' identities were only known to the first author (the second and third authors were aware of participants' geographic region).

Data analysis. The interviews were analyzed following the procedures described by Smith et al. (28). Transcripts were read and reread multiple times, sometimes while simultaneously listening to the audio recordings. Initial descriptive, linguistic, and conceptual notations were then added to the right margin. This process was repeated several times for individual transcripts, with the focus shifting to various aspects each time before emergent themes were developed and noted in the left margin. Connections across interviews were subsequently searched for after all individual interviews had been analyzed. This process resulted in some emergent themes being revised and others being merged. All interviews were reanalyzed in light of the final conceptualizations. The researchers' prior knowledge, experience, and understanding are accepted as integral parts of the research process in IPA studies, including analyses and interpretations (28). Specifically, the first author's background as a member of the INFOSAN Secretariat at

WHO for more than 10 years is likely to have influenced how themes and interpretations were developed. Potential biases were countered by the authors' rigorous adherence to the analytic process principles and by providing transcript extracts to substantiate interpretations (28). Specifically, interpretations were inspired by and arose from attending to the participants' own words rather than being imported from outside the study context (31). A master table of themes with extracts from all interviews was created to enhance the validity of findings (Table 2). All subthemes included in the final conceptualizations occurred in at least four of the interviews, and superordinate themes occurred in all 10 of the interviews (Table 2).

RESULTS AND DISCUSSION

The process of data analysis generated 5 superordinate themes and 14 subthemes that offer an understanding of INFOSAN members' experiences. The themes are presented in Table 2 and supported by original quotes, with all participants represented by at least one quote. Symbols used within participants' quotes have the following meaning: three ellipsis points (. . .) indicate that some text has been omitted, and square brackets ([]) contain the researchers' words aimed to clarify or contextualize the content. Pseudonyms have replaced all real names and were chosen by the first author. The themes are discussed below in relation to existing literature, including the published results from the first two phases of the study of INFOSAN, which involved a descriptive analysis of the ICW (26) and a global survey of members (27) as already described. Throughout the "Discussion," the global survey of members that was conducted as part of phase 2 of this study is referred to as the "survey" for brevity.

Trust: authenticity and reputation are drivers for the acceptance of information from the network. The INFOSAN Secretariat's reputation as a trustworthy provider of authentic information to network members was reported by participants as a significant driver of their acceptance of such information. As food safety regulators, many members are responsible for taking risk management decisions to protect public health and thus, acting on unambiguous, factual information is of the utmost importance. Participants' accounts of their experiences suggested a hierarchy of needs concerning food safety information with accuracy at the top, followed by other characteristics, including timeliness and completeness. Underpinning these needs is the inherent trust that members placed in the INFOSAN Secretariat. There was also a recognition of the critical role that other trusted members play in information exchange as gatekeepers to privileged information, who can either allow or deny access based on a range of factors. Finally, the online ICW's characterization as a safe space to exchange information between members indicated the value that members place on security and a focus on getting messages right before making them public. Overall, the concept of trust is a prominent theme mentioned in various ways, as discussed below, by several participants across three subthemes.

TABLE 2. Final themes identified in the analysis, with illustrative quotes

Superordinate theme	Subtheme	Illustrative quote	Source
Trust	Secretariat as an authoritative voice	“INFOSAN, what it does, it offers messages at the right time. And the best thing about it, is that we know that when we get information from INFOSAN, that it is authentic information. So we don’t have to worry about thinking that it may not be true or something like that. [. . .] You get information first hand. That is the most important thing, because now I think we are living in a world where there is so much information and half of it is all wrong, and half of it we don’t know – you can’t simply distinguish the right information from the wrong information.”	Hana, South Asia
	Members as gatekeepers to privileged information	“They know exactly why I’m asking the question, and they will share their information instantly and they’ll give us, you know, analytical reports and there are no barriers there. And, you know, they save us days of work and that, that’s just such a shining example of how things should work!”	Jessica, Pacific
	ICW as a safe space to exchange information	“It provides a safe place for communicating, sharing, asking questions and getting information.”	Carlos, South America
Learning	Knowledge transfer and exchange	“So we can share our experience and say – You don’t need to go through these steps, but these steps, and you can easily do this because we’ve tried that and it worked – so, we can help them to help themselves, you know? To prevent the mistakes we made or overcome the challenges we faced.	Fatima, Middle East (Gulf)
	Professional development	“You start getting invited to the board meetings, the meetings you never could have gotten into before. Alright? You’re like invisible and then all of a sudden, everybody sees you as important: Oh, yes! We must have INFOSAN there. Yes!”	Brianna, Caribbean
Health protection	Preventing foodborne illness	“Because of INFOSAN, we found the products and everything was destroyed for health reasons. [. . .] You feel like the job is done, like you did your job, you know? And you are protecting the people. You are protecting the consumers.”	Gabriel, Africa
	Improving food safety	“I feel very proud of this INFOSAN to help me, improving food safety in the country.”	Izzy, East Asia
Sense of community	Making global connections	“We are bridging with [a country in Europe], we are bridging with others – and this is a really important part that INFOSAN is doing – by harmonization and building more relationships between the members. I think this is really one of the really excellent added values from having the INFOSAN meetings and from the INFOSAN network.”	Elias, Middle East (Mediterranean)
	Membership as a multilayered identity	“So in that way it has benefited in terms of my experience, or our experience, country experience. So I thought that was the most benefit thing: connecting people and gathering information”	Hana, South Asia
	Facilitating collaboration on projects	“INFOSAN is a critical part of how we operate and it’s certainly a part of my job I love because I do get to talk to different people with different – from different countries and try to resolve issues together.”	Jessica, Pacific
	Unifying a globally disparate group	“I love to be a member of INFOSAN. I feel that I belong – that I am a citizen of the world [. . .] I like this idea of being a citizen of the world and INFOSAN gives me this – this feeling that I can discuss, if I have a problem, I can discuss it with someone else all over the world and find the answer for my question.”	Dina, Europe
Potential	Barriers limit participation	“The most important barrier for me, it’s our food safety system. Because I want to give INFOSAN more, but I can’t do it because of our system – it’s a poor system, you know?”	Gabriel, Africa
	Members as drivers of activities	“More work has to come from the members, because it’s, it is a community for them and, it’s not really relying on the Secretariat that, that will get us there. So I, I really do think that the members should have a larger role”	Amanda, North America
	Need for improvement	“I get the feeling that INFOSAN has a lot of potential that has not been fulfilled – that it’s working below its potential.”	Carlos, South America

First, many participants expressed how their experiences had led them to see the INFOSAN Secretariat as an authoritative voice, especially during situations when accurate information was needed urgently to communicate an acute food safety risk to the public. Hana from South Asia expressed this sentiment in the following way: "INFOSAN, what it does, it offers messages at the right time. And the best thing about it, is that we know that when we get information from INFOSAN, that it is authentic information. So we don't have to worry about thinking that it may not be true or something like that. [...] You get information first hand. That is the most important thing, because now I think we are living in a world where there is so much information and half of it is all wrong, and half of it we don't know – you can't simply distinguish the right information from the wrong information." Here, Hana reveals that using information from the Secretariat can alleviate some pressure that she may face to make risk management decisions in her own country. Jessica from the Pacific shared a similar view on the Secretariat's trusted reputation and said, "the value is getting that information out there quickly, but on top of that, it's that, it's from the authority. For us to be able to say that, 'We've got this from INFOSAN which is a WHO/FAO network,' is, is like gold because it means that we can demonstrate we're linking in correctly and we've got the global body of this involved and we're getting information from you." Together, these accounts from Hana and Jessica exemplify an inherent trust of the INFOSAN Secretariat to provide accurate information that is justified because of the Secretariat's reputation. Carlos from South America shared sentiments that were similar to those of Hana and Jessica about the quality and trustworthiness of the INFOSAN Secretariat's information, but suggested that the timeliness of information provided could be improved: "I would rely on INFOSAN for good information, not necessarily being the first – you usually hear about it in the press – but the official information, the best quality information I've seen comes from INFOSAN." He elaborated further and explained, "Whenever I have a question that requires official information, I use that network to get that information." On the issue of timeliness, Jessica from the Pacific provided her understanding of why information sharing was sometimes "a little bit slow" when she said, "I know it's because you [the INFOSAN Secretariat] are consulting with other countries so you're trying to get the message right before it comes out to us." Others expressed their trust in the INFOSAN Secretariat as an authoritative voice for issues beyond the context of food safety emergencies. Reflections from members have unveiled a hierarchy of information needs, whereby accuracy was of the utmost importance and followed by timeliness and completeness. Across nearly all the interviews, participants expressed their respect for the INFOSAN Secretariat as an authoritative voice that provided accurate information and emphasized the importance of trust in that experience. Such accounts are congruent with results from the survey, indicating that a large majority (163 of 237, 76%) of members believe that the information

communicated by the INFOSAN Secretariat is always accurate (27).

Second, many participants explained how they see other INFOSAN contact points in different agencies and countries as gatekeepers to privileged information that requires sharing to inform risk management decisions by different agencies and in different countries. In such instances, these other network members are seen as trusted partners because of their shared membership in INFOSAN. For example, Hana from South Asia explained that "gathering of information through the contact points which – I mean, food safety experts which we all have identified as well as WHO has identified – those are the things that helps us also to get the authentic information to help us with our work in our field. So in that way it has been helpful." Here, Hana alludes to the value she places in the time saving that she experiences when sharing resources and other assets by reaching out to other network members. Other participants also explained the necessity of relying on INFOSAN members to do their jobs and explained that building trust facilitated information sharing. For example, Fatima from the Middle East (Gulf) explained that "certain information is really not available with me, in my organization, so this is when I need to have other focal points, INFOSAN Focal Points, who are known to me in my country, so we can easily get the information and exchange it." Fatima recognizes the need for collaboration to address the multidisciplinary food safety issues and suggests that only by engaging with other members to obtain required information will response efforts be possible. Furthermore, Fatima highlights the important role that INFOSAN can play in connecting national authorities within a single country, in addition to facilitating connections to authorities abroad. Jessica from the Pacific shared her experience of dealing with another trusted INFOSAN member, which meant saving precious time when trying to implement risk management measures to protect the public from unsafe food: "They know exactly why I'm asking the question, and they will share their information instantly and they'll give us, you know, analytical reports and there are no barriers there. And, you know, they save us days of work and that, that's just such a shining example of how things should work!" In her reflection, Jessica suggests the consequences of interactions where communication is challenging, including potential time delays in implementing risk management measures to protect public health. According to the results from the survey of INFOSAN members, a slight majority (118 of 231, 51%) indicated their agreement with the statement "INFOSAN members trust each other," whereas 30% of respondents (69 of 231) did not know and 16% (37 of 231) neither agreed nor disagreed (27).

Third, nearly all participants described past experiences using the ICW as a safe space to exchange information with other trusted members and the Secretariat. Their stories highlighted the value of getting messages right before taking them public and the benefit of discussing such messages in a secure environment before doing so. When he spoke about the ICW, Carlos from South America expressed this idea succinctly when he said, "It provides a safe place

for communicating, sharing, asking questions and getting information.” Other participants elaborated on this idea, explaining why using the ICW has been meaningful for them by enabling them to get their questions answered by either the Secretariat or other members alike. Gabriel from Africa appreciates the ICW because “It’s a mechanism that allowed all the Focal Points to be together and to work – and to use this website – work together. Yeah, everyone’s in their country, but we can still work together, because of the website.” Here, Gabriel emphasizes the value of gaining outside perspectives from his colleagues in other countries and pooling information from experts worldwide to solve problems. Izzy from East Asia shared this sentiment and said, “you just go to the discussion forum and you put your issue and then you will be there right away and then you can get the answer or information will be given to you.” Other members had similar experiences and emphasized the practical use of the various tools on the ICW (such as the synchronous chat function) to communicate directly with other members or the Secretariat in real time to get information about a food safety issue of concern. For example, Gabriel from Africa explained that “If you go to the website, you will see all these new notifications, everything is updated, and, and when you have to receive notification, we receive it. So for me, I think it’s here – the most important thing is that you can talk with them anytime, because you have this chat window.” In these reflections, members alluded to the importance of the human connection despite virtual connectivity and the value in direct access to support, which may all contribute to strengthening relationships and building trust. Brianna from the Caribbean emphasized the importance of the ICW as a repository of resources that good-intentioned members from around the world have shared: “I can go on my INFOSAN Community Website, I can check to see if there’s an alert or notification about various food items, because these organizations, they come from all over the globe! They’re coming to help you! [...] On the website, you are also provided with the topics that are in the discussions that are needed to get your own national emergency food plan in place, your own authorities in place. There’s excellent guidance.” Reflections from members appear congruent with results from the survey of members, which indicate that 94% (216 of 229) of respondents believe that the ICW is an important and supportive tool for the network, and 79% (185 of 233) of respondents believe that it facilitates information sharing and provides collaborative features that help to foster the community of practice among members (27).

Overall, all participants expressed the importance of trust as a factor to facilitate information exchange between members and the Secretariat, and the critical role of the ICW as a safe, trusted, and practical tool for sharing important food safety information. This is so important because, in practical terms, it means members feel confident in carrying out their national responsibilities using authentically sourced information. In a review of multinational foodborne outbreak investigations, it has previously been determined that using tools or networks similar to INFOSAN to communicate internationally can largely

depend on the trust among foodborne disease experts in different countries and their willingness to share information (1). More recently, during an international meeting of members of INFOSAN in 2019, trust among members was reported as an essential factor that supports information exchange between countries on matters of food safety. It was also noted that while creating a trustworthy collaborative environment takes time, it is critical for building a strong community of practice among members (13).

Learning: international collaborations are experienced as valued opportunities for professional development and knowledge exchange among members. The opportunities for learning that exist for collaborating INFOSAN members are experienced as valued aspects of participation in network activities. Because members hail from all parts of the world, representing countries from the least to the most developed, each brings a unique range of experiences from which others can learn. As a result, many participants alluded to the value in transferring and exchanging knowledge related to food safety and public health between INFOSAN members. In this way, participants also suggested the importance of mapping knowledge, identifying gaps, and filling them through the pooling of assets and resources. In addition, participants explained how participation in INFOSAN has enabled their professional development and suggested that certain experiences were responsible for a range of workplace benefits, including increased visibility and respect. Overall, the idea that INFOSAN serves as a learning device in different ways was a prominent theme that numerous participants expressed across two subthemes, as discussed below.

First, the stories shared by participants illuminated several different ways in which they value interacting with and learning from other network members, specifically in the context of knowledge transfer and exchange as it related to food safety and public health. In this context, knowledge transfer and exchange was understood as referring to the dynamic and iterative process of synthesis, dissemination, exchange, and application of knowledge to inform policy and practice in these sectors (23). Elias from the Middle East (Mediterranean) expressed this succinctly when he said, “There is value in contacting the other members from the other countries. And learning from them. And exchanging with them, their expertise and experience. This is very important.” In this sense, many members found value in understanding how other members, often in other countries, solved a problem or addressed a specific food safety issue so that lessons learned elsewhere could be applied in a local context. Izzy from East Asia expressed this clearly when she said, “When they have done a very good practice in another country, we can share experiences and then we can learn from them – especially because the same case may happen here and people do things differently and maybe things can be done more effectively and then less costly, for example.” Here, Izzy suggests that pooling knowledge and expertise can be an effective strategy to save and money and eventually save lives. There was a clear sense of importance articulated by participants concerning

communicating shared experiences with one another. Fatima from the Middle East (Gulf) expressed this sentiment and emphasized that exchanging knowledge between members results in learning that can be applied to solve problems: "We can share our experience and say – 'You don't need to go through these steps, but rather these steps, and you can easily do this because we've tried that and it worked' – so, we can help them to help themselves, you know? To prevent the mistakes we made or overcome the challenges we faced." In her account, Fatima expressed a kind of altruism that seemed to be a common characteristic of many participants who maintain a desire to learn and a willingness to help others. These participant accounts appear to be in accordance with the survey results, indicating that the application of knowledge gained from INFOSAN to inform policy and practice has been shown to have numerous positive impacts on some members' organizations (27).

Second, several participants explained how participating in INFOSAN enabled them to learn and grow in ways that contributed to their professional development, such as training, new job assignments, increased duties and responsibilities, and improved job performance. As such, many members revealed how they had professional experiences because of INFOSAN that they would not have had otherwise. Gabriel from Africa explained how he has been learning and developing professionally since joining the network: "I was selected to be the Focal Point and then I participated in the Listeria food alert management activities, and then [the Secretariat] sent the invitation for the second global meeting, and I got all this training, these training opportunities, and received all the documents, as well, about food safety. So I think it's allowed me to grow professionally." Here, Gabriel demonstrates how he valued the opportunities that participation in the network has brought him that he would not have otherwise experienced. Brianna from the Caribbean explained that being designated as a member of INFOSAN in her country was a great source of pride for her and significantly raised her professional profile among her colleagues: "You start getting invited to the board meetings, the meetings you never could have gotten into before. Alright? You're like invisible and then all of a sudden, everybody sees you as important, 'Oh, yes! We must have INFOSAN there. Yes!'" In this case, Brianna sees INFOSAN as a kind of badge of honor that, when worn, denotes a certain status among her peers and colleagues. Improving one's reputation and visibility within the organization is a consequence of INFOSAN membership that was reported to some degree by 68% (153 of 225) of survey respondents along with 64% (145 of 225) who reported improved career prospects because of their membership (27). Dina from Europe recounted some inspiring interactions with other INFOSAN members that had impacted her ways of thinking and helped her develop a new perspective to address existing problems in her work, including during her participation in the second global meeting of INFOSAN members in 2019. In this context, she explained that "the meeting was really interesting, and it made us, you know, open a little bit our minds and think in a

different way." She elaborated and exclaimed, "Oh, I learned a lot! For me as a person, I learned a lot! It's great because you have all these top experts that completely made inputs inside my head." For Dina, participation in INFOSAN activities was valuable because it provided an opportunity for departure from ordinary daily tasks and the chance to become stimulated by external ideas. This holds importance because it could mean being able to solve problems or address challenges in ways that had not previously been tried. Such reported experiences appear to be congruent with experiences shared by 72% (128 of 179) of survey respondents who indicated that because of the combination of the different skills and views in INFOSAN, many new ideas had been developed, and 67% (130 of 193) of respondents who indicated that knowledge is now so developed in INFOSAN that it can be turned into innovative ideas (27). For Amanda in North America, participation in INFOSAN helped her professional development by enabling her to do her job "better, faster and in a more efficient way" and is an idea that was shared by others, including Jessica from the Pacific who emphatically stated, "I would hate to be doing this job without INFOSAN." For both Amanda and Jessica, participation in INFOSAN has become a kind of supporting apparatus that has improved the ways they do their jobs and reveals the importance that they place on efficiency in a professional context.

Overall, participants' stories about their experiences with INFOSAN leading to knowledge transfer and exchange and professional development indicated that learning from one another is a valuable part of their participation that is meaningful to many of them. This aspect of deepening knowledge and expertise by learning from one another and interacting regularly is a common feature of communities of practice (29) and is well documented in the literature (3, 17, 18, 21).

Health protection: collective actions to safeguard the global food supply are seen as noble endeavors and worthy investments by members. For many participants, engagement with INFOSAN was understood as a principled way to contribute to the safety of their national food supply. In addition, participants expressed the pride that they felt as network members, believing that membership represented an investment to protect their fellow citizens' health. Furthermore, the recognition of INFOSAN as a mechanism that enabled collective actions to bolster the global food supply appeared to be a significant motivating factor for participants to engage in network activities. As such, the use of INFOSAN as a health protection tool to enhance various aspects of food safety and prevent outbreaks of foodborne illness was a theme that was expressed clearly by all participants and considered to fall within two subthemes that are described below.

First, all participants recounted various stories about how their engagement with INFOSAN had improved food safety. Their stories provided additional context to the results from the survey of members, which indicated that 62% (146 of 235) of respondents believed that INFOSAN has improved the safety of the global food supply. Several

participants recounted how they applied various technical information received through INFOSAN to improve their national food safety systems or other processes and procedures to enhance coordination efforts related to food safety incident response. For example, when speaking about various guidance documents shared through INFOSAN, Gabriel from Africa explained that “all these documents support us to build a lot of tools that we need right now. So, it, it’s very important – important to create food safety tools, to manage food alerts, for example.” For Gabriel, INFOSAN supplied him with the building blocks to bolster a food safety system that was still under development in his country. As such, participating in INFOSAN to improve food safety appeared to be a primary motivating factor for many participants. This motivation was also articulated clearly by Elias from the Middle East (Mediterranean), who explained, “My motivation, you know, is always that we need to enhance the food safety level in the area. This is the major goal for everybody: we need the food safety to be better. Every time – for the Middle East countries – it’s hard, you know? You don’t want always to be at the end of the line.” Here, Elias also suggests that an essential factor for participating in INFOSAN is to improve certain aspects of development for his country and region where others lag behind amidst a range of complex challenges. In addition, he reveals his sense of responsibility to make a difference within and beyond his community by improving food safety. Fatima from the Middle East (Gulf) explained the significance of her participation in INFOSAN as a way to ensure that her national food supply was safe: “being a country importing more than 90% of its food, receiving certain notifications to help me make sure that food entering my country is safe – I mean, it’s a necessity to me. So it has a great impact.” Fatima’s engagement with INFOSAN represents a professional investment in bolstering the safety of her national food supply. Other participants expressed a sense of pride over the fact that they had some responsibility for improving food safety in their respective country and were doing so with the support of INFOSAN. Izzy from East Asia succinctly expressed the meaningful impact that participating in INFOSAN had made when she said, “I feel very proud of this INFOSAN to help me, improving food safety in the country.” For Izzy, her motivation for engagement in network activities is rooted in her understanding that participation will lead to a safer food supply in her country.

Second, all participants described how participation in INFOSAN had prevented foodborne illness cases in their respective countries. Their stories provided additional context to the results from the survey of members, which indicated that 59% of respondents believed that INFOSAN had reduced the burden of foodborne illness globally (27). It logically follows that by improving the safety of the food supply, foodborne illnesses would be prevented, but the degree to which this happens is often challenging to measure, and several participants expressed this conundrum. Amanda from North America articulated this point clearly when explaining the difficulty in quantifying the reduction in national foodborne illness cases due to the

implementation of risk management measures during an outbreak (e.g., removing contaminated food from the market): “It’s very difficult to prove the negative like that. And, and I think that it’s probably the same thing for INFOSAN: How many lives have we saved? For sure some. Can I quantify it? No. But I think that we can take faster actions and just by the fact that we’re doing something quicker, in terms of risk management action or decision, I think that ultimately that saves – that saves something in terms of public health! [. . .] It’s faster information and faster reaction. It allows us to make risk management decisions faster.” In her explanation, Amanda suggests that although difficult to measure, there is a public health benefit to participation in INFOSAN and alludes to the value of prevention and proactivity rather than reactivity. However, Amanda’s experience also highlights the challenges faced by a significant group of survey respondents (37%) who expressed uncertainty or ambivalence with respect to whether INFOSAN has reduced foodborne illnesses globally and a similar proportion (34%) who expressed uncertainty or ambivalence with respect to whether INFOSAN has improved the safety of the food supply. These responses underscore the need for better indicators to monitor global food safety and foodborne diseases more broadly (27). This could include the development of a global foodborne disease surveillance system to monitor trends in foodborne illness over time, making it easier to determine where interventions are resulting in real reductions in morbidity and mortality due to unsafe food. The idea of being able to implement risk management measures quickly because of information received through INFOSAN was echoed by other participants, including Gabriel from Africa, who explained his actions during an international outbreak of listeriosis: “Because of INFOSAN, we found the products and everything was destroyed for health reasons.” He continued and explained his feelings at the time: “You feel like the job is done, like you did your job, you know? And you are protecting the people. You are protecting the consumers.” Here, Gabriel reveals his sense of duty to protect his fellow citizens and his appreciation for INFOSAN as a source of information to help him do so. Similarly, Jessica from the Pacific explained the impact that engagement with INFOSAN has had on her ability to protect consumers in her country: “We can action recalls more promptly and it’s fair to say we’re probably actioning more recalls because of the information we’re seeing, knowing that we have tools available to us to get the information in a prompt manner. So, at the end of the day, we are managing to get unsafe food away from consumers more often and more, more rapidly.” In her reflections, Jessica emphasized the importance of timeliness with respect to food safety decision making. Food moves quickly from one country to another, and she recognized that communication between countries should move faster in situations where unsafe food needs to be kept away from consumers. Jessica further elaborated to emphasize an important perspective shared by other participants about being able to rely on INFOSAN for scientific information, free from political influence: “I don’t know how else we’d

be able to operate without INFOSAN on those things [international food safety incidents]. It would be a very long process and very political process without INFOSAN. So I think that's part of the value, it's, you know, it's removing the politics and it's just purely keeping it about food safety information from a reputable source." Here, Jessica referred to the necessity for independent, science-based decision making and the importance of neutrality when conducting risk assessments and implementing risk management decisions. Food safety emergencies can have significant financial and reputational consequences, and Jessica alluded to the need for decisions to be apolitical to remain health focused.

Overall, participants' experiences relying on INFOSAN as a health protection tool to improve food safety and prevent foodborne illness were articulated clearly by all participants and indicated as significant motivating factors for participation in this international network. These participants' accounts follow multiple reports in the literature that describe how using communication tools such as INFOSAN to facilitate cross-border communication has prevented foodborne illnesses and protected public health (14, 16, 20, 22). Also, the reported experiences provided context to the results from the survey of members (27), which indicate that the most important goals they are trying to achieve by participating in INFOSAN include preventing foodborne diseases and improving the safety of the food supply, both rated as very or extremely important factors for participation by 95% of members (228 of 238 and 225 of 236, respectively).

Sense of community: shared ownership for INFOSAN creates feelings of mutual respect and opportunities for collaboration within the network. Participants' accounts suggested several ways the network operates to build a sense of community by fostering mutual respect among members and facilitating collaboration opportunities to reach common goals. An important aspect of community revealed by many participants relates to the global connectivity afforded by network membership. In addition, many participants revealed ways in which membership formed part of their identity as professionals, spokespersons of their national agencies, and representatives of their respective countries, which has implications for how they engage in network activities. Because of a shared domain of interest, collaborating on projects was a valued membership outcome. In addition, several participants revealed how the network functions to unify a globally disparate group and the resulting positive outcomes. The idea that INFOSAN worked to strengthen the sense of community among members worldwide and facilitate collaboration between them is thus another theme that was powerfully conveyed through participants' experiences and expressed across four subthemes, described below.

First, nearly all participants talked about making global connections with other members as a valuable experience. The experiences shared by participants provide some additional meaning to the results from the survey of members that indicate 77% (175 of 229) of respondents

believe that participating in INFOSAN has connected them with other food safety professionals worldwide (27). The idea of connectedness was discussed by several participants in the context of quickly identifying points of contact when urgent information related to a food safety emergency was required from regulatory authorities abroad. The aspect of time saving was echoed by several participants and articulated by Carlos from South America when he said, "The value I've seen – and I've seen it, I've used it – it's the ability to easily connect, worldwide, to a network of experts in the food safety arena that is predetermined. I mean, I don't have to set up my network based on my contacts. It's all in there in the network." Brianna also expressed her appreciation for the ease with which she can make global connections through INFOSAN: "The connections that INFOSAN has is – wow! You know? I mean, you get in contact with Focal Points around the globe in record time, and to me, that is remarkable!"

In addition to the time-saving benefits, several participants expressed the critical role that INFOSAN played in making international connections, and in several cases, between countries that would have never otherwise been in touch. Elias from the Middle East (Mediterranean) explained that he was connecting with multiple members from different countries outside of his region, and "This is a really important part that INFOSAN is doing – by harmonization and building more relationships between the members. I think this is really one of the really excellent added values from having the INFOSAN meetings and from the INFOSAN network." Here, Elias emphasizes the value he places on learning from others with different perspectives and the respect for and value in diversity that exists among the INFOSAN membership.

Second, participants articulated their experiences as members of INFOSAN in a way that highlighted membership as a shared identity. The concept of INFOSAN membership as a shared identity was explored in the survey, and 64% (100 of 155) believe that most members in INFOSAN have developed a strong common understanding and identity over time (27). For Gabriel from Africa, INFOSAN membership made him feel like "a part of something important to the world," and other members expressed a similar sentiment. Here, Gabriel also reveals his altruistic motivations for participation and commitment to making positive contributions to society to improve food safety. Interestingly, many members shared their experiences in a way that uncovered membership as not just personal identity but one with multiple layers. For example, when talking about how she had used INFOSAN to obtain microbial test kits, Hana from South Asia said that engaging through INFOSAN "has benefited in terms of my experience, or our experience, country experience. So I thought that was the most benefit thing: connecting people and gathering information." Here, she speaks about her experience from the personal level, the organizational level, and the national level. This kind of response was typical of many participants who saw themselves as a personal representative to the network and also as a representative of their organization and their entire country.

The idea of identity across these multiple levels was also revealed by Fatima from the Middle East (Gulf) when she explained that, “As an organization, I’m working with INFOSAN to prevent any food safety incidents that will challenge the food safety in my country. So to me, it gives a greater value to my organization. I’m a safeguard for my country as I work with and collaborate with INFOSAN. To me I’m protecting my country, my fellow citizens and making sure that nothing harmful happens to them which I’m aware of or I’m supposed to be aware of in regards to food safety. So to me it’s a very noble contribution personally and at the level of my organization.” Here, Fatima expresses the sense of responsibility that she bears for protecting the health of fellow citizens at a personal level as well as on behalf of her organization.

Third, many participants explained that membership to INFOSAN had facilitated essential collaboration during incident response activities or on projects with members from other agencies or countries. These reflections demonstrated the value that members ascribe to international engagement and consideration of outside perspectives to solve work-related problems. For example, Jessica from the Pacific explained that “INFOSAN is a critical part of how we operate and it’s certainly a part of my job I love because I do get to talk to different people with different – from different countries and try to resolve issues together.” Her perspective of enjoying and finding it a valuable experience to collaborate with members from other countries to solve problems was shared by other participants and appeared to grow stronger over time when members got to know each other better. Brianna from the Caribbean explained this clearly when she said, “Through all of the recalls, the alerts and notifications, the online sessions, the face-to-face meetings, we really have created that level of communication that is beyond just the basics: we now can share information and feel comfortable and confident when we’re sharing that information.” Here, Brianna alludes to the idea that building the community takes time and investment, but that eventually, the investment pays off in the form of easy and effective communication between members. This comfort level often appears to grow out of interactions during international food safety incident responses, which build trust and facilitate collaborative work in different contexts. Amanda from North America explained that after liaising with INFOSAN members during an international food safety incident, it “led to joint publications between countries” and also for two organizations to “jointly plan surveillance” activities that proved greatly valuable to manage the specific risk under consideration and save time on conducting preliminary research. Amanda’s reflections revealed that collaboration with other network members was highly valued and evolved over time. Participants have provided some additional context regarding the impact of feeling a part of a global community of practice of food safety professionals, which was reported by 93% (217 of 233) of survey respondents (27).

Fourth, many members provided examples of experiences that suggested the network had a significant role in unifying the globally disparate membership. This unifying

influence is undoubtedly facilitated by the shared identity and collaboration on projects. However, members also indicated that INFOSAN membership created a sense of equality between all members that was not always present in other settings, yet greatly appreciated. This sense of equality was most colorfully articulated with a metaphor from Brianna, who explained her delight when meeting other INFOSAN members: “We get to sit down around the round table – we’re like Knights of the Round Table – and we’re able to have that discussion face-to-face. It makes it more personal.” This idea that everyone is coming together, united and working toward a common goal without a hierarchy, was expressed by others, including Gabriel from Africa, who said that INFOSAN is “a very important network because you are bringing all the countries together for the same cause. And, I think it’s important as well to harmonize, you know? Harmonize knowledge and share experiences. It’s very important.” In his reflection, Gabriel suggests that knowledge is a public good that holds great benefits when shared. Dina from Europe said something similar: “I love to be a member of INFOSAN. I feel that I belong – that I am a citizen of the world.” She later continued and explained, “I like this idea of being a citizen of the world and INFOSAN gives me this – this feeling that I can discuss, if I have a problem, I can discuss it with someone else all over the world and find the answer for my question.” Here, Dina reveals that finding a sense of belonging is a motivating factor for participation in INFOSAN that facilitates knowledge exchange with other members. The feeling of belonging was reflected in the survey results, with two-thirds of respondents (155 of 232, 67%) indicating their belief that network members feel a sense of belonging to INFOSAN (27). Previous research into participation in virtual communities of practice has shown that fostering a sense of belonging among members is an important motivational factor (2).

Overall, the sense of community that members were building with each other was a crucial and valuable membership component. Initial connections had grown into long-lasting relationships and respected professional collaborations that have united members to achieve common goals to safeguard the global food supply and prevent foodborne illness.

Potential: recognition of untapped potential is a significant motivating factor that leads members to lend time and energy to network activities. For many participants, different barriers exist that limit their participation in INFOSAN activities or prevent their engagement from increasing to personally desired levels. Participants’ accounts have revealed how barriers could be overcome, suggesting certain enabling factors at the individual, organizational, and national levels. Through their reflections, many participants recognized the need for members to take a more active role in driving activities and seemed to embody a sense of ownership for INFOSAN successes and failures. A desire to cultivate the untapped potential of the network appeared to be a significant motivating factor that led members to invest their time in INFOSAN activities. Overall, all members shared experiences that unveiled the vast potential

of INFOSAN that has yet to be cultivated or fully exploited and were related to three subthemes described below.

First, all members described a range of situations that previously created barriers that limited active participation and engagement in INFOSAN activities. Lack of coordination between agencies at the national level with one's own country was a barrier that several participants discussed as one of the main problems. Dina from Europe explained that "the coordination between the agencies within the country: it's the worst possible thing. It's so easy to coordinate with others outside, but is not really easy at all to coordinate within the country, so this really sometimes is one thing that blocks it [participation in INFOSAN]." Carlos from South America also expressed frustration as he described his failed attempts to coordinate with other INFOSAN members in his own country despite his best efforts: "I would like as a country to be more coordinated, I've tried to do it, but I have not been successful. I don't get answers to my questions. I don't get replies to my emails. I don't get reactions to my comments." The exasperation expressed by Carlos and Dina illustrated the frustration each felt as they attempted to tap into the potential benefits of INFOSAN that others in their respective countries have perhaps yet to see.

Lack of prioritization of INFOSAN activities in the face of limited time was another barrier that was mentioned by multiple members and articulated by Hana from South Asia: "We are all tied up! Tied up with our own work, no? We hardly have time to go to log in – too much information online, I mean, so many emails, so many group chats, so many – I mean, groups, and all, no? So, overload of information." Here, Hana suggests that despite her best intentions, she is restrained and can only offer so much in the face of competing priorities. Other participants discussed the lack of food safety technical capacities as a significant barrier to participation, despite their willingness to participate. For example, Gabriel from Africa explained that "the most important barrier for me, it's our food safety system. Because I want to give INFOSAN more, but I can't do it because of our system – it's a poor system, you know?" Having an underdeveloped or nonexistent national food control system was a barrier to participation in INFOSAN that was reported by 38% (88 of 234) of respondents in the survey of members (27). This finding is consistent with reports in the literature suggesting that international communication networks can serve as invaluable collaborative and supportive tools, but their ultimate effectiveness is linked to an individual nation's capacities for surveillance and diagnostics related to food safety and foodborne disease (15). Furthermore, it has been documented that functional participation in international networks engaged in food safety information exchange is supported when national food control systems are strengthened more generally (30).

Another barrier described by several participants was the lack of individual members' authority to provide information outside of their organization. As Elias from the Middle East (Mediterranean) explained, "the main challenge is authority: Not every organization has the authority to tell information. They need, maybe, approvals

from other players in the government. And this is really something that can interfere with the way of approval." Here, Elias alludes to the consequences that can arise when high-level government buy-in has not been obtained, thus leaving members without the autonomy to make their own decisions regarding information sharing. Some participants felt they had succeeded in overcoming many of the barriers that previously existed by improving national coordination, embedding engagement with INFOSAN into standard operating procedures, and doing so with the high-level political buy-in from organizational authority figures. For example, Jessica from the Pacific explained that engagement in INFOSAN comes from "building confidence and making INFOSAN the norm, rather than only for the big events, you know? [. . .] I think all of those things have led to that, and just making it day-to-day, rather than doing it once a year." Here, Jessica reveals the importance of normalizing the use of INFOSAN in order to embed it within organizational procedures to ensure sustainable use and gain high-level support. Gaining support from high-level government officials for the participation in international communication activities, with clear roles and responsibilities agreed (including the agreement on the type of information to be shared), has been identified as a key element required to improve international cooperation and collaboration using established systems such as INFOSAN (19). For Amanda from North America, she acknowledged the absence of certain barriers on account of such enabling factors already being in place: "I'm lucky I'm from one of the countries that is privileged and we have a good food safety system, and I have support from around me, and we have good communications among the country to use it [INFOSAN]. So, for me, or for the members in my country, I think that it's much easier than it might be for others. I also don't have challenges with technology and getting Internet access or things like that." In her case, Amanda's level of engagement with INFOSAN has become very much a matter of personal interest because other barriers at the organizational or national level do not exist.

Second, many participants acknowledged their potential to improve engagement in INFOSAN and the critical role of members as drivers of these activities. Speaking about her experience interacting with other members, Amanda from North America explained that, "More work has to come from the members, because it's, it is a community for them and, it's not really relying on the Secretariat that, that will get us there. So I really do think that the members should have a larger role". Carlos from South America shared a similar sentiment: "It's more related to what member countries can do than what the Secretariat can do. I've seen that the Secretariat does what it can, but at the end, it's up to the members to be engaged in INFOSAN." Both Amanda and Carlos revealed their desire for INFOSAN to become more member driven, with the Secretariat playing a supportive and facilitating role. Reflecting on her lack of engagement, Fatima from the Middle East (Gulf) explained her need to take ownership for driving activities forward: "I started being aware of my roles and responsibilities, yet, I need to, you know, work

harder, to strengthen my, my relation with other INFOSAN members. I'm still at the beginning. I'm starting with my baby steps. I'm not at all an active member, honestly. So my experience, I will summarize it as, I need to work harder on my membership." Fatima illustrates the evolution of membership as a process that takes time, not a status that changes immediately from one day to the next. Other members acknowledged the critical role they needed to play but expressed some frustration or regret because they had not invested more effort in their participation. For example, Amanda from North America said, "I wish I could sometimes do more"; Jessica from the Pacific said, "I wish I had more time to do more things"; and Dina from Europe said that she had "goodwill to do more and more stuff for INFOSAN" but she was challenged, and "the main issue is time." According to the results from the survey of members, although 70% (165 of 236) indicated that their organization allocates time for their participation in INFOSAN, only 17% (39 of 236) feel strongly encouraged by their organization to participate actively in INFOSAN, and 77% (183 of 237) indicated they would like to have more time available for related network activities. The perception by multiple members of a lack of time for engagement appears routed in a lack of prioritization of INFOSAN activities.

Third, all members acknowledged various aspects of INFOSAN that require improvement so the network's full potential could be realized. Carlos from South America expressed this succinctly when he said, "I get the feeling that INFOSAN has a lot of potential that has not been fulfilled – that it's working below its potential." Several members explained that they would appreciate more INFOSAN activities related to sharing information on important food safety issues of global interest and promoting partnerships and collaboration between countries. Amanda from North America explained the opportunities for more activities to be delivered concerning those two dimensions and suggested that INFOSAN is "a gold mine that you can still tap with the members." The potential to uncover more valuable experiences in the future appeared to be a strong motivating factor for continued engagement. Speaking about practical enhancements that could be made to improve experiences as an INFOSAN member, Elias from the Middle East (Mediterranean) explained that, "sometimes it's not just easy to get the information that you want and I believe the website [ICW] needs to be upgraded, and also the members themselves need to be enhanced and need to contribute." He explained that when other members do not engage actively during a food safety crisis and share information promptly, it "is really affecting the value of the system." Here, Elias reveals his feelings that everyone has a role to play in supporting each other in the network; in a globally connected food supply system, information systems need to be globally connected, too. The need to upgrade the ICW was the main conclusion from the first phase of this study (26), and the INFOSAN Secretariat subsequently made it a strategic priority to redesign and relaunch the ICW as a modern tool to facilitate improved collaboration among members (9). By making the ICW

more user friendly, the INFOSAN Secretariat could contribute to a stronger community of INFOSAN members, who are more connected and capable of leveraging the worldwide knowledge and expertise available to combat global food safety emergencies (26).

Overall, all participants have explained the various barriers they faced and how they could limit participation, and many spoke emphatically about how the coordination between agencies within their own country was one of the most significant barriers. These stories were congruent with results from the survey of members that indicate the most commonly reported barrier to participation (indicated by 60% [139 of 232 respondents]) is the need for a simpler and more standardized way to share information between national authorities within their country (27). Many participants also offered some critical enabling factors that helped to overcome existing barriers, including building INFOSAN engagement into daily standard operating procedures to increase personal experience with the network, improve technical food safety capacities at the organizational level, and ensure high-level political buy-in at the national level to foster interagency coordination. Participants also recognized that members have a significant role to play to improve various aspects of INFOSAN for the network to reach its full potential. Finally, participants suggested that their recognition of untapped potential within INFOSAN was a significant motivating factor for their engagement in the network.

Recommendations for practice. Based on the resulting themes that have been identified in this study, a framework for value creation among INFOSAN members has been developed (Fig. 1). In this framework, engagement with INFOSAN is described at three levels: the individual level, the organizational level, and the national level. Requirements for engagement in INFOSAN at each of these levels differ. At the individual level, members must have a personal interest or commitment to fulfilling their roles and responsibilities as an INFOSAN member. Achieving this requirement can be supported by outreach from the Secretariat and provision of information to ensure understanding. At the organizational level, there must be technical capacities to enable individuals within those organizations to obtain the information requested by other INFOSAN members. Such capacities would include essential technical elements of a functional food safety system (e.g., monitoring and surveillance, legislation, inspection, enforcement, and more) and could be delivered through targeted training by the Secretariat or other members who have experiences to share. At the national level, there must be political buy-in to facilitate coordination between organizations and allow international information sharing. This level of buy-in should be advocated for by the INFOSAN members themselves once they understand the requirements and benefits of participation in network activities. Engagement at all three levels is built upon trust, which must be fostered between members and the Secretariat as a foundational requirement. When engagement in INFOSAN activities is achieved at all three

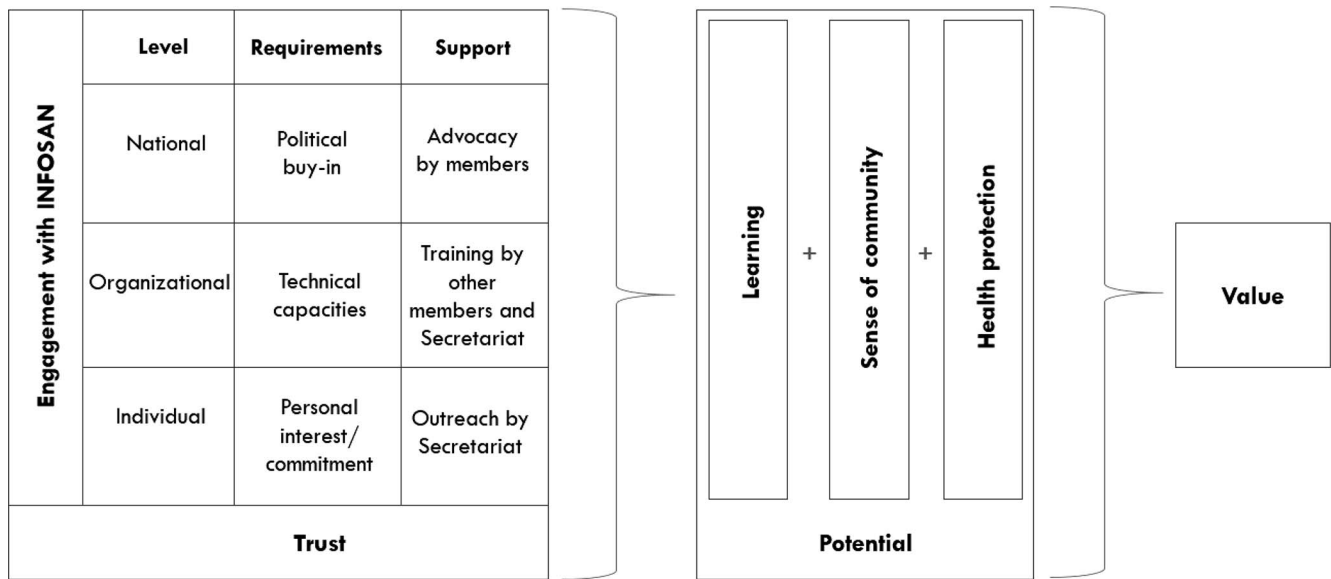


FIGURE 1. Value creation framework for INFOSAN members.

levels described, several potential outcomes may be improved, thereby increasing the value of participation. Members may learn from others in different countries more efficiently and develop professionally, and they may develop a stronger sense of community with other members and engage in joint projects to solve everyday problems related to their jobs. Finally, they may use INFOSAN to its full potential as a health protection tool to improve food safety and prevent foodborne illnesses worldwide.

Limitations. The current study has limited generalizability as it was designed as a qualitative, exploratory study. However, the approach has allowed for in-depth exploration of INFOSAN members' experiences in participating in network activities and how they valued these experiences. Although not generalizable, these findings may be transferable to other global or regional networks similar to INFOSAN. Interview data include retrospective reports, which may have been affected by recall bias. The researchers' prior knowledge, experience, and understanding represent important limitations to the analyses (28). The researchers sought to counter any bias arising from these, as described in the "Methodology" section. The study's results are also limited to English, although 8 of 10 participants' first language was not English and they came from different social and cultural contexts than the first author who interviewed them. Some participants seemed to prefer providing generic information rather than detailed information, perhaps because English was not their first language and articulating detailed accounts of feelings and experiences may have been challenging. Also, some participants seemed to prefer providing impersonal rather than personal responses. In some instances, this may have been because the interview was about participants' experiences in a professional network, so they tended to remain in a professional mindset rather than a personal mindset. In addition, several participants provided answers concerning other members rather than about themselves.

Furthermore, although males and females are represented in approximately equal proportions in INFOSAN, females have been overrepresented in this small sample, which may have introduced a female-skewed perspective. Despite males and females volunteering to participate in nearly equal numbers (8 males, 10 females), 2 of the males who volunteered were not selected because they requested to conduct the interview in a language other than English and because duration of membership and geographic representation were prioritized over gender balance. Finally, although all of the participants identified challenges or areas for improvement, their overall impressions of INFOSAN were quite positive, perhaps because those members with ambivalent views or negative opinions of INFOSAN were less likely to volunteer to share their experiences, thus introducing a bias toward positive experiences being reflected in these results. Despite these limitations, all interviews contained valuable nuggets that contributed to the overall phenomenological analysis and deeper understanding of members' experiences as INFOSAN members. Furthermore, in some cases, participants' reflections on other network members' actions were relevant to their own experiences because others' actions impacted them and their own experiences. Overall, the first author attempted to counteract these limitations by asking for specific examples and personal experiences in probing questions during the interviews. If future IPA studies are conducted with INFOSAN members, a multilingual study team could be assembled, if resources are available, to conduct interviews and analyses in participants' mother-tongue language to elicit more profound and personal accounts. Such studies also could narrow the focus of interrogation to explore fewer dimensions of membership.

CONCLUSIONS

Overall, this study has demonstrated that authenticity and reputation are drivers for accepting information from

INFOSAN. As such, the network provides trusted information for members in different regions worldwide, functioning as a health protection tool to improve food safety and prevent foodborne illness. Through their participation, collective actions of members to safeguard the global food supply were seen as noble endeavors and worthy investments. Furthermore, international collaborations created valued opportunities for professional development and knowledge exchange among members. In addition, shared ownership for INFOSAN created feelings of mutual respect and opportunities for collaboration within the network to reach common goals. Unfortunately, the full potential of INFOSAN remains unmet as many barriers still prevent active engagement. However, recognition of untapped potential was a significant motivating factor that led members to lend time and energy to network activities. Focusing on outreach to sustain personal interest, training to improve technical capacity, and advocacy to obtain political buy-in are ways in which the INFOSAN Secretariat could encourage increased participation of members in network activities at the individual, organizational, and national level, respectively. When built upon a foundation of trust among members, such engagement could translate into more effective international communication during urgent food safety incidents and fewer cases of foodborne illness globally. Future research may consider implementing a value creation framework as depicted in Figure 1 and examining outcomes on that basis. Doing so would help determine whether such interventions effectively increase participation and value creation and whether they contribute to the desired outcomes of reaching the network's full potential.

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SUPPLEMENTAL MATERIAL

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