
DEVELOPING A MODEL OF COMMUNITY OF PRACTICE AMONG HEALTH INFORMATICS PROFESSIONALS IN SOUTH AND SOUTHEAST ASIA

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Abstract

There is still debate on whether communities of practice (COP) can be formed or created. Many have claimed that they provide a venue to share knowledge which translates to action. In South and Southeast Asia, international development partners have invested in many capacity building initiatives to set-up and/or improve eHealth implementations in countries. While interest and resources for this increase, many challenges are still left unresolved due to repeated mistakes and undocumented experiences. The Asia eHealth Information Network (AeHIN) is a community of health informatics professionals organised to share knowledge and improve the use of ICT in health systems strengthening. **Objectives:** This study examined how AeHIN emerged as a knowledge sharing platform, identified best practices it adopted, and developed a model that could sustain itself as a COP. **Methods:** A sociometric survey was used to map knowledge sharing connections of pioneer members with interviews to substantiate findings and a 20-hour participant observation to triangulate data. UCINET 6.0 was used to analyse social network data while qualitative data were coded. **Results:** Defining roles of health informatics professionals inside the COP influences the type of information, resources, and capacities that can enter a network. The nature of its subgroups determines potentials and barriers to the network. Twelve best practices were identified to sustain a health informatics COP. It is recommended that a learning network is an appropriate model for this type of COP and an understanding of country-specific political structure is important to support participation. **Conclusion:** AeHIN is a COP model whose activities have a life of their own. While some prove successful, others die down or are discontinued. This unique design proved to be fitting for a group of health informatics

professionals as it accommodates success and failures crucial for project implementations.

Keywords: Asia; capacity building; medical informatics; knowledge; social support

Introduction

Health informatics groups in Asia can be traced back to before 1999. Thereafter, several other groups with different but related agendas sprung up with the support of various development partners operating globally and in countries.¹ However, little is known about how knowledge in these communities coalesces, thrives, or is even sustained to address challenges to support health systems' strengthening.

For knowledge to be effectively translated into practice, individuals should be aware of the competencies that exist within their communities and should learn how to strategise in using it.² Lave and Wenger endorsed the idea of communities of practice (COP) to support collaborative learning within and outside organisations.³ When it comes to driving new ideas and approaches, the knowledge generated from COP has the capacity to encourage new skill that produces ways of solving complex problems, retains talent, and decreases the learning curve for new members to adopt a practice to achieve an end.^{4,5}

The Asia eHealth Information Network (AeHIN) is a collaborative community of health informatics professionals in South and Southeast Asia committed to promoting better use of information and communication technologies for better health. Five years in operation with funding from the World Health Organization Regional Office of the Western Pacific and partners spurs its expansion from seven individuals to almost 900, forging alliances with 21 development partners. In 2015, AeHIN was registered as a not-for-profit organisation operating in Asia and the Pacific.

While the work of AeHIN proved to be appealing to countries over the years, operationalising its activities in support of technical assistance for health informatics in countries remains a challenge. As developing countries in Asia face unique challenges in implementing health information systems, the need to understand collaboration among various sectors to maximise current ICT for health resources is necessary.

This study aimed to examine how AeHIN emerged as a knowledge sharing platform, identify best practices adopted by it, and develop a model for it to sustain itself as a COP.

Methods

Nine models of health informatics-related organisations were studied and desk reviews of technical reports and documented literature were conducted to substantiate qualitative data. Twenty-six members from 12 countries of the AeHIN core group from 2011-2016 were interviewed, surveyed, and observed during a 20-hour planning meeting in Bangkok in April 2016. Knowledge sharing interactions within the core group were typified using a sociometric survey. UCINET 6.0 was used to analyse knowledge sharing data as a social network. Centrality measures, degree (influence), betweenness (speed of information transmission), closeness (quality of linking), and reciprocity (extent of sharing) quantified the roles within the AeHIN core group. NetDraw was used to visualise maps and egonetwork data to identify subgroups. Open and axial coding were used to handle qualitative data from participant observations. Themes were identified and coded via MS Word .doc files and were extracted to MS Excel through Macros. Mind maps were then used to consolidate data. Themes were culled from AeHIN technical reports and day-to-day reflections of the researcher for triangulation and until data were situated.

Ethical clearance was obtained from the Tropical Medicine Ethics Committee of the Faculty of Tropical Medicine, Mahidol University.

Results and Discussion

Two of the nine health-informatics related organisations reviewed had more than one focus. Specifically, three organisations focus on learning, one on partnerships, three on advocacy, one as a legal/regulatory body, and three as academic societies which highlight the production of scientific literatures.

Memberships are mostly free of charge but some charge for individual/organisation-based membership. Funds are generated by applying for grants from development agencies while others derive funds from conferences and general meetings. Two of them no longer exist while the rest still have ongoing activities.

Of the 26 members of the AeHIN core group, 18 members from 11 countries responded in the sociometric survey. One hundred and three nodes were generated which formed the social network accounting for 408 links. The density of the network was 3.9%, which is relatively low for a small group. Based on the roles of COP identified by Lave and Wenger revealed that influence is used as criterion for champions of the COP.

Node ID 26, the regional advisor for health situation and trend assessment of the Southeast Asia Regional Office of the World Health Organization who provided funds for the launching of AeHIN and Node ID 18, the AeHIN Executive Director had the highest outdegree (35) with the standard outdegree value of 34%. Node ID 18, 3, 11, and 6, are in the next highest indegree values (15) making them the most prominent nodes which can transmit information most rapidly to other nodes within the network. Altogether, they connect the nodes with the highest outdegree. Capacity to assist the flow of information was done by facilitators using betweenness centrality as a metric. Node ID 13, a professor of health informatics and paediatrics at the International Medical University in Malaysia, had the highest betweenness value (165) followed by Node ID 12, the deputy director of the health informatics centre at the planning and development division of the Ministry of Health-Malaysia. The coaches were from the top 10 individuals listed outside the network but were recognised as influencers. Based on overall indegree values, Node ID 27, 42, 70, 49, 50, and 63 have shown common connections with the AeHIN core group having two-three in-degree values. Sponsors are Node ID 19 has the largest geodesic distance sum from other actors (infarness of 256). Node 11 has the highest incloseness score at 9.96 followed by Node 12 at 9.92 and Node 13 at 9.88. Summary statistics were computed and revealed that there were zero variability for incloseness and high variability for outcloseness. This means that nodes in the network have more freedom to connect to other nodes but at a very slow rate. Administrative/technical support Nodes were Node ID 15, the director at the Ministry of Health and Gender in Maldives, which had the highest number of reciprocated links. She was

followed by Node ID 6, who works in various telehealth roles at a foundation hospital in India, and Node ID 23, the Satellite Secretariat.

There were 12 themes which surfaced in the participant observation, desk reviews, and interviews.

Membership

To increase membership in AeHIN and sustain members' interest in the network, respondents mentioned that i) collaboration (in the form of establishing a research community), ii) in country activities (such as creating an AeHIN chapter which will provide regular information about AeHIN and health informatics topics), iii) participation and volunteerism (such as by taking an active role in maintaining AeHIN initiatives in countries), and iv) communication (online and face-to-face that could deepen commitment in their respective health informatics agenda), play an important role within its membership and activities.

Improving reach

Improving reach in AeHIN would mean providing more opportunities for collaboration (in the form of country exchange programmes and capacity building activities; AeHIN to complement existing health informatics groups), engaging people ("deliberately engaging ministries and academe" is important not only in spreading awareness but in supporting the activities of the network. Without this, efforts will not have national or regional impact). An interesting finding in increasing reach in AeHIN is how volunteerism could be honed as means of improving AeHIN reach. A respondent suggested that in choosing a focal person to expand AeHIN activities in countries, he/she must first show consistent interest and personal bias in health informatics in the developing world. He/she must visibly take part in AeHIN activities to familiarise him/herself in AeHIN operations.

Offering capacity building activities

Five themes emerged which showed how both the gaps and the direction of AeHIN capacity building activities: accountability (in the form of being able to give-back to his country, once trained), acceptable background, information dissemination, monitoring, and creation of a solid return service programme. Possessing an acceptable background/expertise precedes the selection criteria. Priority is equally given to both government and non-government agency professionals, working in health, IT, or management. A track record of an active role in health informatics related activities, authority, and ability to create an impact, and harness

collaboration in communities in their countries is specified.

Conducting webinars

There was an undeniable value for webinars as verbalised by the respondents. Webinars are described as of "great value" and "very informative and useful". However, scheduling, invitation, knowledge-seeking behaviour on health informatics, and access to the platform remain challenges. It was suggested that in order to improve retention of the webinar learnings a separate discussion and well organised readings that are accessible and handy are needed. Ratings, periodic surveys, and polls on its delivery were also suggested to monitor how the webinars are being delivered and received by the audience.

Sustaining interest in working groups

One of the challenges in sustaining interest in work groups is that it provides "too much of academic exercises", shared by one respondent. To be able to develop an engaging strategy to motivate people to join, especially those who are already working and aware of workgroups in AeHIN, activities in workgroups must bring tangible value to people. Participants in workgroups should find value in exploring benefits, sharing priorities, and accessing this knowledge at their fingertips. Outputs that could demonstrate impact could be a series of white papers or policy papers which are written by countries collaboratively.

Designing for evolution

An informal atmosphere rose as a theme on how AeHIN meetings are conducted. Interactions in this set-up were nurtured for participants to explore personal biases and evaluate if personal agendas coincided with the direction of AeHIN. The influence of AeHIN throughout the discussion, surfaced as a positive way to promote capacities in countries, lead to partnerships that generate resources, and leverage trust of their respective governments to the work that they are doing. There was a mention of the technical assistance which happened in Myanmar as an offshoot of ongoing work in their respective country which also served as a recognition of health informatics efforts being done in the respective countries.

As sharing of experience thrives within the network, wrong approaches have not been adopted and collaboration with other countries was encouraged. The role of partners as a resource generator was catalysed since countries themselves identified their needs. One participant expressed that "Because of AeHIN, we start thinking, personally from the government," which

emphasised that coming together as a community led to personal growth in the workplace. Self-directed initiatives were also mentioned by other participants, such as starting an eHealth steering committee in Nepal which was brought by the need to improve the National eHealth Strategy in their country.

Creating an open dialogue

Dialogue within meetings are strategic and well-planned. Within the network, the AeHIN consultative group surfaced as the “insiders” (have solid understanding and experience in the health informatics field) and the members and partners as the “outsiders” (AeHIN members who are working in the government to push forth the health informatics agenda). The insiders use the AeHIN history (i.e. mention of the AeHIN meetings, certification trainings, and other activities) to launch an agenda and promote a value. For instance, the number of enterprise architects trained in AeHIN and COBIT (Control Objectives for Information Technology) foundation training supported by the network was used to frame a question on how to maximise these resources rather than as a general announcement on how these resources are being provided to countries. However, the presence of the AeHIN consultative group was not fully recognised as they tend to blend with other AeHIN members and do not express authority. Although a governance structure exists within AeHIN, line of authority is not fully evident. AeHIN members serve as a consultative group/deciding body under the leadership of the AeHIN chairs.

Inviting different levels of participation

Participation in AeHIN and its agenda was challenged by in-country situations as verbalised by the participants in the meeting. “How I can improve in talking to our leaders on improving the status of the indicators,” said one participant as he described his difficulty in convincing people in higher authority on the work that has to be prioritised. Some other questions centred on actual health informatics implementation problems such as integration, interoperability, and scaling up of systems. Much of the conversations revolved around how AeHIN’s operations would be sustainable after being accredited as an international non for profit organisation. Personal roles within AeHIN surfaced in the discussion as participants shared development on health informatics activities in their countries. Three levels of participation have been observed, i) engaged individuals (AeHIN core group members and partners), ii) active individuals

(individuals participating in the discussion, and iii) individuals on the periphery (individuals not participating in, but actively observing, the meeting).

Designing public and private spaces

The meeting was designed to allow networking opportunities within the programme and outside of it. The atmosphere is quite informal. Participants get to know each other by looking at the profile wall of attendees or by exchanging business cards. There are more conversations than one-way sessions allowing more knowledge to flow from one person to another.

Focusing on value

Values that emerged in three particular sessions observed were more on innovation, knowledge seeking, environment scanning, and building capacity and incentives. Although topics had been assigned for discussion in each of the sessions, the learning activity was packaged in a way of sharing both success and challenges in planning and executing health informatics activities in countries. There was mention of “innovation in implementing the National eHealth Strategy Toolkit”, questions on processes that sought knowledge such as “how were you able to understand/start this”, environment scanning such as “studying the complexity (of framework) and knowing what people should know,” and “studying current models”. The meeting’s agenda was another sharing and learning activity to move the network to its next directions and was more consultative rather than suggestive. There were times that the session was observed to lose its directions but this presented opportunities to map interesting agendas and conversations that may be valuable in the future.

Combining familiarity with excitement

In the planning of activities in AeHIN, countries were encouraged to talk to each other to identify common technical assistance needs so that AeHIN could consolidate resources and capacities for them. A continuous call for “health outcomes that make people better in health” was mentioned which summarised the importance of the quality of care being rendered and not the information produced from data generated. The open invitation to join activities of AeHIN provided opportunities for new members to participate and bring new insights to the group. Commitments, however, were not necessarily established within the meeting but the discussions were enough to start involvement in various areas being discussed. Translating the effect of AeHIN in countries, as a neutral community and springboard of ideas in health informatics, is a

challenge. Governments which do not believe in good eHealth systems and prioritise resources wrongly (no HIE, progress motivated by competition, politics, human resource problems, leadership styles) still exist. However, participants in the meetings, had a strong belief that there have already been significant gains in eHealth through AeHIN brought about by shared health informatics goals, and efforts.

Building rhythm of activities

Having a “model activity” or “benchmark” was observed as a new strategy of AeHIN in providing assistance to countries as revealed in the meeting. Some individuals shared clear needs and plans for execution which came as technical assistance requests, convergence meetings, and/or willingness to share experiences lessons and learned. However, timelines were not defined during the meeting and consultation is ongoing, although needs have been well articulated by participants. There was a strong emphasis on the country’s commitment to activities to achieve the end result.

Revisiting the roles in this community, revealed that how individuals connect with champions, prominent individuals, facilitators, coaches, sponsors, autonomous and administrative professionals, could play a crucial role in the survival of COPs.⁶ For instance:

- Champions team up with sponsors and prominent nodes since sponsors could overcome barriers when sending information while prominent nodes can transmit information fastest to other nodes. Although they are not much engaged with directly during general meetings, They are primarily sought for advice BY members interacting with them via videoconferencing
- Facilitators (from the Ministry of Health and one from a University in Malaysia) could have common connections with prominent nodes and could somehow share the role of the sponsors. Expertise is on health information systems and they are engaged with face to face communication
- Coaches (with expertise in health systems, eHealth technology and strategy, standards, big data analytics, mHealth, ICT, and medical informatics) share information and other resources within the network through the champion (who is the development partner of AeHIN), although they are outside the network
- An autonomous individual (from the Sri Lanka Ministry of Health) is engaged because of his personal administrative expertise (working in

Indonesia, Thailand, and Hong Kong) and has a central role in bringing in knowledge and other capacities from these countries to support the network. He can reach his own decisions in the network and may or may not be difficult to influences

- Further investigation is necessary to establish how individuals from Indonesia and Sri Lanka are connected to prominent individuals.

Discussion

Preliminary studies suggest that satisfaction of members in a COP has positive association with the knowledge they are to share.⁷ Exploring benefits, sharing priorities, and accessing health informatics knowledge right at their fingertips are valuable for members and could be used for defining satisfaction rates in the network. Although geographic barriers limit access to information, especially as the network is connected through online communication, the rate at which they seek this information is linked to its quality. This goes beyond expressing information seeking effectiveness and empathy.^{2,3} Continued communication, not only with members but also individuals outside the network could deepen commitment, which is how the agenda of AeHIN is achieved. Face to face communication was confirmed as essential for serious negotiation, even for a community that exists online.⁸ To sustain interest in small initiatives within the network, it is necessary for conversations to be experiential, rather than an academic exercise.⁸

This study gave context on the four major characteristics of COPs in healthcare: social interaction, knowledge sharing, creation, and identity building.^{4,9} Although members participate in the sessions, questions such as how they can improve convincing their government on AeHIN, and specific issues on HIS integration, interoperability, and scale up are still to be addressed. Knowledge creation and identity building is achieved by members, personally learning their roles in AeHIN and by honest and open communication in their country specific situations which further results in countries verbalising their agenda in AeHIN.

COP in the health sector take time and effort to mature and this is consistent with AeHIN’s five years of existence.¹⁰ One of the strengths of the network lies in the design of how learning within this COP is carried out. Letting members realise their roles in their

governments/countries proceeds to generating resources needed at hand. This confirmed studies which used social network analysis in examining co-authorships in biomedical and health informatics journals.^{11,12} Learning is seen as central to why people register as member of AeHIN, and in learning, members are subject to open communication where there is no right or wrong. It was observed that activities are geared towards a specific direction, others are not or are discontinued. Despite this, these activities are not wasted as they are redirected to better achieve priority activities. For an instance, the monitoring of National eHealth Strategies mentioned a model which AeHIN subscribes to, was discontinued as a result of the first general meeting. However, preliminary findings of the monitoring have provided key questions on technical assistance needed by countries. Successful models were also put together and used, such as AeHIN's National eHealth Capacity Roadmap which later brought funding for IT certification training.

Conclusions

Results show that determining roles of health informatics professionals inside the community of practice influences the type of information, resources, and capacities that enter the network. Using egonetworks to determine subgroups within COPs gave us an understanding of the potentials and barriers of their participation within the network. Combined with Wenger's principles for establishing successful COPs and four regular operations of AeHIN, there are 12 best practices that could be considered in sustaining the network. A learning network is an appropriate model for a health informatics COP in South and Southeast Asia and an understanding of country-specific situations and that of their respective country's governance structure is important to support sustenance of a health informatics COP.

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