

Preliminary Evaluation Study on User Experiences with Health Information Systems

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&
Evaluation Team

Report on a Preliminary Evaluation Study of User Experiences with Health Information Systems

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Health Information System Development in Tanzania -
Collaborative Project - Preparatory Phase
Finnish Christian Medical Society

Health Information System Development in Tanzania - Collaborative Project - Preparatory Phase Finnish Christian Medical Society 2015-2016

- User experience evaluation study - September - October 2016
- Selected Tanzanian health facilities
 - Health care organizations 9: Medical doctors 14, nurses 11, health IT professionals 11
- 2 students of Nelson Mandela African Institution of Science and Technology (NM-AIST) and 4 students of University of Dar es Salaam (UDSM)
- Supervised by:
 - Professor emerita Pirkko Nykänen from University of Tampere (UTA), Finland
 - Lecturer Dr. Dina Machuve from NM-AIST
 - Lecturer Dr. Masoud Mahundi from UDSM
 - Dr. Khamisi Kalegele from The Tanzania Commission for Science and Technology (COSTECH)
- Funding from the Ministry for Foreign Affairs of Finland (FORMIN), 2015-2016

Site	Persons interviewed	HIS	Type of hospital
<i>Arusha Lutheran Medical Center</i>	<i>Medical doctors 2 Nurses 2 Health IT professional-</i>	<i>Care2X</i>	<i>Private</i>
<i>Hydom hospital</i>	<i>Medical doctors 2 Nurses 1 Health IT professional 1</i>	<i>Care2X</i>	<i>Private</i>
<i>Makiungu hospital</i>	<i>Medical doctors 2 Nurses 1 Health IT professional 1</i>	<i>Care2X</i>	<i>Private</i>
<i>St Elisabeth hospital</i>	<i>Medical doctors 2 Nurses 2 Health IT professional -</i>	<i>Care2X</i>	<i>Private</i>
<i>Luico</i>	<i>Health IT professionals 3</i>		<i>Care2X Developer/Supplier</i>
<i>Kairuki hospital</i>	<i>Medical doctors 2 Nurses 2 Health IT professional 1</i>	<i>EHMS</i>	<i>Private</i>
<i>Muhimbili Orthopaedic Institute</i>	<i>Medical doctors 1 Nurses 1 Health IT professional 2</i>	<i>MEDIPRO</i>	<i>Public</i>
<i>Muhimbili national hospital</i>	<i>Medical doctors 1 Nurses 1 Health IT professional 1</i>	<i>JEEVA</i>	<i>Public</i>
<i>Sanitas hospital</i>	<i>Medical doctors 1 Nurses - Health IT professional 1</i>	<i>EHMS</i>	<i>Private</i>
<i>Tumbi regional referral hospital</i>	<i>Medical doctors 1 Nurses 1 Health IT professional 1</i>	<i>(GOT) HMIS</i>	<i>Public</i>

Study focus and objectives

- User experience

- A person's perceptions and responses that result from the use and/or anticipated use of a product, a system or a service (ISO 921-210-2010)

User experience explores how a person feels about using a system, i.e. the experiential, affective, meaningful and valuable aspects of a product use

- Study objective - to collect and analyse the user experiences and user opinions on the use of the current health information systems
 - And to identify needs for further improvement for wider adoption and deployment of these systems

Study methods - Thematic questionnaires

- Health professionals, medical doctors and nurses
 - Use of health information system, user satisfaction, user's assessment of the current system in use, and suggestions, comments for further development
- Health IT professionals, either represented by the health IT supplier company or by the health IT department of the hospital
 - Technical details of the system, applied standards, database coverage, decision support options, data exchange with other systems, order-entry system, statistics and reporting, integration options, data security and confidentiality

This part was not on user experience but on collection of detailed information on the system – the technological solutions, structure and functionalities

Care2X

ALMC, Hydom hospital, Makiungu hospital, ST Elisabeth hospital

- Medical doctors were positive, they are happy with the system, though they would welcome more functionalities like digital referrals and discharge letters, also all nurses had a very positive experience with the system, they were satisfied
 - The system has had positive effects on health care, e.g. the patients need not to queue long time for treatment or visit
 - The system is considered to bring accuracy to clinical practice and to keep record on patient information and data
 - More training would be needed on how to use the system - Training should be continuous to update and maintain the usage skills, training 3 times a year an ideal situation, training is needed because not all health professionals can use computers smoothly
 - Wider use - all potential users are not using the system - If all potential users are not able to use the system, the planned efficiency will not be achieved

EHMS system – Kairuki hospital, Sanitas hospital

- Medical doctors were positive with the system use, the clinical tasks are significantly easier with the system and they use the system in all possible clinical tasks daily, training given had been partial assistance in learning to use the system, not real training, also the nurses were generally satisfied with the system
 - Better usability - The nurses hoped that EHMS would be more user-friendly, the system is now complicated and requires a lot of training on how to use it, slowness, recovery from errors
 - Mobile technologies - devices like tablets could be used with the system in order to make the system more usable when on-move in various clinics
 - Security concerns - especially when transferring patients to other departments of the hospital

JEEVA – Muhimbili national hospital

- The medical doctor uses the system daily in clinical tasks and is almost always very satisfied with the system, also the nurse was satisfied, but not all nurses are using the system and therefore the efficiency of the department has not improved

- Web-based system – services could be accessed from more locations
- Concern on security - accessing information from other clinic might not secure
- Reporting – more reports for nurses, e.g. on how many beds are occupied in the wards
- Usability – the system is not user friendly, and it is slow sometimes

MEDIPRO – Muhimbili orthopaedic institute

- The doctor - uses the system to all clinical tasks daily, his clinical work has become easier with the system, however he thinks that system has not helped him to use more time with the patient. The nurse thinks that the department has not become more efficient, because not all persons have been trained to use the system, and accessibility of work stations, computers is still a challenge

- Better reporting options
- Training - all health professionals should be trained to use these systems, though accessibility of work stations, computers is still a challenge in the hospital
- Mobile devices - would be good for easy input of information when on move
- User involvement in design - to improve usability and user interaction with the system

(GOT)HMIS – Tumbi regional referral hospital

- Doctor - uses the system in most of his clinical tasks, his tasks are significantly easier to perform, satisfied with the system overall, he feels that half of the time the system provides sufficient information to support clinical tasks. The nurse uses it to search specific information on the patient or to follow the results of specific investigations – the nurse did not have positive feelings on the system, he/she felt that all tasks had become more difficult with the system and he/she was seldom, or even never, satisfied with the system.

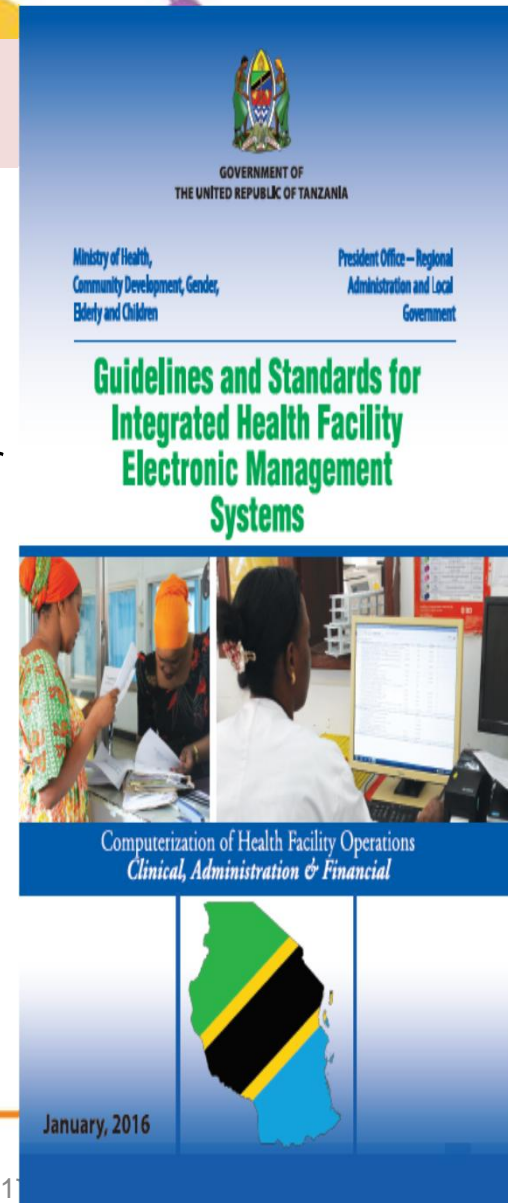
- Security – Trust on the system, no problems with data security or with patient privacy
- Integration of the system with other health facilities to enable electronic referrals and discharge letters / patient summaries
- Usability improvement – difficult to use
- Use of the system in all hospital departments to exchange information

Summary of user experiences

- Users were mostly satisfied with all the systems they have in use - the systems help them in their daily clinical tasks, tasks are significantly easier to perform with these systems than manually, and the systems provide many benefits as compared to earlier manual data processing
 - many the doctors and nurses were not originally willing to shift from paper-based records to electronic health records, in some hospitals they had to force the users to use the electronic systems.
- Improvements - interoperability and integration of the current systems with other organizations' patient information systems in such a way that critical information can be easily and seamlessly exchanged – patient summaries, referrals
- Usability – improved user-friendliness
- Training of users to use these systems - regularly to update and accumulate the skills
- Study weaknesses – Limited number of users interviewed, selection of interviewees, all questions in the questionnaire might not have been easy to understand

Recommendations

- **Interoperability** – exchange of information and patient data between health care organisations
 - Legal framework for security and privacy – access and disclose
 - Discharge letter /patient summary, referral, prescription, other documents - Standardized, agreed content and format
 - Standards for messaging, exchanging information
 - Coding systems, classifications
- Practical guidance on how the national guidelines should be implemented in such a way that interoperability can be achieved
- Deployment of EHRs/eHealth/ health IT countrywide to achieve the potential benefits




- Improved **usability and user experience**
 - International usability heuristics, usability guidelines, minimum requirements
- **National principles and guidance on how to select/ procure and adopt health IT/EHRs/eHealth systems**
 - Minimum requirements on functionality, interoperability, connectivity, security, usability – criteria for selection!
 - Adoption, training and maintenance support locally – continuous!
 - Methods and guidance for selection / purchase
- **Standards** – Agreed standards and their application – no local adaptations
 - Different standards may not be compatible with each other

Students' experiences on the study

- The interviewing process was a bit challenging as the health institutions appeared to be very busy therefore the interview required more time than anticipated
- Some of the staff members in one of the hospitals were hesitating to respond to some questions due to lack of experience using the system because of the lack of enough tools (computers, tablets etc) for their interaction with the system.
- The results well portray all most everything what is on the ground
- Almost all interviewees, the doctors and nurses emphasized the training issue - they need more training as they are medical experienced and not so familiar with ICT, therefore they need to be well trained to be able to interact well with the system

- Also security issue is to be considered as reported by one of the doctors that patient's information is confidential therefore the computerized systems should address security requirements in such a way that every user can access what is within his/her privilege not every information just because he/she has the access to the system
- Another recommendation by the nurses is that users should be involved in system design so that they can provide their inputs which will help to reflect exactly how the process / operation is, this would help to lower the resistance for the system

- From the study it is reflected that **health workers are interested and have shown their readiness to use computerized systems** since they believe it enhances their performance and they need to use less effort in their daily routines
 - More IT skills should be provided to them so that they can use and accept technology well
 - This implies that if the systems are well implemented then health sector shall be well improved for the betterment of the society



Thank you!

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Full study report will be soon accessible at FCMS eHealth-project webpages