

Opponent's Review of Dissertation Thesis of Ing. David Zejda

„Social software to the benefit of the elderly“

Topicality and fulfilment of the doctoral thesis objectives:

Dissertation thesis is involved in the topical theme that undoubtedly belongs to one of the key subjects of contemporary (and hopefully even more future) system engineering and knowledge management.

The goals and objectives, as well as basic methodology used, are presented in chapter 2 in a rather large extent (pages 12-15). Objectives are clearly defined, and research questions concerning the development of “human centric SW design” and reflecting the variety of target group cognitive, sensory and motor impairment, even if often neglected, are potentially more than useful in the level of both, theory and practice. Choice of subject can be evaluated as unambiguously correct. The author's view on the whole problem is well balanced, encountering both, light and grim sides of the presented topic.

Elaboration into partial goals and aims is also almost always clean and completely understandable. All in all, identification of objectives and partial goals and aims as such, combining connection of theory and practice, is very correct and responds to current requirements placed on both, development of practical and theoretical knowledge.

On the other side, it is necessary to mention at the beginning of the review, that the whole structure of presented thesis is not typical. Thesis itself has been divided into 2 basic parts. First one consists of 7 basic chapters (up to the page 95), whereas last part, starting from the page 116 and ending with the page 177, includes appendixes. The part in between contains references, list of author's publications, and various other lists (used terms, etc.).

The “appendixes” part represents authors own contribution, and is devoted to the description of a developed SW prototype, its code, and various aspects of development and coding, identifying and reflecting special needs of above mentioned target group. This development part itself is often underestimated by many and stays invisible for others, but in reality deserves our special attention, because this part itself is, according my opinion and my professional academic experience, dissertable.

On the other side, first part, **if alone**, is not structured exactly properly. Its significant share is devoted to the literature review and to so call “current state of art”. It is very well done, but oversized, while part that describes the author's own research and his own contribution seems to be narrow and underestimated.

In the following, I have to be focused mostly on part 1, since part 2 is presented as appendixes and as such cannot be subject to review.

All together with appendixes, the thesis is well balanced and very beneficial.

Research methods and procedure

Methodology used in the thesis is typical for so called **explorative research**, where the researcher (who is usually among the firsts on the field) has to create his own prototype (e.g. Software) to verify or to refuse his hypotheses. He cannot use case studies (since there are no), he cannot use questionnaires or observation (since his potential respondents have no experience with what he would like to explore). Firstly he has to do developing work.

That is why author cannot present hypotheses in a statistically strict definition, but according to the nature of his thesis (R&D) with large development part (see appendixes), has at first answer large scale of research questions, formulated basically in 3 main subsets (blocks) .

The part of methodology formulates the use of literature review e.g. current state of art specific to each block of research questions (done in the introduction as well as in 3, 4 and 5 chapters) , formulation of research questions, characteristics of investigated group and description of research process. The positive side of such approach is the author's effort to combine qualitative and quantitative approaches, and also different **methodological** approaches to explorative research (e.g. SSRD), even if not described and named properly. Author also underestimates the quantitative measurement of baseline, and both external and internal conditions are not mentioned even if the observation/measurement was done during several days. This is quite usual in qualitative research, where even the performance is judged in a qualitative way, but not in human-computer interaction studies. The use of eye-tracking camera or simple GSR sensors (or /and others) might bring other additional information to used quantitative measure of performance (e.g. number of clicks, bad click coordinates, etc.).

Proper identification of methods, used in human –computer interaction studies, and their adequate application in relation to defined objectives, would help to highlight the methodological part of presented thesis and its overall quality. As it is done now, is not clear enough, which causes certain problem.

Theoretical Outcomes/research problem definition/quality of literature survey

Theoretical starting points combined with research problem definition and literature survey have been presented in rather large scope, containing ca. 50 pages. It is necessary to mention, that theoretical outcomes and literature survey is presented also in the part, called “appendixes” and goes through the all description of both, research and development problems.

The author has submitted possible definitions of necessary terms and approaches to areas, related to the subject of work. This part is sufficient from the point of its content and focus. Unluckily missing information from human-computer interaction studies (even if not exactly subject related) and area connected methodological approaches, might be considered a problem.

Research and development results and their impact on practice

Author's research results have been submitted in the Chapter 7 Results and Potential on almost 15 pages. As mentioned above, another series of results, that can be considered research and development results, is presented in part "appendixes".

Author makes synthesis of different theoretical and methodological approaches. However we can identify several drawbacks. Selection criteria for case studies are not clear. The whole practical part is quite descriptive, the presentation of results itself is, kind of confusing, hidden in a verbal balast. The mixture of both, qualitative and quantitative research methods, that might, if well applied, very fruitful, here leads to certain level of misinterpretation or better lack of interpretation. Certain particular results are presented in an inconsistent way without any explanation (e.g. Fig. 21, representing number of bad clicks and content viewed of Mum and daughter - as a summary?).

To me, if this part is not balanced by research and development results presented in appendixes, it might be considered insufficient.

Questions for Defence:

1. Explain used methodology in relation to objectives of the thesis.
2. Explain why you mix the qualitative and quantitative approaches in the way presented.
3. Clarify representativeness of a sample.
4. Clarify the results presented on the Fig. 21, page 65.
5. Explain your conclusions in the light of presented methodological approaches.

Formal layout of the doctoral thesis and the level of language used

Reviewed thesis has high formal standard. The structure in a sufficient way follows recommendation for doctoral thesis. All used sources are cited correctly according citation norm.

Overall Assessment

The author of presented thesis has focused on a significant topic, the solution of which has and would have in the nearest future growing importance. The author has correctly selected the combination of qualitative and quantitative methodological approaches, even if this part might need certain improvement. The style, in which presented thesis has been written up, establishes a potential for subsequent research and development in this this particular area.

Presented work as a whole satisfies basic requirements for dissertations in the particular area. The author has demonstrated his abilities to focus on important subject and, in principle, to correctly address scientific problem and possible method of its solution.

The presented work of Mr. Zejda fulfilled the criteria for the dissertation thesis and therefore I recommend it to the defence procedure, during which author is kindly asked to clearly answer questions raised above.

In Prague, June 2nd, 2019

Doc. RNDr. Zdena Lustigová, CSc.