

Response to the Reviews on Bargas-Avila *et al.* (2009) ‘Intranet Satisfaction Questionnaire: Development and Validation of a Questionnaire to Measure User Satisfaction with the Intranet’

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This article contains the response to the reviews regarding the development and validation of the Intranet Satisfaction Questionnaire (ISQ), which measures user satisfaction with the Intranet. Where appropriate additional data analysis and interpretation is provided, the data show further evidence for the good validity, reliability and sensitivity of this tool. In addition, we provide a short preview of a follow-up publication and show that the ISQ can differentiate effectively between bad and good Intranets.

Keywords: Intranet; enterprise portal; questionnaire; survey; measure; user satisfaction; usability

Editorial Board Member: Gitte Lindgaard and Jurek Kirakowski

1. INTRODUCTION

One of the challenges in assessing user satisfaction is the lack of a widely accepted definition of this core concept in human–computer interaction (HCI) and based upon that, differentiating its different dimensions (Lindgaard and Dudek, 2003). For our publication Bargas-Avila *et al.* (2009) used psychometric methods to develop a questionnaire for measuring user satisfaction with Intranets (ISQ; Intranet Satisfaction Questionnaire) with a focus on item analysis and item selection, internal consistency and reliability. To fulfill the requirements of a high content validity, we applied factor analytical methods resulting in two dimensions (content quality and Intranet usability). By interviewing experts in the field (Intranet managers), we assured that the experts considered all items in the ISQ as relevant, the ISQ to be complete and to be usable in an applied setting.

In the following we will reply to some of the mentioned minor issues in our work that were raised by the reviewers.

We are currently writing a follow-up publication, where we will present the data of over 35 companies where the ISQ has been used. We will take the mentioned recommendations into account wherever possible.

2. REVIEW BY JAMES LEWIS (2013)

The reviewer raised the concern that eigenvalues >1 do not work well to determine the number of factors.

Factor analytical methods need a decision of how to determine the number of extracted factors. Unfortunately, there is no unequivocal solution to this challenge. The reviewer is right in his remark that a number of statisticians have argued that the often-used criterion of eigenvalues >1 might not work well. We would argue in a pragmatic way that factor analytical methods need to find a balance between transparent statistical criteria and a sound content interpretation of the resulting multidimensional solution. In the case of the ISQ, the resulting

two dimensions (Content quality and Intranet usability) fit nicely to the distinctions made in the theory outlined in the paper, providing a sound theoretical foundation of our decision.

A further recommendation is to re-analyze our data using confirmatory factor analysis. We agree with him and we will take this kind of analysis into consideration in future publications.

Another remark was that we should have reported (1) coefficient alphas for the sub-scales and (2) correlations between item 13 and the sub-scales.

Indeed, it would have made sense to report those coefficients in the paper. We therefore conducted the suggested analysis with the published data, yielding the following values: Content quality $\alpha = 0.824$ and Intranet usability $\alpha = 0.843$. Given the number of items we regard these coefficients as high.

The next shortcoming is that we did not report the correlation between item 13 and the subscales. We acknowledge that this perspective is missing in the paper. Again we report these coefficients here. We correlated the two subscale scores (generated with the regression method) with item 13. As mentioned by the reviewer, there are no major issues in these values: both correlations are significant ($p < 0.01$) with $r = 0.506$ for content quality and $r = 0.682$ for Intranet usability.

The last remark by the reviewer was that we might have included some types of sensitivity analysis in the paper.

We agree that our analyses would be more complete with some kind of explicit validity check. As the reviewer proposes, it would have been very interesting to take a 'good' and a 'bad' Intranet, run the ISQ and do an in depth sensitivity analysis. The reason we did not do this is because we have no such cases at our disposal.

An approximation to this idea would be to compare ex post extreme groups within one Intranet. One method would be to compare the quartile with the highest answers to the global item 13 ('Overall I am satisfied with the Intranet') to the quartile with the lowest answers to the same statement. One would expect the two resulting subsamples also to be characterized by different answers on the two subscales measuring 'Content quality' and 'Intranet usability', respectively. If this can be shown empirically, then it can be interpreted as an indication of a good content validity of the ISQ. We conducted such an analysis with the published data and found significant differences for all three variables. Comparing the two subsamples with item 13 reveals a significant difference with $t(673) = 37.47$, $p < 0.001$. The mean difference between subsamples and subscales is also significant with $t(673) = 21.744$, $p < 0.001$ for Content quality and $t(673) = 21.744$, $p < 0.001$ for Intranet usability.

3. REVIEW BY NIAMH McNAMARA (2013)

The reviewer notes that we could have correlated the ISQ scores with scores from a previously established instrument such as, for instance, the CSUQ (Lewis, 1995).

We agree that it would have been very interesting and valuable to correlate the ISQ with a well-established tool. Indeed, we

considered and would have liked to take such an approach, but decided against it. The main reason for not doing it was that the CSUQ is really not suited to measure user satisfaction with Intranets. In pilot studies we had observed that there are items that received over 50% of nonresponse rates (employees choosing 'N/A') and the analysis of written comments suggested that users were confused about some of the questions. Confusing were, for instance, item 9 (users reported that the Intranet never shows error messages), or 11 (users reported that the Intranet does not offer a help section). Regarding items 3, 4 and 5 users remarked that they were not able to distinguish between completing tasks effectively (3), quickly (4) or efficiently (5).

The problems found when applying the CSUQ in the context of an Intranet were the main reason that we chose to develop the ISQ in the first place. When choosing if we should try to use both tools to correlate the ISQ measurements with the CSUQ, we took these problems into account and decided that we would be 'comparing apple and oranges', because the CSUQ was clearly not suited to be applied in an Intranet context.

The second point raised by the reviewer was to gather additional evidence of the ISQ's ability to distinguish between good and bad applications.

As mentioned earlier, we are currently in train of writing a follow-up publication where we will show further evidence how the ISQ performs. We report here a short preview of these data to bolster that the ISQ can differentiate between bad and good Intranets. Conducting the ISQ in over 35 companies from different branches, in eight different languages and varying company sizes (100 to 70 000 employees), we can show a wide range of results: the average company mean scale (items 1–13) is 4.14 ($SD = 0.45$). The lowest mean is 3.08 and the highest 4.97. The median is at 4.22.

4. CONCLUSIONS

The provided reviews showed that the reviewers regarded the chosen approaches and results in Bargas-Avila *et al.* (2009) mostly as suited and satisfactory. For the mentioned minor issues, we were able to provide conclusive answers. We explained the reasons for the chosen approach to develop the ISQ and showed that additional data requested by the reviewers bolstered the quality of the ISQ. The first preview into a follow-up publication shows a wide range of results, indicating the ability of the ISQ to differentiate between good and bad Intranets. In future, we will provide further data to show that the ISQ is practical in its appliance and indicates a high validity, reliability and objectivity.

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