**Innovation in questionnaire design: the electronic questionnaire ‘authoring’ tool**

Daisy Hamer, Office for National Statistics, daisy.hamer@ons.gov.uk

Jordan Stewart, Office for National Statistics, Jordan.stewart@ons.gov.uk

**Abstract**

*The Office for National Statistics (ONS) is committed to moving all business surveys online in the next few years, as well as making the Census online mode the default method of data collection. So far ONS has moved several business surveys online with a high degree of success (which has been evidenced by quicker returns and fewer errors when compared to the paper versions); however, the process for moving these surveys has been slow.*

*Previously, designing the online version of paper questionnaires was very time consuming; methodologists would create the initial questionnaire templates using Google Slides while seeking feedback from subject matter experts. The agreed content would then be passed to user experience designers and developers who were responsible for highlighting problems with the design of certain questions. For example, designs might not be suitable for users who need to use assistive technology, such as screenreaders or zoom text, to help them complete the questionnaire. Subsequent redesigns were sometimes necessary. The questionnaire would then undergo pre-testing before being dispatched to respondents.*

 *In order to speed up the design and testing process an ‘authoring’ tool has been developed, this enables methodologists to quickly design iterations of questionnaires in the same format and style as they appear in the final version, although the live version is currently created by user experience designers. The tool has in-built question types and answer options, such as checkboxes, radio buttons and currency values. It allows the user to add routing and validation to the questionnaire as they are building it which significantly speeds up the design process. The tool is also being developed in conjunction with a question bank, providing a unique opportunity to harmonise business survey questions, ensuring quality and consistency across business surveys. This paper will address the benefits and challenges of using the tool and discuss the future of questionnaire design in ONS.*

**Keywords:** Survey design, online surveys, harmonisation, questionnaire design

**1. Push to Web**

The Office for National Statistics (ONS) is committed to changing the mode of data collection from largely paper based surveys to largely online surveys, although some surveys will remain as telephone data entry (TDE) and Secure Electronic File Transfer (SEFT). One of the UK Statistics Authority’s (2018) key priorities in their business plan is to have all business surveys online by 2021 along with having the Census as online by default in the same year. Social Survey Transformation is also a project that is ongoing. For example, the Labour Force Survey is being transformed into a mixed mode survey that will include face to face, telephone, and online modes. This is in line with the UK Statistics Authority (2014) ‘Better Statistics, Better Decisions’ strategy that stated that survey respondents want to be able to provide their data online and that business surveys should be ‘digital by default’. This paper will discuss past, present, and future methods of moving surveys from paper to online.

*1.2. Current Status*

Currently business surveys are furthest along with several surveys online. The surveys currently online include Retail Sales Index (RSI), Monthly Wages and Salaries Survey (MWSS), and Quarterly Business Survey (QBS).

For some surveys, we have found much higher first time clearance rates for errors when processing the data. MWSS had an average of 75.04% first time clearance rate for its final round on paper, this increased to an average of 88.30% in the first online round and 87.86% for the second online round. This shows that the online surveys have been successful so far with regards to improving data quality as well as reducing respondent burden by limiting the number of verification calls needing to be carried out by the organisation in order to verify that the data provided by the respondent is correct.

That said, there are few surveys currently online and we have encountered some issues in our process of putting the surveys online which we are working on improving. This paper will focus on how our previous process for putting surveys online has been improved.

**2. Previous Process**

At ONS the previous process for putting a survey online involved multiple stages. First, methodologists would create the initial questionnaire templates using Google Slides while seeking feedback from subject matter experts. The agreed content would then be passed to user experience designers and developers who were responsible for highlighting problems with the design of certain questions. For example, designs might not be suitable for users who need to use assistive technology, such as screenreaders or zoom text, to help them complete the questionnaire.

After consulting with the user experience designers’ subsequent redesigns of the survey in Google Slides were sometimes necessary. The developers would then add the questionnaire to an internal platform for testing. The questionnaire would undergo cognitive and usability testing before being hosted on a live online platform and despatched to respondents. Cognitive interviewing tests the respondents’ understanding of the questions and their wording. Usability testing tests their understanding of the online platform and layout.

*2.1 Issues with this process*

The main problem with this method was that designing the online version of paper questionnaires was very time consuming. Whilst Google Slides was the best option available to us at the time it involved spending a considerable amount of time formatting the page. Adding response options such as radio buttons was often a particular challenge as the formatting of them was burdensome and they often moved around when something else on the slide was altered. Because these issues were slowing down the process of moving surveys online it became clear that a superior platform was needed.

**3. The ‘Authoring’ Tool**

In order to speed up the design and testing process an ‘authoring’ tool has been developed by user experience designers at ONS.

This tool is designed to streamline design process enabling methodologists to quickly design iterations of questionnaires in the same format and style as they appear in the final version. This means that the questionnaire could be viewed as how they would look when live whilst they are being mocked up and layout issues could be addressed in a streamlined manner. This also ensures the harmonisation of survey design, making sure that different questionnaires are in the same style and so they are recognisable as ONS surveys.

*3.1. Functionality*

The tool has built in question types and answer options, such as checkboxes, radio buttons and currency values. In the future, it will also allow the user to pipe in values from previous questions and date periods.

It will also allow the user to add routing in the survey and validation to the questionnaire as they are building it which significantly speeds up the design process and reduce errors from respondents, improving first time clearance rates.

In the future it will also include quarter on quarter validation, meaning that the respondents’ answers can be validated against what their response was in the previous survey round. For example, in the Quarterly Stocks Survey respondents are asked to provide the value of their stocks at the end of one quarter, they’re also asked about the value of their stocks at the beginning of the next quarter, these figures should, in theory, be the same. Validation can be added to ensure the respondent enters the same figure for both. Including this validation will improve first time clearance rates as there will be fewer errors that need to be investigated.

*3.2. Benefits and Drawbacks*

The ‘authoring’ tool speeds up the process of designing; question and answer types are built into the system meaning that less time is spent formatting. The tool aids methodologists to see what the questionnaire would look like online during the survey drafting process which means any issue with layout can be addressed in a more timely manner than was possible previously. This also means that methodologists no longer need to send the draft survey to developers to add to the testing platform, which significantly speeds up the design process and takes the burden off the developers.

Cognitive and usability testing can be undertaken quickly with the ‘authoring’ tool. It allows for the time between waves of testing to be significantly reduced; new iterations can be developed quickly based on recommendations from previous waves and tested in the field within days.

However, some of the functionality is still not available in the ‘authoring’ tool. It currently has no function to include routing on the questionnaires, although developers are working to include this function. Some question and answer types are also not yet available. This is a process that needs to be worked on iteratively; as ONS adds more questionnaire types to the tool more question and answer types are encountered we must consider how these questions would look online.

*3.3 Current and Future Usage*

The ‘authoring’ tool is currently used in ‘transformation’ and ‘translation’ of surveys. ‘Translation’ of surveys involves moving surveys from paper mode to online mode with few major changes to the layout and content of the survey. ‘Transformation’ of surveys is a more fundamental redesign process. It involves attempts to make large changes and improvements to the layout and content of the questionnaire and can involve considering whether any of the data the survey collects can be replaced with other data sources such as admin data.

Once this work has been done we will then go on to use the ‘authoring’ tool in all our standard work of updating and testing when there are changes to questions in already established online questionnaires.

Going forward, we will also be working to link the ‘authoring’ tool with a question bank that is being compiled. The question bank project is looking to harmonise questions so there are a finite number of format and wording types for each question type and will provide a unique opportunity to ensure quality and consistency in business surveys across ONS and potentially across the rest of the Government Statistical Service (GSS).

**4. Conclusions**

The questionnaire ‘authoring’ tool is a good improvement on the previous method of preparing surveys to go online. It aides in adding consistency between questionnaires and speeds up the design process. However, there are still some functionality issues that need to be resolved such as including routing and adding some new answer types.

It remains to be seen how successful the ‘authoring’ tool will be when transfer of surveys from paper to online is ramped up, however we are confident that it will be a useful tool in future work.

**5. References**

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