Non-participant observation online: using screen recording and trace analysis for collecting and analyzing individual behaviors online

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1 Abstract

Non-participant observation is a data collection method in which the researcher observes events, activities and interactions with the aim of gaining a direct understanding of a phenomenon in its context (Liu & Maitlis, 2010). It is different from participant observational methods because the researcher has no contact with the informant, but rather records a situation involving real individual reactions and behaviors (Giannelloni & Vernette, 2001). Since subjects are seldom able to fully explain their actions and intentions (Denzin & Lincoln, 2000), they provide a different kind and quality of data compared to that collected through interviews or self-reports (Liu & Maitlis, 2010). However, non-participant observation has mainly been used as a method for observing offline behaviors although online behaviors differ significantly. Moreover, the Internet offers a different type of data that helps analyzing individual behaviors more deeply. Therefore, this paper introduces a non-participant observation approach to collect and analyze online behaviors of individuals in a qualitative fashion.

2 Method used for the data collection

The method suggested in this paper is based on the combination of behavioral data and in-depth discussions. Using laboratory (or real) settings, the researcher observes participants from an adjacent room. Five types of data are collected: video recordings from two cameras, field notes, audio recordings, Internet browser history data and video screen captures. One camera films the general environment from the adjacent room, and the other camera focuses on the behaviors at the desk. The webcam of the laptop completes the information by taking into account facial expressions, which could reveal signs of difficulty, interest, etc. Field notes are taken directly from the adjacent room based on a systematic observation guide. The main data capturing tool to analyze participants’ behavior is taken from Camtasia1 (or another similar tool), which is an application for screen recording. It allows tackling questions about how people frame their search terms, how they refine their search strings or how participants select their results and which hyperlinked texts they are following (Attwell, 2007).

If a laboratory setting is used, the room is decorated in order to be close to a natural environment (desk, chairs, etc.). The latter helps detecting individuals’ processes in an adapted environment close to a “natural” environment using real life tasks (Ravasio, Gutormsen-Schär, & Tschertner, 2006).

1 Source: http://www.techsmith.com/camtasia.html (consulted in April, 2019)
Follow-up discussions are held with participants after the experience using a semi-structured interview guide. Informants give a feedback on their experience during the non-participant observation session, including the process, motivation, outcomes, perceptions and other important topics.

3 General method used for the data analysis

Trace analysis is a technique initially used by Bousbia and colleagues to identify learners’ behavior and preferences or styles in a web-based environment (Bousbia et al., 2010a; Bousbia et al., 2010b). It was initially developed for educational sciences and builds on the systematic collection of learning indicators or “traces”, in which a trace is represented as a temporal sequence of observed elements recorded from a user’s interaction and navigation (Settouti et al., 2006). In this research, trace analysis is adopted to gain further insight in participants’ navigational behavior on the Web. As we do not only use browser history, but combine these data with coming from screen information recordings, video cameras and follow-up discussions, the insights are richer than the trace analysis alone.

In order to come up with participants’ attitudes and behaviors online, we recorded and transcribed learning indicators such as durations, clicks, navigational paths, etc., which can be deduced using the screen and video recordings. Additionally, in the context of our study, we collected complementary data on the type of sources used during the Internet session (written documents, Internet, packaging, none, or others), the type of source used (brands, peers, etc.-), the media used (text, pictures, videos, audio, animations such as screencasts, or others), and the number of visited web pages per category.

4 Application to consumer behavior research

We conducted a research, which aimed to understand how individuals learn the usage of a new product or service by searching for information online (e.g., video tutorials). To identify participants’ learning behavior and paths, we adopted the method described earlier in a laboratory setting in which participants were given products and a computer with an Internet connection. Trace analysis (Bousbia et al., 2010a) recommends decomposing each participant’s online behavior into browsing patterns and navigational patterns.

According to Bousbia et al. (2010a), three learning patterns could be observed depending on the browsing path of individuals: scholar (linear path), star (many loops to one or the same node) and dispersion (moving in all directions). The systematic trace analysis showed that we did not face a linear learning style resulting from repetition and time (e.g. Bayton, 1958; Janiszewski, Noel, & Sawyer, 2003).

Moreover, based on the data, we calculated a learning indicator based on the ratio of the number of consulted pages of one category to the total number of pages. The result varied between 0 and 1 and gave a global estimate on how far learners deepened their knowledge about a topic (thorough if k > 0.8, intermediate if 0.5 > k > 0.8, superficial k < 0.5, Bousbia et al., 2010a). We observed that very few indicators exceeded 0.3 suggesting that all consultation was mainly superficial and participants rather diversified and multiplied resources about a same topic.
Besides, these insights drawn from the trace analysis, the collected data allowed identifying how consumers search for online information into more depth thanks to screen and video recordings. We were able to identify information types, sources, preferences, offline application of what has been learned, emotions linked to the searching and learning experience, etc.

5 Discussion and conclusion

Qualitative research results can present a risk of the observer’s impact and ability to be objective. Moreover, in some research situations, subjects are seldom able to fully explain their actions and intentions as these can occur unconsciously. The online non-participant observation method presented in this research uses screen recording and trace analysis to provide a complementary data compared to that collected through interviews.

First, trace analysis contributes by its structured and objective analysis of the behavioral data. Screen recordings were used as a data collection method, which contributes by the capture of real behaviors, reactions and expressions. In-depth interviews helped reducing the risks of misinterpretation of the behavioral data. The combination of the data collection and analysis methods provides thus a rich approach for the study of individual behaviors online. Whereas most observational methods focus on macro-observation of a group of individuals, trace analysis helps considering both, individual behaviors and the observation of general tendencies. Finally, the triangulation of data sources and collection methods contributes to a greater internal validity of the study findings.

References


