

After-sales Service as an Important User Experience and Customer Experience Factor in Professional Music Software Development

Jacek Wachowicz

*Bydgoszcz University of Science
and Technology, Bydgoszcz, Poland*

jacek.wachowicz@pbs.edu.pl

Andrzej Karp

Kossecki Tax Planning, Warsaw, Poland

a.karp@op.pl

Zofia Frąckowiak

Kozminski University, Warsaw, Poland

frackowiak.zofia@gmail.com

Aleksandra Baaske

*Monte-Carlo Lifestyle / Kozminski University,
Monaco / Warsaw, Monaco / Poland*

abaaske@kozminski.edu.pl

Paweł Kossecki

*The Polish National Film, Television and
Theatre School, Lodz, Poland*

kossecki@poczta.onet.pl

William Steingartner

*Technical University of Kosice
Kosice, Slovakia*

william.steingartner@tuke.sk

Abstract

This paper presents an introductory study of professional music software after-sales service, in particular, user feedback and software evolution perception, to evolve it as part of the system development process. It has been based on theoretical and managerial review. During the first stage, a new conceptual model of user feedback based on the agile software development cycle integrating elements of TAM, CX, UX, and Agile PM methodologies was prepared. At this entry stage, qualitative research was chosen. Data were collected through semi-structured hybrid interviews among professional music software users. The outcomes may be a valuable source of ideas on professional users' software development process improvement in the music industry and on the pace of introducing changes and updates to the software. Results may be valuable for both developers and researchers. Overall, practical changes based on our introductory findings may improve customer satisfaction in this market.

Keywords: agile software development model, professional music software, after-sales service, Technology Acceptance Model, Customer Experience

1. Introduction

In 2023, the total revenue of the recorded music industry amounted to 28.6 billion U.S. dollars. Global streaming revenues reached 19.3 billion U.S. dollars in the same year and increased by 10% y/y [7]. This means that the music industry market is very large and dynamically growing. Its important actors are professional musicians and music producers, without whom the songs and music, in many cases, would not be created, or at least it would not have as large a public audience. They increasingly use software, which, in

addition to musical instruments and consoles, has become an integral element of the music production process. Therefore, considering the specific conditions of the music production process (such as the multitude of sources and significant subjectivity) and improving the user-friendliness of the used devices and software interfaces is becoming an increasingly crucial task. At the same time, this segment is practically absent from scientific research. A valuable contribution of this article is an attempt to change this state and create foundations beginning with research on the perception of user feedback and evolution speed. An additional value is collecting opinions from professionals with national and European recognition. The obtained results can already serve as the first guidelines for music software and hardware producers for professional music market.

2. Background

Customer Experience (CX) recognizes people as customers but, in a way, as well partners and collaborators. Its essence lies in user interaction with a product. Possible interactions, ideally should bring the feeling of life enrichment. However, to achieve this, it has to be reflected by careful user needs modeling during the software specification phase and later customer service user feedback collection and incorporation during the whole software development and iterative evolution cycle. In this case, the investigation of factors of online services and applications influencing their perception and ease of use is conducted in the Human-Computer Interaction (HCI) research framework [8]. In the music industry has a range of companies, of which a lot is from Small and Medium Enterprises sector, where Digital Transformation is also accelerating[3]. There are also specific operation-related issues influencing user-friendliness, which include, for instance, differences between physical and virtual manipulators [9]. Their design may even consider using emotional design techniques in interface design, like the Japanese Kansei concept [5].

3. Model and methodology

Based on the Technology Acceptance Model (TAM) and recursive Agile Software Project Management (PM) methodology, a new agile conceptual recursive software development cycle model has been constructed, which integrates user feedback, which is a part of after-sales service with crucial elements of recursive Agile PM software development, TAM, CX, and User Experience (UX) methodologies as presented in Figure 1. In particular, it presents close relationships which have been observed between Perceived usefulness (TAM) and Identified needs (Agile), Perceived ease of use (TAM) and User friendliness/UX, as well as Attitude towards using (TAM) and software perception/CX.

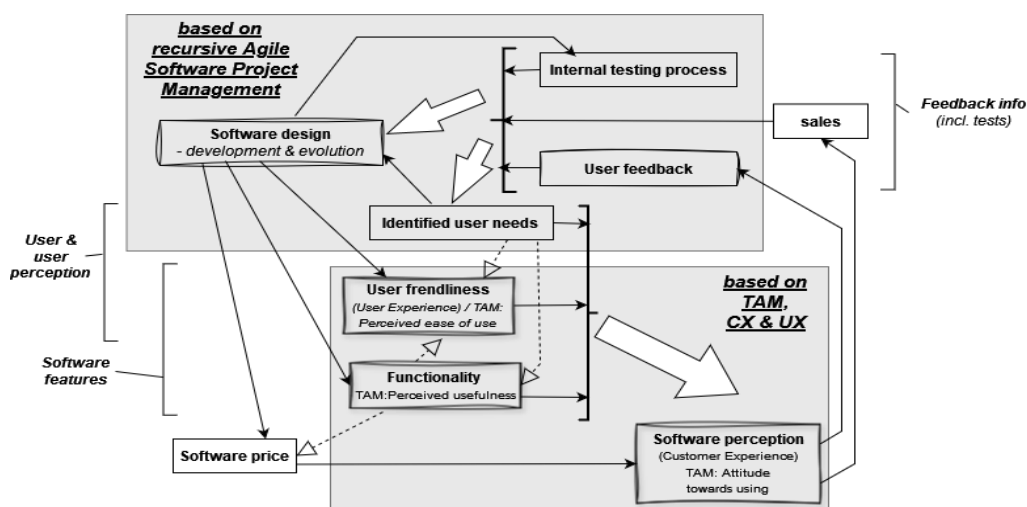


Fig.1. A new, conceptual, integrated agile model software development cycle combining Agile PM, TAM, CX & UX methodologies elements

In this initial research, we used purposive sampling to target professional users of music software. We chose this group because they are aware software users, use similar types of software, and are able to provide valuable insights for comparison purposes. Additionally, their professional use of the software suggests that they prioritize its quality. Therefore, their opinions may be valuable for improving professional music software development quality. For such introductory studies, qualitative methodology is appropriate for several reasons.

First, after-sales service constitutes complex social settings where the dynamics are not immediately apparent. Second, social-process situations are best studied through qualitative techniques such as interviews [6]. Contextualization, vivid description, and in-depth understanding of actors' perceptions are critical [1]. Therefore, we chose as appropriate, an exploratory approach [2] and a simple Grounded Theory (GT) analysis [4] of data segment coding to understand the framework, which after-sales service and evolution in professional music software UX and CX must fit.

3.1. Research hypotheses

Research hypotheses based on expert discussion on research gaps include commonly believed but not yet researched, in particular on the professional music market, claims:

1. current after-sales contact is being well-perceived by professional music software users (threshold=50%)
2. professional users share their suggestions as a user-feedback (threshold=50%)
3. the current evolution of features, functions, and software versions is a problem for professional users (threshold=50%)

Research hypotheses reflected in the following questions during all recorded interviews and in the constructed open-question Computer Assisted Web Interview (CAWI) questionnaire:

- “How do you assess current after-sales support for your most important music programs and how important it is?”
- “Do you share your thoughts about software with its producers? What makes it difficult to share such information? Who and how could motivate you to share your thoughts on how the software, or the process of its sale, and service could be improved?”
- “In your opinion, is the current evolution of software features, functions, and versions more of an advantage or a hindrance - how much and why? Furthermore, is software's innovativeness (including the speed of change and dependence on hardware requirements) generally of an advantage or a handicap for a professional user?”

3.2. Data Collection

We used the interview as our technique for collecting data. We conducted semi-structured interviews (in Polish and English) with individuals representing professional music software users. Our interviews were semi-structured, focusing on evaluating the relevance of various features of music software with particular emphasis on CX and closely related - Human-Computer Interaction (HCI) and UX. They were voice-recorded with the possibility of adding statements via e-mail or the web questionnaire (CAWI). At the beginning of each recorded interview, we briefly presented the nature of the study and its context, that is, a study to write an article. We assured the interviewee that anonymity was guaranteed. We asked each interviewee to introduce themselves and resituate the discourse in each person's context.

We had the opportunity to interview music professionals from different fields of music activity (including a musician, lecturer, and sound engineer and from different perspectives: users of different Digital Audio Workstations (DAWs) and people of different ages), which gave the possibility to broaden a view of different perceptions. We drew up a target list of twenty-nine professionals - respondents, of which nineteen answered - including (in alphabetical order) Marek Andrzejewski, “Budyń”, Angelika Fijalkowska, Rafał Gontarski, Przemek Gorlas, Henry Harris, Michał "Jelonek" Jelonek,

Oscar Jensen, “Marcinus”, Daniel “Banan” Szyba, Rafał Świśłocki, Wiktor Wojsyk who agreed to publish their names and/or artistic names. The great value of the obtained answers stems from the utmost professional level (country-wide or international) of most respondents. Therefore, instead of presenting an anonymous list of respondents together with a survey key attribute data sheet, we decided to add to each quoted answer a unique identifier (P1..P19), which gives the possibility of still being anonymous (in a sense that despite publishing names it is still not possible to match individual answers with individual names) tracing each respondent’s answers, which together seems to deliver cognitively more sound and credible outputs. All interviews took place between December 2022 and January 2023. The respondents answered our questions in face-to-face interviews conducted during telephone calls or during hybrid mode interactive interviews (telephone call, e-mail, CAWI web questionnaire).

The interviews lasted approximately 0.5 to 3 hours, with possible intervals between calls, and averaged an hour. All the interviews were conducted by one of the five authors of this study. All answers from open questions were transcribed and encoded into categories, as presented in the results.

4. Results

Due to the space shortage and the research introductory character, only basic outcomes are presented, together with their coding in accordance with GT analysis.

The first hypothesis in respondents’ answers found itself almost on the borderline – positive answers did not reach the threshold (there were 31% positive, 6 out of 19, answers) but two more answers were ambivalent – they have seen both positive and negative sides, making it slightly more than negative answers (7 out of 19), thus considering both positive and ambivalent answers, the first hypothesis might be considered to be weakly confirmed. It is worth quoting the answer of respondent P3: “When the program is written correctly, and its use is intuitive, the manufacturer's support is not needed. However, nowadays, the support is mostly very good. Producers are usually very helpful and willing to help.” 21% of answers were negative (7 out of 19), of which respondent (P16) answered: “Normally sales support cannot help me as I usually ask them only in quite complicated issues. User forums are more helpful,” and 21% (4 out of 19) respondents did not want to answer this question. Such an ambivalent view may strongly indicate need for further research in this field.

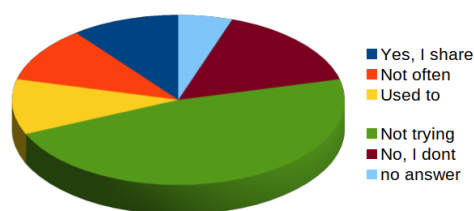


Fig. 2. User feedback sharing

The second hypothesis definitively may not be confirmed, as only 21.1% of respondents (4 out of 19) verbalized that they share their thoughts on software with vendors. Most respondents (63.2%) answered that they did not want to or never tried to. Nevertheless, the most interesting are two answers (10.5%) stating that they used to share their opinions. For instance, respondent P5 answered: “I don't believe in contacting software vendors. It never worked.” The structure of the answers is presented in Figure 2.

Finally, the third hypothesis in respondents’ answers was exactly ambivalent. The answers were equally distributed, as 26% of the respondents (5 out of 19) claimed that the current evolution of software features, functions, and versions is an advantage. In contrast, the same number, 26% of the respondents (5 out of 19), found it as a disadvantage, but from their answers, one may see that they were not against evolution – they rather doubted if the current model of evolution is the right one. For instance, respondent P2 stated: “As a live performer, I need to be equipped with a reliable set of equipment that I can operate

fluently. I don't do not update the software before I check its operation on a parallel system. Too much of a risk.”. Further, 21% of the respondents answered ambivalently (4 out of 19). They saw both the negative and positive sides of the software evolution. The rest of the respondents (5 out of 19) answered that they had no opinion or did not want to answer this question.

Table 1. Correlation between the perception of attitudes towards after-sales contacts and evolution of software features

		perception of features evolution					
		vs.	positive	ambivalent	negative	no answer	total
perception of after sales contact	positive		10.5% (2)	-	5.3% (1)	15.8% (3)	31.6% (6)
	ambivalent		-	5.3% (1)	5.3% (1)	-	10.5% (2)
	negative		5.3% (1)	10.5% (2)	15.8% (3)	5.3% (1)	36.9% (7)
	no answer		10.5% (2)	5.3% (1)	-	5.3% (1)	21.1%(4)
	total		26.3% (5)	21.1%(4)	26.3% (5)	26.3% (5)	100% (19)

There is a weak correlation between perceptions of attitudes toward after-sales contacts and the evolution of software features calculated by the Pearson correlation coefficient of 0.386 based on the data presented in Table 1.

5. Conclusions

The development of professional music software CX has not been a very well-studied area so far. Our goal with this paper was to research after-sales communication perception, especially in the context of dynamic music software development. The outcomes show that professional users perceive both the after-sales process and that the current evolution of features, functions, and software versions, as ambivalent. This indicates a need for further research.

References

1. Compernelle T., Richard Ch.: The Audit Committee as an Interactive Process: Insights on the AC Chairperson's Power. *European Accounting Review* (2017)
2. Cooper, D.R., Schindler, P.S.: *Business research methods* (9th ed.). Boston, MA: Irwin/McGraw-Hill (2006)
3. Januszewski, A., Wachowicz, J.: Digital Transformation in Micro and Small Enterprises in Poland. A Research Concept, *AMCIS 2024 Proceedings* (in print) (2024)
4. Mina, H.N.: *Developing Theory With the Grounded-Theory Approach and Thematic Analysis*, Association for Psychological Science (2016), <https://www.psychologicalscience.org/observer/developing-theory-with-the-grounded-theory-approach-and-thematic-analysis> (accessed 15.03.2023)
5. Ludwiszewski, B., Redlarski, K., Wachowicz J.: Wykorzystanie zbiorów przybliżonych w analizie Kansei (Use of rough sets in Kansei analysis) [In Polish], *Proc. of the Conference: Interfejs użytkownika - Kansei w praktyce* (User interface - Kansei in practice), Warsaw, pp. 21–27, PJWSTK Warsaw Press, ISBN 978-83-89244-87-1 (2010)
6. Patton, M.Q.: *Qualitative research & evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage (2002)
7. Statista: *Global revenue of the recorded music industry 1999-2023* (2024) <https://www.statista.com/statistics/272305/global-revenue-of-the-music-industry/> (accessed 10.04.2024)
8. Wachowicz, J.: Information Society in Poland - Similarities and Differences in the Perception of ICT Between Generations, *Conference: EuroSymposium on Systems Analysis and Design*, September 2016, DOI:10.1007/978-3-319-46642-2_14 (2016)
9. Wachowicz, J., Karp, A., Kossecki, P.: On the Friendliness of Physical vs. Virtual Manipulators in Music Software - from a Perspective of Software Developers. *Proceedings of IEEE 16th International Scientific Conference on Informatics* (2022)