Use of Online Enriched Courses: The Satisfaction and Perceived Value of Users from Emerging Countries

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Abstract – **This article provides feedback on satisfaction and perceived value in the use of online courses enriched. It is based on a course that was administered over two years to students living in the southern hemisphere where Internet access is difficult and costly. We first present the importance of technological limitations and their impact on educational choices. This is followed by the trial and the practical limitations linked to course implementation. Student satisfaction is measured using a disconfirming method, and perceived value is measured using a functional and economic dimension. A discussion on the feedback and transfer of this experiment is presented.**

Keywords – **E-Learning, Enriched Course, Satisfaction, Perceived Value, Emerging Countries.**

I. INTRODUCTION

This study focuses specifically on the implementation of a flipped classroom whereby students must work independently when preparing coursework and then take part in live meetings with the teacher. Many studies have been carried out on the use of flipped courses and their application when the Internet is used to prepare students [9, 2, 12]. These studies have demonstrated the educational merit of site visits, online videos, and the use of PDF documents for student use. They are based on trials carried out via streaming platforms such as Moodle. But all of these studies present two limitations: they do not analyze the impact of the choice of technology made by educational teams (in particular, satisfaction [7, 6] and perceived value) and they are overwhelmingly limited to European or North American environments where high-speed Internet access is generally available.

To date, studies on the accessibility of online courses are limited to either engineering or information network issues. The educator is provided with a ready-to-use solution. Streaming is most commonly used. Such tools require a powerful server and high-speed connection to operate. Too often overlooked, the quality of students' Internet connection is fundamental to being able to properly access an online course. Educators must integrate this limitation into their educational approach as part of a student's satisfaction depends on course content being readily available (speed and width of data received). The variety of streaming services and their inherent speeds simply increases the central role of the quality of Internet connections. In light of this, our study sets out to present a distinct technological solution and to analyze the satisfaction and perceived value of a course enriched with text that is used on and offline by students living in areas where the network makes it impossible to access a high quality Internet connection.

II. THE EXPERIMENTATION

The experimentation is an extension of past ones [4, 8, 11, 13] ran over 2 years, delivering MBA level courses. The courses were in digital marketing and the behaviour of online consumers, digital communication and the perception of personal data management by consumers. The first two courses qualify as "soft" as set out by Biglan [3] as far as they do not require any technological or mathematical knowledge; according to the same body of work, the latter course qualifies as "hard" because it requires a technological and quantitative approach. The students have no pre-requisite for or particular prior knowledge of the field and the goal is to provide them with a level necessary to achieving the role of junior web project. Each course is divided into chapters with each chapter corresponding to an average of 4 hours work. Each chapter is in itself divided into units of 20 to 30 minutes. At the end of each chapter there is a debriefing video of one hour with the educator. A record of the debriefing is then posted on a private work forum that is set up at the beginning of the course. This forum is a written record of the interactions between the educator and the group. The groups are made up of a maximum 25 students. The choice of selected technology (iBook) relates directly to the target population. Although most e-learning experiences occur in the northern hemisphere, our target group was students in Brazil, West Africa, the Middle East and India. A lack of Internet access was a particularly important element (little access to a high-speed connection, high cost of mobile contracts, extremely variable network quality depending on location).

First advantage, the cost of creating the course is low as iBook author software and content management software (iMovie, iPhoto) are integral to Macintosh computers' operating system. The main advantage of this software is that it incorporates in just one native file all the multimedia streaming, quizzes and interactions needed for the course. Thus, the final product is similar to a file read on the iPad with no configuration needing to be carried out by the user and with no need to connect to the Internet once the course has downloaded. The latter point was a defining element for students. Internet connections are bad and costly, only institutions like universities benefit from good quality Internet access. It is therefore not possible to work while using streaming. In practical terms, students would go to their school to download course chapters and were then able to work on course content without network. They were able to use a straightforward low-speed connection to connect to the forum to interact with other students, and to access face time and the forum that stores archived debriefings. Finally, the Apple system makes it possible to update content across all terminals without the student needing to configure data;

in this way, as with application updates, the student always has the latest version of the course available. This choice of technology makes it possible to minimize to the largest extent possible the configurations that must be carried out by the user (no plug-in or specific software is needed). It is therefore almost a ready-to-use solution for students who do not need any particular computing skills. This aspect is particularly important as it allows students with little computing knowledge to work [4, 8, 13]. Once the technological limitations and fears are resolved, students are able to focus on the course itself. Use of video content, complementary activities and the self-assessment quiz provide important educational possibilities to enrich the course. The regularity of debriefings also makes it possible to maintain the link between educator and group, and to prevent the relationship being dehumanized [8].

III. LITERATURE REVIEW

Our exploratory study aims to measure two behavioral user constructs: first of all, we aim to measure user satisfaction in relation to his/her expectations of this type of e-learning course, then we aim to analyze the perceived value dimensions of the proposed innovation. Here, the innovation operates on three levels. The first level represents the use of the e-learning course rather than a face-to-face course. These days the pervasiveness of YouTube tutorials means that students have almost all followed online tutorials, and the educational video format does not therefore present an obstacle to these students. However, it is difficult to integrate the formulation of an exclusively tutorial-based course. Traditionally, a course is distributed at a given moment by the educator, whereas following a course at one's own pace requires significant organizational and cognitive effort.

The second level involves the dematerialization of the relationship with the educator. The course's debriefing sessions are carried out on FaceTime, which requires a greater level of concentration and organization in terms of speaking and asking questions. Engagement need to be recreate through technological tools (Russel-Bennett and al. 2010). Finally, the third level concerns handling a tablet. The course is presented as an enriched book listed in the iBook library [4, 13]. Mobile usage is highly intuitive; course support (iPad) is a very important element in the perception of the course's ease of use [5].

IV. MEASURING SATISFACTION

Measuring user satisfaction is approached using an expectation disconfirmation model. This model offers a satisfaction assessment that relies on a post usage measure (Perf.) that is compared to a user expectation (Expect.) measure. The deviation between the two (Delta) provides an indication of satisfaction, or dissatisfaction, with the experience. This measurement model presents a highly cognitive approach to classifying user expectation. Although the latter element is often cited as a limitation to this measurement model, it is well suited to the context of our study as students are familiar with cognitively assessing course satisfaction. Use of an entirely digital course support reinforces the user's cognitive engagement, which cannot be passive during the course as s/he is an active participant. In this way, a strictly cognitive measure of satisfaction seems appropriate. This model is based on the longitudinal measurement of expectation. Positive disconfirmation translates into user satisfaction, whereas negative disconfirmation translates into dissatisfaction. Numerous studies have shown a positive linear relationship between disconfirmation and satisfaction. In order to adapt this model to our trial, students took part in an informational meeting at the beginning of the year before beginning to use the course. As courses take place over the course of a semester it is possible to carry out a longitudinal measure of their expectations and user experience. Measurement was carried out using an online questionnaire that was given to students at the end of the session in which the online course was presented (purpose, method, organization and planning), then at the end of the course's semester after the final exams. The questionnaire was created by a group of e-learning educators (initial and continuing education educators). After removing some items, the final scale is one-dimensional and represents 5 items (Cronbach's alpha 0.79) assessed on a 7-point Likert scale. The study involved 114 students: a) Interaction with the student (Expect 5, Perf 3, delta -2) ; b) Interaction between students (Expect 5, Perf 3, delta -2) c) Educational progress (Expect 6, Perf 7, delta 1); d) Knowledge advancement (Expect 5, Perf 6, delta 1); e) Technological complexity (Expect 7, Perf 4, delta -3). The results obtained clearly show dissatisfaction on the first two items (a, b), which relate to interaction. An initial attempt to explain this highlights the change in how the relationship between student and educator is organized. The automation of this relationship is highly significant and the working method that must be adopted still seems to be badly mastered. The length of independent working time seems to be a problem, students work easily with units of around thirty minutes but the sequencing of units to achieve four hours of course work and the debriefing appear to be too long. Here it is clearly the affective element of the relationship that is in question; the e-learning tool cannot fully compensate for a human relationship with a professor or between students [1]. For their part, the two items that relate to the cognitive dimension of learning (c, d) are positive. Thus, students express positive satisfaction with respect to their expectations. The use of different multimedia components that are integrated into the course makes it possible to provide a wide variety of examples, which breaks the monotony of independent learning and makes it possible to work in richer educational sequences and therefore more fully adapt to the varying sensibilities of users. Finally, the final items (e) that relate to the complexity of the technological support (the iPad) makes it possible to measure the variance between the misgivings of students who have little technological ability, and the perceived ease of use of the selected technological tool.

V. Perceived Value of an Innovation

Our trial is based on a new type of course for students (the enriched book) as well as a particular choice of technology (partial offline operation). Here, we are particularly concerned with the perceived characteristics of the innovation both on the educational and the technological level. Rogers' PCI model [10] is used in this study. It puts forward 2 dimensions: relative advantage and ease of use. Relative advantage is described as the principal way the innovation is perceived in relation to previous products and services. This dimension includes 3 sub dimensions: functional advantage (linked to use of the innovation), economic advantage (linked to the perceived price of the innovation), and social advantage (linked to the social image of using the innovation). In our study we deal only with the first two dimensions of the perceived value of the innovation (functional and economic advantage). This advantage is strongly linked to the user's social and cultural environment. In our sample and the context of use set by the university we are able to eliminate part of the variance that relates to social advantage. Each student must use the service, regardless of his/her social background. The measurement scales have been adapted from the literature and tested in their new form. Analysis makes it possible to put forward a two-dimensional scale for comparative advantage (Cronbach's alpha of the functional dimension, 0, 68; Cronbach's alpha of the economic dimension 0, 81) and a one-dimensional scale for ease of use (Cronbach's alpha 0, 76). The sample of 114 students was asked to respond to a questionnaire at the end of the semester, the average functional dimension was established as 5 out of 7 and the economic dimension as 4 out of 7. The functional dimension readily translates the course's usage value in its integrated form. The students liked the mainly offline operation of the course. The complete downloading of content for each chapter before commencing studies involves significant organizational challenges, but the low quality and cost of communication networks is a much greater limitation. Preference for a course that can be used without an Internet connection is an important element to emerge from our study. Low-speed connections are adequate for the routine use of interactions within the program and for consulting the forum.

The economic dimension clearly reflects the financial constraints linked to the choice of educational support used. iPad use is a constraint on the development of this type of course in a market where purchase power is relatively weak. As mentioned earlier, the cost of acquiring material can equate to 30% of the annual cost of university. Equally, Internet access and the high volume of data downloads involve additional costs. Currently, iBook format courses can also be used via an Apple Mac computer not only via an iPad, and this development will certainly open the market to a greater number of users.

Finally, the ease of use dimension is assessed on average as 4 out of 7, which reflects user ease when adopting this innovation. Use of a tablet and a proprietary format for interaction as part of the course makes it possible to minimize the need for configuration for their operation.

Students are extremely familiar with smartphone type operating systems so tablet use comes easily.

VI. Discussion and Limitations

Following two years in operation, this trial clearly shows the educational advantage of downloadable enriched courses. Here we present the main points that educators and students might take into account when wishing to implement an enriched course of this type.

In this research, we barely touched on the subject of educators. Although enriched courses are inexpensive because they are part of the Macintosh operating system, it is important to avoid downplaying a number of points. 1) As in every e-learning course the task of structuring course material is a particularly large investment. The size of course units is therefore fundamental. 2) The variety of multimedia: other than the copyright constraints around video/audio usage their KB size can quickly prove problematic. 3) A minimum level of technological knowledge is indispensable to creating this type of enriched course. Educators must be able to capture and recode video or audio streams, import resources from other software, and "juggle" other file formats.

From an educational perspective, many elements must be brought to the fore. 1) The variety of stimuli that can be integrated into the course make it possible to offer students a large range of exercises, which means that they are more likely to find examples suited to their own learning sensibilities. 2) The option to download and use courses offline is a real advantage for students located in geographic areas where the Internet connections are poor and expensive. The satisfaction of being able to work without an Internet connection is important. 3) Use of an iPad means that handling course support material is straightforward. For students, using a tablet seems to be a natural extension to using a smartphone, the format requires no plug-in or software updates. The strength of the Apple eco-system is that it makes technology transparent to users.

Although this approach may seem appealing it is important not to overlook the financial implications of using this type of course. Multiple costs are involved: 1) the cost of creating the course (calculated as the educator's work hours), structuring of course material, getting hold of multimedia content, and programming an enriched course require much more work than preparing a face-to-face course. 2) The time involved in the debriefing video must also be taken into account with the increasing number of student groups. 3) Finally, the course can only be completed on an iPad or Macintosh computer, which involves a significant purchase cost, and this point was particularly detrimental in our trial. A solution that involves borrowing or sharing material could be useful.

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