

# *Non-Traditional Interfaces used in Market Research: A Literature Review*

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**Abstract**— The main reason why market research is so important, is because every company wants to improve and maximize their chances of having a successful campaign. However, there are well-known weaknesses about traditional research methods that could be improved using new technologies. The purpose of this literature review is to find studies that evidence the use of non-traditional interfaces in market research. Search criteria were defined and selected papers were categorized into: Non-Traditional Interfaces, Market Research, and Non-Traditional Interfaces in Market Research. The majority of Non-Traditional Interfaces findings were mainly related to design and evaluation of non-traditional interfaces, applying Human Computer Interaction (HCI) concepts and techniques. In terms of Market Research, most of the findings were related to Analysis of consumers' behavior based on changes in marketing trends. In conclusion, the main concepts that were closely related between the findings of Market Research and Non-Traditional Interfaces were Virtual Reality, Social Marketing, Usability, User Experience, and Consumers' behavior.

**Keywords**—*Non-traditional Interfaces; Market Research; Marketing; Virtual Reality; Human Computer Interaction.*

## I. INTRODUCTION

Market research analyzes and collects information about what current and future customers may need and want. Some traditional market research methods are: focus groups, surveys, personal interviews, field trials [1]. Each traditional method has its advantages but if companies only get stick to one method, they will probably miss a significant amount of quality data [2]. There are known disadvantages about traditional research methods too [2]. In the first place, they are very expensive, companies have to spend a lot of money on incentives to get participants. In the case of focus groups, several phases are required [1]. In general, these methods are outdated [2]. The way people interact with technology has notably changed; so, should not research methods do so too? Another key point is the data quality; frequently is not fully trustable [3]. For

instance, survey participation is low, sometimes the target audience is not covered by the participants, resulting in low-quality data [3]. Conversely, new market techniques such as gathering emotion information, provides very high-quality data as it predicts key success metrics such as brand recall, purchase intent and possibility to share [4]. Therefore, if innovative technologies are combined with marketing strategies, market research could be more accurate, efficient and fast. The main goal of this literature review is to find studies that evidence the use of non-traditional interfaces in market research.

The graphical user interface (GUI) is an essential component of every computer system because it determines how the system is controlled and operated. When the interface is well designed, it makes users to feel satisfied [5]. While the GUI is still the most common interface today, there are other interfaces that are becoming progressively popular.

The definition of “non-traditional” is something different from what was considered usual or typical in the past, regarding non-traditional interfaces, it includes from an interactive interface to an interface that covered all of the human senses, many of these interfaces will evoke a strong “wow” factor (e.g., taste interfaces) since they are not common [6].

Examples of non-traditional interfaces are: haptic interfaces (use the sensation of touch to provide information to the user), gesture interfaces (use hand and face movements as input controls for a computer), locomotion interfaces, auditory interfaces, speech user interfaces, interactive voice response interfaces, olfactory interfaces, taste interfaces, small-screen interfaces and multimodal interfaces [6].

Human Computer Interaction (HCI) “is a multidisciplinary field in which psychology and other social sciences unite with computer science and related technical fields, with the goal of making computing systems that are both useful and usable” [7, p. 491]. Non-traditional interfaces add value to our day-to-day lives, and that is the reason why HCI plays a key factor in this research, because it perfectly fits with psychology (marketing, users) and computer science (non-traditional interfaces).

This paper describes the protocol and results of a literature review performed to gather evidence of the use of non-traditional interfaces in market research. A literature review is a way to identify and discuss in a formal manner, the current knowledge related to a research area; in this case Market Research and Non-Traditional Interfaces.

Section II presents background of non-traditional interfaces in market research, section III presents the protocol used to conduct the literature review. Section IV presents the results and findings of the three categories (Non-traditional Interfaces, Market Research, and Non-traditional Interfaces in Market Research). Section V presents the conclusions and future work of the research.

## II. BACKGROUND

Although there are very interesting new technologies, market research is still very traditional. Some efforts have been made to implement non-traditional interfaces using Virtual Reality to create a greater impact in retailing, through virtual stores [8].

A non-traditional tool that has had a major impact on market research is *Affdex* for Market Research by *Affectiva* [9], a cloud-based solution that uses emotion recognition software. This solution provides deep insight into unfiltered and neutral consumer emotional responses to digital content. It is simple, easy and highly accurate. *Affdex* for Market Research measures the user moment-by-moment facial expressions of emotions. The results are aggregated and displayed in an easy-to-use dashboard [4].

Another example is *iMeet* that gives users the power to meet via web, video or audio conferencing—however and wherever they want—from single interface. Vantage Group Managing Partner & Founder, Read Xiegler, said that traditional in-person focus groups can cost up to \$6,000 each, depending on the scale, while focus groups conducted virtually using *iMeet* can save the company up to half those costs [10].

## III. METHODOLOGY

The following subsections describe how the literature review was conducted. Barbara Kitchenham protocol [11] was used as a guideline and its most relevant sections were covered.

### A. Research Question

The main purpose of this literature review is to find an answer to the following research question: *Have Non-Traditional interfaces been used in Market Research?*

### B. Search Strategy

This literature review is focused on Market Research and Human Computer Interaction (non-traditional interfaces), for

this reason and based on HCI expert advice, Springer was the only search source consulted.

The eligibility criteria in Springer were: Conference Paper and Article (content type), Computer Science (discipline), User Interfaces and Human Computer Interaction (sub-discipline), and English (language).

The query string executed was: (("non-traditional" OR nontraditional) AND (interfaces OR interface OR "user interfaces" OR "user interface" OR tool OR tools OR application OR technology OR technologies)) AND ("market research" OR "marketing research").

### C. Study Selection

After executing the query with the above mentioned eligibility criteria, a quick title and keyword scan was done and the 25 most interesting articles related to the research topic were considered.

Retrieved papers' titles, abstracts, keywords and conclusions were reviewed. If those sections explicitly mentioned the words "non-traditional interfaces", "Interactive/Innovative systems", "Virtual Reality" or "Augmented Reality", the paper was included under the first category ("Non-Traditional Interfaces"). If "marketing", "market research" or "marketing research" was mentioned, the paper was included under the second category ("Market Research"). Lastly, if the paper met both criteria, it was included under the third category ("Non-traditional Interfaces in Market Research").

## IV. RESULTS

This section presents an overall analysis of the studies included in this literature review.

Since the results were quite heterogeneous, they were grouped into related topics depending on each category.

The query in Springer retrieved 66 documents. After the scanning process (by title, abstract, and keywords), 20 papers were selected to full text reading. In the Table 1 categories are presented.

TABLE I. DISTRIBUTION OF PAPERS BY CATEGORY

| Category                                      | Number of Full Papers (Reviewed/included) |
|---|---|
| Non-Traditional Interfaces                    | 10  |
| Market Research                               | 6   |
| Non-traditional Interfaces in Market Research | 4   |

### A. Non-Traditional Interfaces

The information gathered to perform the synthesis was: tool functionality, technology used for the implementation, evidence of improvement when using the system, and HCI techniques applied.

Figure 1 shows that 58% of the reviewed studies were mainly related to design and evaluation of non-traditional interfaces, applying HCI concepts and techniques. The remaining percentage corresponds to Innovative Systems implementation.

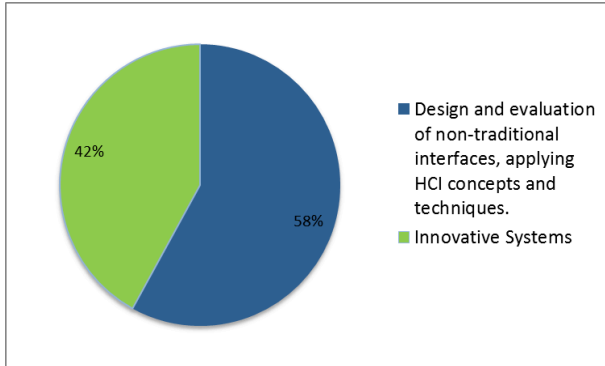


Fig. 1. Findings of Non-traditional Interfaces

### B. Market Research

Some of the information gathered to perform the synthesis was: marketing strategy, type of research, target audience and improvement opportunities. Figure 2 shows that 60% of the reviewed studies were Analysis of consumers' behavior based on changes in marketing trends. The remaining percentage was new marketing techniques.

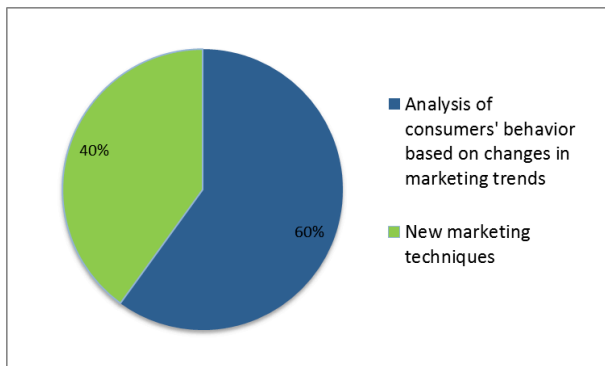


Fig. 2. Findings of Market Research

### C. Non-traditional Interfaces in Market Research

In this category, the most important finding was related to market research and different non-traditional interfaces developed with Virtual Reality (VR). VR has gotten marketers interest because it can get consumers' attention in a creative

and ingenious way. Some brands like Volvo, offer a virtual test-drive for their newest models. Jaguar, offers a virtual visit to the Wimbledon Stadium in which the user can simulate to be a tennis player (e.g., Andy Murray). Adidas offers a VR experience featuring NBA Players. Also, Carrefour has embarked on a VR marketing strategy, by creating virtual environments in which the consumers can see the various products they offer [12].

Marketing literature has demonstrated that a more vivid representation gets positive feedback in the consumer in terms of attitudes [12], that is why Virtual Reality has started to be implemented in VR Experience Marketing.

The use of Virtual Reality in marketing practice is still fairly limited. Nevertheless, affordable Virtual Reality headsets like Samsung Gear VR are reaching consumer markets. Recently, even reachable low-cost alternatives, such as the Google Cardboard are available for general customers. [12].

One important concept in this category is Social Media Marketing. It is completely related to consumers and from that perspective, the use of information technologies offers a number of benefits, including: efficiency, a broader selection of products, competitive pricing, cost reduction, and product diversity [13].

In terms of User Experience, Anthony Franco [14] mentioned that marketing is *selling* and user experience is *servicing*, so if the goal of marketing is to create value for the business, then the goal of user experience is to create value for the customer.

In addition, Usability is a quality attribute that assesses how easy user interfaces are to use, that is the main reason of why it is a key factor in non-traditional interfaces [15].

The main concepts that were closely related between the findings of Market Research and Non-traditional Interfaces are shown in Figure 3.

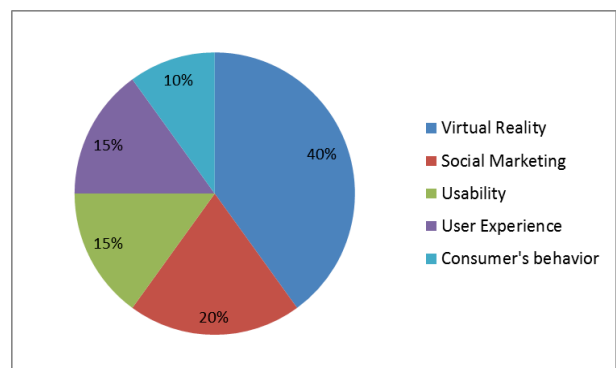


Fig. 3. Findings of Non-traditional Interfaces in Market research

## V. CONCLUSIONS

This literature review was made to find evidence of the use of non-traditional interfaces in market research. A protocol was defined to perform the literature review and 20 papers were reviewed and categorized in three categories.

Non-Traditional Interfaces findings, showed that 58% of the reviewed studies were mainly related to design and evaluation of non-traditional interfaces, applying HCI concepts and techniques. Market research findings showed that 60% of the reviewed studies were about analysis of consumers' behavior based on changes in marketing trends. The most relevant concepts between the Findings of Market Research and Non-Traditional Interfaces were Virtual Reality, Social Marketing, Usability, User Experience, and Consumers' Behavior.

Despite the fact that few studies directly link non-traditional interfaces with market research, valuable findings were found after synthesizing the information to answer the research question.

In market research, the more realistic the situation, the more accurately will marketers be able to study how people behave. Focus groups are good, but talking to people in a room is different from understanding how they might behave if they are actually surrounded by the right stimulus. In this case, the right stimulus can be achieved through VR [16].

One research question that arose based on this literature review is:

*Is it possible to improve the way in which data from focus groups is analyzed and gathered using non-traditional interfaces?*

In a nutshell, non-traditional interfaces have been used in market research, but mostly in experimental phases, which opens the possibility to a large series of future researches.

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