A Scoping Review of Online User Engagement

Gozde Boga

A research Paper submitted to the University of Dublin,
in partial fulfilment of the requirements for the degree of
Master of Science Interactive Digital Media

2014

Declaration

I declare that the work described in this research Paper is, except where otherwise stated, entirely my own work and has not been submitted as an exercise for a degree at this or any other university.

Signed: _____
Gozde Boga
28/02/2014

Permission to lend and/or copy

I agree that Trinity College Library may lend or copy this research Paper upon request.

Signed: _____
Gozde Boga
28/02/2014

Acknowledgements

I would like to thank to my family for the support they have given me over the course of this research paper. I would more importantly like to thank my supervisor Marie Redmond who has been the pillar of sound advice that I needed to write this research paper. Many thanks !

ABSTRACT

Over the last decade, practitioners, professionals and scholars have studied the ever-changing nature of digital technology and the concept of online user engagement, examining engagement with web-based platforms – websites, web applications, software, and social media. This paper profiles and assesses the existing body of research pertaining to online user engagement within the context of user experience. Specifically, this study profiles the definitions of online user engagement, summarizes its various components, and flags up those areas that demand further enquiry and research. A scoping review methodology is chosen to identify the breadth of literature, to summarize findings and to identify gaps. Through a literature database search, twenty studies meeting our criteria for review have been identified. An analytical study will be conducted to create an operational consensus on the meaning of online user engagement, which can serve as a foundation for more detailed reviews. This paper adopts a reflective stance on existing debates and findings to offer a re-interpretation of online user engagement studies.

TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

CHAPTER ONE - INTRODUCTION

1.1 Scope and Rationale of the Study

Digital interactions between people and their engagement with online technology have become a defining characteristic of modern life. With the rapid development of web technology, the nature of one's web experience is diversified almost by the second. Online private enterprises make significant efforts to understand the dynamics of the web experience, and invest time and money in determining what makes a successful user engagement. Constantly striving to improve online experience and the satisfaction of their customers, companies that use digital means for customer outreach are growing nearly twice as fast as their non-digital peers (PwC, 2013). This statistic makes clear how users are paying more attention to online services, and responding to web technologies.

There is a great deal of discussion about online user engagement within the context of user experience. Common enquiries on user engagement within IT concern ways in which web analytics can be tracked, and how to measure and model user engagement to enhance effective online experience. For example, Google is interested in the how of engagement (Levy, 2013) with the Engagement Project, while Microsoft is working on how to predict the *changes* in engagement (Song, Shi, and Fu, 2013). Verma, director of platform technologies at Oracle, notes that a key tenet of user engagement is personalization (2012) and a recent ACM Conference on Information and Knowledge Management included a workshop to discuss user engagement optimization (Hong and Hong-Yang, 2013). Clearly, then, the main focus of the Information Technology (IT) industry is encouraging users to engage with brands to further satisfy their customers. While we look forward to seeing how the debate progresses, this study is concerned rather with the extent and the nature of academic research activity regarding online user engagement.

In the quest to broaden their understanding of what constitutes engagement in online experience, academics are researching the evolution of the relationship between the individual and technology. The online engagement phenomenon is explored through both quantitative and qualitative research. Researchers are working closely to investigate the meaning of user engagement. The nature of interaction between people, information, and technology is illuminated in discourse concerning the

influence of new communication technologies. However, while there is a great deal of interest in online user engagement both in the IT industry and the academic field, there is also a good deal of confusion. Indeed, even though "we have a fairly comprehensive picture of the role of technology in modern life, there is no account of how we use it" (Turner, 2013). For this reason, of all the areas in digital interaction and experience, user engagement is arguably the most important and the most challenging aspect to analyze, since it is such a dynamic, hybrid and complicated process.

Even though online engagement is an anticipated concept, neither scholars nor stakeholders in private enterprises have been able to reach a consensus on a precise definition of online engagement, or what constitutes successful user engagement. "User engagement" is applied as a synonym for user experience when describing a user's actions within or interaction with a system. User experience is present in every step of user interaction and seeks to promote rich, engaging interactions between users and systems. There is a vast body of literature focusing on how to define the nature of such interactions. Despite the widespread use of terms as synonyms, "user engagement" is not the same as "user experience", and scholars have noted that user engagement is often either undefined or under defined in the context of user experience.

Users who are online are at the core of user engagement. It is valuable to note that "online" refers to the user's activities performed when accessing the Internet, such as using Skype, sending or reading e-mail, going on Facebook, reading or writing a blog, or any other activities related to the Internet (Dworkin et al., 2013). Online users are the users who should be motivated to initiate an interaction, and who therefore engage with technology. Thus, engagement is typically a prerequisite for a technological system's objectives: if a user stops interacting with a system, then it cannot have any further impact (Bickmore and Schulman, 2010). Clearly, user experience and user engagement are two concurrent processes. At its conceptual core, user engagement is about creating something of value for an audience (Idiom, 2013). Whereas user experience focuses on aspects of human-computer interaction, engagement as a concept has its roots in offline marketing studies, and embraces the engagement and communication of customers with one another, with a company or a brand. Various discourses present online user engagement with an increasing number of definitions.

Understanding what is already available in the literature in regards to users' online engagement, and exploring the studies defining the nature of those engaging interactions with the web, can enable practitioners, professionals and scholars to make relevant and valuable contributions to our understanding of user engagement. As such, the main objective of this work is to summarize the definitions and disseminate research findings in regards to the concept of online "user engagement", because demonstrating a diachronic understanding of a concept helps to explain the basis and background of what we see today in the web era.

A scoping review methodology is used since it's an ideal way to incorporate a range of study designs (Levac et al., 2010), and to provide a descriptive account of available research through a large number of studies (Arksey and O'Malley, 2005). Before going into the details of methodology, and the search strategy within scholarly resources, it is necessary to clarify guiding search terms of this study at the outset of scoping. Even though scoping reviews are more comprehensive than systematic reviews, excessively wide definitions might generate an unmanageably large number of references (Arksey and O'Malley, 2005) to work with.

1.2 Complexity of Guiding Terms
1.2.1 "User" and "Engagement"
Since the twentieth century, a philosophical stance towards the work of interdisciplinary studies has emerged. This perspective evokes multiple kinds of interpretations when studying users' experience with technology, and basic concepts become even more complex when offline experiences expand into online platforms. Yet one cannot design a research plan without a clear idea of what basic terms mean. The research question at the core of this methodologically-driven scoping review can progress only when terms are properly defined, and the context is clearly explained. Ultimately, due to the multidimensionality of online experiences, the methodology of this work initially develops a common understanding of the concept of "user engagement" within the context of user experience. The first challenge is to clarify the guiding terms of "user" and "engagement" respectively.

At the beginning of the 1980s, HCI introduced an academic and design discipline (Dix, 2014) and established the concept of "user" as a term. Not surprisingly, academics of HCI came up with the term "user" as opposed to "consumer" in marketing terms, because of their focus on usability of design in human-made objects. The term appeared as "user" because usability was always very deeply rooted in usage; when people invented that term, it had not been the consumer, but naturally the user (Dam and Soegaard, 2011).

The earliest reference to user experience appears in 1995. Essentially, Don Norman invented the term "user experience" because he thought human interface and usability were too narrow. He suggested the term to cover all aspects of the person's experience with a system, including industrial design, graphics, the interface, the physical interaction, and the manual (Hornsby, 2013). This, in turn, brings us back to the use of "user", because Don Norman's explanation of user experience essentially refers to a person's experience. In fact, Don Norman is on a quest to dispose of the term "user" (Norman, 2008), calling them "people" instead, since "user" simply refers to a person who uses a computer or computer system.

This study also identifies a "user" as a "person", and therefore, when in search for the scope of user engagement, "customer", "consumer", and "user engagement" will be used as search terms interchangeably. Similar to Don Norman's view, the customer is someone who pays the bills; the consumer is the one who consumes; and the user is the person who pushes the buttons, clicks the mouse, and keeps getting confused (Norman, 2006).

Moreover, it is valuable to briefly clarify the engagement concept in order to narrow the study selection in our scoping review, as many studies have explored the term from various perspectives. For example, human resources (HR) literature defines a person's engagement with tasks. Accordingly, "engagement connotes involvement, commitment, passion, enthusiasm, focused effort and energy, so it has both attitudinal and behavioral components" (Macey and Schneider, 2008; p. 4). Similarly, many of the human computer interaction studies use sociology and psychology literature definitions of engagement, which clarifies the term engagement "as a short term cognitive process in

performing a task or in working with another person or an object" (Bickmore and Picard, 2005).

From the perspective of the advertising field, engagement is defined by Advertising Research Foundation as "turning on a prospect to a brand idea enhanced by the surrounding context" (Burns, 2006). There is also the concept of engagement mode, which is described as the general properties of people's activities in relation to the external world (Heidegger, 1927/1996). In the present context, the perceived external environment refers to the subjects' perception of external constraints and possibilities are related to their use of technology (Norman, 1998).

After extensive studies, marketing field researchers suggest engagement as a cognitive and affective commitment to an active relationship with a brand as personified by the website, web application and web platforms. Accordingly, user engagement is "characterized by the dimensions of dynamic and sustained cognitive processing and the satisfying of instrumental value (utility and relevance) and experiential value (emotional congruence with the narrative schema encountered in computer-mediated entities)" (Mollen and Wilson, 2010).

Evaluating related perspectives evoked a basis of guidance and reduced the complexity of terminology for the scoping review. The verb "to engage" appears to imply involvement, and a reciprocal relationship of users with web technologies. However, due to several fields' concentration on the engagement concept, the term broadens, becomes vague and, eventually, application or context dependent. This reinforces the idea that data is contextual, implying different meanings depending on the context. Inevitably, this work needs to further clarify the terminology of online user engagement as a search term. The gist of study selection, as well as profiling findings from those studies, can only be meaningful together with concepts strongly related to online customer or user experience.

1.2.2 "User Engagement"

User engagement is a buzzword in several disciplines, and the terminology that has grown up around the subject of user engagement has become blurred. Therefore, it is challenging to define the boundaries of the concept and various perspectives present hurdles for conceptual definitions. However, such instances also offer the opportunity to develop studies that explore the nature of interaction between the user and online applications. Although people's experience with technology has changed and matured, research attempts to keep up with this, and indicates a continuous need for further clarity on what is and is not engaging from the user's perspective versus what is and is not engaging from a user experience designer perspective.

For the purposes of this study, user engagement refers to a component of user experience and emphasizes the aspects of the interaction. User engagement was originally the phenomenon associated with being captivated by technology (Attfield et al., 2011). With such a starting point, here in this section, the terms and work around user experience are outlined to explain the rationale of defining user engagement as a component of user experience.

Firstly, the overlaps and differences between user experience and user engagement are discussed by explaining the nature of studies in the user experience field. It is argued that the existence of user experience and user engagement as separate notions clearly outlines the variance in terminology. Secondly, as a basis to create components of our scoping methodology, the perspectives of both user experience and user engagement studies are clarified, and the fine line between user experience and user engagement is displayed by way of a supplementary literature map.

In the first place, there are a number of essential definitions in literature for a complex phenomenon like user experience. However, ISO 9241-210 (formerly ISO 13407) defines the user's "experience" as "a person's perceptions and responses that result from the use or anticipated use of a product, system or service". Generally speaking, three factors influence user experience: (1)system, (2)user and (3)context of use (ISO, 2010). Particularly, "an experience is an episode, a chunk of time that one went through – with sights and sounds, feelings and thoughts, motives and actions; they

are closely knitted together, stored in memory, labeled, relieved and communicated to others" (Hassenzahl, 2010, p.8). Thus, a person's perceptions and responses within a period of time can define the user's experience.

Human-Computer Interaction (HCI) researchers and practitioners have adopted user experience (UX) and UX goals despite their definition being "vague, elusive, and ephemeral" (Hassenzahl and Tractinsky, 2006, p.91). As previously mentioned. UX is a design practice that has established approaches such as user research, interaction design, and usability engineering. In parallel, literature on UX focuses on and strives to incorporate experiential and affective dimensions in understanding the user (Bach and Carroll, 2010, p.904). So, UX studies in HCI provide a way to make the inference that there is a relationship between a user and a product, system or service, with a focus on process or the interaction episode. Consequently, user experience can be briefly explained as a mutual and dynamic relationship between the person and the technological source within time.

Beyond identifying the relationship between user and technological source, Donald Norman promotes that we fully explore the needs and desires of users and the intended uses of a product (Abras et al., 2004). In a similar fashion, by focusing on user needs, user experience is also defined as:

•   a consequence of a user's internal state (predispositions, expectations, needs, motivation, mood, etc.)

•   the characteristics of the designed system (e.g. complexity, purpose, usability, functionality, etc.)

•   the context (or the environment) within which the interaction occurs (e.g. organisational/social setting, meaningfulness of the activity, voluntariness of use, etc.) (Hassenzahl and Tractinsky, 2006, p.95).

In conclusion, user experience (UX) literature evaluates an ongoing relationship between the user and the technological product. Also, due to user and system variables, the evaluations are subjective, context-dependent and dynamic over time (Law et al., 2009). Where user engagement fits within this picture is the key to defining the similarities and differences between user experience and user engagement.

Sutcliffe (2009) argues that UX is a diffuse term and user engagement is reserved to explain how and why applications attract people to use them within a session. Some studies emphasize the positive aspects of interaction and refer to user engagement as a quality of user experience (Attfield et al., 2011). As a starting point, we referred to user engagement as a component of the user experience because in this paper it is argued that UX defines the wider picture, including why people adopt and continue to use a particular design over many sessions and even years, by looking at the whole process from use, system and context perspectives. However, user engagement describes how people are attracted to use interactive products (Sutcliffe, 2009, p.3-4) and remain attracted to episodes of interaction.

In addition, a graphical overview of the literature within user experience is provided (Figure 1) to map the rationale behind our approach to online user engagement studies. The graphical map illustrates the wide range of research that exists, and shows the key areas within UX literature as well as connoting the complexity of the various research areas it draws upon. As a result, the presented literature map by Hart helps to narrow down our review strategy on online user engagement, and reinforces the need to conduct a scoping review. Unlike narrative, empirical reviews, or meta-analysis, scoping reviews tend to focus on breadth rather than depth of coverage of the literature conducted on a specific topic.
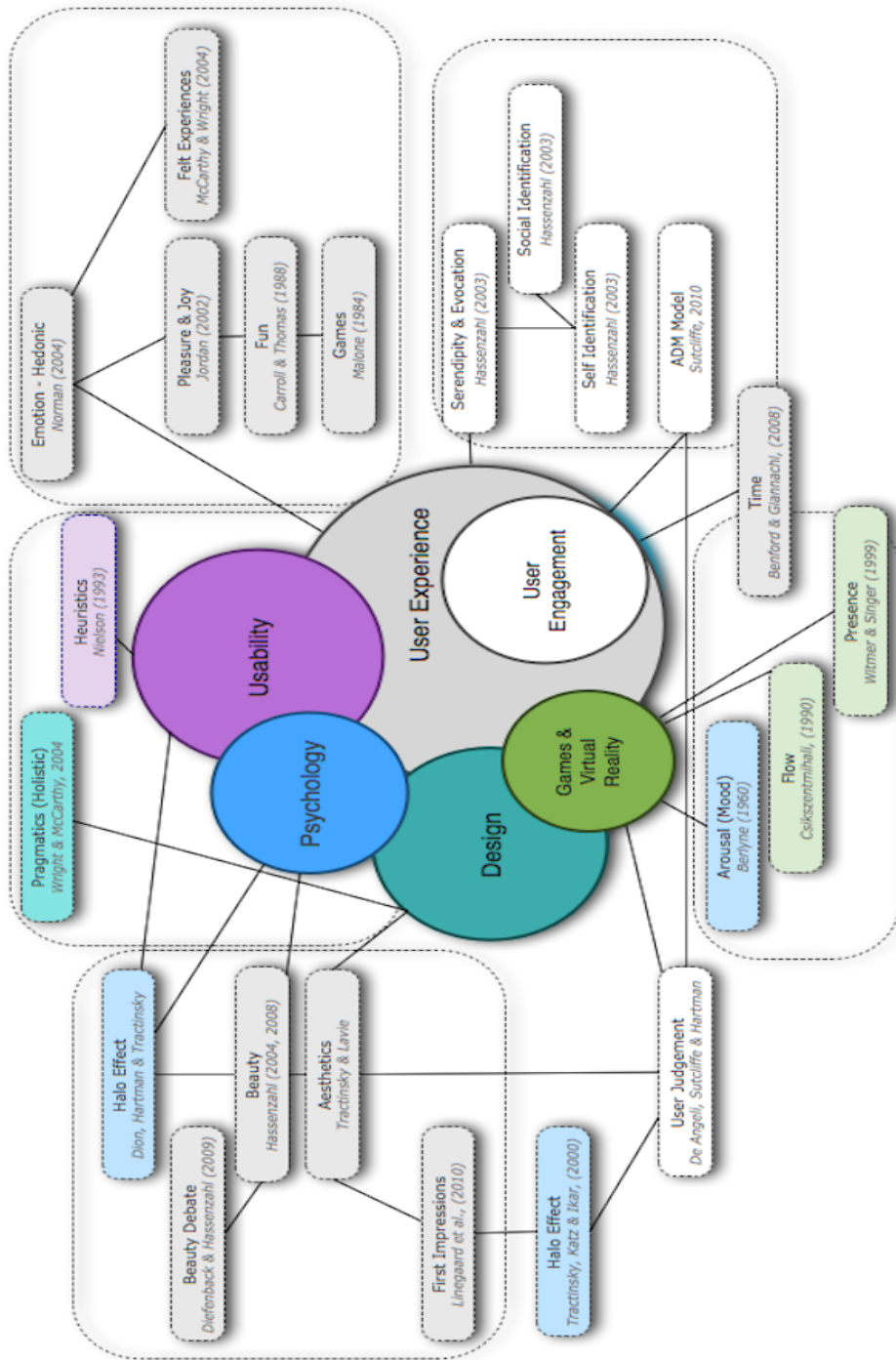
Figure 1: Hart, J. (2012). A Graphical Overview of Literature on User Experience

CHAPTER TWO - METHODOLOGY

2.1 Research Methodology

This paper is essentially a methodologically-driven scoping study or review. Built on a scoping review framework developed by Arksey and O'Malley (2005), and expanded upon by Levac et al. (2010), scoping review methodology has been chosen to examine what is known from existing primary studies on online user engagement.

Arksey and O'Malley (2005) describe a five-stage framework for conducting such a scoping review (Figure 2). In a scoping review, papers are included regardless of their research design and methodological quality. Also, unlike systematic reviews, scoping studies do not seek to examine the entire evidence base on any given topic, rather they identify studies with a preliminary list of descriptors (Rumrill et al. 2010) and examine the most important references.

Overview of the Arksey and O'Malley methodological framework for conducting a scoping study	
Arksey and O'Malley Framework Stage	**Description**
1: Identifying the research question	Identifying the research question provides the roadmap for subsequent stages. Relevant aspects of the question must be clearly defined as they have ramifications for search strategies. Research questions are broad in nature as they seek to provide breadth of coverage.
2: Identifying relevant studies	This stage involves identifying the relevant studies and developing a decision plan for where to search, which terms to use, which sources are to be searched, time span, and language. Comprehensiveness and breadth is important in the search. Sources include electronic databases, reference lists, hand searching of key journals, and organizations and conferences. Breadth is important; however, practicalities of the search are as well. Time, budget and personnel resources are potential limiting factors and decisions need to be made upfront about how these will impact the search.
3: Study selection	Study selection involves *post hoc* inclusion and exclusion criteria. These criteria are based on the specifics of the research question and on new familiarity with the subject matter through reading the studies.
4: Charting the data	A data-charting form is developed and used to extract data from each study. A 'narrative review' or 'descriptive analytical' method is used to extract contextual or process oriented information from each study.
5: Collating, summarizing, and reporting results	An analytic framework or thematic construction is used to provide an overview of the breadth of the literature but not a synthesis. A numerical analysis of the extent and nature of studies using tables and charts is presented. A thematic analysis is then presented. Clarity and consistency are required when reporting results.
6: Consultation (optional)	Provides opportunities for consumer and stakeholder involvement to suggest additional references and provide insights beyond those in the literature.

Figure 2: Overview of the Arksey and O'Malley methodological framework for conducting a scoping study (Levac et.al., 2010, p.3)

According to Arksey and O'Malley (2005), there are generally two different purposes of scoping reviews. The first focuses on examining the range and nature of a particular research area, or determining if a full systematic review is needed. The second is more similar to the systematic reviews and endeavors to disseminate research findings or to identify gaps in the existing research literature (Rumrill et al., 2010, p. 401). This study chiefly focuses on the latter and aims to disseminate research findings as well as identify the gaps of online user engagement studies.

Arksey and O'Malley acknowledge the need to maintain a broad scope to research questions, but it is found that the research questions lacked the direction, clarity, and focus needed to inform subsequent stages of the research process, such as identifying studies and making decisions about study inclusion. To clarify this stage, we combined broad research questions with a clearly articulated scope of inquiry as suggested by Levac et al. (2010) to establish an effective search strategy.

Therefore, a preliminary review of literature and terms are discussed earlier on to facilitate the filtering of existing research literature specifically related to user engagement on online platforms. Relevant aspects of the question are defined in the introduction section as guiding terms and it is identified that the nature of the literature have ramifications for search strategies (Levac et al., 2010, p.3). In section one, the online user engagement baseline is defined, and the context of user engagement in literature is supplemented, enabling this work to efficiently identify the relevant articles in a large volume of published literature.

As user engagement is a complex phenomenon that could include possible variances, this study had to determine what parts of user experience related literature should be included or excluded. Very wide definitions of what might constitute online user engagement might have reduced the likelihood of missing relevant articles, but could also generate an unmanageably large number of references. Therefore, initially a wide approach is adopted, in order to generate breadth of coverage methodologically, by clarifying the roots of guiding terms and relevant field studies.

As Arksey and O'Malley's (2005) methodological framework is the core guiding principle while conducting this work, naturally the structure of the framework is applied to structuring the overall outline of contents. Therefore, here in the methodology section, the methodology rationale is introduced and associated with the first three stages of the framework.

- Research questions and objectives are identified
- Search criteria are established to identify relevant studies
- *Post hoc* search criteria is identified based on search questions and process

is documented for study selection

2.2 Identifying the Initial Research Questions

Often, the underlying aim of a scoping review is to explore the literature as opposed to answering specific questions (Giustini, 2014). Therefore, a scoping review of research and literature regarding online user engagement is guided by the following research questions:

- How is online user engagement defined in theoretical fields, specifically

when interacting with computers?

- What are the identified characteristics of online user engagement?
- What are the overarching gaps in research in this field?

The project has four objectives:

- To capture and evaluate existing online user engagement knowledge, and

engagement models across published academic papers.

- To evaluate the defined elements of user engagement processes.
- To evaluate suggested metrics to measure user engagement *(if any – unlike*

business and e-commerce sites, not all web applications necessarily have an end-goal or target

metrics for users to achieve).

- To identify the gaps of online user engagement studies.

2.3 Identifying Relevant Studies

Search Strategy

Decisions about how to set parameters on large numbers of bibliographic references are made once some sense of the volume and general scope of the field has been gained. To begin with, a target number of articles for the review is limited to a maximum of 100, as suggested by Rumrill et al. (2010). Then, the number of articles are limited by review of criteria to report original or extant data in relation to research questions (Rumrill et al. 2010).

Search terms are identified and combined keyword searches are conducted to maximize search recall (or *sensitivity*) (Giustini, 2014) and search phrases are identified based on the general scope of the field. Terms are applied to a database search for identifying the studies in literature. An initial review is conducted based on criteria of exclusion and inclusion. An inclusion and exclusion criteria as a review protocol for the scoping is compiled using the rigorous methodology proposed by Arksey and O'Malley (2005), and it is modified as necessary. By creating citations reports, references from included studies and relevant review articles are also scanned for the same terms. Then references within reviewed articles are followed up.

Inclusion Criteria

- Search terms: online user engagement, online consumer engagement, online customer engagement, (online engagement) AND (user experience).

- Completed electronic articles that appeared in refereed academic or professional journals, reports, papers and documents directly addressing search terms in their abstracts, titles, keywords or subjects are included in this study.

- The search was not limited by date.

- No geographical restriction.

Exclusion Criteria

•	Books and book chapters

•	Duplicate article results returns

•	Due to the scope of this research, journals, articles, studies in all settings are not considered as relevant

•	Engagement in medical literature, health care, public health, health approach, parenting program, rasch model, sander is wide and diverse and related articles mapped out even though fitting the inclusion criteria.

•	Engagement in games and virtual reality studies are not directly relevant to our research questions. So, game related topics and subtopics are mapped out.

Database Research

The process of collecting literature based on defined parameters demanded surveying many subject-specific search engines and databases. The primary search engines used for this research included: ScienceDirect, and The IEEE Xplore digital library (access provided by Trinity College Dublin) and Google Scholar. IEEE stands for the Institute of Electrical and Electronics Engineers and it is the world's largest professional association dedicated to advancing technological innovation and excellence for the benefit of humanity, and thus is relevant to this work. The first two databases, ScienceDirect and The IEEE Xplore library were used to identify academic literature, while the third is for the inclusion of the references follow up.

Limitations and Strengths

Compared to systematic reviews, exclusion and inclusion criteria are determined based on relevance rather than the quality of studies (Valaitis et al., 2000, p.3). However, the search methodology is not linear but iterative; research steps are repeated and the criteria refined to ensure that the literature is covered in a comprehensive, in-depth and inclusive manner (Arksey and O'Malley, 2005). However, several challenges arose when identifying literature to be consolidated in this study.

This study has three key limitations and three key strengths. The first limitation is the lack of representation in regard to the sources of documents. The scoping review aims for breadth and the identification of all relevant types of literature by searching for evidence via many different sources, including electronic databases, the Internet, existing networks and relevant organizations (Arksey and O'Malley, 2005). However, it is important to note that although the aim is for breadth, a scoping review can make no claim to comprehensiveness. As Arksey and O'Malley (2005) explain, scoping reviews are often just one part of an ongoing process. In this study, both the journal hand-searches and refined reference review contributions were limited to key databases that were accessible through Trinity College Library. This limitation increases the study sample size's potential influence on conclusions that can be made. Small studies provide issue-specific evidence, while larger studies generate evidence that can be used as a comparison tool in further data collection. The majority of the research conducted, however, was online user engagement specific, and the limitations should be noted when using the data for comparison or further studies. The second limitation of this study is that the quality of the documents included is not appraised, mainly because no systematic quality-appraising tool exists for this type of evidence. Also, similar to literature reviews, scoping reviews are prone to selection bias due to sample selection. However, as with any high quality research, the position or potential bias of any work must be identified, and potentially subjective decisions regarding data analysis made clear (Arksey and O'Malley, 2005). The third limitation is the research duration, as the majority of the literature encompassed in this study is based on short-term research and assessment.

The first strength is that the results of the study present the first effort to systematically identify and gather published journal articles on user engagement, and to explore documents that specifically address online user engagement by identifying a road map where future studies could be. Second, the study involved exclusion and inclusion criteria which is determined based on relevance rather than the quality of studies (Valaitis et al., 2000, p.3). Even though the answers to our research questions have more to do with method than with content, a fine balance of relevant content is identified as scoping study cannot determine whether particular studies provide robust or generalizable findings (Arksey and O'Malley, 2005). Finally, the third strength is that this study is conducted to clarify a complex

concept and refine subsequent research inquiries (Levac et al., 2010). Therefore, this work is incorporating a range of study designs, provides a thematic construction of current literature as well as producing a synthesis on particular aspects of the online user engagement.

2.4 Study Selection

Given that the initial target number of articles for the review is limited to 100, in order to respond to the breadth of the review, the study evaluating two databases with search terms returned 179 (n=179) results. Duplicate studies (n=21) were excluded based on titles of articles and journals' area of study. The inclusion and exclusion criteria were applied and 83 (n=83) results excluded. Only 75 (n=75) articles are selected for initial abstract and references review.

After abstract reviews, 32 (n=32) studies are excluded as they did not address the central research question of this study and 43 (n=43) studies are selected for full text review. If the relevance of a study was unclear from the abstract, then the full article is selected for full text review (Arksey and O'Malley, 2005). Since examining the most significant references is important in scoping reviews, 15 (n=15) articles from those 43 (n=43) studies are additionally selected from references for abstract review. Therefore, a total of 58 (n=58) articles are selected for full text review. The full list of reviewed citations is found in Appendix. The results and summary of the inclusion and exclusion process are presented in Figure 3.
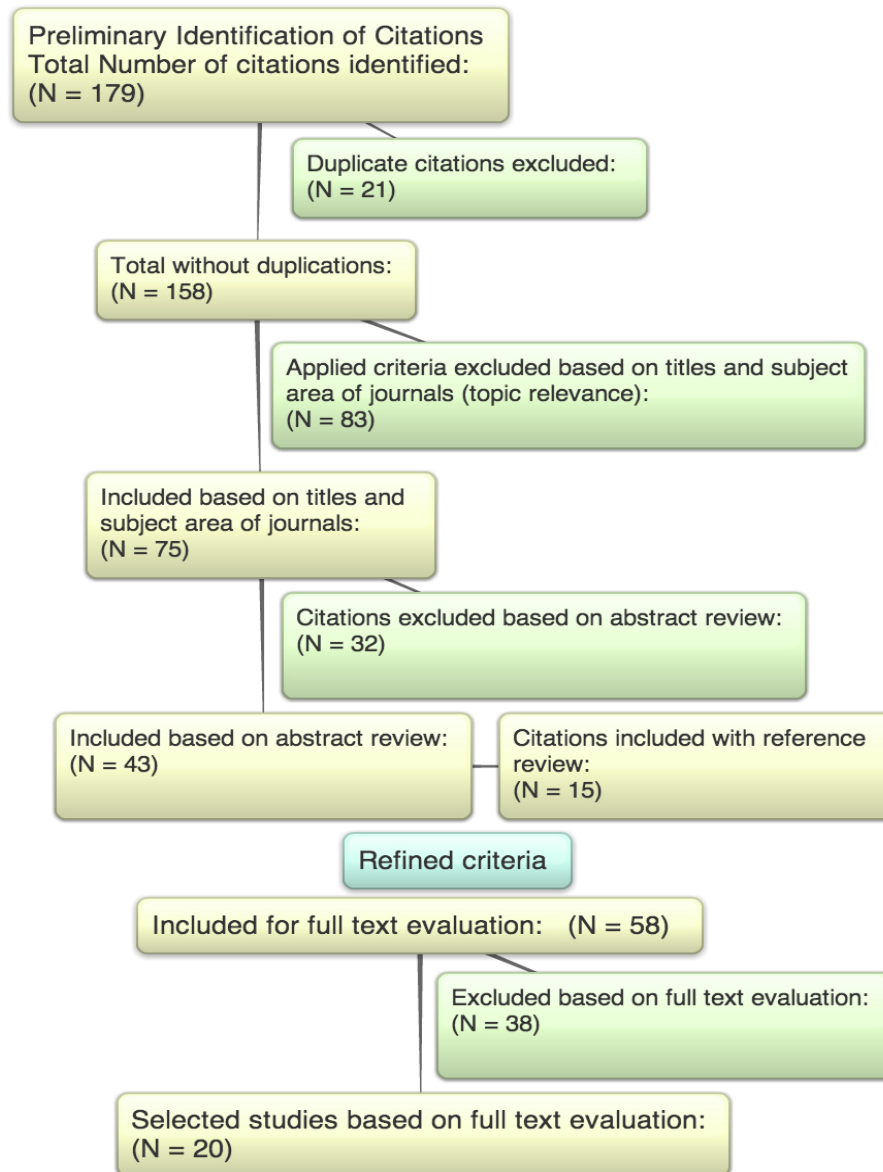
Preliminary Identification of Citations
Total Number of citations identified:
(N = 179)

Duplicate citations excluded:
(N = 21)

Total without duplications:
(N = 158)

Applied criteria excluded based on titles and subject area of journals (topic relevance):
(N = 83)

Included based on titles and subject area of journals:
(N = 75)

Citations excluded based on abstract review:
(N = 32)

Included based on abstract review:
(N = 43)

Citations included with reference review:
(N = 15)

Refined criteria

Included for full text evaluation: (N = 58)

Excluded based on full text evaluation:
(N = 38)

Selected studies based on full text evaluation:
(N = 20)

Figure 3 Summary of citation selection process

As Levac et al. (2010) indicate during the iterative process, refining the search strategy based on abstracts retrieved from the search was a critical step. Also, there was demand for a mechanism to help us eliminate the studies that did not address our central research questions (Arksey and O'Malley, 2005). For full text reviews, the initial extraction criteria are refined as new familiarities are generated with the subject matter due to the peripheral findings from preliminary reviews.

Refined Criteria for Full Text Reviews

•   Conference papers and abstracts are excluded as the main subject of
this research is complete electronic articles that appeared in refereed academic   or   professional
journals

•   Due to the nature of the design focus within literature, there were few fashion studies, art
design magazine articles that were excluded.

•   Weekly journals are also excluded

•   Energy studies, agricultural studies, urban planning, transport, tourism journals and
environmental studies are excluded

•   During the abstract reviews it has been identified that there is a vast
literature on online social networks (social media or social networks). Despite being noted as a key
discussion point within literature, and included as one of the thematic categories of literature, articles
specifically discussing online social networks are excluded. Reasons for this are clearly discussed
while reporting the results.

•   Studies related to interaction design and/or interfaces with interactive component are
excluded, as the main concern of this study is to deconstruct user engagement with the web.

•   For reference reviews, only articles that are selected for full text review 43
(n=43) are taken into consideration. From each article, additional
reference selection from each article was limited to 2. References to be
included 15 (n=15) are selected based on the title/abstract by applying the criteria to make sure that
the top major references that are specifically related to online user engagement are selected.

Then, with refined criteria the full text of 58 articles (n=58) was read by applying the post-hoc refined
search criteria to make the final decision about whether they are relevant for the scoping review. As a
result, out of the original 179 reference, 58 were identified to be used for the full text review. Having
read the articles in full, 20 articles were selected for inclusion in the review.

Additional Limits

At first, inclusion and exclusion criteria were applied to titles and abstracts. On the other hand, full texts of the remaining studies were obtained and evaluated by refined inclusion or exclusion criteria. Also, even though it is suggested that a scoping review framework be conducted in teams, charting the data from selected studies and summarizing reports section was only conducted by one reviewer. Even though it is advantageous in decreasing the potential ambiguity and brings clarity regarding the terminology to determine the final study inclusions, it is important to note that for further studies it is recommended to conducts scoping reviews, yet with a clear purpose and method of validation and to offer an ideal mechanism to enhance the validity of the study. Lastly, further research on matters like user engagement could attempt to secure a larger sample size, use actual behavior measures, and examine different devices and platforms contexts.

CHAPTER THREE - CHARTING THE DATA

3.1 Charting the Data from Selected Studies

This stage involves charting the key items of information obtained from the selected studies and the charting approach is a descriptive analytical method focusing on the narrative review (Arksey and O'Malley, 2005). Charting, as indicated by Levac et al. (2010), is a highly valuable, though challenging process demanding much repetition in order to summarize complex concepts in a meaningful way. Driven by the research questions, the information is recorded as follows:

- Author(s), year of publication
- Aims of the study and study disciplines
- Methodologies and important results
- Definitions of online user engagement (if clearly defined)
- Descriptions of engagement that can define online user engagement
- Characteristics of user engagement
- Outcome measures/findings

The data from 20(n=20) selected studies formed the basis of the analysis. During the charting process, findings peripheral to our research questions are identified. The year of publications, aims of study, and disciplines discussed in the literature review sections helped to map the ecosystem around the user engagement concept.

Other important results that are not directly relevant to research question are presented in section 3.3 as they may be relevant for future research. These initial findings helped this work to map out and prepare a thematic categorization of the studies around online user engagement, which again could be useful for further research. At frameworks stage 5, key definitions and concepts of online user engagement, characteristics of user engagement in the existent knowledge are evaluated specifically in line with the research questions.

3.2 Trends and Collateral Patterns of Studies

3.2.1 Trends

The objectives of a scoping review are broader and more comprehensive than is typical of systematic review because the focus is not narrow or limited to particular research questions (Glasziou et al., 2001). Even though there are some critical findings, they do not directly responding to our research question. Those findings indirect to our research question yet relevant for further research findings are identified as 'patterns', because they are still helpful in understanding the approaches portraying the concept of user engagement. Such initial charting is valuable in order to summarize complex ecosystem dynamics and to determine the dimensions peripheral to the concept of online user engagement.

Therefore, firstly, our study includes both a descriptive map of disciplines around user engagement and a descriptive numerical summary of selected studies. Secondly, it presents a thematic analysis, based on the questions we asked during the charting process (Arksey & O'Malley, 2005). The preliminary information charted is driven from the aims of the study sections and year of publications. An initial map of disciplines around user engagement is presented (see Figure 4).
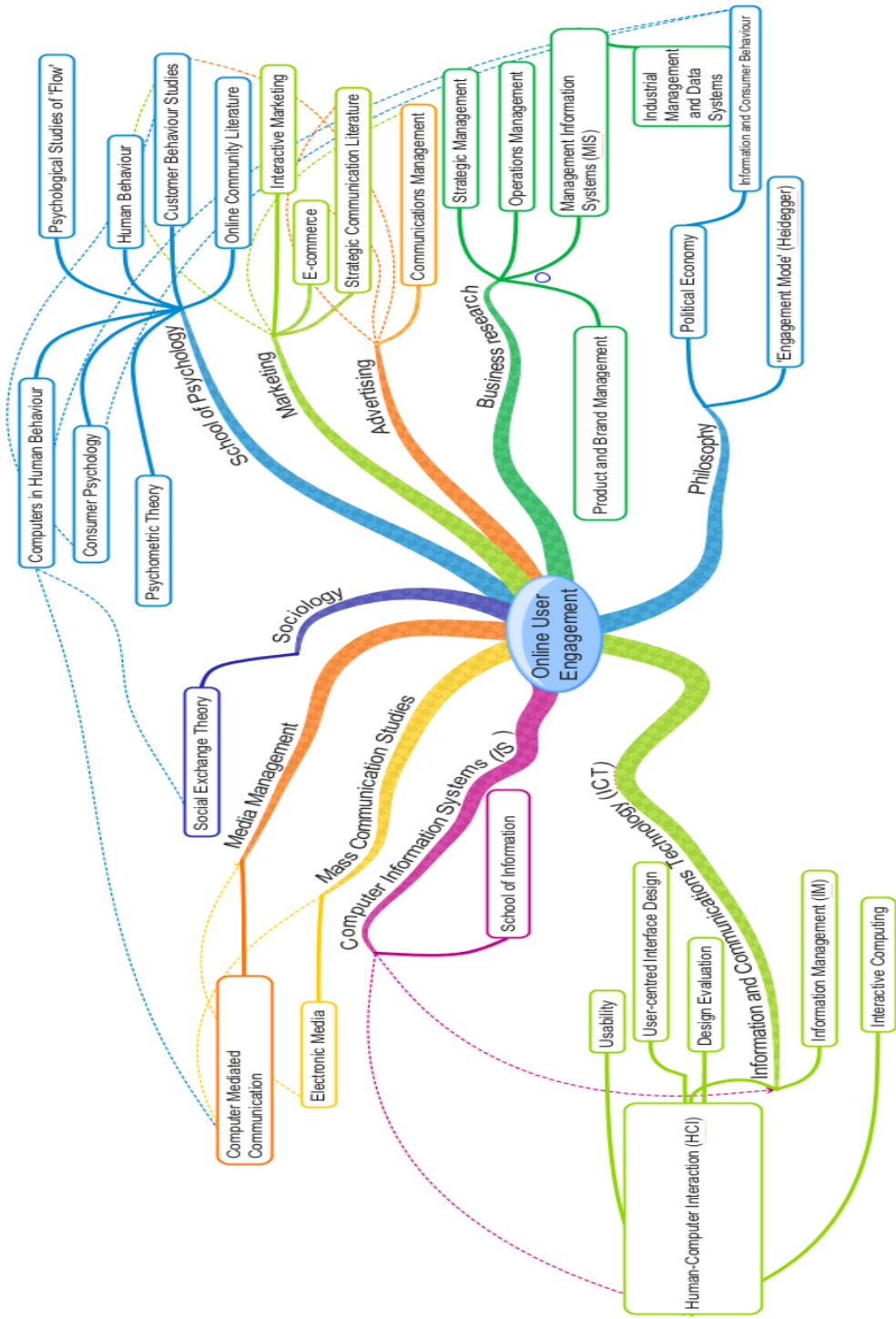
Figure 4 Disciplines representing the ecosystem of user engagement concept

The literature reviews in each study have different organizational patterns and explore the current state of the online user engagement concept from a number of different fields. Analyzing what fields of studies are driving the focus to online user engagement meant unpacking the original records and sources of information to be looked at in the future. In addition, the complexity of the concept becomes apparent as various fields of studies are closely intertwined. An initial data charting form was developed to organize our analysis of literature reviews. Then, with the help of a mind-mapping tool (iMindMap 7), the various academic disciplines represented in the literature reviews are presented in Figure 4, which states the ecosystem of the concept of online user engagement. For future studies, these peripheral fields can be used as a multidisciplinary guide and describe the basic steps for doing a full systematic review.

Most papers were published relatively recently, with the majority appearing in the ten-year period immediately preceding this review (see Figure 5).
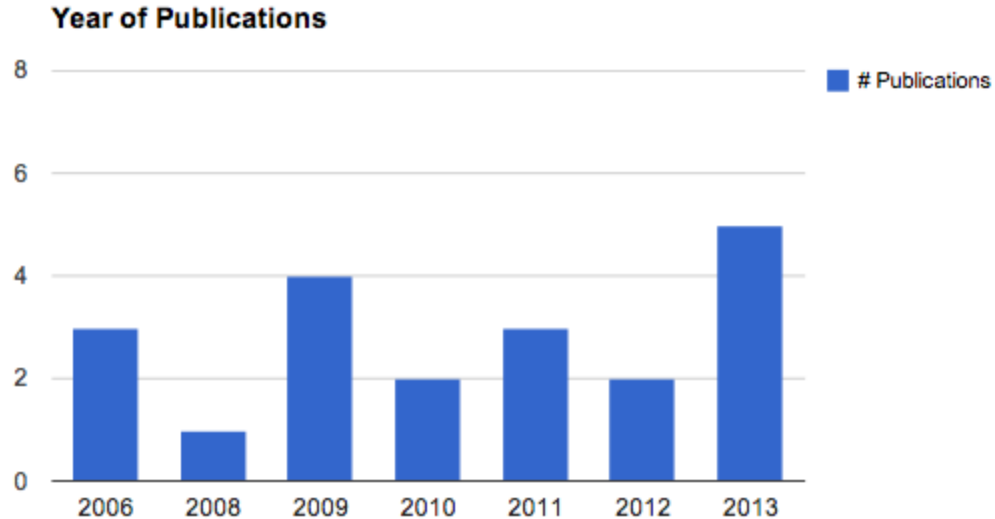

Figure 5 Year of publications

3.2.2 Collateral Patterns

All studies in this scoping review agree on the emergence of information technologies and their potential to significantly change interactions with technology. Additionally, as there remain many unanswered questions about the role and value of digital technologies for the user, the challenges for the researchers are universal. In order to describe and address the human side of interaction with IT, it is critical to look at negative and positive aspects associated with the user's interaction with technology (Norman, 1998; Sharafi et al., 2006). So, there is a vast study of literature in user experience to capture psychological and behavioral aspects of users' interaction with online and digital products.

In order to define online user engagement, most studies in the scoping review are concerned with achieving a conceptual simplicity because user engagement's preceding drivers and consequences are essential parts of user experience. Since engaged consumers exhibit enhanced consumer loyalty, satisfaction, empowerment, connection, emotional bonding, trust and commitment (Brodie et al., 2013), user's interaction with the digital product, and thus the user experience, continues.

However, studies of conceptual and theoretical frameworks, guiding how the research should be conducted, are diverse, owing to scholars' disciplinary training and the influence of different theoretical orientations towards research. Authors' descriptions of user engagement are not only driven from studies that are focusing on online interactions, but also offline, 'physical world' interactions (Brodie et al., 2013). There is a vast body of literature specifically focusing on 'engagement' in marketing, advertising and psychology studies (Abdul-Ghani, Hyde and Marshall, 2011; Brodie et al. 2013; Mollen and Wilson, 2010). Although assumptions are often implicit, half of the publications described taking a particular approach from their perspective of study.

Definitions of online user engagement that derive from the engagement concept (from marketing, consumer engagement studies), and definitions drawing on human-computer interactions studies are slightly different. Even though all studies are concerned with the differing needs of consumers based on variables like gender, age, occupation, and usage experience, the definitions driven from human

computer interaction studies are more focused on the kind of platform experience, rather than the user. As different platforms (auction websites, social networks, applications etc.) and devices (mobiles, desktops, laptops, tablets) are included in the picture of user interaction, the variables of online user engagement differ depending on the type of platform or device. Therefore, results and benefits of online user engagement become differentiated for each platform and device, and make studies more context-dependent (Sutcliffe) and process oriented. Most authors describe the limitations of qualitative research methods (empirical studies, surveys, interviews) and indicate the existence of subjective experience, increasing the need for alternative methods.

CHAPTER 4 - SUMMARIZING AND REPORTING RESULTS

4.1 Definitions of Online User Engagement

Elements of user engagement processes are identified in this section, and the definitions of online user engagement in reviewed articles are grouped into the following key categories:

- engagement definition driven from user perception
- engagement definition from system design point of view (developers of computer systems also seek to determine the meaning of engagement
- categorized by device or platform

As illustrated in Table 1, the definitions are deducted through the exact definitions of online user engagement. When descriptions of engagement are not clearly made in the articles, the inferences are made based on the gist of engagement related arguments.

Table 1

Definitions of Online User Engagement

User's Point of View	System Point of View	Platform/Device
Consumers will engage with sit they deem trustworthy and tur away from those they mistrus	The sites users choose to engage wi and act upon are once more related t issues of content and quali	Website
People's engagement with a soci media platform consists of the experiences. i.e., civic mindednes utilitarian, social facilitation, a inspiration, as opposed to hov long and frequently they use	Social media campaigners shou reasonably expect that the platforn they use would need to have sufficie interactivity, user-friendly interfaces, a engaging conten	Social media
Engagement as the experience that people have in a media vehic or platform—specifically, "collection of experiences" th relate to "a consumer's belie about how a site fits into his/h life"	The bases of consumer websit engagement likely include both utilita and hedonic benefits	Media websites and ads

Table 1 *(continued)*
Definitions of Online User Engagement

User's Point of View	System Point of View	Platform/Device
Consumers will engage with sit they deem trustworthy and tu away from those they mistrus	The sites users choose to engage wi and act upon are once more related t issues of content and quali	Website
People's engagement with a soci media platform consists of the experiences. i.e., civi mindedness, utilitarian, soc facilitation, and inspiration, opposed to how long and frequently they use i	Social media campaigners shou reasonably expect that the platform they use would need to have suffici interactivity, user-friendly interfac and engaging conten	Social media
Engagement as the experience that people have in a medi vehicle or platform—specifical "a collection of experiences" th relate to "a consumer's belie about how a site fits into his/h life'	The bases of consumer websit engagement likely include bo utilitarian and hedonic benefi	Media websites and ads
User behavior on websit engagement vary across differe user segments	Website engagement is the time spe on web page or average visit duratic	Websites, socia media, and searcl engines
Engaging activities are exotelic, extrinsically rewarding and sin flow is defined as optim experience, the positive effec which occurred on the Wel should be the reflections of flo symptoms.	Web designers who aim to maximi the effectiveness of the Web conte through Web design should create a environment which can facilitate occurrence of positive affect	Website
Engagement refers to consumer's ongoing attention an object of consumption such a a website or brand.	Where the website involves th interaction of consumers with o another, engagement also like includes social bonding and exchan of social benefits	Online auction site (C2C)

Table 1 *(continued)*
Definitions of Online User Engagement

User's Point of View	System Point of View	Platform/Device
Consumer engagement is context-dependent, psychological stat[e] characterized by fluctuati[ng] intensity level[s]	Knowledge sharing educating, and enablin[g] consumers to co-develop become important task[s]	Online community (C2C
Online engagement is cognitive and affectiv[e] commitment to an activ[e] relationship with the brand [as] personified by the website [or] other computer-mediate[d] entities designed t[o] communicate brand valu[e]	No matter how stimulating [or] immersive the websit[e] experience, if the site fails [to] be relevant and of use to th[e] consumer and hence to evok[e] some form of cognitive a[nd] affective commitmen[t]	Website
Engagement dimension refe[rs] to extent to which consume[rs] are engaged via features [of] the website environme[nt] designed to attract the[m]	Operational performance i[s] significantly and positive[ly] associated with transaction[s] that are more experience-based and wit[h] greater levels of consum[er] engagement website : pag[e] views and average duratio[n]	Website
User engagement explai[ns] how and why application[s] attract people to use them b[y] also focusing on individu[al] users' thoughts, feelings, a[nd] their degree of activity duri[ng] system use[.]	To explore user engageme[nt] metrics dwell time, number [of] page views, number o[f] distinct and returning user[s] and time spent interacti[ng] with a website over single [or] multiple sessions can be use[d]	An exploratory web searc[h] system

Table 1 *(continued)*
Definitions of Online User Engagement

User's Point of View	System Point of View	Platform/Device
Engagement occurs when person is psychologicall immersed in a video, refers the perceptual focus o mediated information and tl avoidance of stimuli that not belong to the medi offering	In order to get a persor engaged in watching vide clips on a mobile device, tl content should be sensor rather than emotiona	Mobile vs. Desktop & Vide
Engagement is the highe level of interactivi	The interface is the mear and place of interaction. Sc the modes of interactivity a the rhetorical modes of tl interface and high levels interactivity (involveme produce high levels engagemen	Interface function
User engagement is th quality of the user experien that emphasises the positiv aspects of the interaction. I particular the phenomen associated with bein captivated by a web application, and so bein motivated to use it	Engagement metrics can b categorized based or popularity, activity ar loyalty	Websites
Engagement is a quality user experience and considered "a desirable—even essential— human response t computer-mediated activitie	Usability is intricately wov into the experience o engagement. Engagir applications do appear t have an inherent baseline usability	Online shopping, we searching, webcasting, an video games

As illustrated in Table 1, online user engagement has been defined using numerous different methods and measurements. Scholars who focus on online user engagement seek to identify either general drivers (such as the user's psychological state and individual experiences) or specific impacts of contexts (such as web sites and web application) that define online user engagement. Three elements appear frequently in the descriptions of online user engagement:

- human psychological response as commitment (behavioral, emotional, cognitive)
- user control and design focus for the online systems
- changes occur over time

These elements hold promise for the exploration of user engagement on the web because they serve as umbrellas for many of the elements identified in Table 1. For example:

- Human psychological response encompasses the concepts of sensory and

emotional responses such as being interested, and making interactions with web applications.

- User control dimensions include system design functions that evoke cognitive

participation and transactions with web pages like usability.

- The concept of time embraces the change of intensity, and levels of engagement.

Even though the unit of analysis varies between articles, it is also identified that there is considerable variation in the nature and type of the work defining the concept of online user engagement. Variation occurs, especially between the ones that are defining user engagement as characterized by positive emotions and those that are defining the process without emphasizing desirability. While some studies profile user engagement as a quality of user experience (O'Brien and Toms (2008), others are explaining user engagement from flow symptoms, indicating a positive effect (Chen, 2006).

Studies that are defining online user engagement as a quality of user experience are closely analyzed. It is found that there is a fourth element holding promise for the exploration of user engagement: attitude towards online user engagement, which can also be sub-categorized as positive engagement, non-engagement, and negative engagement. There is a framework suggested to explain online user engagement in one of those studies, but the specifics will be discussed in section 4.2. For now, from

the definitions of selected studies, it is important to note that four elements appear frequently to describe online user engagement:

- Human psychological response (behavioral, emotional or cognitive)
- User control dimensions, including system design functions
- The concept of time (depicts the intensity and levels of engagement)
- Attitude towards engagement (positive, negative, and non engagement).

To keep consistent with the research questions that formed the basis of our scoping review, we summarized how online user engagement is defined when interacting with computers.

In addition, articles address the need to develop a working definition of user engagement, and propose conceptual frameworks to reconcile the practitioners' view of engagement. However, either the studies are too specific to certain dimensions of user engagement like interactivity or trust, or suggest frameworks based on several distinct field of studies. Accordingly, it is making online user engagement challenging for the researchers and practitioners to understand. In addition, authors promote (based on motivational states) the use of multidimensional scales to measure user engagement and acknowledge the various patterns of behavior across a multitude of online platforms.

4.2 Characteristics of Online User Engagement

In this section, the discussion of the findings corresponds to the second research question that formed the basis of our scoping review: the identified characteristics of online user engagement. Metrics to measure user engagement are also briefly evaluated. The findings from reviewed articles are grouped into eight key categories to illuminate the most common approaches that researchers use within the online user engagement domain (Rumrill et al. 2010). These categories are by no means discrete; overlapping between articles did occur.

Even though we present categories here, most of the studies overlapped in terms of the questions they ask on online user engagement. The platforms, the devices and sometimes the study fields of the authors are different and created tiny variances. However, one concept occur continuously in all

articles. Simple navigation and clean user experience path on websites, web applications, and social media is encouraged at all times.

1. Conceptual frameworks around user engagement: There are studies to develop solid understanding of the online user engagement and define the life cycle of engagement with relational factors. Such efforts are there to build standard structured models that include relational factors concerning user engagement and they carry loads of explicit or implicit information in relation to characteristics of user engagement. Each factor's impact within such frameworks is also modeled, and metrics to measure user engagement are suggested. Thus, such studies also accommodate the defining characteristics of user engagement components.

A general online social interaction propensity (GOSIP) framework, for example, is developed as an explanatory power for consumer engagement. GOSIP serves as an antecedent focusing on online interaction behavior that could explain differences in levels of engagement (social and behavioral). Such a framework is useful for understanding subsequent differences in level of engagement across contexts (Blazevic et al., 2013). Subsequently, an operational framework is suggested to understand the level of engagement; it can be used to predict consumer engagement across three contexts: a social networking context (Facebook, Twitter), an online review context (Amazon, TripAdvisor) and a video-sharing context (YouTube, Vimeo). Therefore, predicting the level of consumer engagement in different web platforms is believed to be valuable. However, the value of the level of consumer engagement in different web platforms again found context-dependent.

Lehmann et al. characterize user engagement in terms of three families of commonly adopted metrics that reflect different aspects of engagement: popularity (number of users), activity (dwell time) and loyalty (return rate). They then further categorize users according to how often they visit a site, and finally investigate temporal behavioral differences in engagement (Lehmann et al., 2012). Meanwhile, O'Brien and Toms framework of engagement suggests that engagement is characterized by challenge, aesthetic and sensory appeal, feedback, novelty, interactivity, perceived control and time, awareness, motivation, interest, and effect (2008). As a result, depending on the models suggested,

online user engagement aspects are popularity, activity and loyalty, challenge, aesthetic and sensory appeal, feedback, novelty, interactivity, perceived control and time, awareness, motivation, interest, and effect.

Mollen and Wilson (2010) also suggest a theoretical framework called the Stimulus–Organism–Response (S–O–R) model to examine the nature and the role of consumer engagement. Their framework views consumer online experience as consisting of three components. The first is the website (stimuli), the second is the consumer's internal state, and the third the 'experiential brew' that generates 'approach and avoidance' brand attitudes and behaviors driven from Eroglu et al., 2003 and Sautter et al., 2004. Accordingly, as an example, the consumer's internal state can be affected by motivation or interest, and website stimuli is there to act for aesthetic and sensory appeal; the user, in response, can interact with the website. So, specific features offered to explain the components of user engagement are clearly not linear, but rather dependent upon the context, platform, and personal state. even though behavioral aspects, i.e. website visits, are measurable.

2. Articles borrow the suggested frameworks or use earlier theories to test the validity of factors for different contexts: There are studies to validate the dimensions of user engagement in relation to earlier theories. These kinds of studies often begin with hypotheses, and go on to measure the validity of the factors of engagement, attempting to analyze the key relationships between the constituents of engagement.

User experience on mobile video appreciation (See-To, Papagiannidis, and Cho, 2012) suggest a framework which is closely related to psychological flow theory. Flow theory suggests that user experience, engagement and enjoyment might be determining factors of satisfaction. Therefore, the study measures whether enjoyment will positively influence user satisfaction with mobile video entertainment services, and whether engagement will positively influence enjoyment and influence user satisfaction (See-To, Papagiannidis, and Cho, 2012). In a similar fashion, Chen (2006) examines relationships and interactions between the web users' flow symptoms and positive effects. According

to the assumptions, factors of flow represent the process that an individual could experience during his/her engagement on the Web and demonstrates the potential application of flow theory in the Web environment.

Paek et al. (2013) also measure engagement (with the social media platform) by findings drawn from Calder et al.'s (2009) framework. From the thirteen items Calder et al. suggest, Paek et al. choose the four most relevant to a cause-related social media campaign: civic mindedness, utilitarian, social facilitation, and inspiration.

The user's engagement with mobile video, or web experience can be explained by flow theory or flow theory can be applicable to various online user experiences other than games. Also, social media platforms' engagement levels for users can be different from the regular website engagement process. Such studies make room for previous approaches i.e. flow theory, and also offer new ways of understanding, calling for collaboration to figure out the dynamics of online user engagement in different platforms.

3. Articles explaining phases of the online user engagement process: There are articles that either focus on differing phases of engagement or build a framework that is derived from staged models to explain the process of online user engagement. Sillence et al.'s work (2006) promotes trust as a dimension to support online engagement, while participants are becoming engaged with the sites at various levels. Three different phases of online engagement are identified: (1) first impressions and heuristic analysis (2) further involvement with the site and content evaluation, and (3) longer term engagement with subsequent relationship development. Similarly, O'Brien and Toms (2008) suggest that engagement is a process comprised of four distinct stages: point of engagement, period of sustained engagement, disengagement, and reengagement.

On the contrary, even though Brodie et al. (2013) agree that consumer engagement is a process and may include a transitory state of dormancy and/or termination at particular points in time, the consumer engagement process does not follow an orderly, sequential progression of phases over

time. Rather, consumer engagement is an interplay, or iteration, of relevant sub-processes (cf. Resnick, 2001 from Brodie et al.).

4. Articles explaining drivers and results of online engagement: Studies also worked on the motivational drivers entailing online engagement. Some prefer to name drivers as antecedents, while other studies prefer to call the benefits causes of online engagement. As an example, Abdul-Ghani, Hyde and Marshall (2011) reveal the utilitarian, hedonic, and social benefits as the bases of engagement with the auction sites. According to the study, the means by which community practices create value for members needs to be understood and further research can develop a scale to measure consumer engagement with auction sites.

Moreover, according to Carnegie, high levels of interactivity produce high levels of engagement, exemplified in experiences of immersion and captivation (2009), while engagement is defined as the highest level of interactivity, and occurs when multiple schemas are invoked and the user/reader must draw from an array of schemas (Douglas and Hargadon (2001), from Carnegie 2009).

The drivers of engagement are defined by Mollen and Wilson (2010) as engagement characteristics. They explain engagement characteristics as active, sustained, cognitive processing, the attainment of relevance and utility, and emotional bonding, derived from pleasure and satisfaction. Mollen and Wilson (2010) also suggest that engagement can stand as an intermediate variable between telepresence and consumer attitudes and behavior. Telepresence (psychological state of 'being there' augmented by focused attention) is defined as an antecedent of engagement, while engagement is defined as an antecedent of attitudes and behaviors conducive to purchase or future purchase.

Similarly, Calder et al. argue that engagement is antecedent to outcomes such as usage, effect, and responses to advertising (2009). Brodie et al. (2013) suggest that other relational concepts (e.g. participation, involvement, telepresence) act as engagement antecedents, while engagement consequences may include commitment, trust, self-brand connections, consumers' emotional brand attachment and brand loyalty.

Consequently, drivers of engagement are presented as being utilitarian, hedonic, socially beneficially, as well as showing high levels of interaction, participation, involvement and telepresence, which is very similar to the concept of immersion and captivation. On the other hand, results of online user engagement are defined in terms of purchase, value for community members, trust, commitment, and brand loyalty.

5. *Articles discussing website metrics and design for online engagement:* In order to define the characteristics of engagement, some studies choose to suggest website related metrics as evidence of user engagement. There is a long list of website metrics, depending on the web application, including the number of clicks, time spent on a landing page, frequency of visits, number of unique visits, sign-ups, follows or check-ins if the web application is in the social stream. Examples of such studies are the works of Abdul-Ghani et al., who explore a web user's transient experience and the results/benefits of their engagement (2011). Jiang et al. (2013) also depict website popularity based on user behavior and reflect results in both visit traffic and traffic engagement.

However, online engagement also consists of cognitive aspects. As defined by Mollen and Wilson (2010), it must incorporate the satisfying of instrumental value (utility and relevance) and experiential value (emotional congruence). They characterize the consumer's experiential response to website and environmental stimuli as a dynamic, tiered perceptual spectrum that includes interactivity, telepresence and engagement. Therefore, they position engagement along an experiential continuum and website stimuli may generate that experiential state.

6. *Articles emphasizing intensity or levels of online engagement:* Users' online engagement is determined in a number of different ways (e.g. heuristics, utility value of the site, experiential value). This means the intensity of online engagement can change depending on certain variables, and differs depending on the user and the experience. According to Brodie et al. "consumer engagement represents a highly context-dependent, motivational state characterized by a specific intensity level at a given point in time", and they go on to evaluate the interplay between the emotional, cognitive and behavioral aspects of engagement generating differing levels of engagement intensity (2013).

With the general online social interaction propensity (GOSIP) framework, Blazevic et al. (2013) explain the potential level at which one person will participate in an online interaction, while another person will not, based on similar access and motivational circumstances.

According to O'Brien and Toms (2008), engagement itself operates in a continuum and a single session contains a range of engaging experiences that vary in intensity. Similarly, Higgins and Scholer (2009) review different sources of engagement strength and indicate that stronger engagement can make something positive more positive, and something negative more negative. Therefore, factors to be used to create a certain combination of engagement strength and process experience would depend on the specific goal of the influence attempt.

7. Articles explaining what online user engagement is not: To understand what online user engagement is, it is also crucial to ascertain what it is not. A few of the studies in our selected articles examined what user engagement is not. Mollen and Wilson (2010) indicate that engagement is not solely involvement, because involvement is a component of telepresence. Mollen and Wilson (2010) specifically note that involvement is just an important dimension of engagement. Accordingly, engagement is not a proxy for flow, telepresence, or interactivity. It is a discrete construct, characterized by specific experiential components.

As Calder et al. (2009) describe, many define being engaged as site visits, time spent on the site, or page views. However, according to Calder et al. (2009), those metrics are consequences of engagement rather than engagement itself. Therefore, according to Calder et al. (2009) "we shall use the term *experience* whenever we refer to a specific set of consumer beliefs about a vehicle such as utilitarian or intrinsic enjoyment, and the term *engagement* whenever we refer to the overall experiences of a vehicle."

Carnegie (2009) evaluates the distinction between immersion, flow, and engagement concepts as well. Immersion, he argues, "refers to a highly focused state in which an individual loses his or her

sense of self, while flow refers to a condition in which an individual loses a sense of self and time and becomes intensely focused on the task at hand". So, according to Carnegie (2009), flow is the intermediary state between immersion and flow, and it is the highest level of interactivity.

8. Patterns in findings of articles: When Sharafi et al. (2006) suggested that the focus of future studies should be on understanding how personality factors and situational and contextual circumstances are influencing online interactions, they also indicated that research should examine "whether enjoyment, efficiency, and curiosity lead to higher IT-competence or whether IT-competence leads to enjoyment, efficiency, and curiosity". Online user engagement's entangled nature is at the very core of this question. Consumer engagement has a central role in the process of relational exchange and is an iterative process (Brodie et al., 2013).

Findings of the reviewed articles are attempting to represent various correlations of the factors that are playing a role in the online user engagement process. However, findings are not substantial enough to suggest either a new framework of user engagement, or a complete and simple definition of the process. Essentially, studies on online user engagement have to suggest a neat and balanced consensus of terminology. It is found that there is excessive terminological suggestion and even though the engagement process is context and time dependent, there are more terminological suggestions generated to define and to measure the process of engagement.

Higgins and Scholer (2009) note choosing factors to use when creating a combination of engagement strength and experience would depend on the specific goal of the influence attempt. Additionally, Brodie et al (2013) suggest consumer engagement as an interactive process and a process that may emerge at different intensity levels over time. Even though O'Brien and Toms (2010) have modeled a user engagement scale (UES), they note that it is "impossible to find measures that do not vary over time and across contexts" (Serenko and Turel, 2007, p. 657).

Although close attention to detail is crucial in academic research, too intense a focus can generate challenges for future studies. However, it is important to note substantial patterns of findings. For

example, according to Carnegie (2009), the interface should be examined according to how it engages the user through representations and schemas of social connection and physical place. The user-focused design is called out in more than half of the studies. Also, Higgins and Scholer (2009) suggest that the effects of persuasion and influence have yet to be investigated. So, understanding the user is crucial for interface design, yet identifying ways to influence the user through their experience is also important for engaging users.

Chen et al. (2009) advise businesses to pay close attention to three factors when designing the website. For them, the website should use broad structure navigation systems, the terminology and wording usage of products and categories should be simple and familiar to the general public, and should include images, pictures, videos and sound. The inference we can make is that there are different factors that can influence the user. Of all the factors that are suggested, simple navigation, familiarity and rich media content have the potential to generate higher online user engagement on websites.

However, online user experience and engagement doesn't only happen on websites. There are various online media tools such as web applications, social networks, and portable devices in play within the user engagement phenomenon. Calder et al. (2009) suggest that the principle of engagement and its effects on communication effectiveness can be extended to other media such as mobile media and the social media.

There is also careful consideration of metrics to measure online user engagement in many of the reviewed studies. Abdul-Ghani et al. (2011) suggest that "research can develop a scale to measure consumer engagement with auction sites, and relate levels of engagement to consequent behaviors, including the time and money consumers spend on auction sites". Lehmann et al. (2012), is also focusing on the modeling of engagement with website metrics, and finds revisiting of engagement metrics to be an essential component of modeling. Lehmann et al. (2012) suggest that user demographics (e.g. gender, age) and finer-grained temporal aspects (e.g. time of the day) are likely to bring further insights into modeling and measuring engagement.

O'Brien and Toms' (2013) user engagement scale (UES) is an attempt to model the process across contexts. Even though they accept the context-dependent and iterative nature of the process, they suggest three subscales (Perceived Usability, Focused Attention, and Aesthetic Appeal) that have demonstrated stability across several studies. Therefore UES is useful for evaluating users' engagement levels along a number of user and system dimensions.

4.3 Future Directions

Authors point to the need for further work to examine social media and virtual community engagement. Rigorous understanding is required in order to analyze the effects of social networks on user engagement and on communication effectiveness (Calder et al., 2009; Abdul-Ghani, 2011; Paek et al., 2013; Jiang et al., 2013). The importance of users' engagement with social media has to be examined, as well as identifying the conditions, content, and actions that enhance it (Paek et al., 2013). According to Brodie et al. (2013), virtual communities are becoming increasingly prevalent, yet virtual community prevalence should not imply the substitution of online for offline activity. There is also the need for comparative research, which focuses both on consumer engagement in the offline, "physical world" and in online "virtual" settings (Brodie et al. 2013).

There is also a need for clarity on antecedents and consequences of online user engagement depending on each context, platform, or design. While the relationship between user, system, content and task should be further examined (O'Brien and Toms, 2013), exploring the relationship and relative valence between cognitive and affective variables of the engagement may also be fruitful (Mollen and Wilson, 2010). However, academic and practitioner collaboration is crucial to develop viable measures of online user engagement, and an assessment of its importance and utility (Mollen and Wilson, 2010).

In the information era, consumers expect brands not only to listen but also to respond. In order for brands to respond and engage their users, engagement metrics have to be precise. Measuring the

level of participation and engagement different platforms are creating is also important. Recent research has adopted metrics, such as dwell time, number of page views, number of distinct and returning users, time spent interacting with a website over single or multiple sessions (Lehmann et al., 2012), click, share, like, retweet kinds of social media statistics, interviews and user satisfactions surveys. Yet there is still room for improvement, as such system related metrics do not reflect the dynamic process of engagement; instead it partially explains user behavior. Additionally, forms of online engagement data for devices may vary. People interact with their mobile devices differently than with their desktop or laptop – e.g. touching, shaking and flipping the screen. User experience and engagement on a web page may be different from online interactions on a smartphone, tablet or laptop.

CHAPTER FIVE - CONCLUSION

5.1 Conclusion

With a scoping review methodology, we examined the definitions of online user engagement, summarized components of online user engagement, identified patterns in research in the context of online user experience, and focused on where further enquiry should be. At a theoretical level, the roots of consumer engagement already lie within the field of marketing. The answers to many questions about online user engagement are already worked on in marketing field of study as marketing's research focus is the conversation between consumers, the products and the services. The nuance lies in the transformation of the information architecture and non-linear communication and narratives on the web. With the advancement of technological mediums, current information architecture allows users to have conversations with consumers, the products (systems), and to interact with services as well. There should be a closer connection and collaboration between marketing field researchers and human-computer interaction researchers to clarify the definitions of online user engagement as well as to establish the metrics to measure the level of engagement across platforms.

There is vast amount of terminology and data presented on online user engagement within the context of user experience. However, user experience and engagement related growing data in particular have to be recorded, and deployed in an organized way within the academic field. The web has become interactive; conversation between people, systems and services is continuous. If academic research is being conducted in such an ecosystem, the web tools that are available to make information clear should be used as well. The academic researchers on user experience and user engagement should collaborate and build a web information architecture, literature maps, record suggested models online to make it easily accessible to everyone working in the field. The conversation potential of the web platforms should be considered as a way of finding a consensus in terminology, designing collaborative research and providing further insight into the role of individual differences in online user engagement.

References

Abdul-Ghani, E., Hyde, K.F. & Marshall, R. (2011). 'Emic and etic interpretations of engagement with a consumer-to-consumer online auction site'. *Journal of Business Research*, 64, 1060-1066. [online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S0148296310002109>

Abras, C., Maloney-Krichmar, D. and Preece, J. (2004) *User-centered design*. In Bainbridge, W.S. (ed.) Berkshire Encyclopedia of Human-Computer Interaction. Great Barrington, MA: Berkshire Publishing Group.

Arksey H. and O'Malley L. (2005). 'Scoping studies: Towards a Methodological Framework'. *International Journal of Social Research Methodology,* 8:19-32.

Attfield, S., Kazai, G., Lalmas, M., Piwowarski, B. (2011). *Towards a science of user engagement (Position Paper)*. In: WSDM Workshop on User Modelling for Web Applications. [online] Available at: <http://www.dcs.gla.ac.uk/~mounia/Papers/engagement.pdf> (Accessed 22 January 2014).

Bach, P. M. and Carroll, J. M. (2010) 'Characterizing the Dynamics of Open User Experience Design: The Cases of Firefox and OpenOffice.org'. *Journal of the Association for Information Systems*: Vol. 11: Iss. 12, Article 1. [online] Available at: http://aisel.aisnet.org/jais/vol11/iss12/1 (Accessed 24 January 2014).

Bickmore TW, and Picard RW. (2005). 'Establishing and maintaining long-term human-computer relationships'. *ACM Transactions on Computer-Human Interaction Journal,* 12(2):293–327.

Bickmore, T., Schulman, D., and Yin, L. (2010). Maintaining Engagement in Long-term Interventions with Relational Agents. *Applied Artificial Intelligence,* 24(6): 648-666.

Blazevic, V, Wiertz, C, Cotte, J, de Ruyter, K, Keeling, D.I. (2013) GOSIP in Cyberspace: Conceptualization and Scale Development for General Online Social Interaction Propensity, *Journal of Interactive Marketing*, ISSN: 1094-9968. [online] Available at doi: 10.1016/j.intmar.2013.09.003.

Brodie, R.J., Ilic, A, Juric, B, Hollebeek, L. (2013). Consumer Engagement in a Virtual Brand Community: An Exploratory Analysis. *Journal of Business Research.* 66(1),105-114.

Burns, E. (2006). Marketers Mulling ARF's 'Engagement' Definition. *ClickZ Marketing News & Expert Advice.* [online] Available at: <http://www.clickz.com/clickz/news/1707642/marketers-mulling-arfs-engagement-definition> (Accessed 18 January 2014).

Calder, B. J., Malthouse E.C , and Schadel, U. (2009), An Experimental Study of the Relationship Between Online Engagement and Advertising Effectiveness. *Journal of Interactive Marketing*, 23 (November), 321-31.[online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S1094996809000747>

Carnegie, T. (2009). Interface as Exordium: The Rhetoric of Interactivity. *Computers and Composition* (28)2 164-173. [online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S8755461509000401>

Chen, H. (2006). Flow on the net: Detecting web users' positive affects and their flow states. *Computer in Human Behavior*, 22(2), 221–223. [online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S0747563204001189>

Chen, J.V., Lin, C., Yen, D.C., and Linn, K. (2011) The interaction effects of familiarity, breadth and media usage on web browsing experience. Computers in Human Behavior 27(6): 2141-2152. [online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S0747563211001142>

Dam, R. F.and Soegaard, M. (2011). Video: User Experience Video 1 - Marc's introduction to User Experience and Experience Design. *Interaction Design Foundation* [online] Available at: <http://www.interaction-design.org/tv/1_introduction_to_user_experience_and_experience_design.html> (Accessed 10 January 2014).

Dix, A. (2014). Human Computer Interaction Course Contents and Goals. *Interaction Design Foundation*, [online] Available at: <http://www.interaction-design.org/courses/human-computer_interaction.html> (Accessed 10 January 2014).

Dworkin, J., Connell, J., and Doty, J. (2013). A literature review of parents' online behavior. *Cyberpsychology*, 7(2).

Guistini, D. (2014) Scoping Reviews. *HLWIKI International.* [online] Available at: <http://hlwiki.slais.ubc.ca/index.php/Scoping_reviews> (Accessed 28 January 2014).

Glasziou, P., Irwin, L Bain, C. and Colditz, G. (2001). *Systematic reviews in health care: a practical guide.* Cambridge: Cambridge University Press.

Hart, J. (2012). A Graphical Overview of the Literature within User Experience. *Evaluating User Engagement and Interaction for Design.* [online] Available at: http://jenneferhart.wordpress.com/literature-map-2/ (Accessed 29 January 2014).

Hassenzahl, M. and Tractinsky, N. 2006 User experience - a research agenda. *Behavior and Information Technology*, 25, 2 p. 91-97.

Hassenzahl, M. (2010). *Experience Design: Technology for all the right reasons*. San Rafael, CA: Morgan & Claypool.

Heidegger, M. (1927/1996). *Being and time: A translation of Sein und Zeit* (J. Stambaugh, Trans.). Albany, NY: SUNY Press.

Higgins, E. T. & A. A. Scholer (2009) Engaging the consumer: The science and art of the value creation process. *Journal of Consumer Psychology*, 19, 100-114.[online] Available at <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S1057740809000205>

Hong, L. and Hong-Yang, S. (2013). *The User Engagement Optimization Workshop.* [online] Available at: http://www.ueo-workshop.com/ (Accessed 15 January 2014).

Hornsby, P. (2013). I'm Not a UX Designer Anymore. *UX Matters.* [online] Available at: http://www.uxmatters.com/mt/archives/2013/08/im-not-a-ux-designer-anymore.php (Accessed 19 February 2014).

ISO DIS 9241-210. (2010). *Ergonomics of human system interaction - Part 210: Human-centred design for interactive systems* (formerly known as 13407). International Standardization Organization (ISO). Switzerland.

Idiom (2013) *3 Ways to Start Thinking Strategically About User Engagement Now* [online] Available at: <http://www.idiom.co/3-ways-to-start-thinking-strategically-about-user-engagement-now/>

Jiang, Q., Tan, C., Phang C.W. Sutanto, J. and Wei K.(2013) Understanding Chinese online users and their visits to websites: Application of Zipf's law. *International Journal of Information Management,* 33 (5), 752-763. [online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S0268401213000777>

Lee, S.-M., Ungson, G.R. and Russo M.V. (2008): Towards a theory of synchronous technological assimilation: The case of Korea's Internet economy, *Journal of World Business*, 43 (3), pp. 274-289.[online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S1047831011000083>

Lehmann, J. Lalmas, M., Yom-Tov, E. and Dupret G. (2012) *Models of User Engagement,* 20th conference on User Modeling, Adaptation, and Personalization (UMAP). [online] Available at: <http://www.dcs.gla.ac.uk/~mounia/Papers/umap_CRC.pdf>

Levac, D., Colquhoun, H. and O'Brien, K.K. (2010) 'Scoping studies: advancing the methodology', *Implementation Science* 5, 1–9.

Levy, T.W. (2013) 'The Engagement Project: Connecting with Your Consumer in the Participation Age', *Google Think Insights.* [online] Available at: <http://www.google.co.uk/think/articles/engagement-project-new-normal.html> (Accessed 19 February 2014).

Macey, W.H., and Schneider, B. (2008). The meaning of employee engagement. *Industrial and Organisational Psychology,* 1, 3–30.

Mollen, A. and Wilson, H. (2010). Engagement Telepresence and Interactvity in Online Consumer Experience: Reconciling Scholastic and Managerial Perspectives. Journal of Business Research. 63(9/10), 919-925

Norman, D. A. (1998). *The invisible computer.* Cambridge, MA: MIT Press.

Norman, D. (2006). Words Matter. Talk About People: Not Customers, Not Consumers, Not Users. *Interactions.* [online] Available at: <http://www.jnd.org/dn.mss/words_matter_talk_ab.html> (Accessed 15 January 2014).

Norman, D. (2008). Video: UX Week Conference. *Adaptive Path*. [online] Available at: <http://www.youtube.com/watch?v=WgJcUHC3qJ8> (Accessed 15 January 2014).

O'Brien, H. L. and Toms, E. G. (2008). What is user engagement? a conceptual framework for defining user engagement with technology. *Journal of the Association for Information Science and Technology (JASIST)* 59, no. 6,1-18.[online] Available at <http://rptcd.catalogue.tcd.ie/ebsco-w-a/ehost/pdfviewer/pdfviewer?sid=b36d30c9-8d6c-4b7f-9cc 6-e76fcaff0b46%40sessionmgr4005&vid=2&hid=4101>

O'Brien, H., Toms, E., Kelloway, K., and Kelley, E.(2010) The development and evaluation of a survey to measure user engagement. *Journal of the Association for Information Science and Technology (JASIST),* 61(1), 50–69 [online] Available at: <http://faculty.arts.ubc.ca/hobrien/files/OBrien_Toms_2010_The_development_and_evaluation_of_a _survey.pdf>

O'Brien, H. and Toms, E.G. (2013). Examining the generalizability of the User Engagement Scale (UES) in exploratory search. *Information Processing and Management*, 49(5): 1092-1107. [online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S0306457312001124>
Paek, H.,Hove T., Jung Y., and Cole R. T., (2013) Engagement across three social media platforms: An exploratory study of a cause-related PR campaign. *Public Relations Review.* 39(5):526-533. [online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S0363811113001379>

PwC. (2013) Customer Engagement: Reaping the rewards of digital outreach. *Growing your business* [online] Available at: <http://www.pwc.com/en_US/us/private-company-services/publications/assets/pwc-gyb-customer-e ngagement.pdf>

See-To, E.W.K. Papagiannidis, S. and Cho, V. (2012) User experience on mobile video appreciation: How to engross users and to enhance their enjoyment in watching mobile video clips. *Technological Forecasting and Social Change,* 79(8).[online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S0040162512000716>

Serenko, A. and Turel, O. (2007) Are MIS instruments stable? An exploratory consideration of the computer playfulness scale Information & Management, 44 (8) (2007), pp. 657–665

Sharafi P., Hedman L.R., Montgomery, H. (2006). Using information technology: engagement modes, flow experience, and personality orientations. *Computers in Human Behavior,* 22(5): 899-916.

Sillence, E., Briggs, P., Harris, P., and Fishwick, L. (2006) A framework for understanding trust factors in web- based health advice. *International Journal of Human-Computer Studies*, 64(8), 697-713 [online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S1071581906000139>

Rumrill P.D., Fitzgerald S.M., and Merchant, W.R. (2010). Using scoping literature reviews as a means of understanding and interpreting existing literature. *Work: A Journal of Prevention, Assessment and Rehabilitation*, 35(3):399-404.

Song, Y., Shi, X. and Fu, X. (2013). Evaluating and Predicting User Engagement Change with Degraded Search Relevance. *Microsoft Research*. [online] Available at: <http://research.microsoft.com/apps/pubs/default.aspx?id=183859> (Accessed 19 February 2014).

Sutcliffe, A. (2009). *Designing for User Engagement: Aesthetic and Attractive User Interfaces.* Volume 5 of Synthesis lectures on human-centered informatics. Morgan & Claypool Publishers. [online] Available at: <http://books.google.ie/books?id=7YRgAQAAQBAJ> (Accessed 5 February 2014).

Sutcliffe, A., Sri, K. and Jae-Eun, S. (2006) A method and advisor tool for multimedia user interface design." *International Journal of Human-Computer Studies* 64, no. 4: 375-392. [online]Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S1071581905001680>

Turner, P. (2013) *How We Cope with Digital Technology. (Synthesis Lectures on Human-Centered Informatics*). Morgan & Claypool Publishers.

Valaitis, R., Hesch, R., Passarelli, C., Sheehan, D., & Sinton, J. (2000). A systematic review of the relationship between breastfeeding and early childhood caries. *Canadian Journal of Public Health*, 91(6), 411-417.

Verma, A. (2012) Personalization: A Key Tenet of User Engagement. *Oracle WebCenter Blog*. [online] Available at: <https://blogs.oracle.com/webcenter/> (Accessed 19 February 2014).

Appendix

Scoping Review Citations

- Abdul-Ghani, E., Hyde, K.F. & Marshall, R. (2011). Emic and etic interpretations of engagement with a consumer-to-consumer online auction site.*Journal of Business Research*, 64, 1060-1066. [online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S0148296310002109>

- Brodie, R.J., Ilic, A, Juric, B, Hollebeek, L. (2013). Consumer Engagement in a Virtual Brand Community: An Exploratory Analysis. *Journal of Business Research.* 66(1),105-114.

- Blazevic, V, Wiertz, C, Cotte, J, de Ruyter, K, Keeling, D.I. (2013) GOSIP in Cyberspace: Conceptualization and Scale Development for General Online Social Interaction Propensity, *Journal of Interactive Marketing*, ISSN: 1094-9968. [online] Available at doi: 10.1016/j.intmar.2013.09.003.

- Calder, B. J., Malthouse E.C , and Schadel, U. (2009), An Experimental Study of the Relationship Between Online Engagement and Advertising Effectiveness. *Journal of Interactive Marketing*, 23 (November), 321-31.[online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S1094996809000747>

- Carnegie, T. (2009). Interface as Exordium: The Rhetoric of Interactivity. *Computers and Composition* (28)2 164-173. [online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S8755461509000401>

- Chen, H. (2006). Flow on the net: Detecting web users' positive affects and their flow states. *Computer in Human Behavior*, 22(2), 221–223. [online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S0747563204001189>

- Chen, J.V., Lin, C., Yen, D.C., and Linn, K. (2011) The interaction effects of familiarity, breadth and media usage on web browsing experience. Computers in Human Behavior 27(6): 2141-2152. [online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S0747563211001142>

- Higgins, E. T. & A. A. Scholer (2009) Engaging the consumer: The science and art of the value creation process. *Journal of Consumer Psychology*, 19, 100-114.[online] Available at <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S1057740809000205>

• Jiang, Q., Tan, C., Phang C.W. Sutanto, J. and Wei K. Understanding Chinese online users and their visits to websites: Application of Zipf's law. International Journal of Information Management 33 (5), 752-763. [online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S0363811113001379>

• Lee, S.-M., Ungson, G.R. and Russo M.V. (2008): Towards a theory of synchronous technological assimilation: The case of Korea's Internet economy, *Journal of World Business*, 43 (3), pp. 274-289.[online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S1047831011000083>

• Lehmann, J. Lalmas, M., Yom-Tov, E. and Dupret G. (2012) *Models of User Engagement,* 20th conference on User Modeling, Adaptation, and Personalization (UMAP). [online] Available at: <http://www.dcs.gla.ac.uk/~mounia/Papers/umap_CRC.pdf>

• Mollen, A. and Wilson, H. (2010). Engagement Telepresence and Interactvity in Online Consumer Experience: Reconciling Scholastic and Managerial Perspectives. Journal of Business Research. 63(9/10), 919-925 [online] Available at <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S0148296309002100>

• O'Brien, H. L. and Toms, E. G. (2008). What is user engagement? a conceptual framework for defining user engagement with technology. *Journal of the Association for Information Science and Technology (JASIST)* 59, no. 6,1-18.[online] Available at <http://rptcd.catalogue.tcd.ie/ebsco-w-a/ehost/pdfviewer/pdfviewer?sid=b36d30c9-8d6c-4b7f-9cc 6-e76fcaff0b46%40sessionmgr4005&vid=2&hid=4101>

• O'Brien, H, Toms, E., Kelloway, K., and Kelley, E.(2010) The development and evaluation of a survey to measure user engagement. *Journal of the Association for Information Science and Technology (JASIST),* 61(1), 50–69 [online] Available at: <http://faculty.arts.ubc.ca/hobrien/files/OBrien_Toms_2010_The_development_and_evaluation_of_a _survey.pdf>

• O'Brien, H. and Toms, E.G. (2013). Examining the generalizability of the User Engagement Scale (UES) in exploratory search. *Information Processing and Management*, 49(5): 1092-1107. [online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S0306457312001124>

• Paek, H.,Hove T., Jung Y., and Cole R. T., (2013) Engagement across three social media platforms: An exploratory study of a cause-related PR campaign. *Public Relations Review.* 39(5):526-533. [online] Available at:

<http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S0363811113001379>

•	See-To, E.W.K. Papagiannidis, S. and Cho, V. (2012) User experience on mobile video appreciation: How to engross users and to enhance their enjoyment in watching mobile video clips. *Technological Forecasting and Social Change,* 79(8).[online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S0040162512000716>

•	Sharafi P., Hedman L.R., Montgomery, H. (2006). Using information technology: engagement modes, flow experience, and personality orientations. *Computers in Human Behavior,* 22(5):	899-916.[online]	Available	at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S0747563204000573>

•	Sillence, E., Briggs, P., Harris, P., and Fishwick, L. (2006) A framework for understanding trust factors in web- based health advice. *International Journal of Human-Computer Studies,* 64(8), 697-713 [online] Available at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S1071581906000139>

•	Sutcliffe, A., Sri, K. and Jae-Eun, S. (2006) A method and advisor tool for multimedia user interface design." *International Journal of Human-Computer Studies* 64, no. 4: 375-392. [online]	Available	at: <http://www.sciencedirect.com.elib.tcd.ie/science/article/pii/S1071581905001680>