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OVERCOMING INFORMATION OVERLOAD IN ONLINE REPUTATION MANAGEMENT: A SYSTEMATIC LITERATURE REVIEW

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Abstract

With the success of Web 2.0, online users have become publishers and authors rather than just passive consumers. This released traditional media companies from their role as content gatekeepers. Since then, online reputation management (ORM), which relates to people's desire to manage the information about them on the Web, has gained significant importance for individuals. This paper investigates state-of-the-art research on ORM for individuals and enterprises based on a systematic literature review. The findings show that especially ORM concepts and approaches for individuals are not capable to handle massive amounts of information on the web. They lack of means for uniquely identifying relevant information, hardly support the analysis and evaluation of discovered contents and leave concepts on how to remove inappropriate contents almost untouched. Based on these insights, a research landscape has been created, which shows current research gaps as well as recommendations on where and how the state-of-the-art ORM should be advanced.

Keywords: online reputation management, literature review, research landscape.

1 Introduction

The Web 2.0 era enables online users to interact and collaborate with each other. They become authors and publishers of user-generated content rather than merely passive consumers of online content offered by professional content providers. As a consequence, this released established media companies from their role as content gatekeepers in the online world while enabling individuals to express their thoughts and opinions without the restrictions of traditional mass media.

Whereas the benefits of Web 2.0 have been proven by its tremendous success in the last years, it also generated several impacts on the online reputation (management) of individuals and enterprises. First, no one verifies user-generated content prior to publication. Second, published content can reach virtually anybody with access to the Internet. Third, content can be published in an infinite number of virtual locations. Last, the Internet typically does not forget any published content (Rosen 2012). Therefore, online reputation management (ORM) for individuals and enterprises, which directly affects their offline reputation, has been far more than challenging as compared to Web 1.0. The importance of ORM for both parties above is indicated by the two following examples. According to Cross-Tab (2010) over 70% of human resource professionals in the U.S. have rejected job candidates because of information they found online. An unsatisfied customer leveraged the power of social media and attacked Vodafone Germany. She complained about a mistake in her invoice by posting on Vodafone's Facebook wall. The posting was picked up quickly, and liked as well as commented by thousands within 48 hours, which created a so-called *shit-storm* (Hauck and Paukner 2012).

Currently, individuals and enterprises are facing the problem of information overload during conduction of ORM (Lau et al. 2011). Namesakes or duplicates of search results complicates effective ORM (Spina et al. 2011; Tang et al. 2011) since one finds solely basic support for both parties, when examining available tools and services that support individuals and enterprises in their endeavour of managing their online reputation. ORM services are basically crawling the Web on the first-/surname combination bases, leaving the user with the task of scrutinizing each returned web page for relevance (e.g. reputationtool¹). For enterprises, there is greater variety of tools for monitoring related contents. However, the majority of these tools is mostly targeted towards structured online content from, for instance social media, and offers basic evaluation metrics such as page views (e.g. Sentiment Metrics²). Once inappropriate content has been identified, both, individuals as well as enterprises face the same challenge of removing such content, which is typically hosted on third party sites (Schimansky 2012). The strong support by the European Commission (2011) for the latter issue in the form of the *right to be forgotten* further underlines the importance of ORM in general as well the need for appropriate support for ORM in order to achieve its objectives as efficiently and effectively as possible.

Consequently, the paper at hand investigates state-of-the-art ORM research from an individual as well as enterprise perspective. As a result, an ORM research landscape is created, which reveals research gaps and recommends research opportunities for selected fields in order to extend the body of ORM knowledge as well as to foster practical implementations. Therefore, the rest of this paper is structured as follows. Section 2 defines ORM, introduces the ORM cycle as structuring element for the findings, and presents a literature review framework as methodological foundation. Subsequently, Section 3 presents the finding along the ORM cycle. Based on this, research opportunities are derived in Section 4. The paper concludes with Section 5.

¹ <http://reputationtool.com/>

² <http://www.sentimentmetrics.com/>

2 Scope and Methodology

Reputation is a very versatile term, which has been defined in various domains. In this paper “reputation is information used to make a value judgment about [a] [...] person” (Farmer and Glass 2010), which also includes enterprises (juridical personality). Therefore, ORM can be defined as any activity in the Web for reputation building, maintenance and enhancing (Burkhardt 2008). Based on this definition, the abstract ORM cycle based on Jones (2011) is used to define and structure the relevant phases of ORM (cp. Figure 1).

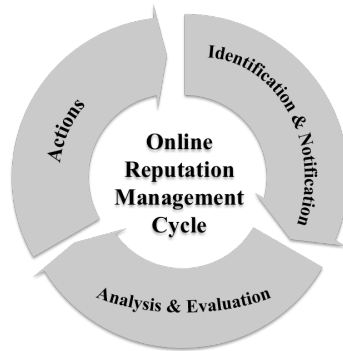


Figure 1: High-level ORM cycle (based on Jones 2011).

In the ORM cycle, at first relevant information about an individual or an enterprise (subject) is identified (e.g. web crawling) and then the subject is notified, once relevant information has been collected (*Identification & Notification Phase*). In the next step, the retrieved information has to be analysed and evaluated by the subject (*Analysis & Evaluation Phase*). This is typically supported by an ORM system (e.g. data structuring, visualisation). Finally, if applicable, necessary steps are undertaken to modify or remove identified information, which may harm the subject’s reputation (*Actions phase*).

Following the established reputation definition and ORM cycle, this literature review follows the frequently applied and cited framework of vom Brocke et al. (2009). At first, this demands the setup of literature review taxonomy in order to structure and describe the planned outcome (cp. Table 1).

Characteristic	Categories			
Focus	Research Outcomes	Research Methods	Theories	Applications
Goal	Integration	Criticism	Central issues	
Organisation	Historical	Conceptual	Methodological	
Perspective	Neutral Representation		Espousal of Position	
Audience	Specialised Scholars	General Scholars	Practitioners/Politicians	General Public
Coverage	Exhaustive	Exhaustive & Selective	Representative	Central/Pivotal

Table 1: Taxonomy of Literature Review (Vom Brocke et al. 2009).

As indicated by the greyed cells of Table 1, this paper focuses on related work of ORM for general scholars and practitioners. Thereby, it addresses central issues of state-of-the-art ORM and presents its results in a conceptual as well as neutral manner. Given the consulted online databases, journals and conference proceedings, the coverage of this paper strives for representative results (cp. Table 2).

In this regard, the selection of journals was based on their coverage and scope in the information system (IS) domain. The selection of A-conferences was based on the ranking of the *Excellence in Research for Australia Initiative* (2010). Owing to the selected databases for A-ranked conferences some non A-ranked but relevant conferences (e.g. ICMB) are included as well. Due to lack of ORM coverage in journals, the focus of the literature review was completely shifted to conference proceedings.

General Scientific Databases & Journals	<ul style="list-style-type: none"> • JStore • ProQuest (only PhD Theses) • Management Information Systems Quarterly (MISQ) • Web of Knowledge
Conference Proceedings	<ul style="list-style-type: none"> • American Conference on Information Systems (AMCIS) • International Conference on Information Systems (ICIS) • European Conference on Information Systems (ECIS) • Pacific Asia Conference on Information Systems (PACIS) • Association for Computing Machinery (ACM) • Wirtschaftsinformatik (WI) • International Conference on Information Resources Management (CONF-IRM) • Mediterranean Conference on Information Systems (MCIS) • International Conference on Mobile Business (ICMB) • Mardi Gras Conference (MGC) • BLED eConference • United Kingdom Academy for Information Systems (UKAIS)

Table 2: Selected Journals and Conferences for the Literature Review.

Within this scope of publication outlets, the paper focuses on the IS domain since ORM involves people/organisation, technology and task. Therefore, papers were ignored for which their title or abstract indicated medical, legal, sociological, psychological, security related reputation topics as well as approaches in which reputation is an independent variable. These research domains were excluded because they define online reputation differently (e.g. reputation in the security domain often means data quality) or deal with offline reputation with face-to-face interaction (e.g. psychology). Further, this paper has also excluded publications on privacy enhancing technologies since they require service provider-sided implementations for which service providers hardly have an incentive to do so. In addition, they do not protect Individuals from others publishing information about them.

For the given publication bodies, up to 20 keywords (e.g. “online reputation management”, “self-portrayal”) were used in order to retrieve relevant publications. Whereas the initial keywords were drawn from prominent ORM literature (e.g. Burkhardt 2008; Helm et al. 2011), further keywords were added as new publications revealed additional ORM related terms.

3 Findings

Table 3 shows the results of the literature review based on the outlined scope and methodology in Section 2. It resulted in 1042 conference papers (data collection ended in July 2012) since no ORM journal paper within the scope was found. Titles and abstracts were analysed in the preliminary screening. 1008 papers were removed, which have been duplicates or were not in the scope to the criteria presented in Section 2. For the remaining 34 papers an in-depth analysis was conducted. Two papers were found due to forward search. Altogether, 36 papers were analysed.

Databases		Conferences	Results	Removed	In-depth
AISnet	AIS Conferences	ICIS, AMCIS	536	522	14
	Affiliated Conferences	PACIS, ECIS, CONF-IRM, MCIS, ICMB	162	160	2
	Other Conferences	WI, MGC, BLED, UKAIS	68	67	1
ACM		All ACM Conference Proceedings	276	259	17
Subtotal			1042	1008	34
Forward Search			2	0	2
Total			1044	1008	36

Table 3: Summary of Literature Review Statistics.

The overall results reveal the following three characteristics of ORM research. The major of initially found publications is out-of-scope. For instance, many ORM publications relate to network security, i.e. measuring the validity of data packets. Further, ORM research in the scope of this paper is solely published in conference proceedings. Finally, the fact that 32 out of 36 relevant papers have been published after 2008 indicates that ORM is (still) a new but also emerging research topic. The detailed findings of the review are presented based along the introduced ORM cycle in the following sections.

3.1 Identification and Notification Phase

In the first phase of the ORM cycle based on Jones (2011), relevant information about an individual or enterprise (subject) has to be identified and then the subject is notified. In order to present the current contributions for this phase, an overview of the conduction of ORM is provided first. Then, the findings in this category show results, which attempt to address name disambiguation, identification of relevant communication hubs, and effective information retrieval approaches.

Conduction of ORM

Madden and Smith (2010) analysed the ORM behaviour of individuals. They found out that 57% of adult Internet users search for information about themselves using their names. 46% of the adult Internet users also monitor digital footprints of themselves and others. Moreover, 16% of all Internet users had conducted background-checks on partners or dating partners. People using online dating sites do more background-checks (34%). Additionally, they created online profiles on social networking sites (SNS) to maintain their online reputation. 31% of the employed Internet users have searched about information of their co-workers and 27% looked for information about their employers. Besides analysing the information retrieval behaviour of Internet users, the authors investigated which actions people take for ORM. About 44% limit information about themselves by changing privacy settings or removing tags from photos. 4% of online adults personally had bad experience because of embarrassing or inaccurate information. 47% of SNS users deleted unwanted comments and 8% requested that someone remove information about them. Motoyama and Varghese (2009) extracted profile information from one SNS and used them to find the same person on the other SNS. They found out that the combination of education institute and name are the best attributes to relocate people.

Name Disambiguation

In order to address the issues of name disambiguation, Tang et al. (2011) have developed an algorithm, which disambiguates namesakes based on user's SNS information. In the same regard, Zhou (2009) proposed a system, which translates Western names into Chinese based on their pronunciation. Further, Spina, Amigo and Gonzalo (2011) introduced a keyword filtering method for company name disambiguation in Twitter. However, according to Perez-Tellez et al. (2010) keyword filtering solely based on Twitter content is not effective, as the tweets should also be enriched with information from other sources (e.g. Wikipedia). Therefore, they demonstrated several different approaches. Based on the latter contribution, the authors tested another approach named *full term expansion methodology* with a text formaliser (Perez-Tellez et al. 2011). In this approach, they used a dictionary containing the most common abbreviations of micro-blogs to re-formalize the tweet. After that the ambiguous word and words with high co-occurrence with positive company tweets were expanded.

Communication Hub Identification

Xu et al. (2011) presented a methodology to identify opinion hubs to increase the effectiveness of advertising for enterprises on SNS. They collected data from SNS as well as rating platforms and computed the influence relationship strength by analysing the social relationships. The result is a communication hub, which offers the most joint influence power to convince other people to buy a product.

Information Retrieval Approaches

Amigó, Gonzalo and Verdejo (2011) developed evaluation metrics for document filtering for selective information retrieval. They tested and stated the advantages and disadvantages of *utility-based metrics*,

informativeness-based and *class-oriented measures*. Tsagkias, de Rijke and Weerkamp (2011) dealt with the problem of finding re-published verbatim or near-verbatim news articles by using hypergeometric distributions. They presented a task-driven and a Bayesian inference language model. Yang, Li, and Kiang (2011) proposed an approach for identifying customer complaints in a highly distributed social media environment. They used a heuristic algorithm and classification scheme for the evaluation in order to overcome the over-fitting problem. Further, Khatiban (2012) presented in a research-in-progress paper a reputation system, which gathers reviews, comments, opinions, and feedbacks from several sources in order to reveal all information about an object.

3.2 Analysis and Evaluation Phase

The *analysis and evaluation phase* covers methods, technologies and approaches, which support individuals or enterprises to evaluate the relevance and impact of retrieved information. The retrieved papers can be assigned to the categories fraud detection, measuring approaches, and classification.

Fraud Detection for User Ratings

Fake ratings or reviews (i.e. reviews from competitors to harm or self-created reviews to increase the reputation of own products) can have strong impact on the reputation of an enterprise (Lau, Liao and Xu 2010). They are often misused as a marketing instrument. Sherchan, Loke and Krishnaswamy (2006) addressed the problem of identifying invalid user ratings in web services based on a fuzzy model, which estimates the ratings according to service level agreement parameters such as response time, availability, and performance. Abbasi and Chen (2007) built a framework for stylometric analysis, which distinguishes authorship in online communities and identify fraud behaviour in ratings. Lau et al. (2011) presented a method for detecting untruthful reviews using text mining techniques and probabilistic language modelling, which can determine near-verbatim reviews. Mukherjee, Liu and Glance (2012) proposed a method for spotting fake reviewer groups in customer reviews on several indicators (e.g. similarity, time frame). Finally, Padovan et al. (2001) presented a mechanism for reputation tracking on e-commerce platforms, which tracks and compares a trader's behaviour and predicts the probability of cooperative behaviour.

Trend analysis, effect-, and sentiment measuring

The objective of *trend analysis* is to identify upcoming topics related to a product in order to decrease the reaction time on important issues. Goorha and Ungar (2010) addressed this topic with a system, which extracts phrases related to products to reveal emerging trends. This system identifies and extracts phrases close to the term of interest that occurs above average.

Effect measuring seeks to measure the impact of an event or action from competitors on own products and vice versa. Dai, Kakkonen and Sutinen (2011) developed a system for detecting competitive intelligence from social media. It collects valuable information from competitors and their customers to measure the effect of comments and statements on own products. Alexe et al. (2012) presented an end-to-end framework for real-time analysis in social media. It collects and presents data in clean form in a dashboard. Lau, Liao and Xu (2010) investigated the impact of fake consumer reviews on the economy by introducing semantic language modelling and Kullback-Leibler divergence based computational model. Duan, Cao and Gan (2010) examined the impact of basic, stylistic, and semantic characteristics on the perceived helpfulness in customer reviews.

Sentiment measurement is the analysis of public opinions about a product or company. Botzenhardt, Witt and Maedche (2011) introduced a concept for text mining extracting customers' voice from unstructured content. They integrated text-mining techniques into Cross Industry Standard Process to correlate unstructured content with metadata. The output was a sentiment analysis of unstructured data. Sommer et al. (2011) addressed the problem of opinion mining in micro-blogs. Their solution used Latent Dirichlet Allocation and Gibbs-Sampling algorithm to identify topic of interest and opinions.

Several papers also measured different aspects of individual's behaviour. Jansen, Ghowdury and Cook (2010) conducted a survey to learn about the usage and importance of status messages: 74% solicited for opinions related to a purchase, 80% got advice after posting, and 75% claimed that advices influenced their purchase decision. Chen, Huang and Xu (2010) investigated in a research-in-progress paper the influence of online vendor's response on customers' trust beliefs towards the vendor. They analysed the mediating variable between companies' explanation and customers' trust. Aral, Ipeirotis and Taylor (2011) analysed the effect of qualitative information (e.g. recommendation, reviews) on sales and found out that more prior attention about an object leads to reduced impact of recommendation. Further, they proved that more prior knowledge makes qualitative information less persuasive.

Classification of Content/Reputation

Tanimoto and Ohta (2010) presented a ranking method and prototype which visualises and scores reputation using evaluative expression dictionaries on Japanese websites. Meij, Weerkamp and de Rijke (2012) proposed a solution which links micro-blog posts from Twitter with semantic data and connects them to Wikipedia articles in order to determine and classify the content of the posting. Wang, Liu and Fan (2011) developed a framework for text classification. It assesses the helpfulness of user-generated content in order to present the seeker the most useful information.

3.3 Action Phase

Finally, if applicable, individuals and enterprises need to take action regarding content they deem inappropriate. Seven found papers can be separated in the following two categories.

Dissemination of Information

Jansen et al. (2009) collected tweets from 50 brands to show that micro-blogging could be used to enhance the online reputation of a company by spreading information. Additionally, real-time feedback from customers and direct interaction with unsatisfied customers is also a factor to consider. Moreover, enterprise can gather valuable opinions for product development and innovation.

Strategies

Kuikka and Äkkinen (2011) derived two dimensions of challenges in social media adoption. The internal dimension includes resources, ownership, authorisation, attitudes and economics. The external dimension composes of reputation, legal, and identity challenges. Additionally, they provided strategies to enhance companies' reputation. Seebach, Beck and Denisova (2012) analysed in a case study stakeholders communication about their perception of a company. Based on these results, they provided guidelines how to derive an individual customer relationship strategy. Aggarwal and Albert (2009) presented a Web 2.0 strategy for companies, which illustrates the competitive advantage of leveraging relationships with customer communities. It encompasses five guidelines for leveraging customer relationships. Segrave, Carson and Merhout (2011) proposed a framework including seven critical success factors how to manage a fan page on SNS. Cahill, Batista and Kawalek (2004) investigated recovery strategies for government reputation derived from recovery strategies for companies. They introduced a two-dimensional recovery strategy and several techniques for reputation enhancement.

3.4 Summary of Findings and Current Research Trends

The results of in-depth analysis of 36 papers are summarized in Table 4. The *application field* is distinguished between *enterprises* and *individuals* due to their different ORM objectives. Further, for each application category, the results have been split up into *open environments* (i.e. the public Web) and *closed environments* (e.g. social media such as Twitter or Facebook). The public Web mainly consists of unstructured data on websites, which is very costly to translate into structured datasets for analysis. In contrast, social media content can typically be accessed via an Application Programming Interface (API), which returns structured dataset that can easily be analysed.

ORM Cycle	Approach	Enterprise		Individuals			
		Closed	Open	Closed	Open		
Identification & Notification Phase	Conduction of ORM	1	1	2	1	5	16
	Disambiguation	1	2	1	1	5	
	Information Retrieval Approaches	1	2	1	1	5	
	Communication Hub Identification	1	0	0	0	1	
Analysis & Evaluation Phase	Fraud Detection for User Ratings	5	0	1	0	6	23
	Trend analysis, effect-, and sentiment measuring	7	4	0	0	11	
	Classification of Content/Reputation	3	1	1	1	6	
Action Phase	Dissemination of Information	1	0	0	0	1	8
	Strategies	4	2	1	0	7	
		24	12	7	4		
		36		11			

Table 4: Research Landscape of ORM.

The current research landscape of ORM, as illustrated in Table 4, indicates that significantly more research has been conducted for enterprises than for individuals. In this regard, enterprises mainly focus on *closed environments* because they are especially interested in the reputation or prominence of their brands/products towards their (potential) customers (Walker 2010). Therefore, social media is currently the main channel for customers to exchange information on such topics. Consequently, most research was conducted in order to support enterprises in the *analysis and evaluation phase* in *closed environments*. For individuals, slightly more research publications could be found for *closed environments*. In contrast to enterprises, individuals typically strive to discover, which personal information is currently available about themselves on social media. It allows them establish self-portrayals of their digital identities as basis to evaluate their online reputation (Madden and Smith 2010). Consequently, the majority of the research has been conducted for *identification and notification phase*.

As a result of research supporting the specific practical needs of enterprises and individuals, several research gaps have been conclusively identified (cp. grey cells in Table 4). Despite the fact that only 36 available research publications may limit the informative value of the outlined research landscape, two valuable insights have been revealed. First, ORM appears to be still a niche topic or emerging field, although there is a constantly increasing information overload and its related threats to the online reputation of enterprises and individuals. Second, the existing publications still indicate that current research is solely addressing specific needs of enterprises and individuals rather than covering the whole ORM cycle. Consequently, the following Section 4 will discuss possible new research directions in order to extent the current body of knowledge towards better ORM cycle coverage.

4 Further Research Opportunities

Based on the available publications on ORM and identified research gaps, new research opportunities are discussed, which contribute to all phases of ORM for enterprises and individuals at the same time. The common denominator for these research opportunities is the effort reduction during ORM conduction. As already discussed as part of the motivation of this paper (cp. Section 1), the Web 2.0 allows virtually everybody to publish information on the (public) Web. This creates threats to the online reputation of enterprises and individuals while at the same increases their effort to protect their online reputation. Consequently, the following sections discuss potential research topics, which can address that matter along the ORM cycle.

³ Some papers are counted more than once because they cover more than one application field.

4.1 Attribute-based and User-Profile Identification

When conducting ORM, enterprises and individuals are still confronted with vast of search results about themselves (*identification phase*), which often contain many unrelated results – esp. in the public Web (e.g. result duplicates, namesakes, etc.). Further, due to searches solely based on keywords or names of individuals, content that does related to enterprise or individual, but does not fit this search patterns, is not discovered. Consequently, additional search criteria should be applied. For instance, for individuals, profile information (incl. gender, age, personal preferences, etc.) can be used in order to alleviate the outlined issues. Therefore, research is needed on what relevant attributes about an individual such a profile should contain, how it can be formally described and in which way a search engine can apply such a profile in order to conduct information retrieval about an individual. The benefit of this approach is that many users already have such profiles to start with (e.g. Facebook, Google+).

4.2 Context-Sensitive Analysis and Early Warning System

In the *analysis and evaluation phase* research should focus on individuals rather than only enterprises. Whereas in contrast to enterprises, individuals typically do not aim to measure their online prominence, they are still in need for support analysis and evaluation of the information publicly available about them. Their major challenge here is to determine the meaning of information (positive, negative, neutral) as well as its reach or impact (e.g. private homepage vs. prominent blog).

Currently research is rarely available for individuals in this phase. In order to support individuals and provide a well-founded basis for evaluation, context information of website (e.g. audience and reach of the website, author's reputation) has the potential to alleviate the problem by enabling a semi-automatic analysis and evaluation process. An ORM system scores information based on the context of website and individuals can then more easily decide whether they want to take action. The emerging research challenges for such an approach are manifold. First, the context of a website needs to be defined. Based on this definition, a process, which automatically rates a certain website with regard to meaning of content and potential impact, is needed.

Enterprises on the other hand, increasingly face the problem so-called *shit-storms*, which originate suddenly from one posting a negative comment, which subsequently spreads virally and can hardly be stopped. Such a *shit-storm* can happen anytime and it is very costly to monitor. Consequently, an efficient early warning system has the potential decrease effort for enterprise on that matter. Therefore, research needs to analyse the indicators for and characteristics of a *shit-storm* and derive requirements for warning system (comparable to hurricane warning system).

4.3 The Right to be Forgotten

Individuals and enterprises face the problem of removing inappropriate online content (*Action phase*). Current approaches, such as Search Engine Optimization (SEO), rather address the symptoms than the root of the problem. The idea is to push unwanted search results in search engines away from the front results page to farer and not frequently visited pages. SEO may on the one hand violate on search engine provider's terms of use whereas the unwanted content still remains on the original websites.

In contrast to the prior ORM cycle phase, there may be hardly a technical solution to this problem since third parties typically host websites. In this regard, the *right to be forgotten*, which is strongly promoted by the European Commission (2011) may open a new venue. It empowers enterprises and individuals with legal right to take down unwanted content from third party websites upon request. However, what intuitively appears as a prospective approach also triggered controversial discussion. Rosen (2012) stated that *right to be forgotten* might be “the biggest threat to free speech on the Internet in the coming decade” because the boundary between censorship and privacy can be blurred. In other words, which type of information should an entity be able to remove in order to protect its per-

sonal online reputation (e.g. character assassination)? And which information needs to stay online in order to inform the people about inappropriate actions of enterprises or individuals?

Consequently, research at the border between censorship and privacy is needed. However, a technical solution to this problem is highly unlikely. Therefore, multi-disciplinary research covering social, economic and legal sciences as well has to be conducted in order to approach this challenge.

5 Conclusion

In the Web 2.0 era and beyond, ORM has become more relevant than ever for enterprises and individuals. The literature review of this paper provided a landscape of state-of-the-art ORM research. Thereby, the relatively low number of publications of ORM shows the current niche character of ORM in IS research. Further, it indicates that current ORM research specifically addresses the current needs of the practice. Whereas enterprises focus on information analysis related to the brand/product reputation in social media, individuals mainly seek to identify inappropriate public information about them.

In order to stimulate current ORM research as well as broaden its scope, a new research direction covering the whole ORM cycle is proposed. With the aim to reduce the effort to conduct ORM as common denominator for all ORM cycle phases and stakeholders, research for improved identification of information, semi-automated analysis/evaluation (esp. for individuals) and multi-disciplinary, scientific discussion on the *right be forgotten* concept (*Action Phase*) is recommended. By following latter, further research can enable a holistic support for ORM beyond the current needs of practice while preparing enterprises and individuals for future ORM challenges.

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