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Advances in Social Media Research: Past, Present and Future

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Abstract Social media comprises communication websites that facilitate relationship forming between users from diverse backgrounds, resulting in a rich social structure. User generated content encourages inquiry and decision-making. Given the relevance of social media to various stakeholders, it has received significant attention from researchers of various fields, including information systems. There exists no comprehensive review that integrates and synthesises the findings of literature on social media. This study discusses the findings of 132 papers (in selected IS journals) on social media and social networking published between 1997 and 2017. Most papers reviewed here examine the behavioural side of social media, investigate the aspect of reviews and recommendations, and study its integration for organizational purposes. Furthermore, many studies have investigated the viability of online communities/social media as a marketing medium, while others have explored various aspects of social media, including the risks associated with its use, the value that it creates, and the negative stigma attached to it within workplaces. The use of social media for information sharing during critical events as well as for seeking and/or rendering help has also been investigated in prior research. Other contexts include political and public administration, and the comparison between traditional and social media. Overall, our study identifies multiple emergent themes in the existing corpus, thereby furthering our understanding of advances in social media research. The integrated view of the extant literature that our study presents can help avoid duplication by future researchers, whilst offering fruitful lines of enquiry to help shape research for this emerging field.

Keywords Information systems · Social networks · Social media research · Systematic review

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1 Introduction

Social media allows relationship forming between users from distinct backgrounds, resulting in a tenacious social structure. A prominent output of this structure is the generation of massive amounts of information, offering users exceptional service value proposition. However, a drawback of such information overload is sometimes evident in users' inability to find credible information of use to them at the time of need. Social media sites are already so deeply embedded in our daily lives that people rely on them for

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every need, ranging from daily news and updates on critical events to entertainment, connecting with family and friends, reviews and recommendations on products/services and places, fulfilment of emotional needs, workplace management, and keeping up with the latest in hashion, to name but a few.

When we refer to social media, applications such as Facebook, WhatsApp, Twitter, YouTube, LinkedIn, Pinterest, and Instagram often come to mind. These applications are driven by user-generated content, and are highly influential in a myriad of settings, from purchasing/selling behaviours, entrepreneurship, political issues, to venture capitalism (Greenwood and Gopal 2015). As of April 2017, Facebook enjoys the exalted position of being the market leader of the social media world, with 1.97 billion monthly users (Statista 2017). In addition to posts, social media sites are bombarded with photo and video uploads, and according to the recent numbers, about 400 million snaps a day have been recorded on Snapchat, with around 9000 photos being shared every second (Lister 2017). While 50 million businesses are active on Facebook business pages, two million businesses are using Facebook advertising. Apparently, 88% businesses use Twitter for marketing purposes (Lister 2017).

Academics and practitioners have explored and examined the many sides of social media over the past years. Organizations engage in social media mostly with the aim of obtaining feedback from stakeholders (Phang et al. 2015). Consumer reviews are another big part of social media, bringing issues of information quality, credibility, and authenticity to the forefront. To a large extent, online communities have been successful in bringing together people with similar interests and goals, making the concept of micro blogging very popular. While most messages exchanged on social media sites are personal statuses or updates on current affairs, some posts are support seeking, where people are looking for assistance and help. Interestingly, these have been recognized as socially exhausting posts that engender social overload, causing other members to experience negative behavioural and psychological consequences, because they feel compelled to respond (Maier et al. 2015a).

Given the relevance of social media to various stakeholders, and the numerous consequences associated with its use, social media has attracted the attention of researchers from various fields, including information systems. This is evidenced by the large number of scholarly articles that have appeared in various outlets. Researchers have to expend an enormous amount of time and effort in collating, analysing, and synthesising findings from existing works before they embark on a new research project. Given the significant number of studies that have already been published, a comprehensive and systematic review can offer valuable assistance to researchers intending to engage in social medi research. Our literature search suggests that there are reviews on social media in the marketing context (see for example, AlAlwan et al. 2017; Dwivedi et al. 2017a; Dwivedi et al. 2015; Ismagilova et al. 2017; Kapoor et al. 2016; Plume et al. 2016). However, there exists no comprehensive review that integrates and synthesises the findings from the articles published in Information Systems journals. Such an endeavour will not only provide a holistic view of the extant research on social media, but will also provide researchers a comprehensive intellectual platform that can be used to pursue fruitful lines of enquiry to help advance research in this rapidly expanding area. To fulfill this goal, this study reviewed relevant articles to elucidate the key thematic areas of research on social media, including its benefits and spillover effects. The resulting review is expected to serve as a one-stop source, offering insight into what has been accomplished so far in terms of research on social media, what is currently being done, and what challenges and opportunities lie ahead. By doing so, this study explores the following aspects of existing research on social media:

- How is social media defined in the IS literature?
- How has social media literature evolved from a multidisciplinary perspective?
- How have social media technologies, applications, practices, and research evolved over the past 20 years?
- Which social media issues and themes have already been examined in IS research?
- What are the major limitations of extant literature on social media?

The next section of this paper gives a brief overview of the method employed for carrying out the literature search. The succeeding section discusses citation and text analyses of social media publications. Subsequently, we outline the various ways in which scholars have defined social media. This is followed by a section that focuses on the evolution of social media research from an IS perspective. Next, we articulate the major themes emerging from prior research and use them as a backdrop for our review of the literature on social media. The ensuing section discusses our findings, followed by key conclusions and limitations of the study.

2 Literature Search Method

The literature search for this analysis was conducted in the following two phases: (1) keyword-based search and analysis to explore the overall evolution of social media literature; and (2) manual search across specific IS journals to understand the emerging IS perspectives on this topic.

2.1 Keywords Based Search and Analysis

In order to gain a deeper understanding of social media, we analyzed relevant abstracts that were downloaded from the Web of Science (WOS) database. Our search terms[1] yielded a total of 13,177 records, out of which 12,597 unique abstracts were obtained. The analysis of these records was undertaken in two steps. First, we used VOSviewer (Van Eck and Waltman 2011) to perform a co-citation analysis of first authors in the downloaded corpus. VOSviewer allows visualization of similarities in publications and authors through an examination of bibliometric networks. Furthermore, we used VOSviewer to analyze words derived from titles and abstracts. Second, we used Latent Dirichlet Allocation (LDA) (see Blei 2012) to extract key thematic areas latent in the literature on social media. Further details about these analyses and results are presented in section 3.

2.2 Manual Search and Analysis

Given the inconsistencies in the use of keywords in social media research, a manual search, rather than a keyword-based one, was deemed to be more appropriate for identifying the existing literature on social media. Furthermore, since keywords in the social media literature tend to overlap with topics and/or theories in other related research areas, a keyword search may yield irrelevant articles. For instance, a keyword search for "Social network" returns articles related to social network theories, which are not necessarily part of social media. The articles reviewed in this study are from the following eight Senior Scholars' Basket of Information Systems journals: *European Journal of Information Systems* (EJIS); *Information Systems Journal* (ISJ); *Information Systems Research* (ISR); *Journal of the Association for Information Systems* (JAIS); *Journal of Information Technology* (JIT); *Journal of Management Information Systems* (JMIS); *Journal of Strategic Information Systems* (JSIS) and *Management Information Systems Quarterly* (MISQ)). Along with these eight journals, we have also analysed relevant articles from *Information Systems Frontier* (ISF) journal. This is because it focuses on examining "new research and development at the interface of information systems (IS) and information technology (IT) from analytical, behavioural, and technological perspectives. It provides a common forum for both frontline industrial developments as well as pioneering academic research".[2] ISF enjoys the reputation of a high quality journal across continents. For example, a journal quality ranking by Chartered Association of Business Schools, UK, has given it a three star (high ranking) quality rating, while journal ranking by the Australian Business Deans Council (ABDC) has rated it as an 'A' class journal (the second highest quality journal category after A*, which is reserved for premier publications). In light of these observations, it was deemed appropriate to consider articles from ISF along with the aforementioned eight journals.

Relevant articles were then identified and downloaded from each of the target journals by going through their archives. Specifically, all volumes and issues published in these journals between 1997 and 2017 were considered in our analysis. Articles, research notes, introductions, research commentaries, and editorial overviews relevant to social media were downloaded and numbered to prepare an APA style reference list. The first literature search resulted in 181 articles that had some relevance to the social media domain. A closer examination of individual abstracts and full articles led to the elimination of 49 irrelevant articles, thus giving us a total of 132 articles pertinent to the domain of interest (i.e., social media).

3 Citation and Text Analyses of Social Media Publications

3.1 Author Co-Citation Analysis (ACA)

Author Co-Citation Analysis (ACA) is a bibliometric technique that has been widely used to explicate the conceptual structure of disciplines (for example, see White and Griffith 1981; McCain 1984; Culnan 1986; Nerur et al. 2008). The underlying assumption in ACA is that authors who are frequently cited together tend to work on similar concepts. Thus, frequently co-cited authors are likely to cluster together when an ACA is performed. VOSviewer considers only first authors when it performs ACA. Only authors who had 50 or more citations were included in the analysis. Figure 1 shows the results of ACA.

VOSviewer identified seven distinct clusters:

1. **Cluster 1:** Authors in this cluster have contributed to research on Twitter (e.g., Sakaki), social network analysis (e.g., Wasserman), topic modeling (e.g., Blei), sociality and cognition (e.g., Dunbar), sentiment analysis of tweets (e.g., Thelwall), and other related topics.
2. **Cluster 2:** Authors in this cluster are well known for their work on technology adoption (e.g., Venkatesh), diffusion of technology (Rogers), culture (Hofstede), theory of planned behavior (Ajzen), marketing/consumer behavior (e.g., Hennig-Thurau), and statistical methods (e.g., Bagozzi, Fornell, Hair).
3. **Cluster 3:** This cluster comprises of authors who deal with a variety of issues related to social media (Facebook and Twitter) use. For example, Steinfied and

[1] TITLE: ("Social Media" or "social networking" or "facebook" or "linkedin" or "instagram" or "twitter")
Refined by: DOCUMENT TYPES: (ARTICLE OR PROCEEDINGS PAPER)
Timespan: All years. Indexes: SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI.

[2] http://www.springer.com/business+%26+management/business+information+systems/journal/10796

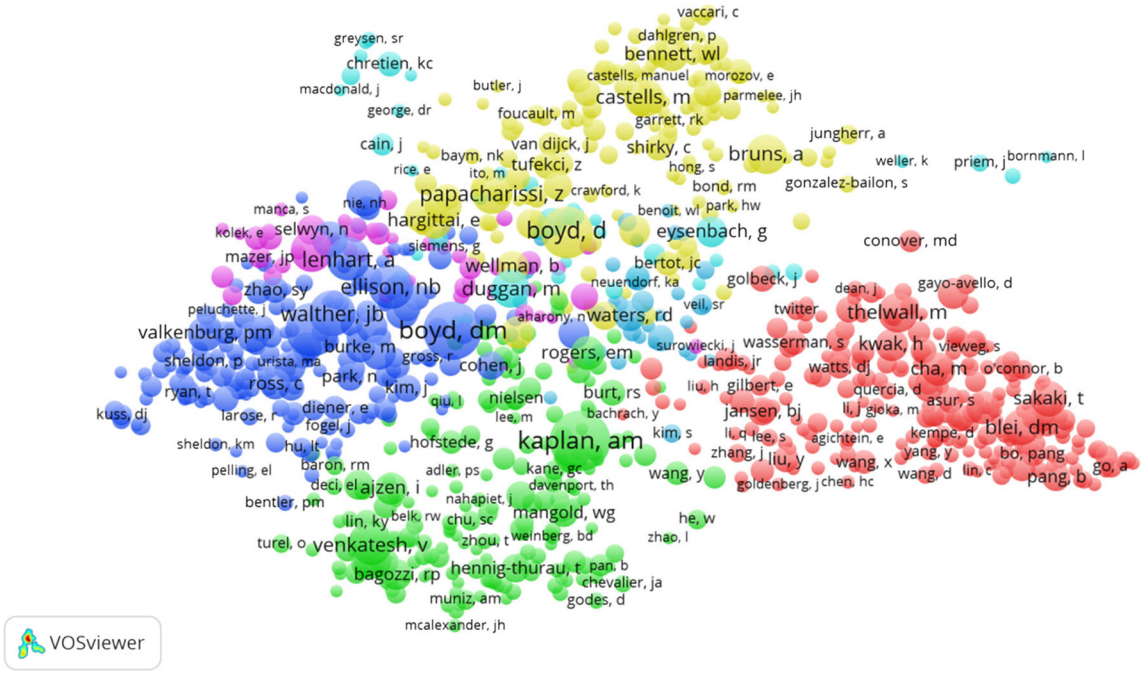

Fig. 1 Author clusters from ACA

Ellison examined social capital across Facebook; Kuss studied online/social networking addiction (e.g., gaming addiction), and Lenhart focused on teens and technology (e.g., mobile internet use), particularly in the use of social media. Other topics include Bandura's self-efficacy, use and benefits of Twitter by scholars, and personality and social characteristics of Facebook users (e.g., Ross).

4. **Cluster 4:** Prominent social theorists/sociologists who have contributed to social capital theory, structuration theory and modern sociological theory are distinguished members of this cluster. These include Bourdieu, Coleman, Giddens, and Habermas. Papacharissi has written about a variety of topics including the exploration of factors that predict Internet use as well as users' behaviors, identity, sense of community and culture on social media. Tufekci has studied privacy and disclosure on social media, as well as other topics, including how social networking sites such as Facebook might influence one's decision to participate in protests.
5. **Cluster 5:** In this cluster, there is evidence of the influence of Vygotsky's socio cultural learning theory as well as Lave and Wenger's work on communities of practice. In addition to his work on collaborative learning, Kirschner has examined the relationship between Facebook and academic performance. Likewise, Selwyn has explored pedagogical and learning engendered by the use of information and computer technologies (ICT).
6. **Cluster 6:** This cluster appears to reflect two broad themes. The first is a range of topics related to medical Internet research, broadly referred to as e-health (Eysenbach) or online health (Duggan). Themes in this category include electronic support groups and health in virtual communities (Eysenbach), and policies and healthcare associated with social media, and professionals among medical students and physicians in the use of social media (Chretien, Greysen). The second main thematic area in this cluster deals with scholarship on social media, scholarly communication, and metrics for evaluating impact of articles on the web (e.g., Weller, Bormann, Priem).
7. **Cluster 7:** The dominant theme here is the nature and content of communication. In particular, scholars in this cluster have focused on communication and response in the face of crises (Coombs), including image restoration after a controversy (Benoit), analysis and reliability of content (Krippendorff), and the use of social media sites such as Facebook and Twitter by government agencies and non-profit organizations to engage stakeholders (Waters).

3.2 Text Analysis of Words in Titles and Abstracts

VOSviewer was used to analyze terms (i.e., words) in the titles and abstracts of our corpus to obtain a two-dimensional map showing proximities of words that are likely to be related based on their co-occurrences. Specifically, VOSviewer relies on the Apache OpenNLP Toolkit to identify noun phrases, and then compares their overall co-occurrence distribution with their distribution across other noun phrases to compute a relevance score (Van Eck and Waltman 2011). The intuition is that frequently co-occurring noun phrases with high relevance are

likely to unravel a topic or theme that is latent in the corpus. The term map from VOSviewer is shown in Fig. 2. Only terms that occurred 50 times or more were included. Furthermore, relevance scores computed by VOSviewer for every term were used to select the top 80% that met the threshold.

VOSviewer identified five clusters here. It is evident from the clusters that research on social media has dealt with a broad range of topics, including but not restricted to diffusion of information and opinions, spread of diseases (e.g., influenza), identification of social and emotional health concerns and attendant interventions to deal with them, social media as an influence, the use of social media for marketing purposes, and the implications of social media as a tool for pedagogy (i.e., teaching and learning) and medical practice. These have been summarized in Table 1.

It must be noted that the topics are broad and don't reveal the nuances of research areas embodied in the abstracts examined in this study. The next sub-section presents the results of topic modeling, which has the potential to unravel more focused themes embodied in the large corpus that we analyzed.

3.3 Topic Modeling

The fact that our search terms yielded over 12,000 abstracts suggests that scholars are investing increased interest on research issues related to social media. While an informed researcher may have a general idea of the nature of research undertaken so far, it is humanly impossible to discern the thematic structure of all scholarly documents available on social media. Recent advances in topic modeling have made this task relatively easy. Topic modeling relies on algorithms and statistical methods to elicit the topics latent in a large corpus (Blei 2012). The term *topic* refers to a specific and often recognizable theme defined by a cohesive set of words that have a high probability of belonging to that topic. There are several options available for topic modeling: non-negative matrix factorization (NNMF), Latent Semantic Analysis/Indexing (LSA/LSI), and Latent Dirichlet Allocation (LDA). In this study, we use LDA, arguably the most widely used topic modeling algorithm. In order to perform topic modeling on a corpus, the researcher has to specify the number of topics to be extracted. In this study, we extracted the top 100 topics reflected in the scholarship on social media. LDA starts with the assumption that each abstract in our study reflects each of these topics to varying degrees (Blei 2012). Thus, each abstract has a distribution of the desired 100 topics. The 100 topics that were extracted from our abstracts are shown in Table 2. The machine learning for language toolkit (MALLET) (McCallum 2002) was used for this purpose.

4 Analysis of Social Media Research from an IS Perspective

4.1 How is Social Media Defined in the IS Literature?

In studying the existing literature on social media, it becomes apparent that the authors in this field have not focussed on

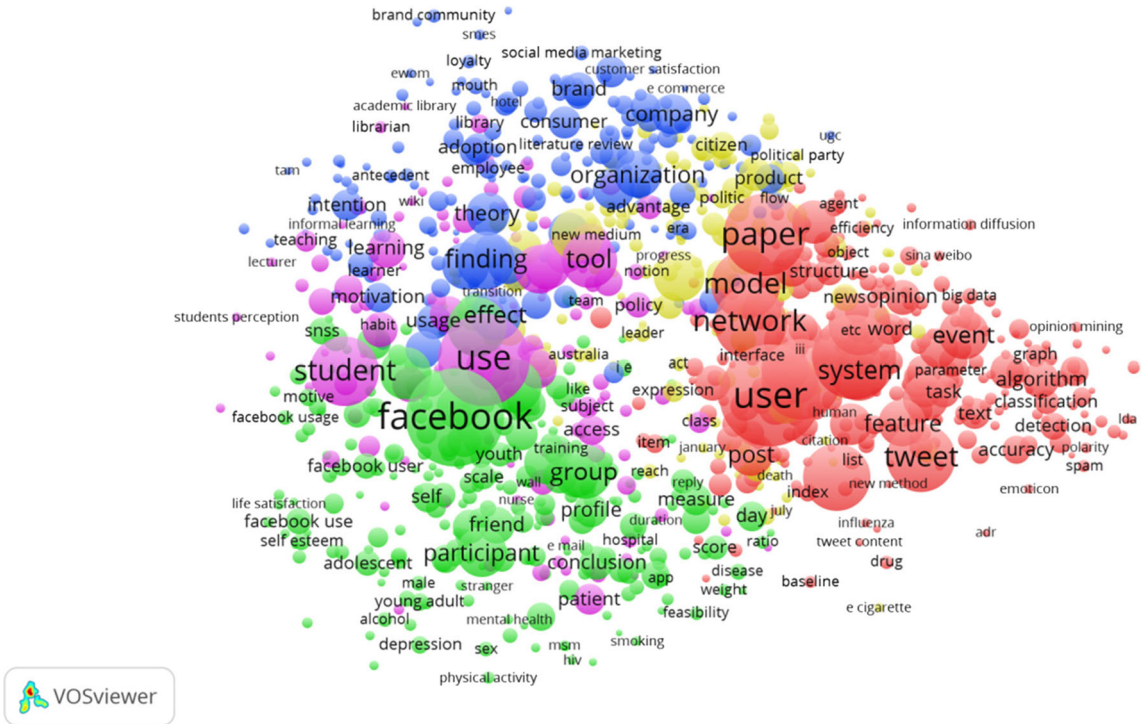

Fig. 2 Term map showing clusters of related words/noun phrases

Table 1 Keywords and topics

Keywords	Topic Description
Twitter network/graphs, opinion mining, spam detection, drugs, adr (adverse reaction to drugs), emoticons, evolution, influenza, information diffusion, classification, big data, weibo	Twitter/μ blogging insights
Facebook users (friends, adolescents, adults), depression, self-esteem, social relationship, intervention, alcohol, smoking, disease	Facebook as a medium for addressing emotional, social and health concerns
Social media marketing, brand loyalty, purchase intention, TAM, motivation	Social Media Marketing
Influencer, political party, politicians, citizens, article, scholar, news opinion, expression, e-cigarette, death, conflict, leader, celebrity	Social Media as an influencer
Teaching, learning, lecturer, student, tool, school, use, practice, patient, hospital, physician, provider, health professional, reflection	Social Media for pedagogy and healthcare practice

defining social media. Of all the studies included in this review, only a handful of studies have come close to defining, or clarifying the concept of social media. For instance, Lundmark et al. (2016, p3) suggest, "social media, as a unique form of communication, integrates multiple sources of legitimacy, and as a result, presents a unique and important context through which to study the topic. Indeed, social media are a means for the dissemination of both internally and externally generated information pertaining to firms, industries, and society in general." According to Schlagwein and Hu (2016), social media constitutes internet-based communication and collaboration channels, widely in use since 2005, and, from an IS perspective, social media tools and their surrounding organizational and managerial structures constitute social information systems. Wakefield and Wakefield (2016, p140) describe "social media technologies as an ensemble IS artefact composed of technical, informational, and relational subsystems that interact distinctly according to the context of use." In their study, they also identify a "recent definition of social media and social networks referring to social media networks as specific types of social media platforms and Internet sites with common attributes such as (1) user profile (2) user access to digital content (3) a user list of relational ties, and (4) user ability to view and traverse relational ties" (Wakefield and Wakefield 2016; p144).

In a more relatable and simple definition, Miranda et al. (2016; p304) explain social media being "mainly conceived of as a medium wherein ordinary people in ordinary social networks (as opposed to professional journalists) can create user-generated news." A few other authors like Spagnoletti et al. (2015) and Xu and Zhang (2013) commonly refer to social media as a set of interned-based technologies/applications, which are aimed at promoting the creation, modification, update and exchange of user-generated content, whilst establishing new links between the content creators themselves. Bharati et al. (2014; p258) refer to social media as a technology "not focussed on transactions but on collaboration and communication across groups both inside and outside the firm." Lastly, Tang et al. (2012; p44) also identify social media as user-generated media, which is a source of "online information created, initiated, circulated, and used by consumers intent on educating each other about products, brands, services, personalities, and issues."

All of the aforementioned descriptions clearly regard social media as communication tools supported by internet-based technologies for dissemination of information. Most of them acknowledge the high concentration of user generated content across such platforms. Based on our understanding of social media and the aforementioned definitions, we propose the following definition: *Social media is made up of various user-driven platforms that facilitate diffusion of compelling content, dialogue creation, and communication to a broader audience. It is essentially a digital space created by the people and for the people, and provides an environment that is conducive for interactions and networking to occur at different levels (for instance, personal, professional, business, marketing, political,and societal)*.

4.2 Evolution of Social Media Research in the IS Literature

In the past two decades, various issues related to social media have been examined in line with the rapid evolution of underlying technologies/applications and their appropriation to enable different types of social media usage. An analysis of 132 articles from selected IS journals suggests that publications until 2011 were still examining user-generated content as a new type of online content (Burgess et al. 2011). However, in the last six years, research in this field has made tremendous progress, not just in terms of its scope, but also in explicating the highs and lows associated with the use of social media. While it is difficult to pinpoint evolution on a yearly basis, it has been possible to identify the major aspects of social media research that have emerged over time. Publications between 1997 and 2017 have been reviewed here. Interestingly, only

Table 2 The 100 most relevant topics on social media

Words associated with topic	Topic label
language English linguistic languages corpus Arabic translation foreign speakers Thai feature Spanish multilingual German word lexical corpora utterances author target	Foreign Languages
campaign change awareness climate campaigns environmental sustainability green public action lhds sma pros raise mass target engagement cons sustainable scripts	Sustainability Campaigns
women gender men relationship romantic relationships female male females partners relational males Facebook partner jealousy behaviour maintenance response surveillance sexual	Human Relationships
network graph user clustering nodes clusters algorithm cluster networks algorithms community link communities links method structure graphs degree similar distribution	Network Graph Analysis
tool social potential development project challenges benefits process community resources communication effective opportunities experience case design practices develop work technology	Social Media Platform/tool for resource sharing and communication
adolescents depression youth parents children symptoms adolescent cyber bullying depressive online sleep behaviour health teenagers teens girls peer bullying young years	Cyber bullying
data urban traffic spatial city patterns areas human temporal mobility cities geographic spatiotemporal distribution regions location activity planning geo tagged transportation	Human Spatial Interaction
sentiment analysis opinion tweet twitter negative positive sentiments mining classification polarity method neutral lexicon expressed reviews public express posts word	Sentiment Analysis of tweets
countries cultural united states international south culture global country American national Korean European cultures India Africa African Korea local region	International Cultures
Chinese weibo china suicide sina micro blog wechat quality air suicidal risk traditional values renren chinas micro blogging posts micro blogs postings pollution	Chinese Micro blogging
social network networks online relationships user analysis structure ties interaction interactions strength connections friends individuals relationship influence people strong information	Social Network Analysis
crisis disaster emergency information response event media management disasters public crises risk twitter earthquake awareness situational communication natural situation flood	Emergency/Crises Response
body comparison eating image appearance behaviour women selfies comparison dissatisfaction girls religious self esteem concerns disordered weight selfie fitness percent posting	Self-Esteem
game sport sports fans team players football teams fan athletes play league playing clubs gaming video gambling professional engagement activity	Issues Related to Sports and Games
model perceived factors intention influence social behaviour user theory research significant effect survey structural usage trust attitude acceptance technology effects	Technology Acceptance Model
face accessibility speech heritage disability disabilities intellectual robot disabled blind ism	Speech Disability

Table 2 (continued)

Words associated with topic	Topic label
impaired email aphasia therapists nonverbal natural amendment accessible field	
method proposed model data approach propose problem user feature algorithm information framework experiments performance experimental effectiveness existing approaches evaluate demonstrate	Research Methods and Algorithms
movement media social political protest protests collective activists activism action role article mobilization occupy activist Arab spring event change street	Social and Political Activism
community groups group communities members online virtual individuals participation identification membership interest shared active discussion interests Facebook interaction interactions form	Virtual Communities (e.g., twitter-mediated communities)
teachers school skills literacy education schools teacher secondary student training educational computer digital pre service activities program level project elementary development	Social Media Impact on Teachers and Students
stock market financial prediction sentiment price firms predict performance predictive forecasting returns prices firm movie forecast trading volume investors markets	Impact of twitter sentiments on firm (e.g., stocks) or movie (e.g., box office) performance
research science articles academic researchers impact scientific review article scholarly published literature metrics journals scientists publications scholars journal authors sciences	Social Media Research Review and Impact of Scientific Articles
conference surgery surgeons conferences meeting session journal surgical academic medicine meetings plastic association annual participant discussion total impressions medical increased	Social Media use among Urologists and Surgeons
participant recruitment advertising Facebook method online research advertisements web traditional recruited survey recruiting ads cost targeted advertisement recruit women potential	Use of Social Media to recruit human subjects for research
service customer customers quality satisfaction crm services firms management companies consumers response recovery reviews failure relationship product complaints airlines banking	Customer Relationship Management
Saudi power energy Arabia centres centre utility utilities consumption oral grid water volunteer smart scenario heat region senators constituent gulf	Monitoring and Improving Energy Consumption
social people networks information world order life present time virtual important work part make real internet share main tool communication	World-wide Information Sharing
article digital practices identity media analysis discourse space con work power argue cultural spaces public drawing critical culture form argues	Multiple Perspectives on Value and/or purpose of Social Media
privacy information user personal security concerns disclosure risks risk Facebook online private control settings concern social profile data trust sharing	Information Privacy & Security
sns snss networking sites user social services usage activities site popular switching network motivations popularity personal addition result MySpace costs	Motivation for participation in and usage of social networking sites
user recommendation interests profile system attributes systems interest preferences recommendations similarity personalized recommender items content friends information matching social similar	Recommender Systems
news media journalists content television twitter audience stories articles journalism audiences traditional coverage event sources mainstream radio news outlets mass	Journalism on Social Media
social media research framework model theoretical future theory literature development review conceptual process con proposed practical approach case key theories	Managing Organizational Use of Social Media

Table 2 (continued)

Words associated with topic	Topic label
drug adverse drugs health abuse event reporting pharmaceutical medical reactions effects adrs prescription patients safety online medication side fda patient	Adverse Drug Reactions or Side Effects
mobile devices applications smart phones phone networking user application apps device access smart phones smart phone technologies services app internet physical digital	Social Networking and Internet Use on Mobile Devices
model diffusion information models propagation spread behaviour rumour dynamics agent agents network evolution collective process patterns rumours modelling dynamic distribution	Information Diffusion Through Social Media
Facebook user friends research site network number usage networking popular sites relationship time survey page active feature Facebooks activities examined	Motivation for and consequences of using Facebook
library libraries music librarians services academic information digital un friending book un friended tool artists festival promote associations lis university books purpose	Librarians' Perception and Acceptance of Social Media
effects positive negative participant effect perceptions perceived behaviour influence reserved individuals experiment high attitudes response cognitive impact control exposure low	Experimental Study of Factors Influencing Behaviour
purpose research qualitative interviews design methodology approach originality value data authors approach analysis conducted participant practical quantitative explore identified in depth behaviour organisations understanding	Career practitioners' use of social media
brand consumers brands consumer purchase engagement loyalty marketing ewom trust online customer relationships relationship influence customers word of mouth behaviour fan equity	Brand Loyalty, equity and Customer Lifetime Value
student university college Facebook academic school undergraduate year survey perceptions class performance universities questionnaire faculty groups engagement semester educational part	Social Media (i.e., Facebook) in academia for learning, teaching, and collaboration
adoption business innovation small businesses smes enterprises diffusion entrepreneurs adopt factors enterprise adopters adopted purpose performance early entrepreneurship barriers medium sized	Small Medium Enterprise (SME) innovation through Social Media
social networking sites online site Facebook internet web popular network services MySpace current identity activities networks access people discussed purposes	Online Social Networking Sites and their benefits and risks
communication communications informal interaction communicate conversation conversations messaging style messages talk electronic tool email formal instant medium face to face chat interpersonal	Social Media Communication
event topics twitter topic detection time tweet detect temporal streams real time stream trending real information news system identify world detecting	Real-time event and topic detection on Twitter
spam accounts osns detection malicious osn twitter spammers user feature detect bots networks attacks online fake large account urls detecting	Fake news, fake product reviews, and spamming on Twitter
opinion public political debate leaders discourse discussion issue discussions debates online sphere views comments politics leadership conflict actors controversial society	Public opinions and socio political conflicts
job linkedin applicant professional employer selection process recruitment employment profile organ donation snws candidates recruiters potential jobs information hiring employees	Employee recruitment through social networking sites
data analysis information big techniques large processing mining analytics twitter tool sources collection source amount time analyzing generated framework researchers	Big Data Analytics using Social Media data

Table 2 (continued)

Words associated with topic	Topic label
learning student teaching educational education tool learners online classroom group collaborative teachers process technology environment elearning courses experience university interaction	Blending social media platforms with traditional classroom for learning and collaboration
health public surveillance disease influenza data hpv outbreak vaccination vaccine flu cases twitter ebola outbreaks risk diseases control monitoring epidemic	Surveillance and monitoring of public health concerns through social media
video videos YouTube content sharing contents cloud multimedia popularity viewer viewing internet streaming audio native peers popular servers fire load	Cloud computing challenges of sharing social media content
web media online social blogs twitter content Facebook plat YouTube blog sites forums Google internet presence blogging popular tool LinkedIn	User generated content on social media and how it is used
social media internet technology technologies communication digital information development years web impact recent world society generation online networks growth plat	Use of social media and digital technologies for information and communication
cyber security intelligence crime law police attacks policing military attack terrorist enforcement terrorism potential criminal conflict groups safety propaganda threats	Social Media for monitoring extremism, cyber security and threats
time number data high significant level activity average higher correlation significantly day frequency rate period increase compared measure measures impact	Correlating extent of social media use to behaviours
affordances section interaction framing frames empowerment technology human structure organizing technological rhetorical meaning exploration lens affordance submission moves repair micro	(Socio technical) factors that affect technology (i.e., social media) use
feature classification learning machine accuracy twitter data method approach training classifier tweet task performance model classifiers vector dataset techniques supervised	Machine Learning techniques to analyze tweets
smoking tobacco cessation ecigarette health smokers ecigarettes electronic quit hookah cigarette cigarettes quitting flavors campaign background increased ecig commercial prevalence	Smoking related issues
Facebook posts comments post page status likes updates engagement content number posted response comment posting feedback type popular shares share	(Member) engagement on Social Media (e.g., Facebook)
location user locations geographical geographic local places geo tagged spatial place method city home distance check in time services geo social area foursquare	Determining spatiotemporal and geographical awareness using Social Media
social research online con analysis important role understanding potential specific present suggest attention key types characteristics current literature content strategies	Research to understand effects of Social Media
political participation engagement online civic offline activities Hong young Kong citizens survey relationship youth discussion engage participatory expression participate involvement	Political Participation
content analysis posts method public identified related categories posted analyzed discussion themes objective period common total information postings key determine	Content Analysis of posts
twitter tweet user messages hashtags micro blogging analysis retweet content popular million hashtag platform information collected tweeting followers service topics twitters	Analysis of microblogs
search information semantic web content query engine tags retrieval document ontology knowledge concepts metadata relevant queries Google tagging terms entities	Information Search and Retrieval
	Racial and sexual harassment

Table 2 (continued)

Words associated with topic	Topic label
black racial youth harassment violence stem smn sexual race gang feminist soft ethnic rape gender culture examine smns racism antisocial	
personality Facebook traits addiction behaviour predicted online self esteem psychological anxiety narcissism high related motives scale relationship reserved participant individuals extraversion	Personality characteristics and associated behaviours of social media users
knowledge sharing management collaborative share exchange transfer factors tool creation work collaboration platform practice organizations shared information teams organizational technologies	Knowledge Sharing and Collaboration
ethical policies online legal policy public article ethics law risks rules privacy guidelines practices human protection consent concerns cases challenges	Online ethical policies
tourism travel hotel destination tourists travellers destinations tourist hospitality marketing industry hotels trip visitor online field experiences trips dmos tour	Tourism
intervention group participant activity physical Facebook groups control mothers program interventions support women weight follow up background health method weeks baseline	Social media as a tool to institute interventions (e.g., promote physical activity)
political election candidates politicians campaign twitter parties elections party communication presidential campaigns politics electoral citizens candidate campaigning voters analysis article	Political campaigns
media social plat communication research potential survey impact activities usage public traditional role understand purposes influence platform relationship benefits engage	Understanding scholarship about social media
emotional emotion emotions negative positive mood affective people happiness online anger fear psychological expression states individuals state expressions feelings expressed	Investigating emotional tones on social media
organizations organizational employees work performance management organization internal firms workplace managers enterprise employee activities external chain workers adoption resource firm	Organizational opportunities and challenges from the use of social media
death deceased memory coping memorial process grief past closure mourning gene brain grieving rituals injury historical family trauma families memories	Two separate themes: Funereal rituals and genetics
health patients care cancer mental healthcare patient support health related information medical hospitals diabetes hospital disease professional treatment conditions clinical objective	Healthcare
education student higher universities institutions university educational academic faculty research teaching members purposes usage private institution tool staff technologies lecturers	Social Media policies and use in higher education
research data survey question method respondents usage tool questionnaire conducted analysis social answer collected sample purpose attitudes aim response determine	Empirical, survey research on the effects of social media
information sources source sharing trust quality credibility share seeking dissemination people making shared exchange important providing channels find decision credible	Issues in information creation, sharing and dissemination
people online support social young friends individuals family adults offline life experiences communication participant peoples relationships friendship group experience interactions	Social media for support and to maintain relationships

Table 2 (continued)

Words associated with topic	Topic label
images Instagram image photos visual photo flickr photographs content multimodal sharing multimedia shared posted tags popularity videos popular feature	Analysis of images and multimedia posted on social media (e.g., Flickr & Instagram)
system user systems design social application web applications services software platform service networking architecture interface present proposed network prototype computing	Design of architectures and applications for web/social media applications
museum sms visitor university school arts cultural art celebrities Indiana kelley millennial media reserved creative film history published runners event	Arts, Theatre, Films and Museums
twitter followers accounts user influence number influential account popularity influencers identify top popular activity audience follower metrics ranking celebrities retweet	Social Media Influence/Popularity Analysis
age years participant young internet adults gender survey demographic higher sample older significantly population states younger compared factors regression united	Research related to the impact of the use of Social Media by young adults
food species risk safety restaurants forest ecosystem health public conservation restaurant yelp monitoring nutrition organic neighbourhood obesity genetic protected populations	Safety and risks associated with: a) food and b) conservation of ecosystem
public government citizens local media policy governments agencies services citizen sector participation departments transparency egovernment private state accounts policies level	Transparency and openness in governance
organizations communication public relations corporate stakeholders media strategies engagement crisis reputation organization companies stakeholder management csr analysis publics non profit reserved	Dialogic engagement strategies of organizations
messages message content types persuasive audience response messaging appeals attribution effective authorship received favourable authors reception effectiveness contrast virality postings	Effectiveness of advertising messages
profile pictures participant impression self presentation online user gender picture attractiveness status cues impressions management photos owners attractive identity male female	Understanding profile attractiveness and androcentrism in social media
alcohol drinking references consumption alcohol related behaviour marijuana norms young content gambling adolescents substance risk displayed exposure behaviours health messages display	Adolescents' behaviours related to their references to alcohol on social media
professional medical nursing practice physicians online education professionalism clinical patient residents faculty patients medicine nurses care information health survey personal	Professional legal and ethical risks of the use of social media by residents and faculty in emergency medicine residency programs
user content behaviour patterns social activity activities online types interaction analysis network feature profile share identify networks characteristics user generated active	Inferring behaviour from social media content
factor scale measures validity measurement measure reliability dimensions item model items analysis instrument scales factors measuring test questionnaire exploratory version	Assessment and validation of measures for behaviours such as addiction and sexual health
sexual hiv sex men msm risk testing participant prevention behaviour partners health youth online prep sexually gay interventions Latino homeless	Using social media to research risky sexual behaviours and their association with HIV
social relationship capital satisfaction wellbeing self disclosure relationships positive online psychological life negative support perceived effects usage effect intensity positively outcomes	Factors (e.g., self-disclosure, social capital) affecting psychological wellbeing
marketing companies media business social product products customers company market consumers industry strategies strategy sales customer firms businesses advertising consumer	Social media and digital marketing

one publication of interest to this study (Griffiths and Light 2008) was identified between the period 1997 and 2009.

Out of the 132 studies individually reviewed here, about 21 studies examined the *behavioural side* of social media use. While most of the initial studies (for instance, Massari 2010; Garg et al. 2011) restricted interest to peer influence and information disclosure willingness (2010–2012), the latter studies (for instance, Gu et al. 2014; Krasnova et al. 2015) were seen to be more exploratory in examining the positive, dysfunctional, cognitive and affective, heterophily and homophily tendencies of social media users (2012–2016). There were 18 studies investigating the very popular aspect of *reviews and recommendations* on social networks, with 2013 being a popular year for such studies. Most of these studies (for instance, Hildebrand et al. 2013; Zhang and Piramuthu 2016) were interested in improving their understanding of the information quality of these reviews and the associated consequences (2010–2016). There were 17 studies (2011–2016) evaluating the integration of social media for varied *organizational purposes*. While some studies investigated the employee side (e.g., innovativeness, retention, and motivation) of social media use (for instance, Aggarwal et al. 2012; Miller and Tucker 2013), the others discussed the relationship between social enterprise systems and organizational networking (for instance, Trier and Richter 2015; Van Osch and Steinfield 2016).

Around 13 publications studied the use of social media as a *marketing tool*. The early studies here (2010–2013) explored consumer purchase behaviour and firm tactics, such as involving consumers in marketing strategies (for instance, García-Crespo et al. 2010; Goh et al. 2013). The later studies (2015–2016), however, became more focussed on studying social commerce across networking sites such as Facebook, MySpace, and YouTube (e.g., Chen et al. 2015; Sung et al. 2016). Ten studies were interested in *online communities* and blogging (see Singh et al. 2014; Dennis et al. 2016). These were mostly interested in blogger behaviours, reader retention, online content, contributing capacity, and blog visibility (2011–2016). Nine publications revealed the *risks* associated with the use of social media. These are either very early studies (2008–2010; for instance, Tow et al. 2010) or fairly recent (2014–2016) learning about scamming and farcing issues faced by users. They focus on combating issues of privacy and security, whilst trying to differentiate between fake and authentic online content (for instance, Zhang et al. 2016).

Up until 2015, about eight studies analysed the *negative stigma* attached to using social media at the workplace (for instance, Koch et al. 2013). While a couple of studies also revealed the positive side of social media (for instance, Lu et al. 2015), most were seen discussing its ill-effects on work outputs, routine performance, and clash of notions in the personal and professional space (for instance, Ali-Hassan et al. 2015). About seven studies were interested in exploring the relationship between social media use and *value creation* (for instance, Luo et al. 2013; Barrett et al. 2016) in terms of firm equity, customer retention, social position, and firm value (2010–2016). Another seven studies investigated the use of media sites to share and exchange information during natural disasters and *critical events* (2011–2015). Interestingly, most of the studies documenting this aspect of social media used Twitter data for their analyses (for instance, Oh et al. 2013; Lee et al. 2015a). A very small percentage of studies (five studies) in 2014 and 2015 focussed on analysing the effects of social media posts that were seeking help/support from other social media users (for instance, Spagnoletti et al. 2015; Yan et al. 2015a). Only a handful of studies (five studies), particularly in 2010 and 2016, were examined the use of social media in *public administration* and *political* contexts, such as open governance and transparency (for instance, Baur 2017; Rosenberger et al. 2017). Also, just about three studies (Wattal et al. 2010; Dewan and Ramaprasad 2014; Miranda et al. 2016) dedicated their efforts to *comparing traditional media with social media*. The last set of studies (2013–2016), around nine in total (for instance, Bharati et al. 2014; Chung et al. 2017), were identified as those limiting themselves to developing and testing social media constructs in relation to previously established theories and models (technology acceptance model, theory of planned behaviour, and others).

4.3 Literature Synthesis

As outlined in the previous section, social media research is evolving at a fast pace. In reviewing the shortlisted articles, various themes were identified based on the similarities observed across the issues addressed in social media research.

4.3.1 Social Media Use Behaviours and Consequences

Many scholars explore the behavioural side of social media, and interestingly, some find factors that prevent users from continuing its use. Turel and Serenko (2012) warn against excessive use of social media sites, which can result in strong pathological and maladaptive psychological dependency on social media. In a subsequent study, Turel (2015) used cognitive theory to reveal that guilt feelings associated with the use of a website can increase discontinuance intentions. Matook et al. (2015b) show that online social networks can be linked with perceived loneliness, which depends on user's active/passive engagement with social media. Krasnova et al.

(2015) suggest that in response to social information consumption, envy plays a significant role in reducing cognitive and affective wellbeing of a user. However, Maier et al. (2015b) disclose that, while social networking stress creators can increase discontinuance intentions, switching stress-creators and exhaustion (i.e. switching to alternatives) can reduce such intentions. Chang et al. (2014) find that dissatisfaction and regret, alternative attractiveness, and switching costs affect switching intentions. Xu et al. (2014) find that dissatisfaction from support and entertainment values, continuity cost and peer influence encourage switching between social networks.

Wakefield and Wakefield (2016) focus on Facebook and Twitter to show that excitement combined with passion acts as a favourable factor for increased social media engagement. Chiu and Huang (2015) use media communication theories to show that user gratification from social networking sites positively affects their social media usage intention. In studying virtual investment communities, Gu et al. (2014) reveal that despite benefits of heterophily, investors are allured by homophily in their interactions. Zeng and Wei (2013) analyse Flickr data and find that at the time of forming a social tie, members exhibit similar behaviour, which evolves differently later. Shi et al. (2014) examine retweet relationships and find that those with weak ties have a higher probability of engaging in content sharing. Kreps (2010) introduces poststructuralist critique to explore how closely an individual's personality is reflected in their social media profile, such as Facebook.

Chen et al. (2014) find affective and continuance types of commitments to be good predictors of user behaviours on social media sites. Stieglitz and Dang-Xuan (2013) examine the relationship between user behaviour and sentiment to conclude that emotional Twitter messages have a higher retweet tendency. Khan and Jarvenpaa (2010) analyse event creation pages on Facebook to find that the social groups demonstrate differential interactive behaviour prior and post the midpoint of event creation. Chen and Sharma (2015) disclose that the extent of self-disclosure on social media sites depends on member attitude. Massari (2010) finds that MySpace users tend to disclose substantial personal details that put them at the risk of security and privacy breach. Xu et al. (2016) find that one's image and moral beliefs combined with community policies and peer pressure act as deterrents to aggression on social media. Garg et al. (2011) measure peer influence in an online music community and find that peers can significantly increase music discovery. Susarla et al. (2012) examine video and user information dataset from YouTube, and find that the success of a video hugely depends on social interactions, which also determines its impact magnitude.

The review of studies related to this theme suggests that since 2010, IS researchers have focussed on examining the dysfunctional consequences of social media adoption, such as - addiction, stress, information overload, and others. Use behaviour was examined across a variety of platforms like Facebook, Twitter, MySpace, and Flickr. Media content, such as picture, video, and tweets have also been explored by the studies in this category.

4.3.2 Reviews and Recommendations on Social Media Sites

A predominant characteristic of social media networks is product/service reviews and recommendations. People are beginning to rely on others' experiences, for instance, before making a purchase, visiting a place, or searching for accommodation.. Such online reviews complement product/service information. An early study on online travel information found that consumers invest higher trust in reviews published on government/tourism websites in comparison to those on a social media site (Burgess et al. 2011). Hwang et al. (2011) analysed the social bookmarking sites for impact of positive and negative reviews on collective wisdom and found that negative reviews are capable of stabilizing system performance. Dellarocas et al. (2010) suggest that online forums looking to increase reviews of lesser-known products should make information on previously posted reviews a less prominent feature. Cheung et al. (2012) empirically tested a consumer review website to conclude that argument quality, review consistency, and source are critical for assessing review credibility.

Chen et al. (2011) investigate the effect of moderation and reveal that the commentators generate high quality content to build a stronger reputation. Wei et al. (2013) developed a multi-collaborative filtering trust network algorithm for Web 2.0 with improved accuracy for filtering information based on user preferences and trusted peer users. Luo and Zhang (2013) refer to user-generated reviews and recommendations as consumer buzz to find that advocacy and consumer attitude can impact firm value. Hildebrand et al. (2013) use data from a European car manufacturer allowing self-designed products to reveal that feedback from other community members lessens uniqueness whilst increasing dissatisfaction. Centeno et al. (2015) address the skewed reputation rankings problem in movie ratings by suggesting the use of comparative user opinions. Ma et al. (2013) analyse data from Yelp to test bias in online reviews and find that frequent and longer reviews successfully combat such biases. Lukyanenko et al. (2014) demonstrate that participants tend to provide accurate information in classifying a phenomenon at a general level, and higher accuracy where they are allowed free form data. Shi and Whinston (2013) explore the possible impact of friend check-ins on social media, and find it has no positive effect in generating new user visits.

Goes et al. (2014) disclose that user popularity results in increased and objective reviews, while numeric ratings turn

more varied and negative with it. Matook et al. (2015a) use relationship theories to show that past recommendation experience, closeness, and excessive posting behaviour positively affect trust and person's intention to act on the made recommendation. Yan et al. (2015b) evaluate revisit intentions for restaurants, and find that food and service quality, price and value, and the atmosphere govern such intentions. Kuan et al. (2015) analysed Amazon reviews and observed that certain characteristics such as length, readability, valence, extremity, and reviewer credibility are more likely to be recognized. In a different study, Zhang and Piramuthu (2016) suggest that product/service information on seller's websites are often limited, and propose a Latent Dirichlet Allocation model to reveal the useful complementary hidden information in customer reviews. In a parallel conversation, Wu and Gaytán 2013 suggest that buyers integrate product price with seller reviews in configuring their willingness to pay.

The review under this theme suggests that studies as early as 2010 focussed on evaluating the authenticity of product and service reviews/recommendations published online. Overall, these studies reveal that the effect of review volume is often moderated by a buyer's risk attitude. Most studies identify that the combination of consumer's interest and available reviews helps users choose products/services that offer best value to them.

4.3.3 Social Media and Associated Organizational Impact

Publications have also shown interest in investigating the effects of user-generated content on entrepreneurial behaviour. For instance, Greenwood and Gopal (2015) find that discourse in both traditional and user-generated media has a notable influence on IT firm founding rates. Lundmark et al. (2016) reveal that higher usage of Twitter, alongside follower numbers and retweets result in higher levels of under pricing for initial public offerings (IPO). Trier and Richter (2015) find that online organizational networking has many unbalanced multiplex relationships, mostly comprising of weak ties and temporal change. They attribute the uneven user contribution in social networking sites to discourse drivers and information retrievers. Schlagwein and Hu (2016) identify collaboration, broadcast, dialogue, sociability, and knowledge management as the social media types that serve varied organizational purposes. Claussen et al. (2013) study Facebook to conclude that social media networks can exercise management not only by excluding participants, but also by driving softer changes in incentive/reward systems.

Subramaniam and Nandhakumar (2013) study enterprise system users and find that integrating social media facilitates user interaction that helps embed relationship ties between virtual actors. Another study concerning social features in enterprise systems reveals that business interactions are less social, and highly context specific (Mettler and Winter 2016). Van Osch and Steinfield (2016) showed that the enterprise system user involved in social network posting will show differences in team boundary spanning activities based on their hierarchical position (leadership, team member, etc.). Benthaus et al. (2016) analyse Twitter data to find that social media management tools have a catalysing effect on employee output as they enrich the user engagement process. Gray et al. (2011) study the social bookmarking system to find that social diversity of information sources is a good predictor of employee innovativeness. Kuegler et al. (2015) show that using enterprise social networking within teams strongly influences task performance and employee innovativeness. Leonardi (2014) reveals that communication visibility increases meta-knowledge between organizations, which results in innovative products and services minus knowledge duplication. Aggarwal et al. (2012) interestingly reveal positive effects of negative employee posts on an organization's reputation, given that such posts attract larger audience.

Miranda et al. (2015) suggest that diffusion of social media is based on an organization's vision that offers a well-defined range of moves to choose from, with the freedom to improvise. Xu and Zhang (2013) regard Wikipedia as a social media platform and conclude that it improves information environment in the financial market and the value of information aggregation. Qiu et al. (2014) study prediction markets to find that users with increased social connections are less likely to invest in information acquisition from external sources. Miller and Tucker (2013) study the extent of social media managed by firms to report that most firm postings are centred on firm's achievement and are not necessarily in clients' interest. In summary, studies reviewed under this theme are focussed on analysing the impact of integrating social media within work roles in organizations. Effective management and utilization of social media is agreed to provoke employee activity, which helps in employee innovativeness, retention, and motivation. Studies also hint against ignoring social media engagement, which can reportedly have a negative impact on a company's image.

4.3.4 Social Media for Marketing

Social media sites are now a huge part of marketing tactics, and the documented studies are a good showcase of the extent to which social media is being integrated in marketing strategies. García-Crespo et al. (2010) study the continuous interaction between customers and organizations, as it impacts the social web environment with implications for marketing and new product development. Goh et al. (2013) study the user and market generated content for engagement in social media brand community to find that it has a positive impact on purchase expenditures. Rishika et al. (2013) demonstrate how higher social media activity directly correlates with higher participation and customer patronage. Aggarwal and

Singh (2013) find that blogs help managers with their products in the screening stage, and also offer leverage in negotiating better contract terms. Dou et al. (2013) research optimizing the strength of a network by adjusting the embedded social media features with the right market seeding and pricing strategies.

Oestreicher-Singer and Zalmanson (2013) reveal that the firms are more viable when they integrate social media in purchase and consumption experience, rather than using it as a substitute for soft online marketing. Lee et al. (2015b) study the importance of social commerce in marketplace to find that Facebook likes increase sales, drive traffic, and introduce socialization in the shopping experience. Xie and Lee (2015) scan purchase records on Facebook to find that exposure to owned and earned social media activities positively impacts consumers' likeliness to purchase brands. Chen et al. (2015) study music sales on MySpace to find that broadcasting, timing and content of the personal message has significant effect on sales. Qiu et al. (2015) study YouTube data to find that learning and network mechanisms statistically and economically impact video views. Sung et al. (2016) use Facebook data of universities and colleges across the US to show that people in the same class year or same major tend to form denser groups/networks. In a slightly different study, Oh et al. (2016) investigate the pricing models for an online newspaper, and find that charging for previously free online content has a disproportionate impact on word of mouth for niche and popular topics/articles. Susarla et al. (2016) find that social media initiatives succeed when a sustained conversation with likely adopters is maintained.

Studies within this theme focus on the role of community structure and structural patterns in using social media for marketing purposes. For successful social media implementation, it is important to effectively incorporate social computing with content delivery in the digital content industry with growing user population. Most studies identify meaningful conversations with customers as an important attribute of social media marketing. Also, identifying specific customer segments across social media site, for instance, members of a forum/group or organization, helps e-marketers to target specific customers based on demographic patterns and similar interests.

4.3.5 Social Media and Participation in Online Communities

There are many facets to developing and maintaining an online community, and user participation plays an integral role in it. Ray et al. (2014) identify that user engagement increases user intention to revisit an online community. Singh et al. (2014) analyse employee blog reading behaviour and show how reader attraction and retention are influenced by textual characteristics that appeal to reader sentiments. Butler and Wang (2012) find that changing content in an online discussion community affects member dynamics and community responsiveness, both positively and negatively. An early study on participation in online communities finds that different community commitments impact behaviours differently (Bateman et al. 2011). Chau and Xu (2012) develop a framework capable of gathering, extracting, and analyzing blog information that can be applied to any organization, topic, or product/service.

Goes et al. (2016) study goal setting and status hierarchy theories to find that glory-based incentives motivate users to contribute more user-generated content only before/until the goal is reached, with the contribution dropping significantly later. Khansa et al. (2015) examine Yahoo! Answers, and find that artefacts like incentives, membership tenure, and habit or past behaviour hugely influence active online participation. Tang et al. (2012) examine the concept of incentives on social media, particularly YouTube, for content contribution and find that a user is driven to contribute on social media based on their desire for revenue sharing, exposure, and reputation. Zhang and Wang (2012) use economic and social role theories in a Wikipedia context to show that in a collaborative network, the editor determines the total contribution towards collaborative work. Dennis et al. (2016) create a theoretical framework for corporate blogs and analyse Fortune 500 companies to find that a blog's target audience and the alignment of blog content and its management significantly impact the visibility of that blog. Most of the studies under this theme focus on analyzing data on blogs. They highlight the importance of word of mouth, which is closely associated with user satisfaction. It also emerges from these studies that user engagement and consequent satisfaction play parallel and mediating roles within such online communities.

4.3.6 Risks and Concerns with the Use of Social Media

Social media and its associated risks have captured the attention of many authors. A very early study by Griffiths and Light (2008) focuses on the problem of media convergence, whereby a gaming website includes social media features, putting vulnerable young audience at the risk of scamming. An Australian study suggests that many users are unaware of the potential risks of disclosing personal information on social media site, or consider themselves as low risk targets (Tow et al. 2010). Krasnova et al. (2010) find that the ease of forming and maintaining relationships on an enjoyable social platform motivates users to disclose personal information. Their study shows that user trust in a service/network provider, and privacy control options on a networking site greatly dismiss user perceptions of associated risk. Vishwanath (2015) finds that farcing attacks on Facebook occur at two levels – victim to phishers with phony profiles and victim to phishers soliciting personal information directly from them.

To combat the privacy problem of photos, videos, and other content posted online, Fogués et al. (2014) developed a Best Friend Forever tool that automatically distinguishes friends on a user's profile by assigning individual values based on relationship ties. Zhang et al. (2016) find that incorporating non-verbal features of reviewers can massively improve the performance of online fake review detection models. Gerlach et al. (2015) find that user perception of privacy risks has a mediating effect on the relationship between policy monetization and user willingness to share information. Burtch et al. (2016) analyse a large online crowd funding platform and report that when campaign contributors control/conceal visibility from public display, there is a negative impact on subsequent visitor's conversion likelihood and average contributions. In a different study, Choi et al. (2015) find that information dissemination and network commonality has a high impact on individual's perception of privacy invasion and relationship bonding that impedes transactional and interpersonal avoidances.

Studies reviewed here discuss a social contagion effect of risks associated with social media use. Recent studies (2014–2016) suggest educating audiences about the threats associated with the extent of personal information being disclosed on social media sites. They recommend government agencies to keep the users informed, and the social media sites to control some of their security features. It is necessary to define and control privacy settings across these many existing social networks.

4.3.7 Negative Stigma Attached to Social Media Use

Some studies suggest that there is a negative stigma associated with the use of social media in the workplace. In a typical case study, Koch et al. (2012) analyze three employee layers in an organization to find that new hires (users of social media sites) showed improved morale and employee engagement, some middle managers (non users) were frustrated and experienced isolation, while the senior execs were wary of social media use. In a contrasting case, Cao et al. (2015) suggest that social media has the potential to build employees' social capital to positively influence their knowledge integration. In discussing the impact of social media on organizational life, Koch et al. (2013) find that conflicts can stem between workplace values and the values these employees ascribe to social media.

In a gender-based study on social network facilitated team collaboration, Shen et al. (2010) found that the collective intention in men was influenced by positive emotions, attitude and group norms, while the collective participation intention in women was affected by negative emotions and social identity. Huang et al. (2015) debate the concept of communicational ambidexterity to understand the conflicting demands of managing internal organization communication in contrast to open and distributed social media communication. Wu (2013) suggests information-rich networks enabled by social media tend to drive job security and employee performance. Lu et al. (2015) use the social network theory to conclude that structural and cognitive dimensions of social relationships positively impact job performance. Ali-Hassan et al. (2015) show social and cognitive use of social media has a positive influence on employee performance, while hedonic use of social media leaves a negative impact on routine performance.

These reviewed studies showcase that social networking encourages shared language and trust between employees in a workspace. Another emerging suggestion highlights that organizations should exercise policy, and use socialization and leadership-based mechanisms to counter any problems resulting from differing workplace values. Some of these studies show interest in the cognitive side of social ties that positively nurture social relationships and innovation performance.

4.3.8 Social Media and Value Creation

Studies in the extant literature have particularly focussed on the aspect of value creation within online communities. As Ridings and Wasko (2010) have observed, an online discussion group/community is a direct product of its social and structural dynamics. Porter et al. (2013) investigate firm value and find that a sponsor's efforts are stronger with positive and direct effect on trust building. Luo et al. (2013) suggest that social media has faster predictive value than conventional online media, and that the embedded metrics like consumer ratings are leading indicators of a firm's equity. Hu et al. (2015) develop a formative model with an aggregate online social value construct and identify factors to increase user benefits and satisfaction, ensuring customer retention via continued usage of online services. In a public organization study focussing on social networking system, Karoui et al. (2015) suggest that differing perceptions of social capital can result in actors adopting differing strategies for holding their social position within an organization. Barrett et al. (2016) find that value creation in online communities expands beyond the dyadic relationship between a firm and the community to include a more intricate relationship involving stakeholders of a wider ecosystem. Dong and Wu (2015) use data from Dell and Starbucks and find substantial evidence for online user innovation-enabled implementation increasing firm value. Overall, the studies on social media and value creation emphasize on influence of social and structural interplay on sustainability, which is visible over longitudinal examination of their relationship to one another.

4.3.9 Role of Social Media During Critical/Extreme Events

Certain authors are more interested in micro-blogging used at the time of critical/extreme events. In an attempt to filter real time news/updates from irrelevant personal messages and

spam, Cheng et al. (2011) propose analysis of information diffusion patterns for a large set of micro-blogs that update emergency news. They claim that their approach (using Twitter data) outperforms other benchmark solutions to offer diverse user preferences and customized results during critical events. Cheong and Lee (2011) use Twitter data to propose a framework that is useful for Homeland Securities and Law enforcement agencies to record and respond to terror situations. Oh et al. (2013) also study Twitter data from three extreme events to find that information without any clear source is at the top, personal involvement comes second, with anxiety at third place in the list of rumour causing factors during social crisis events. Wang et al. (2014) affirm that news spreads widely through online portals. They find that news first posted even on a small news portal can be picked and reposted by a major news portal, forming a hotspot event for the news to rapidly spread over the Internet.

Lee et al. (2015a) performed negative binomial analysis of the 2013 Boston marathon tragedy Tweets to find that follower numbers, reaction time, and hash tagging significantly affected the diffusion of Tweets. Oh et al. (2015) analysed Twitter data from the 2011 Egypt revolution and found that hash tags played a critical role in gathering information and maintaining situational awareness during such politically unstable phases. Ling et al. (2015) undertake a qualitative study of 2011 Thailand flooding data to conclude that social media can offer a community: structural, resource, and psychological empowerment to achieve collaborative control and collective participation. In summary, studies since 2011 have been particularly examining Twitter data, and have derived significant insights on their positive effect during critical/extreme events.

4.3.10 Social Media for Help/Support

Some users post updates on social media with an aim to seek help/support from online communities. Maier et al. (2015a) find that such posts cause social overload for other users, and the psychological consequences include feelings of exhaustion, low user satisfaction, and high intentions of reducing/stopping the use of social media sites. Yan et al. (2015a) find that healthcare traits of patients help them establish social connections online, which is influenced by their cognitive abilities. Spagnoletti et al. (2015) develop a user utility model for integrating social media in personalized elderly healthcare that is capable of challenging traditional organizational boundaries to transform the internal and external stakeholder engagement. Yan and Tan (2014) propose a partially observed Markov decision process model to find sufficient evidence suggesting emotional support is most significant in improving patient health. Kallinikos and Tempini (2014) study the ups and downs of having a large unsupervised social network based on patient self-reporting for gathering and examining data on patients' health.

Limited number of studies has been recorded for this theme. These studies are fairly recent suggesting a new emerging trend, where health/support based communities are being formed. The expanse of such communities seems to be largely dependent on the information processing capacity and the range of social ties that the members of such networks can handle. Using social media to bring together people with similar health conditions suggests that informational and social support can have varying influence on patient health.

4.3.11 Public Bodies and Social Media Interaction

User-generated content from social media is becoming one of the important information channels across public administrative bodies and political contexts. Baur (2017) has developed a MarketMiner framework that massively improves the utilization of multi-source, multi-language social media content, which can be applied to areas such as open government. Rosenberger et al. (2017) use abstraction-based modelling to conceptualize the data structure, and conclude that wrapping social network application programming interfaces allow mutual integration of most user activities. Gonzalez-Bailon et al. (2010) show that political discussions in online networks are larger and deeper compared to other networks. Ameripour et al. (2010) analyse the restricted Iranian social networks, subject to surveillance and censorship to find that Internet conviviality is not an independent variable with deterministic outcomes, but is a technology shaped by economic and political forces. Although, not published in the list of journals included in this review, Kapoor and Dwivedi (2015) provided a detailed discussion on how social media was used intensively to transform electoral campaigns during India's last general election. Similar use has also been reported in other contexts (for example, US presidential elections) by other studies.

Except one study (that is, Ameripour et al. 2010), the remaining reviewed under this category are very recent (2015–2016). These studies suggest the use of social media for increasing public engagement and transparency. Most of these studies used technical frameworks and modelling techniques to identify communication clusters and structures to derive insights relevant to open government and political campaigns.

4.3.12 Traditional v/s Social Media

Another set of studies investigate the differences between traditional and social media. A very early study by Wattal et al. (2010) compares the big money tactics for political campaigning with social media campaigning to reveal that Internet and the blogosphere can majorly influence campaigning and election results. Dewan and Ramaprasad (2014) examine the importance

of new and old media within the music industry; they find radio positively and consistently affecting sales of songs and albums, and sales displacement from free online sampling overpowering positive word of mouth on sales. Miranda et al. (2016) compare traditional and social media to suggest that there are evils associated with the societal benefits of social media, and mass media has a detrimental effect on public discourse.

4.3.13 Testing Pre-Established Models

Some studies in literature restrict focus to pre-established models and relationships for evaluating varied aspects of social media. Fang et al. (2013) apply social network theories to suggest positive social influence on adoption probabilities. Levina and Arriaga (2014) use Bourdieu's theory to explain the role of status markers and external sources in shaping social dynamics. Bharati et al. (2014) combine institutional theory and organizational innovation, whereby institutional pressures significantly predict absorptive capacity. Kekolahti et al. (2015) use Bayesian networks to indicate the decrease in perceived importance of communication with increase in age. Chang et al. (2015) integrate social distance with clustering methods to show shorter social distance results in satisfactory trust. Chung et al. (2017) employ the Technology Acceptance Model, and find positive effects between traveller readiness and ease of using geo-tagging. Zhao et al. (2016) use theory of planned behaviour and attribution theory to find that virtual rewards for sharing knowledge online undermine enjoyment. Yu et al. (2015) use the causation and heuristic theories to find that affect influences self disclosure indirectly by adjusting perceived benefits. Stanko (2016) employs Innovation Diffusion Theory, and finds that community interaction influences innovations that are used to aid a further innovation.

5 Discussion

In reviewing the publications gathered for this paper, commonalities have been observed in the myriad aspects of social media chosen for investigation. While many studies focussed their attention on understanding the behaviours of social media users, the others examined entrepreneurial participation and firm behaviour. A number of studies have focussed on the content being posted in online communities, several of which report on the repercussions of some of this content being used as an awareness medium during critical events and tragedies. Interesting revelations were made by authors studying the use of social media as a platform to render and/or receive help or support, and its incorporation in the field of healthcare and public administration. Value creation and the ill-effects associated with the use of social media at the workplace were also discussed. Several studies chose to test previously established hypotheses and models, while others compared traditional media with social media. Prior research has also provided insights into how firms have been using social media to market their products and services. These strategies run in parallel with the reviews and recommendations posted by users on social media sites, which have also received considerable attention in the literature. In summary, given that different types of social media platforms are emerging, and different consequences are associated with their use, research in this field will continue to evolve. This is also evidenced by the increased number of publications related to usage and impact over the past five years.

Social media platforms have essentially redefined the ways in which people choose to communicate and collaborate. An online community is a socio-technological space where a sense of communal identity drives engagement, which, in turn, enhances satisfaction (Ray et al. 2014). Intriguingly, social media are facilitating the emergence of virtual knowledge communities and self help networks. These web-based arrangements allow medical practice and research to access patient experience on a daily basis, which was not possible earlier. However, since research in this area is still in its early stages, it is difficult to assess the social complexity involved (e.g., stability of a networking platform that brings together patients with medical experts) in the process (Kallinikos and Tempini 2014).

Firms are recognizing social media as a prominent indicator of equity value that not only improves short-term performance, but also brings about long-term productivity benefits (Luo et al. 2013). The reviewed studies suggest that incorporatin social media in firms increases meta-knowledge (who's who in an organization and who does what), which helps avoid knowledge duplication and promotes new ways of managing work (Leonardi 2014). Active management of social media has been observed to be more effective when those inside rather than outside a firm are engaged (Miller and Tucker 2013).

A specific line of research focuses on consumers, who substantially rely on online reviews before making any purchase decision. The research papers reviewed in this study exhibit diversity in studying authenticity of reviews for travel sites, social bookmarking and review sites, movie ratings, car manufacturing, and social media check-ins. Studies concur that there has been an exponential increase in the number of fake reviews, which is severely damaging the credibility of online reviews and putting business values at risk (Zhang et al. 2016). Some studies have also empirically identified consumers' social media participation as a key metric contributing to the profitability of a business (Rishika et al. 2013). There evidently exists a direct correlation between consumer engagement on social media sites and their shopping intentions, which makes the issue of legitimate reviews all the more important for businesses and consumers. Although some studies have proposed models and algorithms that claim to filter authentic reviews

from the rest, there is no single and straightforward solution reported yet that can fully combat this problem.

The issue of negative posts has received considerable attention in the literature. Prior research suggests that, overall, the impact of negative posts or electronic word of mouth is much higher than the positive ones that increase readership (Aggarwal et al. 2012). This problem is also prevalent in organizations. According to the studies reviewed here, organizations either prohibit employees from posting controversial content online, or employees themselves refrain from doing so, fearing negative repercussions. The same employees also share positive posts, and the adverse effect of the few negative posts is offset by positive ones. It is in a firm's interests to encourage free will enterprise blogging to break down knowledge silos and yield higher employee productivity (Singh et al. 2014).

Businesses looking to monetize online content and social search rely heavily on substantial understanding of consumer behaviour in terms of their interaction and participation in social settings (Susarla et al. 2012). As consumers gain access to social platforms that offer free content consumption without an obligatory payment, the relationship between sampling and sales becomes all the more important (Dewan and Ramaprasad 2014). There is much research supporting the belief that online word of mouth has a critical role to play in a firm's overall performance, and introducing a pay-wall (for previously free content) can significantly reduce the volume of word of mouth for popular content in comparison to niche content (Oh et al. 2016). Determining consumers' social influence in an online community is of critical interest to managers, who seek to gain some leverage from the potential of social media (Shi et al. 2014). Some researchers find it difficult to distinguish social influence from users' self selection preferences. From an analysis point of view, it then becomes necessary to separate factors affecting user membership in a social network from various types of social influence (Susarla et al. 2012).

The findings on the use of social media in emergencies suggests that a general user response in an online community is very different from that during a crisis, as those responses then become more reflexive. It has been observed that in times of crisis, lack of information sources coupled with too many situation reports being shared by the users of a social media platform can precipitate a rumour mill. It thus becomes incumbent on emergency responders to release reliable information, whilst trying to control collective anxiety in the community, to suppress the rumour threads (Oh et al. 2013). Furthermore, security concerns are increasingly common with involuntary online exposure on social media, and research on this subject suggests that information dissemination with network commonality affects privacy invasion and user bonding (Choi et al. 2015). It has been learnt that an individual's or firm's decision to withhold information in the interest of privacy can have both positive and negative effects on their utility (Burtch et al. 2016).

In reviewing the 132 publications on social media and social networking, it was observed that many studies relied primarily on social exchange theory, network theory and organization theory. Table 3, shown below, lists other theories that have been used by at least two publications. There were several other theories that were used by at least once, including social role theory, game theory, structural holes theory, management and commitment theories, institutional theory, deterrence and mitigation theories, and self determination and self categorization theories. It is noteworthy that dominant IS adoption theories such as Unified Theory of Acceptance and Use of Technology (Dwivedi et al. 2017b, c; Rana et al. 2017; Venkatesh et al. 2003), Technology Acceptance Model (Davis 1989) and Innovation Diffusion Theory (Kapoor et al. 2015) are less widely utilised.

In addition, our review of the literature on social media identified dominant research methods employed by scholars. Qualitative, quantitative, and mixed methods were used by most of these studies. Closer scrutiny of the 132 publications reviewed in this study revealed the multitude of techniques applied for gathering data. Quantitative methods employed in these studies mostly adopted analytical techniques and surveys (Table 4). On the other hand, publications using qualitative methods mainly used case studies and interviews to gather the required data (Table 4). As expected, studies employing mixed methods used a combination of analytical and conceptual techniques, alongside surveys and content analysis (Table 4). Table 4 summarizes the various research approaches used by publications in our corpus.

The reviewed publications were also analyzed to determine the nature of the social network that were studied. Precisely 46 websites emerged, with Facebook, online communities, Twitter, Blogs and YouTube being most frequently targeted. Networks analysed by at least two or more studies have been identified in Table 5. The other networks that received attention from the reviewed publications include Ebay, Flickr, Flixster, Gtalk, microsoft, MSN Space, Patientslikeme, New York Times, TripAdvisor.com, and Boxofficemojo.com. Studies also focussed on websites related to online news, Q&A websites, discussion groups and forums, online radio and television, and medical sites such as Webmd.com.

5.1 Limitations and Future Research Directions

Studies, such as the one by Cheung et al. (2012), that examine aspects of popular websites, warn against consumer perceptions being under the influence of brand equity of those websites. They recommend exercising caution while generalizing such findings in the context of other websites (Cheung et al. 2012). Rosenberger et al. (2017) identify a similar problem with relying on publicly available data, in that the

Table 3 Theories used in social media research

Theories	Citations	Frequency
Social Exchange Theory	Choi et al. (2015); Hu et al. (2015); Matook et al. (b); Turel (2015); Shi et al. (2014); Krasnova et al. (2010)	6
Network theory	Yan et al. (2015a); Zhang and Wang (2012); Gray et al. (2011)	3
Organization theory	Lundmark et al. (2016); Schlagwein and Hu (2016); Oestreicher-Singer and Zalmanson (2013)	3
Learning theory	Fang et al. (2013); Chen and Sharma (2015)	2
Uses and gratifications theory	Ali-Hassan et al. (2015); Chiu and Huang (2015)	2
Elaboration likelihood model Theory	Ma et al. (2013); Cheung et al. (2012)	2
Rational choice theory	Hu et al. (2015); Turel (2015)	2
Attribution theory	Zhao et al. (2016); Porter et al. (2013)	2
Dual process theory	Baek et al. (2012); Tang et al. (2012)	2
Social capital theory	Cao et al. (2015); Lu et al. (2015)	2
Innovation diffusion Theory	Stanko (2016); Lee et al. (2015a)	2
IS success model	Burtch et al. (2016); Xu et al. (2014)	2
IS hedonic value	Burtch et al. (2016); Xu et al. (2014)	2
Social penetration theory	Burtch et al. (2016); Xu et al. (2014)	2
Social comparison theory	Krasnova et al. (2015); Yan et al. (2015a)	2
Theory of planned behaviour	Zhao et al. (2016); Xie and Lee (2015)	2
Goal-setting Theory	Goes et al. (2016); Khansa et al. (2015)	2

underlying abstraction makes findings valid only for the specific social media site that was analyzed, whilst significantly restricting its generalizability to other sites. In a similar vein, other studies (Krasnova et al. 2015; Khan and Jarvenpaa 2010; Tow et al. 2010) have acknowledged the limitation of restricting their research to a single social media site, and recommend future researchers to adopt a cross-platform perspective for drawing significant inferences.

Mettler and Winter (2016) suggest that there is a paucity of studies on Enterprise Social Systems because of its novelty, and urge researchers to fill this void. Turel and Serenko (2012) identify the lack of conceptualization in the notion of technology addiction; they recognize that the process of defining it is still in the early stages, and is being debated across communities. For researchers interested in examining aspects of Twitter, Cheng et al. (2011) recommend incorporating the location metric focused on Twitter's geo location feature allowing users to trace the latitude and longitude of Tweets. Another recommendation for Twitter related studies comes from Benthaus et al. (2016), where they suggest researchers should study user involvement differently, based on how often users choose to 'like' the content of a company. As for use of social media for marketing in firms, the literature has restricted focus to the resulting marketing benefits, with limited evidence supporting the effectiveness of social platforms for enhancing employee communications (Miller and Tucker 2013).

For behavioural studies, researchers need to be wary of the fact that motivation for users to adopt social media is different, often contingent on their culture (Chiu and Huang 2015; Shen et al. 2010. It is also important to note that behavioural reactions are susceptible to change over time, and changing habits have a role to play (Chiu and Huang 2015). Longitudinal research is thus always expected to offer a better understanding of the research problem when the intended behavioural reactions transfer into behaviour with time (Maier et al. 2015a). In studying online reviews and recommendations, researchers can assume that these reviews are independent of one another and remain static over time; however, Zhang and Piramuthu (2016) suggest that this may not be true and future researchers should now concentrate on how this has evolved, and if herding behaviour exists on such online platforms. In studying behaviours, it has also emerged that users develop discontinuance intentions after continuance intentions, with the latter never being completely replaced by the former. Turel (2015) thus recommends studying the initiation of discontinuance intentions, whilst identifying the factors leading to its dominance and actual discontinuance attempts.

Matook et al. (2015a) identify that there is a need to study the aspect of trust formation between individuals on social media, where no personal relationships exist (unlike sites such as Facebook). Chung et al. (2017) identify that researchers often associate the use of certain social media with young users (for instance, Maier et al. 2015b), and fail to study the usage perceptions across various ages (Vishwanath 2015). Van Osch and Steinfield (2016) suggest that future researchers should explore the potential of Enterprise Social Media to gain insights into the tools that support disentanglement of team boundary spanning. Finally, researchers have

Table 4 Research methods and approaches

Citations	Research approach (with frequency)
Quantitative methods	
Burtch et al. (2016); Goes et al. (2016); Susarla et al. (2016); Sung et al. (2016); Lundmark et al. (2016); Centeno et al. (2015); Lee et al. (b); Greenwood and Gopal (2015); Hu et al. (2015); Kuan et al. (2015); Lu et al. (2015); Yan et al. (2015a, b); Chen et al. (2015); Qiu et al. (2015); Dewan and Ramaprasad (2014); Fogués et al. (2014); Goes et al. (2014); Shi et al. (2014); Yan and Tan (2014); Aggarwal and Singh (2013); Oh et al. (2013); Goh et al. (2013); Luo et al. (2013); Shi and Whinston (2013); Wei et al. (2013); Xu and Zhang (2013); Xie and Lee (2015); Aggarwal et al. (2012)(b); Butler and Wang (2012); Susarla et al. (2012); Tang et al. (2012); Cheng et al. (2011); Garg et al. (2011); Gray et al. (2011); Dellarocas et al. (2010); Wattal et al. (2010)	Analytical (42)
Chung et al. (2017); Wakefield and Wakefield (2016); Xu et al. (2016); Zhao et al. (2016); Ali-Hassan et al. (2015); Cao et al. (2015); Chen and Sharma (2015); Kekolahti et al. (2015); Turel (2015); Gerlach et al. (2015); Krasnova et al. (2015); Kuegler et al. (2015); Matook et al. (2015a, b); Maier et al. (2015a); Yu et al. (2015); Bharati et al. (2014); Chang et al. (2014); Ray et al. (2014); Wang et al. (2014); Xu et al. (2014); Porter et al. (2013); Rishika et al. (2013); Cheung et al. (2012); Turel and Serenko (2012); Bateman et al. (2011); Burgess et al. (2011); Shen et al. (2010)	Survey (33)
Zhang et al. (2016); Miranda et al. (2015); Yan et al. (2015a, b); Gu et al. (2014); Singh et al. (2014); Stieglitz and Dang-Xuan (2013); Miller and Tucker (2013); Wu (2013); Chau and Xu (2012); Khan and Jarvenpaa (2010)	Content analysis (13)
Zhang and Piramuthu (2016); Khansa et al. (2015); Lee et al. (2015a); Claussen et al. (2013); Luo and Zhang (2013); Oestreicher-Singer and Zalmanson (2013); Zeng and Wei (2013); Baek et al. (2012); Massari (2010)	Web Crawling (9)
Choi et al. (2015); Vishwanath (2015); Lukyanenko et al. (2014); Qiu et al. (2014)(b); Wu and Gaytán (2013)	Laboratory experiment (5)
Chang et al. (2015); Ma et al. (2013); Cheong and Lee (2011)	Simulation (4)
Oh et al. (2016); Zhang and Wang (2012)	Natural experiment (2)
Gonzalez-Bailon et al. (2010)	Theoretical (1)
Mettler and Winter (2016)	Design science approach (1)
Qualitative methods	
Miranda et al. (2016); Huang et al. (2015); Karoui et al. (2015); Trier and Richter (2015); Kallinikos and Tempini (2014); Koch et al. (2013); Koch et al. (2012); Griffiths and Light (2008)	Case study (8)
Barrett et al. (2016); Schlagwein and Hu (2016); Subramaniam and Nandhakumar (2013)	Interviews (3)
Dong and Wu (2015)	Event study (1)
Chiu and Huang (2015)	Survey (1)
Kreps (2010)	Theoretical (1)
Leonardi (2014)	Ethnographic research (1)
Mixed methods	
Dennis et al. (2016); Stanko (2016); Van Osch and Steinfield (2016); Ling et al. (2015); Hildebrand et al. (2013); Ridings and Wasko (2010)	Analytical (6)
Dennis et al. (2016); Van Osch and Steinfield (2016); Oh et al. (2015); Fang et al. (2013); Ridings and Wasko (2010)	Conceptual (5)
Benthaus et al. (2016); Ling et al. (2015); Maier et al. (2015a, b); Ameripour et al. (2010)	Interviews (4)
Maier et al. (2015a); Chen et al. (2014); Krasnova et al. (2010); Tow et al. (2010)	Survey (4)
Benthaus et al. (2016); Oh et al. (2015); Fang et al. (2013)	Content analysis (3)
Ameripour et al. (2010); Tow et al. (2010)	Ethnographic research (2)
Stanko (2016)	Fuzzy set QCA (1)
Krasnova et al. (2010)	Focus group (1)
Chen et al. (2014)	Delphi method (1)
Hildebrand et al. (2013)	Field study (1)

Table 5 Social networks

Network	Frequency	Example citations
Facebook	23	Fogués et al. (2014); Sung et al. (2016); Vishwanath (2015)
Online Community	16	Barrett et al. (2016); Burtch et al. (2016); Stanko (2016)
Twitter	12	Miranda et al. (2016); Oh et al. (2015); Shi et al. (2014)
Blogs	9	Aggarwal and Singh (2013); Chau and Xu (2012); Wattal et al. (2010)
Youtube	7	Qiu et al. (2015); Susarla et al. (2016); Tang et al. (2012)
UGC Platfroms	5	Levina and Arriaga (2014); Lukyanenko et al. (2014); Luo and Zhang (2013)
Myspace	4	Chen et al. (2015); Massari (2010); Wattal et al. (2010)
Yahoo	3	Dellarocas et al. (2010); Gu et al. (2014); Khansa et al. (2015)
Amazon.com	2	Baek et al. (2012); Kuan et al. (2015)
Communication services	2	Kekolahti et al. (2015); Wu (2013)
Epinions.com	2	Cheung et al. (2012); Goes et al. (2014)
Last.fm	2	Garg et al. (2011); Oestreicher-Singer and Zalmanson (2013)
Movielens	2	Centeno et al. (2015); Wei et al. (2013)
Newspapers	2	Greenwood and Gopal (2015); Miranda et al. (2016)
Social Bookmarking Systems	2	Gray et al. (2011); Hwang et al. (2011)
Studivz.net	2	Krasnova et al. (2010); Matook et al. (2015a)
Wikipedia	2	Xu and Zhang (2013); Zhang and Wang (2012)
Yelp.com	2	Ma et al. (2013); Zhang et al. (2016)

established that the lifecycle of information and communication technologies tend to be emancipatory in their infancy but eventually evolve into hegemonic tools. They warn social media policymakers to be wary of reproducing this pattern with digital media; the recommendation is to involve more citizens in the development of Internet governance framework, rather than resting decisions with the members of political or economic power (Miranda et al. 2016).

6 Conclusions

This paper discusses the findings of 132 publications contributing to the literature on social media. Multiple emergent themes in this body of literature have been identified to enhance understanding of the advances in social media research. By building on empirical findings of previous social media research, many new studies have been successful in theorizing the nature of most social media platforms. User-generated content allows collective understanding, which is a massive machine-human knowledge processing function capable of managing chaotic volumes of information. Some key conclusions relevant to stakeholders, including researchers, have been identified here.

- Social media technologies are no longer perceived just as platforms for socialization and congregation, but are being acknowledged for their ability to encourage aggregation.
- In reviewing the 132 publications on social media and social networking, it was observed that most studies used social exchange theory, network theory and organization theory to support their studies.
- Facebook, online communities, and twitter are the three most popular networks targeted by publications in the field of social media research.
- Publications in 2011 were still reporting user-generated content as a new type of online content. However, the last six years have seen tremendous scholarly progression in discussing the many applications of social networking, highlighting the highs and lows associated with its use.
- Majority of the publications reviewed in this study are focussed on behavioural side of social media, reviews, and integration of social media for marketing and organizational purposes.
- Many publications in the year 2013 concentrated their efforts in investigating the very popular aspect of *reviews and recommendations* on social networks.
- Publications have become more focussed on studying social commerce across networking sites, particularly, Facebook, MySpace, YouTube and so on between 2015 and 2016.
- Publications have not shown much interest in support-seeking posts and negative stigma attached to social media use after the year 2015.
- Most studies unanimously acknowledge social media for its information sharing and information exchange

capabilities, with a focussed group of studies recognizing its effectiveness during natural disasters and critical events.
- Almost all publications studying information sharing during natural disasters and critical events focus on Twitter data.
- Publications on *administration* and *political* contexts were particularly found in 2010 and 2016, with no interest expressed in these contexts between 2011 and 2015.

With information systems now expanding beyond organizational peripheries to become a part of the larger societal context, it is important for strategic information systems research to delve into the competitive setting of dynamic social systems. Online communities are introducing extrinsic rewards that do not limit users' intrinsic motivations. Research on such communities should expand to study the interplay between extrinisic and intrinsic rewards, particularly in terms of their ability to cultivate and sustain users' intrinsic motivations. From an organizational perspective, research on social media should move past the conventional dyadic view of the relationship between an online community and a firm, and focus on reconceptualising online users as an ecosystem of stakeholders. Social media has re-established the dynamics between organizations, employees, and consumers. Given the rise in number of publications focussing on workplace setting since 2014, future researchers should aim to analyze stakeholders' potential in adopting social media tools to successfully accomplish their work goals. As for the limitations of this collective review, publications reviewed here were limited to only nine journals. This potentially means studies with significant contributions to social media literature published in other journals have been overlooked. Future researchers can look to overcome such exclusions and focus on the overall review of literature on social media platforms. Future reviews may focus on reviewing articles published in a larger number of IS journals related to a specific type of social media (i.e. social networking sites, blogs), or specific issues related to social media use, such as information load, stress, and impact on productivity. Despite these limitations, our study provides a comprehensive and robust intellectual framework for social media research that would be of value to adacemics and practitioners alike.

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