



Review

Social media metrics and analytics in marketing – S3M: A mapping literature review



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ABSTRACT

The purpose of this study is to present a mapping literature review and a classification for research articles regarding social media metrics and analytics in marketing. The review covers 52 articles from peer review journals and international conferences, from 2010 to 2016. These 52 articles are classified in 5 distinct categories based on their: *methodology of research, type of analysis, field of study, marketing objectives and social media type/platform used*. The findings of the study reveal which is the most used subcategory for each classification, trends and tendencies. This review provides a base classification for researchers and an editable and continuously augmenting typology for further research in the area.

1. Introduction

Web 2.0 tools and the appearance of social media seem to have redefined the marketing strategy, research and practice, broadening marketing's potential. These potentials go beyond customers' information and expand on commitment and engagement levels. Constantinides and Fountain (2008) define Web 2.0 "as a collection of open-source, interactive and user-controlled online applications expanding the experiences, knowledge and marketing power of the users as participants in business and social process [...] supporting the creation of informed users' networks facilitating the flow of ideas and knowledge by allowing the efficient generation, dissemination, sharing and editing/refining of information content".

Social media produce a vast amount of measurable useful data to analysts and marketers whose goal is to monitor and analyze behavioral targeting, brand loyalty and further marketing performance indicators, rendering these data effective. To do that, specific marketing metrics goals need to be clearly defined. Without a specific plan, regarding also the key performance indicators choices, data analysts together with marketers will fail to direct the social media data into useful insights for the companies. For that purpose, firms must precisely raise questions and search answers from social media listening in order to transform data in social media metrics. Social media analysis, therefore, consists of collecting, measuring, evaluating and finally interpreting data (Kaplan & Haenlein, 2010).

Since the first appearance of social media, marketers have noticed the potential of such technology in business (Mangold & Faulds, 2009). Social media can serve as an effective marketing tool in business,

valuable for both consumers and companies, offering a wide range of opportunities (Kaplan & Haenlein, 2010). Therefore, social media show an unprecedented increase of use inside business. Even though, understanding social media is a crucial, but not a simple procedure. Several definitions are classified in order to fully explore the dynamics of social media in marketing.

This study presents a complete base for understanding and describing social media metrics and social media analytics related to marketing strategy, policy and research, by reviewing the relevant literature. The objective of this paper is an extensive review of articles related to social media metrics and analytics in marketing, creating a mapping review/systematic map of the relevant material. The primary goal in this article is to create a conceptual classification scheme (named S3M) for the extant literature by using five distinct dimensions/criteria of classification, such as: Methodology of research, Type of analysis, Field of study, Marketing objectives, and Social media types/platforms. As a result, the most used subsectors from each category are identified, featuring the new upcoming trends in social media marketing. The findings of this study are expected to benefit researchers and marketers by helping them to better understand what has been hitherto achieved. It is our primary hope that the proposed framework will serve as a valuable classification system for researchers, academics and practitioners who conduct similar research.

The paper is structured as follows. The next section presents the research methodology we follow. In the following section we present the classification of the literature, providing a discussion section for each category. The final section summarizes our work, offering concluding remarks, future research directions and limitations that rise from our study.

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2. Research methodology

Social media marketing as a science field is difficult to restrict only in few specific disciplines. This difficulty arises due to the multi-disciplinary nature of the sciences and industry fields involved. Based on our proposal, articles associated to S3M can be found in five types of journals: Marketing and e-Marketing, E-Business and Management, Behavioral sciences, ICT/Information systems and Social media. In order to limit the collection of articles, we take some restrictions into consideration. The articles were initially searched on Internet and academic databases such as Science Direct, Scopus and Emerald. Articles from books and book chapters are excluded from the research. The search returned 101 articles, covering the time span 2011–2016. Of them, 35 were rejected due to lack of compatibility of the content with our research scope. From the 66 remaining relative articles, we excluded 6, for being white papers. From the remaining 60 articles, 52 are scientific articles from peer-review journals and 8 from conferences and proceedings. Each article was reviewed and classified initially into the five above mentioned categories and furthermore in relation with the year of publication. The year distribution can reveal useful outcomes for the research tendencies.

As it is shown in Fig. 1, the research has increased significantly since 2012. This year together with 2014 contribute 8 articles. The pick on publications is noticed during 2013 with 12 articles. 2014 and 2015 present a significant decrease on publications with 2016 showing a small promising increase.

3. Classification of the literature

The amount of the techniques related to social media and their applications in order to spread brand awareness or promote particular products is called Social Media Marketing (SMM). SMM uses mainly the features of social media, such as online communities, social data etc. (Neti, 2011). In the literature, social media marketing is combined with metrics and/or analytics tools, methodologies and techniques. Social media metrics represent the tangible outcome of monitoring, measuring, reporting, calculating content from social media.

Although there is no specific classification system for metrics, researchers can pattern them after: time, reach, relationship, conversion and retention measurements. However, considering that metrics are not yet fully standardized, it depends on the marketer, who sets the marketing goal, to decide the most suitable metric for a certain measurement. Social media produce a vast amount of data, known also as social data, consisting the next phase for an analyst; the social media analysis (SMA). More specifically, SMA consists of gathering and analyzing the data in order to take decisions for businesses. Next, we present eight main definitions for analytics in Table 1.

Furthermore, we classify each article based on five different criteria. More analytically, we subdivide the articles based on methodology, the specific type of analysis, the field of study, the marketing objectives and the social media types/platforms used. As a result, the most common subsectors of each category can be identified, featuring the new

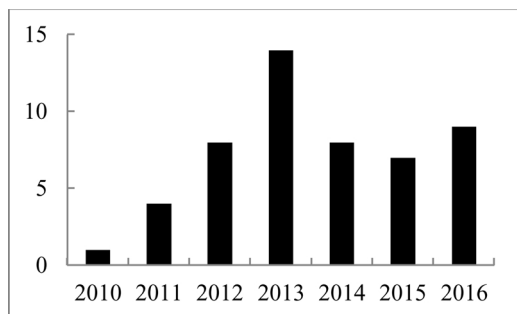


Fig. 1. Year of distribution/number of articles.

upcoming trends on social media marketing. The findings are expected to benefit researchers and marketers by helping them better understand what has been hitherto achieved.

Creating a classification constitutes a complex concept to manipulate and conceive, especially in new scientific fields, where literature is still in its early stages. As Bailey (1994) defines, classification is one of the most central and generic of all our conceptual exercises, being the foundation and a necessary process in social science. Typology and taxonomy are two terms that define classification. Typologies are characterized by labels and names. We use the term typology, instead of taxonomy, because our classification system was derived in a deductive manner, without using any cluster analysis or other statistical method, as it occurs with taxonomies. Initially, we did not know which would be our labels, in order to classify the articles. Our selection of articles contained a plethora of labels, which made our mapping process quite complex but challenging. By studying carefully all the articles, we first identified several methodologies, types of analysis, fields of study and marketing objectives. Based on this study, we formed the subsequent Table 2 with the basic labels. This first collection of labels is editable, so future researchers can add, unify or divide the different topics.

Having this classification as a base scheme we study the articles again, this time in order to classify each one in one or more categories. Our scheme lacks of mutual exclusivity, since one article may belong to more than one category. Reviewed articles are classified into five categories and each of them is discussed as follows.

3.1. Methodology of research

Studies follow different approaches related to the methodology used. This depends on the problem's nature and the research field (Noor, 2008). Diverse studies exclusively review the literature. Usually these studies are qualitative and theoretical. We detected 10 articles that perform reviews and/or theoretical research. On the other hand; other studies perform quantitative research using questionnaires. Our study revealed 13 relative articles. The remain articles do not use questionnaires and form the third category of Table 3 with 27 articles.

The generic category of survey-related articles, both questionnaire-based and not, contributes more than 84% of papers. This can be explained by the fact that social media scientists prefer to contribute with primary research articles rather than review-based researches, since the field is quite new and presents a huge research development margin. Though this numeric conclusion can be evidenced by findings, we believe that theoretical approaches are still necessary and form a solid base for conducting primary research.

3.2. Type of analysis

As S3M is a nascent developing field with challenges and opportunities for further research exploration, this Table is designed to assist researchers to obtain the basic knowledge but also to find gaps and limitations, not yet analyzed. The tendencies towards specific research can be revealed also from the next Table. As Gartner (2013) defines, social analytics include sentiment analysis, NLP, text analysis, predictive and content analysis. We enlarge this definition by adding also statistical and behavioral analysis, as possible categories, in our taxonomy. Only one article performs effectuation analysis which is the process for entrepreneurship decision-making (Fischer & Reuber, 2011). These eight categories form the classification for Table 4.

S3M is not yet fully standardized so it is normal that the different categories mix with each other. This is the reason why many papers fit more than one category. Nevertheless, even if classification is not yet fully clarified, we extract the next outcome by observing Table 4. NLP and text analysis, sentiment analysis, content and social media activity analysis are the dominant categories. This observation can be explained by the fact that data contain insights for customers and information for marketers so as to predict useful outcomes.

Table 1
Definitions for Social Media Analytics.

Author(s)	Definitions
Daniel, Hsinchun, Lusch, and Shu-Hsing (2010)	[...] developing and evaluating informatics tools and frameworks to collect, monitor, analyze, summarize, and visualize social media data, usually driven by specific requirements from a target application.
Yang, Kiang, Ku, Chiu, and Li (2011)	[...] developing and evaluating informatics tools and frameworks to measure the activities within social media networks from around the web. Data on conversations, engagement, sentiment, influence, and other specific attributes can then be collected, monitored, analyzed, summarized, and visualized.
Mayeh, Scheepers, and Valos (2012)	[...] scanning social media to identify and analyze information about a firm’s external environment in order to assimilate and utilize the acquired external intelligence for business purposes.
Grubmüller, Götsch, andKrieger (2013)	[...] social listening and measurements [...] based on use generated public content (such as postings, comments, conversations in online forums, etc.)
Sterne and Scott (2010)	SMA is the study of social media metrics that help drive business strategy.
Nielsen (2012)	SMA is the ability to analyze performance of social media initiatives and social data for business intelligence.
Bensen Connie – Dell Company (conniebensen.com)	[...] consist on web analytics, engagement and revenue generated from social media.
Awareness (2012)	[...] an evolving business discipline that aggregates and analyzes online conversation (industry, competitive, prospect, consumer, and customer) and social activity generated by brands across social channels. SMA enable organizations to act on the derived intelligence for business results, improving brand awareness and reputation, marketing and sales effectiveness and customer satisfaction and advocacy.

Table 2
S3 M typology framework for social media metrics and analytics on marketing.

Methodology of research	Literature review and/or Theoretical approach	
	Surveys	Questionnaire-based research Non questionnaire-based research
Type of analysis	Predictive analysis Natural language process (NLP) – Text analysis Effectuation analysis Statistical analysis Sentiment analysis Behavioral analysis Social media activity analysis Content analysis	
Field of study	Banking Education Child welfare and advocacy Tourism industry Stock market Entertainment E-government Food industry Alternative marketing Clothing	
Marketing objectives	Awareness & Branding Engagement eWOM advertising & promotion Predictive marketing research Consumer behavior research Social capital – Value (business, firm equity) – ROI Relationship marketing: CRM & social CRM	
Social media type/ platform	Social networking sites Blogs Microblogs Content communities – Video sharing sites Forums – discussion	Facebook, Hi5, LinkedIn, Myspace Blogspot, digg wordpress Twitter, twitxr, tweetpeek, plurk Youtube, Flickr, Slideshare Phpbb, Phorum, skype, messenger, google talk

3.3. Field of study

Our review ends up with 10 specific market fields of study. Only 18 articles clearly focus on specific fields of study, while the rest are generic. We list these fields in Table 5.

As we notice, articles related to tourism industry hold the largest percentage with six articles. In a total of 52 articles, this number

represents the 11.5%, but among the 18 that focus on specific categories, the percentage rises in 33.3%. The fact that one third of the articles belong in the tourism industry was highly expected since tourism represents one of the most profitable industries worldwide, contributing to the global economy more than 48 trillion dollars for the same time span of our research, from 2010 to 2016 (Statista.com, 2016).

3.4. Marketing objectives

Business organizations create marketing programs, activities, and campaigns in order to move their current/potential customers to the buyer’s journey, designed to align marketing goals and sales activities. Several marketing objectives including specific actions were identified, such as brand awareness, engagement, marketing and especially customer research, behavioral targeting, e-WOM & promotion policy, relationship management & social CRM and social capital value including ROI questions/assessment.

Brand awareness means the exposure of the target audience to brand content and message, while engagement generates further actions taking into consideration the brand content/offers. Marketing and customer research have been identified by marketers as important and common objectives related to the social media use, giving them valuable information regarding customers impressions, sentiment, satisfaction in order to estimate the conversion/purchase potential. Furthermore, the activation of customers’ influence based on referrals, advocacy activities and evangelism inspiration for products/services constitutes the marketing objective of a positive eWOM promotion policy. Relationship marketing objectives based on social CRM is the new concern in the marketing world, and with good reason (Hoffman & Fodor, 2010; Pentin, 2011). As social media explode among businesses and customers, monitoring, managing and exploiting the resulting data become essential tasks for almost any marketer. Companies are anxious to meet customers where they are in the social media realm looking for the tools to get involved and gain access. Social CRM software works in conjunction with traditional CRM systems to track customer behavior, as a tool that is part of a social media strategy.

The study of the articles revealed initially 7 marketing objectives supported by social media. Table 6 presents the articles based on each objective they serve.

Engagement, consumer behavior research and relationship marketing represent the most dominant among the other categories with 10, 10 and 8 articles, respectively. All these three categories have the consumer/customer as common factor. The consumer-centric marketing was presented as the upcoming trend a few years ago and the current literature and our findings demonstrate that tendency towards that

Table 3
Articles' classification concerning the methodology of research.

Methodology of research	Articles	Percentage of articles/totaln (n/52)
Literature review and/or Theoretical approach	Fan and Gordon (2014); Gayo-Avello et al. (2013); Ghezzi, Gastaldi, Lettieri, Martini, and Corso (2016); Hanna, Rohm, and Crittenden (2011); Malthouse, Haenlein, Skiera, Wege, and Zhang (2013); Neirotti, Raguseo, and Paolucci (2016); Nettleton (2013); Praude and Skulme (2015); Stephen (2016)	19.2%
Survey	Questionnaire-based research Carim and Warwick (2013); Fischer and Reuber (2011); Godey et al. (2016); Guesalaga (2016); Kim and Ko (2012); Lee, Yen, and Hsiao (2014); Michaelidou, Siamagka, and Christodoulides (2011); Nadeem, Andreini, Salo, and Laukkanen (2015); Paek, Hove, Jung, and Cole (2013); Panagiotopoulos, Shan, Barnett, Regan, and McConnon (2015); Praude and Skulme (2015); Sheth, Sisodia, and Sharma (2000); Tiago and Veríssimo (2014)	25%
	Non questionnaire-based research Andrew et al. (2012); Asur and Huberman (2010); Braojos-Gomez, Benitez-Amado, and Javier Llorens-Montes (2015); Castronovo and Huang (2012); Chen, Tang, Wu, and Jheng (2014); Geurin and Burch (2016); He, Zha, and Li (2013); Jang, Sim, Lee, and Kwon (2013); Kavanaugh et al. (2012); Kelling, Kelling, and Lennon (2013); Kontopoulos, Berberidis, Dergiades, and Bassiliades (2013); Lau, Li, and Liao (2014); Lieberman (2014); Mostafa (2013); Pehlivan, Sarican, and Berthon (2011); Podobnik (2013); Qiu, Rui, and Whinston (2014); Ribarsky, Xiaoyu Wang, and Dou (2014); Rohm, Milne, and Kaltcheva (2012); Sabate, Berbegal-Mirabent, Cañabate, and Lebherz (2014); Smith, Fischer, and Yongjian (2012); Xiang, Schwartz, Gerdes Jr, and Uysal (2015); Xie et al. (2012); Yadav, de Valck, Hennig-Thurau, Hoffman, and Spann (2013); Yakushev and Mityagin (2014); Yu, Duan, and Cao (2013)	50%

Table 4
Articles' classification concerning the type of analysis.

Type of analysis (primary data collection and/or metric analysis)	Articles	Percentage of articles/total (n/52)
Predictive analysis	Asur and Huberman (2010); Chen et al. (2014); Qiu et al. (2014)	5.8%
Natural Language Process (NLP) – Text analysis	Asur and Huberman (2010); He et al. (2013); Jang et al. (2013); Kontopoulos et al. (2013); Mostafa (2013); Xiang et al. (2015); Yakushev and Mityagin (2014); Yu et al. (2013)	15.3%
Effectuation analysis	Fischer and Reuber (2011)	1.9%
Statistical analysis	He et al. (2013); Podobnik (2013)	3.8%
Sentiment analysis	Chen et al. (2014); Jang et al. (2013); Kontopoulos et al. (2013); Lau et al. (2014); Mostafa (2013); Xiang et al. (2015); Yu et al. (2013)	13.4%
Behavioral analysis	Andrew et al. (2012); Mostafa (2013); Qiu et al. (2014); Xie et al. (2012)	7.7%
Social media activity analysis	Bernabé-Moreno, Tejada-Lorente, Porcel, Fujita, and Herrera-Viedma (2015); Guesalaga (2016); He et al. (2013); Lieberman (2014); Praude and Skulme (2015); Rohm et al. (2012); Sabate et al. (2014)	13.4%
Content analysis	Bernabé-Moreno et al. (2015); Geurin and Burch (2016); He et al. (2013); Jang et al. (2013); Neirotti et al. (2016); Panagiotopoulos et al. (2015); Ribarsky et al. (2014); Smith et al. (2012); Xiang et al. (2015)	15.4%

Table 5
Articles' classification concerning the field of study.

Field of study	Articles	Percentage of articles/total (n/52)
Banking	Ribarsky et al. (2014)	1.9%
Education	Kelling et al. (2013)	1.9%
Child welfare and advocacy	Paek et al. (2013)	1.9%
Tourism industry	Bernabé-Moreno et al. (2015); Kontopoulos et al. (2013); Mariani, Di Felice, and Mura (2016); Neirotti et al. (2016); Sabate et al. (2014); Xiang et al. (2015)	11.5%
Stock market	Yu et al. (2013)	1.9%
Entertainment (movies, sports)	Asur and Huberman (2010); Geurin and Burch (2016); Podobnik (2013)	5.7%
E-government	Kavanaugh et al. (2012)	1.9%
Food industry	He et al. (2013); Panagiotopoulos et al. (2015)	1.9%
Alternative marketing (viral, email, guerilla etc.)	Castronovo and Huang (2012)	1.9%
Clothing	Nadeem et al. (2015)	1.9%

direction (Osborne & Ballantyne, 2012; Sheth et al., 2000). Of the 47 articles related to some marketing objective, presented in Table 6, the 59.6% regards consumer-centric articles.

3.5. Social media types/platforms and suggested framework

Table 7 represents the articles' distribution for the social media types or the platform used. In order to create this Table, we base our taxonomy on Kaplan and Haenlein (2010), Constantinides and Fountain (2008) and Mangold and Faulds (2009). A difference between these

three articles is that the first two use the term *Content communities* for YouTube and the third one, *video sharing sites*.

In a total of 52 articles, 46 of them fit Table 7 with several articles studying multiple social media types or platforms. Articles related to Facebook and Twitter, dominate with 20 and 17 articles, and 38.5% and 32.7% respectively. These results were rather expected, given the fact that 1.86 billion Facebook users and 320 million Twitter users own an active account on these two most visited and diffused SNS and microblog platforms. In global scale, Facebook is used by 54% of global internet users, so it is expected that science will also be of interest for

Table 6
Articles' classification concerning the marketing objectives.

Marketing objectives	Articles	Percentage of articles/total (n/52)
Awareness & Branding	Andrew et al. (2012); Kim and Ko (2012); Lieberman (2014); Mostafa (2013); Rohm et al. (2012); Sabate et al. (2014); Smith et al. (2012)	13.4%
Engagement	Fischer and Reuber (2011); Guesalaga (2016); Malthouse et al. (2013); Mariani et al. (2016); Osborne and Ballantyne (2012); Paek et al. (2013); Panagiotopoulos et al. (2015); Rohm et al. (2012); Sabate et al. (2014)	19.2%
eWOM advertising & promotion	Chen et al. (2014); Stephen (2016)	1.9%
Predictive marketing research	Asur and Huberman (2010); Gayo-Avello et al. (2013); Kim and Ko (2012); Qiu et al. (2014); Yakushev and Mityagin (2014)	9.6%
Consumer behavior research	Bernabé-Moreno et al. (2015); Godey et al. (2016); Jang et al. (2013); Mostafa (2013); Nadeem et al. (2015); Ribarsky et al. (2014); Rohm et al. (2012); Stephen (2016); Xiang et al. (2015); Xie et al. (2012)	19.2%
Social capital – Value (business, firm equity) – ROI	Braojos-Gomez et al. (2015); Fan and Gordon (2014); Godey et al. (2016); He et al. (2013); Lee et al. (2014); Neirotti et al. (2016); Pehlivan et al. (2011); Yu et al. (2013)	15.4%
Relationship marketing: CRM & social CRM	Geurin and Burch (2016); Malthouse et al. (2013); Nadeem et al. (2015); Osborne and Ballantyne (2012); Yadav, Banwari, Parmar, and Maniar (2013)	9.6%

Table 7
Articles' classification concerning the social media types/platforms.

Social media types/platforms	Articles	Percentage of articles/total (n/52)
Social Networking Sites (SNS)	Andrew et al. (2012); Carim and Warwick (2013); Chen et al. (2014); He et al. (2013); Kavanaugh et al. (2012); Kim and Ko (2012); Lee et al. (2014); Lieberman (2014); Mariani et al. (2016); Nadeem et al. (2015); Paek et al. (2013); Podobnik (2013); Ribarsky et al. (2014); Rohm et al. (2012); Sabate et al. (2014); Sheth et al. (2000); Smith et al. (2012); Tiago and Verissimo (2014); Xie et al. (2012); Yadav, Banwari, Parmar, and Maniar (2013)	38.5%
Blogs	Paek et al. (2013); Yakushev and Mityagin (2014); Yu et al. (2013)	5.8%
Microblogs	Asur and Huberman (2010); Bernabé-Moreno et al. (2015); Carim and Warwick (2013); Fischer and Reuber (2011); He et al. (2013); Kavanaugh et al. (2012); Kelling et al. (2013); Kim and Ko (2012); Kontopoulos et al. (2013); Lieberman (2014); Mostafa (2013); Paek et al. (2013); Ribarsky et al. (2014); Rohm et al. (2012); Sheth et al. (2000); Smith et al. (2012); Yu et al. (2013)	32.7%
Content communities – Video sharing sites	Carim and Warwick (2013); Geurin and Burch (2016); Jang et al. (2013); Kavanaugh et al. (2012); Smith et al. (2012)	9.6%
Forums	Yu et al. (2013)	1.9%

these two platforms.

Summarizing our findings, with respect to the corpus of all articles, we notice a peak on publications in 2013 followed by a decrease the next two years. An important finding is that 2016 represents a small but constant increase in the number of publications, showing an overall increase of interest in social media marketing analysis. Trends show tourism industry, Facebook and Twitter as well as consumer-centric marketing to be the dominant categories, platforms and concepts behind social media marketing strategies. On the other hand though, these trends may bring to the surface gaps in other fields that need attention and research.

4. Future research directions & limitations

Marketing science, together with information technology, has great interest in understanding and analyzing social media and their created data. We present a complete-scale study, aiming to create a typology for social media metrics and analytics related articles, within a continuously incremental and editable typology. The findings contribute to the literature in several ways. The proposed typology is flexible, which means that future literature reviews on a subject can contribute, based on the typology, by adding items and categories.

Regarding specific outcomes, from Table 3 it becomes clear that primary data collection is the most used method on S3 M and the data used for analysis, originate from primary metrics. Another useful outcome is the platform used. On today's social media research, Facebook and Twitter are the dominant platforms and so, the biggest part of the literature is focusing on these two platforms. The above conclusions can help researchers to understand better the tendencies of the diverse field,

but also reveal research gaps and lacks on the literature. We believe that the presented paper presents potential for applications in many domains, ranging from marketing to academic or business research. By knowing how to effectively measure the social media value, companies and individuals can produce insights that allow improvement in promoting products and services. Our paper, presents also some limitations. The research was conducted with keywords such as “social media marketing” and not separately for each marketing objective (e.g. branding, engagement, etc.). This fact, limited the number of the articles. Future studies must approach the S3M topic, by searching (and adding as keywords) every field; platform and marketing objective; separately. This type of search will lead to diverse studies; focusing on a specific direction. Our proposed S3M typology framework should trigger future research enabling the incorporation of further criteria.

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