Influencer is the New Recommender: Insights for Enhancing Social Recommender Systems

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Abstract. Firms are increasingly turning to influencers to persuade consumers to purchase their brands. They do so because influencers have built a large social community around them on social media that they can persuade to adopt a recommended behaviour or brand. This objective is very similar to that of social recommender systems. Thus, this study aims to analyse influencer research and propose how to enhance the persuasion power of social recommender systems. A meta-analysis was conducted on influencer research obtained from the Web of Science core collection to this end. The meta-analysis revealed that influencers have a strong persuasion effect on consumer purchase intentions. Seven essential determinants of purchase intention were identified: trustworthiness, brand attitude, influencer's credibility, parasocial interactions, expertise, and attractiveness. This paper discusses how social recommender systems in e-commerce platforms could be improved based on these findings. It emphasises credibility and identification as two broad factors that should be explored in future research on social recommender systems.

Keywords: Influencer · Social recommender system · Purchase intention

1 Introduction

Digital platforms, especially social media, have become an indispensable source of information for consumers. Social media influencers (termed influencers hereafter) are people with sizeable followers on social media platforms who regard them as trusted tastemakers in one or several niches [1]. Thus, influencers are increasingly used to curate content on social media platforms in various application domains, including e-commerce. They have become an exciting channel for product/service recommendation by several brands [2].

Understanding influencers' role is of immense importance to research and practice, given their ubiquitous social media presence and increasing role in consumer decision-making. Influencers can recommend brands to their communities in exchange for compensation. Consumers adhere to influencers' recommendations because they perceive influencers as trusted opinion leaders with expertise on a particular topic [3,

4]. Consequently, firms pay influencers to recommend their brands because they believe influencers can shape their followers' attitudes and actions in their favour [5].

A key component of influencers' success is their ability to drive consumers to consume a product or brand [6]. Through the massive number of followers they have, they can recommend a brand to a wide variety of people within their sphere of influence. This capability is very similar to that of recommender systems used in e-commerce and social media platforms. However, influencers do not collect information on their followers' preferences and do not know most of them personally [7]. Thus, unlike recommender systems, influencers cannot provide intelligent, personalised recommendations to individual followers. Therefore, influencers cannot recommend brands accurately but rather inform users about a brand's existence. Sometimes, influencers simply post pictures of themselves with the advertised brand without providing valuable information to help consumers decide whether to purchase the brand. Therefore, firms can hardly tell how many people in an influencer's community were genuinely interested in the brand. This challenge has led to several studies on digital influencers' role as recommenders [8, 9].

Despite this drawback, it seems like brands are increasingly abandoning traditional advertising techniques to adopt influencer-based advertising [10]. Does this imply that recommendations from recommender systems are less effective? This paper aims to use recent literature on influencers to inform research on social recommender systems. Social recommender systems are software agents designed to provide personalised recommendations to consumers based on social data. It aims to provide new theoretical perspectives that can help explain and improve social recommender systems' effect on consumer behaviours investigated in influencer literature. No research has addressed this topic before despite the growing importance of these distinct recommendation channels.

Furthermore, this research brings together two disparate research streams to help shed light on consumer behaviour towards recommendations made through social media platforms. These insights could help information systems (IS) practitioners improve their social recommender systems' quality. They could also help marketing managers decide the best way to recommend brands to consumers.

2   Background

The extant literature on influencers highlights that influencer recommendations are increasingly being accepted by consumers [9]. Consumers are more inclined to purchase products recommended by trusted influencers [11]. Firms are advised to collaborate with influencers who post visually appealing content and demonstrate expertise to maximise the adoption of new products [12]. Consumers are more likely to take influencer recommendations based on sound advice (expertise) [11]. This advice could help improve the quality of purchasing decisions made by consumers.

Designing systems to provide similar recommendations through social media platforms to consumers is a well-known IS practice. Social recommender systems refer to using social information to improve recommender systems' performance [13]. There is significant literature on the effect of social recommender systems on consumer behaviour. Friendship and group information, for example, can help recommender systems make

accurate, evidence-based, and persuasive recommendations to consumers [13]. Modelling user communication patterns on social media has helped understand user influence across heterogeneous social networks and improve recommendations [14].

Analysing trust relationships within social networks has helped enhance recommendations from recommender systems [15]. Incorporating social context, activities, and preferences into recommender systems has led to more personalised recommendations [16]. Combining context-aware, social network, and sentiment-based information on consumers has also led to highly accurate and personalised recommendations [17, 18]. Such recommender systems can be further improved using artificial intelligence (AI), data science, and analytics [19, 20].

This research investigates how influencer literature can inform social recommender systems literature. Specifically, it discusses how the effect of social recommender systems can be improved based on evidence from influencers.

3 Methodology

A meta-analysis is a type of aggregative literature review that uses quantitative methods to test specific research hypotheses based on prior empirical findings [21]. This technique is instrumental in summarising evidence in research accurately and reliably [21]. A meta-analysis was conducted to understand influencers' effects on consumer behaviour. The approach used in this paper was proposed by Lipsey and Wilson [22]. It involves three main steps: (i) literature search, (ii) article coding, and (iii) article analysis. The literature search step involved searching the Web of Science core collection of databases using the term "influencer". This collection of databases was used because it is frequently cited as a key source of literature review data [21]. There was no restriction placed on the publication outlet. The search covered all publications until December 2020. A total of 799 articles were identified through the search. For a document to be included in the meta-analysis, it had to empirically investigate one variable's effect (independent variable) on another (dependent variable). Second, the dependent variable had to characterise purchase intention. Third, it had to report data sufficient to compute the independent variable's effect size reliably by providing data on correlation coefficient, significance level, and construct reliability.

Articles were coded to identify categories of determinants of all dependent variables investigated. Only independent-dependent variable relationships tested by more than one study were considered for this meta-analysis. The authors categorised independent variables based on existing theories. After that, the authors coded the variables independently, then came to a consensual code. A separate meta-analysis was conducted for each independent variable-variable pair for article analysis. Information on the correlation coefficients was collected from each study to calculate effect sizes. The magnitude of effect sizes was interpreted as small ($<.30$), medium (between .30 and .50), large (between .50 and .67), and very large ($>.67$). The validity and reliability of the main meta-analysis results were tested using a z-test.

Table 1 presents the paper collection results. Based on our inclusion criteria, 11 articles were retained for this meta-analysis.

Table 1. Paper collection results.

	Journal	Conference	Total
Papers identified in searches	642	157	799
Papers excluded based on exclusion criteria	602	156	758
Retained papers	**40**	**1**	**41**
2011	1	0	1
2017	1	0	1
2018	2	1	3
2019	11	0	11
2020	22	0	22
2021*	3	0	3
Papers used for the meta-analysis	**11**	**0**	**11**
2018	1	0	1
2019	1	0	1
2020	7	0	7
2021*	2	0	2

*These papers appeared as 2021 in the Web of Science database but were published in 2020

4   Results

Purchase intention was identified as the main effect of influencers on consumer behaviour. Table 2 presents the meta-analytic results of the determinants of purchase intention. The table reports the weighted mean effect sizes of each independent variable, their magnitudes, the number of studies that led to the results, and the total sample size used for the analysis. It also reports the z-test of each independent variable. The z-test results indicate each independent variable's significance.

Table 2. Meta-analysis results (dependent variable: purchase intention).

	Overall effect size (stand.)	Effect size magnitude	No. of studies	Total sample size	z-test ***	95% CI
Trustworthiness	0.560	Large	3	1 041	20.317	0.516; 0.6
Similarity	0.465	Medium	2	1 154	17.069	0.419; 0.509
Attitude towards the brand	0.443	Medium	2	917	14.355	0.389; 0.493
Influencer's Credibility	0.404	Medium	2	1 483	16.451	0.36; 0.445
Parasocial interactions	0.394	Medium	3	1 523	16.227	0.351; 0.436

Table 2. (*continued*)

	Overall effect size (stand.)	Effect size magnitude	No. of studies	Total sample size	z-test ***	95% CI
Source expertise	0.294	Small	2	883	8.956	0.232; 0.353
Attractiveness	0.221	Small	4	1 491	8.652	0.172; 0.269

Table 3 presents the definition of each variable.

Table 3. Variable definition.

Variables	Definition
Dependent variables	
Purchase intention	A consumer's conscious plan and effort to purchase a product, a service, or a brand [6]
Independent variables	
Attitude towards the brand	Customers' evaluations of a brand [1]
Attractiveness	The degree to which an influencer is perceived as "classy, sexy and beautiful" [6]
Influencer's credibility	Perceptions of an influencer's physical appeal and expertise regarding the product [5]
Parasocial interactions	Relationship between an influencer and followers, implying an "illusion of intimacy" as in real personal relationships [23]
Similarity	The extent to which one person perceives sharing or having a shared experience, lifestyle, and other features with another person [24]
Source expertise	The degree of knowledge, skills, and experience that a source is perceived to feature [6, 24]
Trustworthiness	Perceptions of honesty, integrity, and believability of an endorser [24]

Figure 1 presents the meta-analysis-based research model discussed in the next section. The "***" indicate significance at the 1% level.
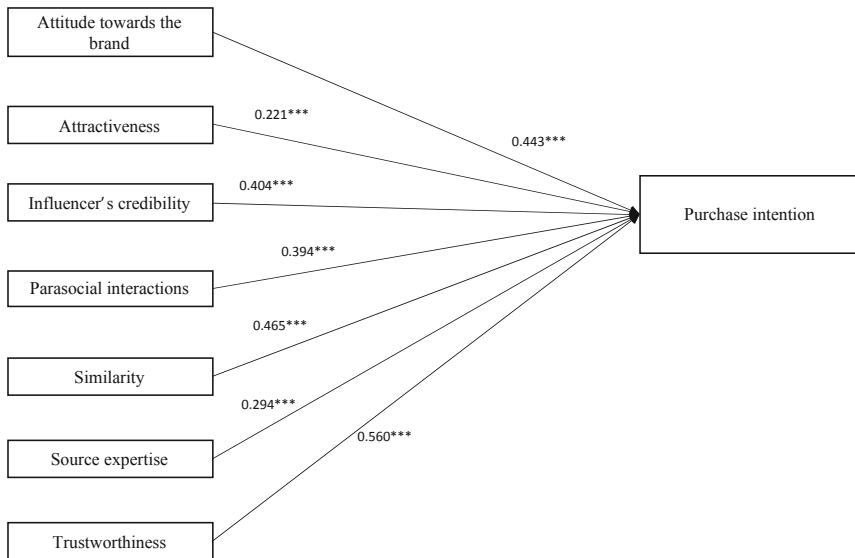

Fig. 1. A meta-model for influencer effect on consumer purchase intention.

5   Discussion

This paper aims to inform research on social recommender systems based on influencer literature. Given the similarity between these two research streams, IS researchers could learn from influencer research how to improve recommender systems' quality and effectiveness in e-commerce platforms. Based on the findings outlined in the results section, several valuable insights were uncovered regarding social recommender systems' effect on consumer purchase intention.

Trustworthiness has a large effect on consumer purchase intention. It implies that influencers perceived as trustworthy and honest are more likely to persuade consumers to purchase a specific brand. Consumers trust influencers because they assume that the influencers have tried the brand and so their opinion can be trusted. Four factors have medium effects on purchase intention: similarity, attitude towards the brand, influencer's credibility, and parasocial interactions, respectively, in order of magnitude. The effectiveness of influencers' recommendations is strongly tied to how much consumers identify with the influencer (shared experience, lifestyle, or other common characteristics, etc.). Consumers are more likely to purchase a product endorsed by an influencer they identify with [24]. Consumers' attitude towards a brand is measured by how good, pleasant, and favourable consumers perceive a brand. Influencers have the power to change consumer attitudes towards brands through their attractiveness. Although attractiveness has

a small direct effect on purchase intention, it contributes significantly to consumer attitudes towards the brand recommended by influencers [1]. Attractiveness is measured through the influencer's physical looks, style, knowledge, and reputation [1]. Therefore, consumers are more likely to perceive brands as attractive and purchase items from the brand if the recommender is found attractive [5]. Influencer credibility is a combination of an influencer's physical appeal and expertise regarding a brand [5]. Physical appeal is very similar to attractiveness, explaining why influencer credibility strongly affects consumer attitude towards the brand and related recommendations [5]. Parasocial interaction also has a medium effect on consumer purchase intentions. Consumers are more likely to purchase products recommended by influencers with whom they have a parasocial relationship [23]. This relationship is strongly related to the feeling of identification and connection the consumer has for the influencer. This relationship is manifested through consumers' desire to look, behave, or belong to the same 'world' as an influencer. Such consumers are usually very active and reactive to the content proposed by influencers they follow [23]. Source expertise has minor effects on consumer purchase intentions. It may be because source expertise is factored into influencer credibility [5, 24]. Therefore, measured alone, its effect is relatively smaller than if captured as part of the influencer's credibility.

5.1 Implications for Research on Social Recommender Systems

These influencer literature findings have several implications for research on social recommender systems and their ability to influence consumer purchase intentions. One main implication is that just like influencer credibility, the recommender system platform's credibility could be essential for the effectiveness of the recommendation. Influencer credibility is based on two main components: the influencer's perceived trustworthiness and expertise [23, 24]. Likewise, recommender systems should be perceived as trustworthy and systems with some degree of expertise. The recommendations made should be trustworthy and perceived as coming from a knowledgeable and skilful person. Also, credibility can be perceived through physical appeal [5]. Thus, a platform that provides customers' recommendations more appealingly could be perceived as more credible. Therefore, a social recommender system that demonstrates credibility through perceived trustworthiness, expertise, and appeal could improve consumer purchase intentions. Credibility effects can be explained by the attribution theory [25]. This theory describes how people examine information to arrive at a causal judgment. It suggests that people see cause and effect relationships even where there is none to make sense of the social world. This theory has been used to show that people tend to trust messages more from a known than from an unknown source. As the source's credibility increases, so does the persuasiveness of its message [5].

Furthermore, the social learning theory argues that people acquire new behaviour through observation and imitation [26]. This theory has helped show that the way influencers appreciate brands they advertise influences their followers' attitudes towards the brand and thus transfer their credibility to the brand [5]. Therefore, it is essential to improve social recommender systems' credibility to increase their persuasiveness and effect on consumer purchase intentions. Therefore, future research should investigate how to enhance social recommender systems' credibility [27, 28].

Another key implication of this research is that identification could play a key role in the relationship between consumers and social recommender systems. Influencer literature highlights similarity and parasocial relationship as key components of identification [23, 24]. Thus, social recommender systems that consumers identify themselves with are more likely to influencer their purchase intentions. Therefore, recommendations from social recommender systems should reflect the consumers' lifestyle and other personal characteristics. Consumers should perceive that the recommender system understands their social needs. This perception would enable consumers to build an "intimate" relationship with the system, increasing the systems' ability to influence their purchase intentions. Like the product-endorser fit [1, 24], recommender systems should fit with the type of recommendation made. The recommender system should be found attractive with respect to the recommendation made. That is, the recommender system should demonstrate the looks, style, knowledge, and reputation necessary to make a specific type of recommendation. Therefore, researchers should investigate how to enhance consumer identification with recommendations from social recommender systems.

5.2 Implications for Practice

This research has some implications for practice, especially in the e-commerce context wherein recommender systems have become an integral part of e-commerce platforms. Recommender systems in such platforms should be perceived as credible to influence consumer purchase intentions. Designing such recommender systems involves improving how consumers perceive the recommendations' trustworthiness. It could be done by designing more trust-enhanced recommender systems [29, 30]. The recommender system should also be perceived as appealing. It can be done by improving the quality of display on the e-commerce website [31, 32] or how the information is communicated by voice.

Furthermore, the recommendation should be perceived as one based on expertise. Therefore, the recommender system should provide some expert-level information to support recommendations whenever possible. Regarding identification, social recommender systems should be designed to make consumers identify with the recommendations, that is, personalised. However, system designers should go beyond personalised recommendations to enhance the quality of interactions consumers have with the recommender systems. The more consumers have parasocial interactions with the platform, the more likely they would accept recommendations made, especially regarding purchase.

5.3 Limitations

The first limitation of this research is that some research papers may have been left out of this study because "influencer" is the only keyword used to conduct the literature search. The reason for this choice is that it is the only term that focuses on the concept we sought to investigate. Unlike "influencer", other terms like "micro-celebrities" or "online stars" do not necessarily characterise people whose purpose is to use social media to influence potential buyers of a product or service. Nevertheless, several studies may have used these terms interchangeably. Thus, future research should use more inclusive terms to identify any missing papers.

Second, this research used only the WoS database to identify relevant papers. While this database contains publications from all leading journals, it may not have publications from some conferences. Thus, future research should consider other databases like Scopus to expand this meta-analysis.

6 Conclusions

Today, social recommender systems are an integral part of most social media and entertainment platforms. Although it is a rich research stream, more research is needed to improve the quality and effectiveness of their recommendations. This paper uses influencer literature to incite researchers to investigate social recommender systems' credibility and make consumers identify with recommendations. The paper highlights perceived trustworthiness, expertise, and appeal as essential components of credibility. Meanwhile, it highlights similarity and parasocial interactions of key components of identification. Integrating these elements into the design and implementation of social recommender systems could lead to more effective social recommender systems, especially in influencing consumer purchase intentions. Hopefully, this paper will inspire future research on improving social recommender systems.

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