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A meta-analysis of social commerce adoption research

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Abstract
Social commerce is a subset of e-commerce that utilises social media to facilitate interaction between sellers and consumers. Over the last number of years, the subject of social commerce has attracted significant attention from many researchers as they attempt to understand the factors affecting its adoption by consumers. A review of results from existing studies suggests inconsistent results for many relationships. Hence, this research has conducted a meta-analysis of 65 studies and synthesized the findings from existing studies in order to estimate the cumulative correlation coefficient (β) and significance (p). The investigation found that behavioural intention, trust, perceived usefulness, and social support are frequently examined dependent variables, that are strongly influenced by a number of independent variables. The findings in this study suggests that perceived usefulness, hedonic value, social commerce constructs, subjective norms, informational and emotional support are important for encouraging social commerce adoption. This research highlights various antecedents that have been theoretically examined in different social commerce studies that explore the effect size through meta-analysis.

Keyword: Adoption, Behavioural intention, Meta-analysis, Social commerce, Trust

1 Introduction

Social commerce is considered a form of electronic commerce (e-commerce) that involves social networking applications and facilitates transactional interaction between buyers and sellers [1,2]The progress of e-commerce technology merging with social networking sites is one of the key reasons for the development of social commerce [3]. The interactions through online communities has developed the concept of social commerce [4]. There are some key features that have separated social commerce from e-commerce, namely digital profile, search ad privacy, relational tie and network transparency [5]. Consumers are able to interact and support each other throughout the purchasing cycle by sharing information and personal experiences of the product and service [6].
In the last decade, social commerce has become a popular topic of research amongst marketing scholars. Different areas of social commerce such as social commerce, feature development, buying behaviour, and adoption have been examined. This has resulted in the application of different theories, theoretical models, and constructs for understanding factors driving or inhibiting the adoption of social commerce. 48.89% of the studies on social commerce have been conducted to examine user behavior [7]. Existing studies have frequently utilised and tested theories/models such as Technology Acceptance Model (TAM), Theory of Planned Behaviour (TPB), and Stimulus-Organism-Response (S-O-R) have introduced different antecedents of behavioural intention for examining consumer

involvement and adoption of social commerce. Previously, few attempts have been made to review social commerce research [7-9]. However, the focus of such articles is somewhat limited to reviewing theories and models, research themes, limitations and future research directions [7,8,10,11]. Recently, Sarker et al. 28] assessed the overall weight of various relationships (using weight analysis techniques) examined within social commerce adoption studies. In order to provide a more rigorous analysis for generating cumulative effect size for each pair of relationships, this submission is conducting a meta-analysis-based synthesis of results reported within the existing literature on social commerce adoption and usage. To achieve this overall aim, this research needs to accomplish the following objectives: Firstly, this paper has identified the relevant articles on social commerce and tested various constructs that generated the results related to social commerce adoption. Secondly, this paper has conducted a meta-analysis of existing results of social commerce studies and summarised the coefficient values, total samples and the number of studies.

There are several reasons to choose a meta-analysis approach for this research. For example, meta- analysis is one of the most systemic and reliable methods to conduct a literature review [12]. Meta-analysis offers a better approximation of the relationship amongst two predictors [12]and helps to resolve inconsistencies in research as well as identifying potential moderating or mediating variables [12]Meta-analysis allows the summarizing of large volumes of literature content into a single data set able to generate relevant conclusions. Also, meta-analysis considers significant and non-significant results to generate overall outcomes [13]. The remaining sections of this paper are structured as follows. Section 2 reports the research method to search and identify relevant articles. Section 3 presents the results from meta-analysis. Section 4 develops the discussion and the study is finally concluded in Section 5.

2 Research method

To find the relevant articles, This study searched through the Scopus database with the following set of keywords: “Social commerce” OR “S-Commerce” OR “F– Commerce” AND title ABS Key “Adoption” OR “Acceptance” OR “Usage” OR “Use Behaviour” OR “Intention” OR “Purchase”. Scopus contains a large number of interdisciplinary data related to science and technology. However, there are different databases available such as Web of Science, which search relevant studies. Moreover, Web of Science updates the data weekly while Scopus have daily update frequency, which generates more recent publications. Therefore, this study found updated journal publications though Scopus that are relevant to social commerce. The Scopus search returned 211 articles published between 2006 to 2020, which included 170 journal articles, 41 outputs from various conferences, and newspaper articles. In order to maintain the rigour and avoid duplication, this analysis included only journal articles. A total of 170 journal articles included 44 non-empirical studies and 126 empirical studies. Due to lack of quantitative values required, non-empirical studies (conference papers, literature reviews and editorial papers) have been excluded from this analysis.

This study further screened all 126 selected articles and searched for availability of path coefficient value (β) of different relationships and sample size that were required to

conduct the meta-analysis. Through this screening this study found that only 65 studies met the criteria so only these studies were retained for further analysis. To generate the results of all values into a single structure, This study began searching the relationships amongst independent variables and dependent variables of analysed constructs. These values were inputted in the Comprehensive Meta-Analysis (V3) software that was utilised to undertake this analysis.

3 Meta-analysis result

The study individually gathered coefficient values related to 489 relationships. Amongst the relationships of independent variable (IV) and dependent variable (DV), This study have considered the inclusion of the relationships that had been examined two or more times across 65 studies and eliminated relationships that were only found in just one study, as it is not appropriate to conduct meta-analysis for such relationships. After filtering all the constructs, this study have found the following as most commonly examined dependent variables: behavioural intention, trust, perceived usefulness, social support intention, attitude, relationship quality, urge to buy impulsively, use behaviour, social sharing intention. The outcome of meta-analysis highlighted the key independent and dependent variables, number of studies, total sample size, Average β value, 95% Low β value, 95% High β value, *z*-Value and *p*- value (effect size). This paper highlights the cumulative β values along with p- values related to different relationships.

3.1 Behavioural intention (BI) as a dependent variable

Behavioural intention or intention to purchase was examined across several studies of social commerce. Table 1 presents the meta-analysis results related to BI as a DV with various independent variables where This study found two or more studies reporting sample size and the coefficient values for a specific set of relationships. For example, trust is one of the vital independent variables of BI that was tested in 17 studies where one of the studies found negative effects of trust on BI, whilst 16 studies had reported a positive relationship. Within social commerce studies, trust has been used in multidimensional ways. For example, trust towards the community [5,14] and trust towards members [5,15]. However, this study consider trust as a single variable that influences BI within social commerce. Additionally, perceived usefulness and perceived ease of use appeared in eight studies. Social commerce constructs such as rating and reviews; forums and communities; recommendation and referral are a critical characteristics of social commerce studies. The social commerce constructs within BI found positive relationships in six studies and negative relationship in one study. Influence of social support, risk and subjective norms on BI have been examined in five social commerce studies. Important antecedents of BI namely attitude, information support, social presence, emotional support, enjoyment, facilitating condition, hedonic value, social influence effort expectancy, performance expectancy, flow, relationship quality and website quality have also been examined in two or more studies (see Table 1).

A total of 65 social commerce studies employed 20 independent variables that influence BI in two and more studies. Table 1 presents the summary of the meta-analysis of 20 average path coefficients between various IVs on BI. The combination of different statistical results constructed more authentic outcomes through meta-analysis. The meta-analysis results of different IVs on BI revealed that attitude is the strongest independent variable that influences BI with average β value=0.492 (p = 0.002). Additionally, website quality, flow and trust were found to have a strong impact on BI with average β value=0.434, 0.342 and 0.315 respectively, all with significant p values ($p<0.001$). Moreover, subjective norm (β=0.260), perceived usefulness (β= 0.256), hedonic value (β=0.232), relationship quality (β=0.230), social commerce constructs (β=0.226), performance expectancy (β=0.224) and social support (β=0.209) are found to exert a strong and significant influence on BI. Meta-analysis results show an overall non-significant influence of risk, informational support, social influence, perceived ease of use, effort expectancy and social presence on BI where the p values found greater than 0.05.

Table 1. Behavioural intention as a dependent variable

IV	**DV**	**#**	**sample Size**	**Average β**	**95% Low β**	**95% High β**	**Z-Value**	***p* Effect Size**
Attitude	BI	4	1093	0.492	0.188	0.710	3.025	0.002
Web Quality	BI	2	401	0.434	0.350	0.510	9.227	0.000
Flow	BI	2	401	0.342	0.252	0.426	7.082	0.000
Trust	BI	17	5,918	0.315	0.217	0.407	6.055	0.000
Subjective Norm	BI	5	1771	0.260	0.030	0.464	2.210	0.027
Perceived Usefulness	BI	8	2203	0.256	0.159	0.348	5.077	0.000
Hedonic Value	BI	2	587	0.232	0.154	0.307	5.690	0.000
relationship quality	BI	2	452	0.230	0.140	0.316	4.945	0.000
Social Commerce Constructs	BI	7	2195	0.226	0.101	0.345	3.489	0.000
Performance expectancy	BI	2	541	0.224	0.023	0.407	2.181	0.029
Social Support	BI	5	1487	0.209	0.094	0.317	3.546	0.000
Social Influence	BI	2	541	0.206	-0.028	0.418	1.729	0.084
Enjoyment	BI	2	394	0.185	0.087	0.279	3.678	0.000
Emotional Support	BI	3	563	0.172	0.090	0.251	4.087	0.000
Social Presence	BI	3	601	0.158	-0.248	0.517	0.758	0.448

Perceived Ease of Use	BI	8	2220	0.146	-0.156	0.424	0.947	0.344
Risk	BI	5	1830	-0.136	-0.274	0.007	-1.859	0.063
Facilitating Conditions	BI	2	541	0.129	0.044	0.211	2.990	0.003
Effort expectancy	BI	2	541	0.100	-0.116	0.307	0.905	0.366
Informationl support	BI	3	528	0.079	-0.007	0.164	1.811	0.070

[Legend: SCC-Social commerce constructs; IV-Individual variable; DV-Dependent variable; BI- Behavioural intention; *β*=Beta value; **#** - Number of studies]

3.2 Trust as a dependent variable

Within social commerce studies, trust (as an independent variable) has been examined in 17 individual studies. Also, its role as a dependent variable has been examined in five studies. The results from meta-analysis reveal that informational support has a significant influence on trust in all eight studies [e.g. 5, 3]. Further, emotional support and trust were also found to have positive and significant relationship in all seven studies [e.g. 16, 17]. Social commerce constructs (Rating and reviews; Forums and communities; Recommendation and referral) had a significant and positive influence on trust in all three studies [3, 18]. Finally, effects of familiarity and perceived usefulness on trust have been examined by four studies each [19, 20]. The meta- analysis of social commerce revealed that familiarity as an independent predictor has a strongest influence on trust and emotional support was found to have the least but also the most significant influence (see Table 2).

Table 2. Trust as a dependent variable

IV	**DV**	**#**	**sample Size**	**Average (β)**	**95% Low (β)**	**95% High (β)**	**Z-Value**	**p (Effect Size)**
Familiarity	Trust	2	734	0.527	0.087	0.795	2.302	0.021
Perceived Usefulness	Trust	2	625	0.362	0.146	0.546	3.199	0.001
Social Commerce Constructs	Trust	3	1130	0.348	0.234	0.452	5.719	0.000
Informationa l Support	Trust	8	2854	0.308	0.214	0.396	6.200	0.000
Emotional Support	Trust	7	2669	0.201	0.080	0.315	3.245	0.001

3.3 Perceived usefulness as a dependent variable

Perceived usefulness (PU) is one of the significant variables of the TAM model [21]. The analysis found that perceived ease of use significantly influences

perceived usefulness in five studies. The significant relationship between perceived ease of use and perceived usefulness is also shown by the original TAM model. Amongst five studies, one study [6] has found the negative effects of perceived ease of use on perceived usefulness. Subjective norm has also been found to influence perceived usefulness in five studies and all relationships are found to have significant and positive values. On the contrary, risk negatively influences perceived usefulness in three studies. However, in the social commerce studies, risk has been used in different forms such as social, psychological, financial, time and privacy that influence perceived risk and subsequently impacts perceived usefulness [22].

The outcome of the meta-analysis highlights that subjective norms and risk are stronger predictors than perceived ease of use. The relationship with subjective norm is significant whereas the effects of perceived ease of use and risk on PU were found to be non-significant (see Table 3).

Table 3. Perceived usefulness as a dependent variable

IV	DV	#	Total sample Size	Average (β)	95% Low (β)	95% High (β)	Z-Value	p (Effect Size)
Subjective Norm	PU	5	1661	0.118	0.066	0.169	4.447	0.000
Perceived Ease of Use	PU	6	1991	0.093	-0.065	0.247	1.155	0.248
Risk	PU	3	1374	-0.128	-0.475	0.253	-0.651	0.515

3.4 Social support (Informational and Emotional support) as a dependent variable

Social support is another relevant outcome variable utilised in social commerce studies. Several social commerce studies have identified that social support has two significant dimensions, namely informational support and emotional support that influences user to adopt social commerce [23,24]. Table 4 shows that social commerce constructs (i.e. rating and reviews; forums and communities; recommendation and referral) had significant positive influence on informational support in four studies (β = 0.683) and emotional support in three studies (β = 0.576). The influence of reputation and enjoyment on informational support have also been examined by two studies each. The results presented in Table 4 suggest a positive and significant influence of reputation on informational support (β = 0.163) while enjoyment had an overall non-significant (p = 0.310) influence.

Table 4. Social support (Informational and Emotional Support) as a dependent variable

IV	DV	#	Total sample Size	Average (β)	95% Low (β)	95% High (β)	Z-Value	p (Effect Size)

SCC	Informational Support	4	1414	0.683	0.444	0.831	4.583	0.000
SCC	Emotional Support	3	1200	0.576	0.297	0.764	3.674	0.000
Enjoyment	Informational support	2	2090	0.181	-0.169	0.491	1.015	0.310
Reputation	Informational support	2	2090	0.163	0.041	0.279	2.616	0.009

3.5 Use behaviour, urge to buy impulsively, social sharing intention, relationship quality, attitude and WOM intention as dependent variables

The meta-analysis also revealed other dependent variables namely use behaviour, urge to buy impulsively, social sharing intention, relationship quality, attitude and WOM intention (see Table 5) each with only one antecedent associated with them. For example, three studies found significant influence (β = 0.480) of purchase intention on use behavior [25-27]). Urge to buy impulsively as a DV is significantly influenced by impulsiveness with the average β value of 0.441. Social sharing intention as a DV is significantly influenced by trust (β =0.286). The relationship amongst social support and relationship quality also found to be significant. Similarly, the influence of perceived usefulness on attitude found to be significant. Finally, informational support had a nonsignificant effect on WOM intention in social commerce studies (see Table 5).

Table 5. Use behaviour, urge to buy impulsively, social sharing intention, relationship quality, attitude and WOM intention as dependent variables

IV	**DV**	**#**	**Sample Size**	**Average β**	**95% Low β**	**95% High β**	**Z-Value**	**Effect Size (p)**
Purchase Intention	Use Behaviour	3	870	0.480	0.144	0.717	2.713	0.007
Impulsiveness	Urge to buy impulsively	3	996	0.441	0.107	0.686	2.538	0.011
Trust	Social sharing intention	3	952	0.286	0.162	0.401	4.424	0.000
Social support	relationship quality	2	452	0.274	0.057	0.466	2.463	0.014
Perceived Usefulness	Attitude	2	598	0.208	0.013	0.388	2.091	0.037
Informational support	WOM Intention	2	293	0.003	-0.196	0.202	0.031	0.976

4. Discussion

The main purpose of this paper was to integrate and synthesis results from social commerce studies by employing the meta-analysis technique. The study integrated

the findings associated with relationships that have been examined in at least two or more times in social commerce research. The results of the review of existing constructs revealed that BI, trust, perceived usefulness, social support, use behaviour, urge to buy impulsively, social sharing intention, relationship quality, attitude and WOM-intention, are the major dependent variables examined in social commerce studies. Various antecedents of the dependent variables related to social commerce literature have been identified for estimating their cumulative effect and size. TAM, TRA, and SOR models and social support theory are frequently used in social commerce research [11]. The variables related to these models (such as perceived ease of use, perceived usefulness, subjective norms, performance expectancy and BI) have been tested in existing studies with significant results. However, this study shows that variables such as trust, risk, information and emotional support relationship quality have been integrated with the theories [as identified by 11] as additional (external) constructs demonstrating theoretical advances. The importance and role of integrating external variables (such as trust and risk) have previously been discussed in existing social commerce studies [22-29].

The meta-analysis of social commerce revealed important independent variables that have been shown to strongly influence the dependents variables. This study has highlighted the significant and non-significant relationships of each pair of constructs. The results highlight that website quality, flow, trust, hedonic value, perceived usefulness, relationship quality, emotional support, enjoyment, social support, social commerce constructs, attitude, facilitating condition subjective norm and performance expectancy have significant influence on Behavioural intention. These variables have directly and indirectly influenced consumers to adopt social commerce. For example, trust and social support on social commerce platform and community motivate consumer to adopt this technology. After the evaluation of online shopping technology, different factors were originated to create a comfortable, easy to use platform for consumers. The analysis also revealed that attitude, website quality and trust have a strong positive influence on consumers' behavioural intention where risk inhibits consumers intention to adopt social commerce platforms.

Additionally, informational support, social commerce construct, emotional support, perceived usefulness and familiarity, significantly affect trust in social commerce research. Impulsiveness towards the urge to buy impulsively, trust towards social sharing intention, social support towards relationship quality, subjective norm towards perceived usefulness, reputation and social commerce constructs towards informational support and perceived usefulness towards attitude found to be significant. However, the meta-analysis results also identified several non-significant relationships. For example, risk, informational support, social influence, perceived ease of use, effort expectancy and social presence are found to have non-significant relationships with BI. Additionally, enjoyment with information, risk with perceived usefulness and informational support with WOM intention also

found to have non-significant relationships. The meta-analysis also revealed that social commerce constructs (forums and communities, rating and reviews, referrals and recommendations) are the variables that strongly influence both informational support and emotional support. Additionally, emotional and informational support was found to have a strong influence on BI. Attitude, trust, website quality, perceived usefulness and subjective norms are utilised by more than one study as independent variables that strongly influenced consumer BI. A number of prior studies from the adoption and diffusion of various technologies (e.g. 30-41] and consumer behaviour [e.g. 42] have already shown relationships of attitude (e.g. 39,42,43-51], trust (e.g.30,52-60], perceived usefulness or performance expectancy [e.g. 13, 48,53-55,62-67] and website quality [e.g. 33-41,47-51,63] trends suggest that such factors are relevant and important across various studies focusing on differing technologies. Although the hypotheses amongst purchase intention towards use behaviour appeared in three studies, the average coefficient (β) value of 0.480 indicates a strong impact of BI on use behaviour. The results also shown a negative influence of risk construct on both BI and perceived usefulness.

This study is contributing by highlighting different antecedents that have been used in social commerce studies. This study has found that researchers repeatedly examined similar kind of constructs and models in the various context of social commerce. However, this research identifies different antecedents using meta-analysis and summarises the effect of those antecedents in the examination of social commerce. Thus, the antecedents such as cost, price value, hedonic motivation have been used in limited studies. Moreover, some of the antecedents such as anxiety, innovativeness, grievance redressal have not been used in the social commerce context. Hence, those antecedents found to be significant in various technology acceptance studies [57,58]. Therefore, future researchers should examine theories and variables in a different context of social commerce [47,67].

5. Conclusion

The meta-analysis accomplished the aim by underlining important variables and significant relationship. 65 empirical journal articles have been identified to collect relevant data (e.g. sample size and path coefficient value) for conducting meta-analysis. Through analysis of results reported in existing studies identified a total of ten dependent variables namely BI, trust, perceived usefulness, social support, use behaviour, urge to buy impulsively, social sharing intention, relationship quality, attitude and WOM-intention. These dependent variables were reported in two or more studies related to social commerce. The meta-analysis has resulted in the identification of variables such as attitude, web site quality, flow that although examined by fewer studies but they have a strong impact on BI. However, variables such as trust, perceived ease of use, perceived usefulness and social support were more frequently used to determine their influence on BI. Meta-analysis also shows that only three studies have examined effects of BI on actual behaviour. Given that understanding actual behaviour is critical for promoting consumer adoption of social commerce. Unlike any other research, this study also has some limitation. Firstly, this study did not consider conference papers due to lack of space and limited empirical research. However, conference papers may consider in future studies. Several studies of social commerce used behavioural intention as a proxy of actual behaviour. This is important that behavioural intention to use social commerce is not equal to actual behaviour. Therefore, future research should focus on identifying and examining the influence of relevant antecedents (including BI) on adoption and usage of social commerce.

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