

빅 데이터 분석을 활용한 소셜 네트워크 서비스 환경에서 구매의도에 관한 메타분석

남수태 · 진찬용*

A Meta-Analysis of Influencing Factors on Purchase Intention in Social Network Service Environment Utilized Big Data Analysis

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요 약

본 연구는 소셜 네트워크 서비스 환경에서 구매의도에 관한 문헌적 고찰을 통해 선행연구를 살펴보고 개념 모델에서 제시된 요인에 대한 실증 분석된 연구들을 메타분석하기 위해 2005년-2015년 국내 학술지에 게재된 논문을 연구대상으로 하였다. 국내 학술지에 게재된 논문만 여과하여 조건에 부합한 총 29편의 논문을 연구에 대상으로 선정하였다. 메타분석의 결과 만족과 구매의도 경로가 가장 큰 효과 크기로 나타났으며, 효과크기는($r = .455$)이었다. 두 번째 효과크기는 구전과 구매의도 경로에서 효과($r = .398$), 다음으로 신뢰와 구매의도 경로에서($r = .386$)로 나타났다. 그런데 상호 작용성과 구매의도 경로에서는 가장 낮은 효과크기($r = .342$)로 나타났다. 따라서 본 연구 개념 모델에서 제시된 예측변수는 약 22%-12% 설명력을 가지는 것으로 나타났다. 따라서 이러한 연구결과를 바탕으로 학문적 실무적 의의를 논의하였다.

ABSTRACT

This study will find meaningful independent variables for criterion variables that affect influencing on purchase intention in social network service, on the basis of the results of a meta-analysis. We reviewed a total of 29 studies related purchase intention in social network service published in Korea journals between 2005 and 2015, where a cause and effect relationship is established between variables that are specified in the conceptual model of this study. The result of the meta-analysis might be summarized that the highest effect size ($r = .455$) is the path from the satisfaction to the purchase intention. The second biggest effect size ($r = .398$) was found in the path between the word of mouth to the purchase intention. Next, the effect size ($r = .386$) in the path from the trust to the purchase intention showed very lower. Finally, the result of the meta analysis can be concluded that lower effect size ($r = .342$) Further, the predictive variables of this study have power of explanation about 22%-12% or more. Based on these findings, several theoretical and practical implications were suggested and discussed.

키워드 : 빅 데이터, 소셜 네트워크 서비스, 소셜 커머스, 메타분석, 구매의도

Key word : Big data, Social network service, Social commerce, Meta analysis, Purchase intention

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I . INTRODUCTION

SNS (social network service) are diffused in all the world as a new business model that combines these began to emerge. Among them is the issue immediately social commerce. The social commerce, traditional e-commerce can be meant for the type of combined with social networking services [1]. Also, social commerce is a kind of e-commerce utilizing social media and online media. The social commerce is a kind of e-commerce as new concept of utilizing social networking services such as Twitter, Facebook, etc. Further, the social commerce as type of social links, social web type, joint purchase and offline linked can be classified into four kinds of forms. The one of the four types such as joint purchasing is recognized as the typically of the social commerce. In particular, such as Facebook and Twitter, etc. based on the social networking services can be seen as the biggest difference among the existing joint purchasing [2]. Typical features of these social commerce were restricted within the number of persons or time to purchase certain products and services. These services must meet the conditions of limited the number of persons to purchase the specific product in an unprecedented discounts provided during the limited time. Thus, these activities as provided of promote products and purchasing information using social media were actively doing [2].

The overview of this study is as follows. In Chapter 2, it tries to review of the previous research of influencing factors on purchase intention in the social network service environment. Next, it tries to summarize the previous studies of the meta-analysis of purchase intention in the e-commerce environment. And, suggested the conceptual model of this study, was proposed the raw data used in the meta-analysis. In Chapter 3, based on the methodology of the meta-analysis, showed a method for calculating the effect size, the homogeneity-test, publication bias, and Fail-safe number. Finally, the effect size between the constructs presented in the conceptual model showed in Table 5, Table 6, Table 7, Table 8, and Table 9. Also, several

theoretical and practical implications were conclusion and discussions of this study.

II . PREVIOUS RESEARCH

Looking at the previous research related social network services, the study on “Consumers' Purchase Intention and Satisfaction of Social Commerce” [2] that showed with the factor affecting on the product purchase which the price discounted than the discount rate when the social commerce usage. The study on “The Effects of Selection Attributes and Purchase Intention by Consumption Tendency of Social Commerce User's” [3] that was reported the net such as establish the plan to further simplify the ordering process and the payment of the social commerce service. In addition, the method for reducing time using the social commerce service was showed more important. The study on “The Motives for Using Social Commerce and Satisfaction, Repurchase Intention” [4] showed that only ‘economy’ and ‘information acquisition’ factors are meaningful on motivation of use which affects satisfaction after using the social commerce. In addition, the effect of social commerce satisfaction on repurchase intention found out to be positive.

The searching of the previous research related meta analysis, The study on “A Meta-analysis of the Relationship between Mediator Factors and Purchasing Intention in E-commerce Studies” [5], supported the weighted mean value with the random effects model that the path from the satisfaction to the purchase intention showed the effect size ($r = .537$). In addition, the results of the study showed that the weighted mean value of the path from the trust to the purchase intention was the effect size ($r = .542$), and the weighted mean value of the path from the loyalty to the purchase intention appeared the effect size ($r = .380$), and the weighted mean value of the path from the commitment to the purchase intention looked the effect size ($r = .536$).

Thus, the study on “A Meta-Analysis for Exploring

Moderators of the Relationship between Online Trust and Purchase Intention” [6], supported the weighted mean value with the random effects model that the path from the online trust to the purchase intention showed the effect size ($r = .643$). In addition, the results of the study showed that the mean value with the fixed effects model of the path from the online trust to the purchase intention was the effect size ($r = .566$). The study on “A Meta-analysis of Relationship among Satisfaction, Trust, and Loyalty in E-commerce” [7], supported the weighted mean value with the random effects model that the path from the satisfaction to the loyalty showed the effect size ($r = .554$). In addition, the results of the study appeared that the weighted mean value with the random effects model of the path from the trust to the loyalty was the effect size ($r = .552$).

A meta analysis refers to a statistical literature synthesis method from the quantitative results of many known empirical studies. The meta analysis can be described as expressed analysis. The methodological approaches and characteristics of meta analysis are as follows. In terms of quantity, a meta analysis is to use the summary statistics to integrate the data simply. In addition, the effect size is calculated by using different research methods and results to measure. As it can be compared with the integration, the effect size is converted to a common unit. Thus, a meta analysis can be derived conclusion commonly. In addition, a small difference between studies can be neglected for generalization even when different effect sizes are used [8].

This study will find meaningful independent variables for criterion variables that affect influencing on purchase intention in social network service, on the basis of the results of a meta analysis. We reviewed a total of 29 studies related purchase intention in social network service published in Korea journals between 2005 and 2015, where a cause and effect relationship is established between variables that are specified in the conceptual model of this study. The conceptual model is shown in Fig. 1.

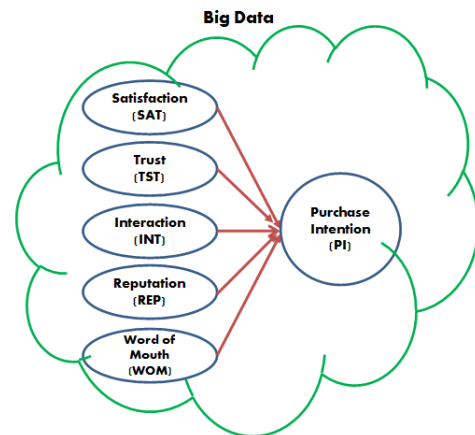


Fig. 1 Conceptual model

The papers included in this study meta-analysis were identified using keywords that are “SNS Purchase Intention”, specifying on RISS, DBpia, eArticle in database articles of social science. A total of 145 research papers was found, consisting of 71 papers from RISS, 28 papers from DBpia and 26 studies from eArticle through the searching.

This study managed with research studies published in Korea academic journals with the study criteria and then targeted a total of 29 papers for this study purpose. The following Table 1, and Table 2 are the list of authors and journals based the raw data for the meta-analysis.

III. META ANALYSIS

Based on the methodology of meta analysis, was utilized the CMA (comprehensive meta analysis) program developed by Biostat was utilized. The homogeneity test in the meta analysis was performed on these research subjects to find that the effect sizes of multiple independent studies are values extracted from the individual population. Statistical null hypothesis for the homogeneity test, showed that no difference between the estimates of the effect size of the results of the individual studies. When the null hypothesis is accepted, a meta-analysis can be performed to obtain an estimate of

the comprehensive the effect size by integrating the estimated the effect sizes. For interpretation of homogeneity test, the Q values of the test statistics based on chi-square distribution issued. The Q values are the same with the chi-square distribution. The results of the heterogeneity test are shown in Table 3.

Table. 1 Authors and sam. paper used meta analysis

N	Authors	Sam.
1	H. Y. Kang & B. S. Kim (2013)	264
2	A. R. Go & S. H. Kim (2014)	329
3	B. S. Goak (2013)	196
4	G. S. Kim and J. H. Lee (2012)	167
5	D. J. Kim & D. U. Hwang (2012)	322
6	S. H. Kim et al. (2011)	307
7	J. M. Nam & S. Y. You (2013)	169
8	S. H. Park et al. (2011)	307
9	J. W. Park & P. S. Song (2015)	148
10	J. Y. Park & H. J. You (2014)	300
11	G. H. Bae & H. Y. Moon (2012)	208
12	S. S. Seo & J. H. Lee (2011)	259
13	M. H. Shin et al. (2012)	210
14	D. H. Ahan & G. J. Han (2011)	407
15	M. H. Oh & I. Kim (2014)	250
16	Y. Wang & S. D. Kwon (2012)	140
17	S. H. Lee & M. S. Kim (2012)	312
18	Y. J. Lee & N. H. Jho (2014)	205
19	J. H. Lee (2013)	168
20	J. H. Lee (2013)	160
21	H. S. Lee (2012)	199
22	H. S. Lee & G. Y. Nam (2014)	525
23	Y. J. Jho & H. S. Yamg (2012)	400
24	Y. J. Jho & S. W. Seo (2013)	128
25	H. K. Jin (2014)	357
26	J. G. Cha & C. H. Jin (2014)	317
27	S. L. Han et al. (2012)	363
28	E. K. Han et al. (2011)	295
29	S. N. Hong & H. J. Lee (2014)	264
Sum of Samples		7,676

Q -values in paths $SAT \rightarrow PI$, $TRU \rightarrow PI$, $INT \rightarrow PI$, $REP \rightarrow PI$, and $WOM \rightarrow PI$ is 148.3, 130.4, 46.7, 20.3,

2.9 if and $p = .5$, chi-squared critical value were 23.7, 14.1, 11.7, 9.5, 9.5 respectively. Consequently, the Q values were bigger than the limit value, the null hypothesis of homogeneity were rejected. Because it was not extracted from the same population, it could establish estimation as consisting of heterogeneous data set. In other words, the sizes of effects for all paths are regarded as being over the standard error. In this heterogeneous case, we calculate the average the effect size by using calibrated inverse variance weighting values with the random-effects model, not the fixed-effects model [9, 10].

Table. 2 Journals and var. paper used meta analysis

N	Journals	Variables
1	The K. J. of S.	Rep., Int., I. Q.
2	The R. J. C. C.	Intention
3	Nor. A. T. R.	Trust, Flow
4	J. the K. C. A.	Satisfaction
5	J. of T. R.	Satisfaction, I. Q.
6	J. of Business R.	Sat., Trust etc.
7	K. A. of Arts M.	Sat., W. of M. etc.
8	J. of Business R.	Trust, Int. etc.
9	I. J. T. & H. R.	Rep., Int., I. Q.
10	J. of Human E.	Satisfaction
11	J. of T. & L. R.	Interaction
12	The E-business S.	Sat., Trust
13	J. the K. C. A.	Sat., Interaction
14	J. F. M. S. of K.	Sat., Reputation
15	J. K. S. of F. D.	Intention
16	J. I. T. A. & M.	Satisfaction
17	J. I of T. & L. R.	Satisfaction
18	The R. J. C. C.	Trust, Flow
19	The E-business S.	Satisfaction
20	K. R. A. of D. I.	Satisfaction, Trust
21	J. of the K. C. A.	Trust, Interaction
22	K. A. S. of H. A.	Use Intention
23	J. of K. S. C. & T.	Sat., Intention
24	J. of the K. S. C.	Usefulness
25	I. of S. C. E. & D	Word of Mouth
26	J. the K. C. A.	Sat., Int. etc.
27	J. of Product R.	Information Search
28	K. j. A. & P. R.	Satisfaction
29	K. S. for I. I.	Satisfaction

In summarizing the results of previous studies in the specific field, a matter of publication bias or the file drawer problem can be occurred when the normalization of the sample does not include all of the previous studies in the field, but it only represents part of the previous studies. This implies that papers published in journals have a high likelihood of positive results as compared to unpublished studies. The result of calculating Fail-safe number is shown in Table 4.

Table. 3 Results of homogeneity test

Paths	df	Critical region	Q	p
SAT → PI	14	23.7	148.3	.000
TRU → PI	7	14.1	130.4	.000
INT → PI	5	11.7	46.7	.000
REP → PI	4	9.5	20.3	.000
WOM → PI	4	9.5	2.9	.000

Q: Q statistics, df: degree of freedom

Table. 4 Results of calculator for fail-safe number

Paths	N	d, r	Nfs	dc
SAT → PI	15	.455	19.13	.2
TRU → PI	8	.386	7.44	
INT → PI	6	.342	4.26	
REP → PI	5	.371	4.28	
WOM → PI	5	.398	4.95	

N: number of studies, d, r: effect size, Nfs: number fail-safe, dc: determination coefficient

IV. CONCLUSION and DISCUSSIONS

This study reanalyzed the research papers with the purpose to classify the results of the previous studies that causal relationships among satisfaction, trust, interaction, reputation and word of mouth in the social network service environment utilized big data analysis published Korea academic journals. A total of 29 research papers was filtered with the study criteria from five databases and examined the causal relationships among in the social network service proposed the conceptual model of this study. As shown in the collected data set (see Table 5, Table 6, Table 7, Table 8, Table 9), the values of the

effect size using the inverse weighted mean as method approach with the random-effects model are provided in the paths from SAT to PI, from TRU to PI, from INT to PI, from REP to PI, and from WOM to PI.

Table. 5 The effect size in path SAT and PI

SAT → PI							
No	N	Corr	L-L	U-L	Z-v	P-v	Q
4	167	.19	.04	.34	2.52	.01	261
5	322	.43	.34	.52	8.28	.00	261
6	307	.30	.19	.40	5.36	.00	261
7	169	.41	.28	.53	5.67	.00	261
10	300	.33	.23	.43	5.99	.00	261
12	259	.70	.63	.76	13.81	.00	261
13	210	.42	.31	.53	6.49	.00	261
14	407	.42	.34	.50	9.07	.00	261
16	140	.51	.38	.63	6.65	.00	261
17	312	.23	.13	.34	4.17	.00	261
19	168	.76	.69	.82	12.74	.00	261
20	160	.47	.34	.59	6.46	.00	261
26	317	.31	.21	.41	5.74	.00	261
28	295	.58	.50	.65	11.37	.00	261
29	264	.52	.42	.60	9.20	.00	261
Random(r)		.46	.37	.53	9.17	.00	261

Table. 6 The effect size in path TRU and PI

TRU → PI							
No	N	Corr	L-L	U-L	Z-v	P-v	Q
3	196	.24	.10	.36	3.33	.00	6.45
6	307	.30	.19	.35	6.26	.00	6.45
8	307	.23	.19	.32	7.44	.00	6.45
12	259	.75	.09	.66	2.47	.01	6.45
18	205	.38	.15	.61	3.04	.00	6.45
20	160	.37	.19	.58	3.55	.00	6.45
21	199	.52	.24	.57	4.28	.00	6.45
23	400	.15	.21	.54	4.20	.00	6.45
Random(r)		.39	.21	.54	4.20	.00	6.45

First, the result of the meta analysis suggests that the higher the effect size ($r = .455$) is the path from the satisfaction to the purchase intention. Therefore, it is clear that the satisfaction factor is the antecedent of the purchase intention factor and shows an explanatory power of 22%. The effect size in the path from the

satisfaction to the purchase intention showed similar and slightly lower with the effect size in the research of Nam et al. [5], and S. Y. Baek [6]. Second, the effect size in the path from the word of mouth to the purchase intention looked the effect size ($r = .398$), no similar studies could not be compared. Thus, it is clear that the word of mouth factor is the antecedent of the purchase intention factor and lists an explanatory power of 17%. Next, the effect size ($r = .386$) in the path from the trust to the purchase intention showed very lower than the effect size in the research of Nam et al. [5], and reports an explanatory power of 16%. Consequently, this result is probably due to differences in e-commerce research environment.

Table. 7 The effect size in path *INT* and *PI*

<i>INT → PI</i>							
No	N	Corr	L-L	U-L	Z-v	P-v	Q
6	307	.28	.17	.38	4.98	.00	5.42
8	307	.28	.20	.35	7.04	.00	5.42
11	208	.23	.20	.33	7.76	.00	5.42
13	210	.57	.19	.49	4.09	.00	5.42
21	199	.52	.24	.51	4.95	.00	5.42
26	317	.14	.20	.47	4.54	.00	5.42
Random(<i>r</i>)		.34	.20	.47	4.54	.00	5.42

Table. 8 The effect size in path *REP* and *PI*

<i>REP → PI</i>							
No	N	Corr	L-L	U-L	Z-v	P-v	Q
1	264	.49	.39	.58	8.70	.00	4.62
6	307	.27	.15	.58	3.09	.00	4.62
8	307	.27	.19	.48	4.24	.00	4.62
9	148	.52	.25	.51	5.14	.00	4.62
14	407	.31	.26	.47	6.40	.00	4.62
Random(<i>r</i>)		.37	.26	.47	6.40	.00	4.62

Table. 9 The effect size in path *WOM* and *PI*

<i>WOM → PI</i>							
No	N	Corr	L-L	U-L	Z-v	P-v	Q
6	307	.36	.26	.46	6.65	.00	2.92
7	169	.41	.30	.46	8.70	.00	2.92
8	307	.36	.31	.43	10.95	.00	2.92
25	357	.46	.35	.45	14.27	.00	2.92
26	317	.39	.35	.44	15.99	.00	2.92
Random(<i>r</i>)		.40	.35	.44	15.99	.00	2.92

Third, the effect size in the path from the reputation to the purchase intention showed the effect size ($r = .371$), no similar studies could not be compared. Therefore, it is clear that the reputation factor is the antecedent of the purchase intention factor and shows an explanatory power of 15%. Finally, the result of the meta analysis can be concluded that lower effect size ($r = .342$) in the path from the interaction to the purchase intention. The interaction factor is the antecedent of the purchase intention factor and reports an explanatory power of 13%. By the way, no studies with similar the meta analysis such as this study in Korea journals, cannot be compared for interaction, reputation and word of mouth of the effect size.

Further, the predictive variables of this study have power of explanation about 22%-12% or more. In conclusion, the result of the study is significant in that we can estimate the effect sizes on the basis of path constructs. Theoretical and practical implications of this study are as follows. Consumer satisfaction was listed to have the highest explanatory power on purchasing intention in social network service environment. Increasing the satisfaction of the consumer can be seen the increase in the purchasing behavior. Consumer of the word of mouth, trust, and the corporate reputation have been determined the increase in the purchasing behavior. Thus, increasing the attitude of these factors can be seen in the increase of purchasing behavior. In addition, we expect that the results of by this study would be touchstones to researchers in similar studies.

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