

An Empirical Study on the Influence of WeChat Using Motivation on Academic Performance

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Abstract: WeChat, one of the most widely used social media, still plays a crucial role in knowledge learning as well as resource sharing. Naturally, it is of vital importance to improve college students' academic performance via WeChat. Given that, this paper discusses the influence of WeChat users' motivation among college students on two dimensions of academic performance (namely competence performance and social performance). The corresponding results reveal positive influence of motivations for convenience, information acquisition as well as social relationship maintenance on academic performance, in which the third one remains the most significant impact. Moreover, the study enriches the research of social media in the field of learning and education, providing theoretical basis for the improvement of academic performance of college students via WeChat.

1. Introduction

Social network has been considered as the main way for college students to acquire, disseminate and share knowledge, a public space to gather and carry out learning activities^[1] as well as also a favorable tool in educational activities^[2]. And closely related to status of job hunting^[3], the learning outcomes (namely academic performance) of college students using social media directly affect the competence of graduates, further influencing their both performance and career development in a long run after graduation^[4]. However, scholars are divided over the relationship between college students' social media use and academic performance. According to the motivation theory, academic performance, the corresponding behavioral outcomes, may be more influenced by motivations, which is closely bound up with behavior. Thus, it is highly possible that taking motivation as the antecedent variable may contribute more to the exploration of the relationship between social media use and academic performance. As one of the most widely used social media, WeChat has also attracted scholars' attention to teaching activities with some studies like English blended learning as well as ideological and political teaching via WeChat platform^[5,6]. Based on this, this study focuses on the impact of WeChat users' motivation among college students on their academic performance with the purpose to promote the exploration of E-learning innovation in domestic universities.

2. Previous Literature Review and Hypothesis

2.1. Motivation for Using Social Media Among College Students

As regards college students' WeChat using motivation, some scholars studied different social media from multiple standpoints. From the perspective of needs, college students' motivations for using social media, Zhang Yonghua and Nie Jing (2013)^[7] found, remain principally "cognitive needs" and "emotional needs". On the other hand, the media needs of college students using WeChat were studied from the perspective of journalism by Wang Lingning (2014)^[5]. Fan Ying and

Wu Yue (2016)^[8] held, as did other scholars, that convenience and informativity stand the major motivations among young users on WeChat public platform, whereas cognitive and habitual motivation, Huang Chuyun and Peng Qilin (2014)^[9] believe, to a great extent, stimulate college students to use WeChat public platform. Later, Yao Changjia (2018)^[10] found that motivation for social media use among vocational college students primarily stems from social needs and entertainment needs. Combining social media with learning, Fan Zhe et al. (2015)^[11] found in his further study the existence of information motivation, instrumental motivation, entertainment motivation as well as social identification among the motivations of university students' willingness to interact with each other through social media platforms.

Given all that, combined with the research on social media use motivation and academic performance among college students, this study believes that there are three major WeChat using motivations. First, convenience motivation. Users' behavior, Davis believes, may well be affected by convenience provided, unencumbered by time and space in the course of learning. Hence, WeChat is considered to facilitate their interaction, information acquisition and continuous learning, which will further enhance decision-making and cognitive abilities of college students. Second, information acquisition motivation. Learning on WeChat platform is more likely to encourage college students to follow some WeChat public accounts or individual ones with the intention of information acquisition and resource sharing. Third, motivation for social relationship maintenance. As a social medium, the most important feature of WeChat is sociability. Therefore, it is expected for college WeChat users to maintain a good relationship with their friends in contacts, communicate with a group of like-minded talents, and acquire relevant knowledge in Moments, thus improving their individual and social ability.

2.2. The Connotation of Learning Performance

The earliest study on academic performance domestically believes that academic performance refers to academic records and learning efficiency of class groups^[12]. At present, there are two widely recognized definitions of academic performance. First, the definition from the perspective of outcomes. Academic performance was defined by Gao Fengfen and Lei Tianan (2008)^[13] as the learning achievements and learning efficiency in learners' completion of a certain task at a certain time and under certain conditions, which are naturally considered as outcomes of the interaction between individuals and the surroundings. Second, the definition from the perspective of process. Wang Dong (2003)^[14] deemed that academic performance is a series of changes in students' learning behavior and quality development generated by learning activities within a given time.

As for the measurement of academic performance, GPA (Grade Point Averages) or academic records are commonly adopted in studies domestically and abroad. However, it is worth noting that academic performance does not equal academic records, the latter only a quantitative result but far from the representation the whole performance. Bloom believed that learning outcomes mainly reflect three kinds of abilities: namely interpersonal skills, intellectual learning skills as well as problem-solving and execution skills. In 2004, Association for Educational Communications and Technology emphasized academic performance in its definition of educational technology, pointing out that academic performance is the ability of learners to use newly acquired knowledge and skills. Li Binghuang (2005)^[15] pointed out that under the quality education system, the importance of knowledge in the evaluation of academic performance is reduced, whereas the status of students' creativity and development is increased, which was recognized by Xie Youru et al. (2015)^[16], that is, the improvement of college students' practical ability should be attached to the study of academic performance. Obviously, there are certain limitations in the evaluation of academic performance by academic records only. And Hao Jianchun (2005)^[17] divided academic performance into learning performance in competence and learning performance in sociability, which are called "competence performance" and "social performance" in this paper, in which competence performance is mainly reflected in the impact on professional knowledge, decision-making, thinking and analysis ability, whereas social performance mainly on interpersonal relations, communication skills, literal expression, coordinate negotiation and cooperation with others.

2.3. The Relationship between Social Media Use and Academic Performance

The relationship between social media use and academic performance in existing studies mainly appears in foreign literatures, many of which exemplify foreign popular social media like Facebook and Twitter, while, with little attention paid in China. As far as the relationship between the two is concerned, no unified conclusion has been reached at present, and the following three views mainly exist. First, the use of social media has a negative impact on academic performance. Kirschner and Karpinski (2010)^[18] showed that the GPA of Facebook users, with less time spent on study, was lower than that of non-users as well. The research results of Giunchiglia et al. (2018)^[19] uncovered the negative impact of social media use on academic performance. Second, there is no relationship between social media use and academic performance. Kolek and Saunders (2008)^[20] found that the use of Facebook was not correlated with GPA, which was verified by Pasek and Hanqittai (2009)^[21] by exemplifying Facebook. Taking Facebook and Twitter as examples, Alwagait et al. (2015)^[22] found that there was no linear relationship between social media use and GPA in their study on the relationship between students' average weekly use of social media and GPA through 108 respondents online. Third, the use of social media has a positive impact on academic performance. Junco et al. (2011)^[23] found that encouraging college students to use Twitter can improve their GPA; Joseph (2015)^[24], in his preliminary study on the impact of social media on learning results, believed that social media has a positive impact on both students and teachers under the mixed MOOC mode. Also, under the guidance of meta-analysis method, Chinese scholars Ren Gaofer and Chen Yaoyao (2020)^[25] investigated the impact of social media use on academic performance, revealing a moderate positive correlation between social media use and academic performance, which means the use of social media is conducive to improvement of academic performance.

2.4. The Relationship between Social Media Use Motivation and Academic Performance

There is a certain degree of linkage mechanism between motivation and behavior (Biggs, 2003)^[26]. And motivation is the inner power that induces, promotes and maintains individual learning activities (Zimmerman, 2000)^[27], by which people are driven to engage in any practical activity. That means motivation harbors more desirable predictive power for behavior results. Based on that, this study believes that the relationship between social media use and academic performance should start from motivation. Naturally, the influence of WeChat use on academic performance may be better explained by taking WeChat use motivation as the antecedent variable.

Barton et al.(2021)^[28] found that motivation as a predictor boasts a more significant factor of academic achievement than social media use. The research by Al-Rahmi (2018)^[29] showed the existence of positive influence of social media satisfaction, convenience and perception of usefulness on college learners' collaborative learning and contributions, which will ultimately affect their academic performance. And the adoption of WeChat among college students is mainly for its simplification, acquisition of knowledge and enhancement of judgment and problem-solving skills. It is believed that the employment of WeChat will positively affect their interaction with peers, thus improving their academic performance (Al-Rahmi et Al., 2015)^[30]. In this process, peer-assisted learning is likely to be promoted in the improvement of language proficiency, communication and coordination, and social competence with timely raise of the question and seeking solutions. Accordingly, the following hypotheses are proposed:

H1: Convenience motivation will positively affect competence performance (H1a) and social performance (H1b);

H2: Information acquisition motivation will positively affect competence performance (H2a) and social performance (H2b);

H3: Motivation for social relationship maintenance will positively affect competence performance (H3a) and social performance (H3b);

Based on the above, this study constructs the following research model(as shown in Figure 1)

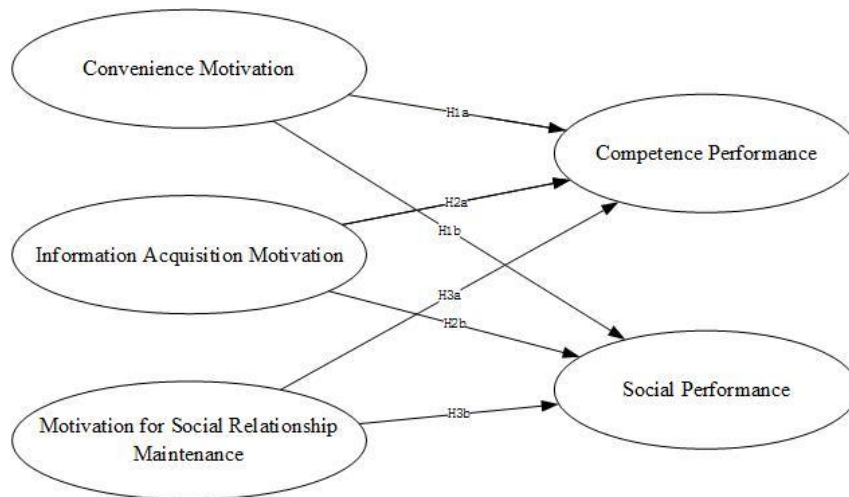


Figure 1 Research model.

3. Research Design

3.1. Questionnaire Design

The questionnaire design of this study mainly includes the investigation of the respondents' demographic characteristics, WeChat using behavior, the dependence on WeChat, WeChat using motivation and academic performance. The literature is basically cited on the concept measurement project and is fine-tuned in combination with this study. The measurement of college students' motivation to use WeChat is based on the study of Fan Ying and Wu Yue (2016), as shown in Table 1. And the measurement of academic performance, referenced by the research of Hao Jianchun (2005), is from two aspects: competence performance and social performance, as shown in Table 2. The questionnaire options employ the Likert5 scoring method, 1-5, respectively, "strongly disagree, disagree, neither agree nor disagree, agree, strongly agree."

Table 1 Measurement indexes of learning motivation.

	Items
Convenience Motivation	C1.I use WeChat because it is convenient and fast
	C2.WeChat can actively push content to me,simplifying the process of knowledge acquisition.
Information Acquisition Motivation	I1.I think WeChat is a good tool of information resource integration
	I2.I can receive and share some interesting knowledge information through WeChat.
	I3.There is a lot of useful knowledge and information on the WeChat public platform that I can learn a lot from.
Motivation for Social Relationship Maintenance	S1.WeChat strengthens my connection with my family and friends
	S2.I can better maintain interpersonal relationship through WeChat.
	S3.I can express myself better through WeChat.

Table 2 Measurement indexes of academic performance.

	Items
Competence Performance	A1.The use of WeChat has increased my professional knowledge and concepts a lot.
	A2.The use of WeChat has developed my decision-making ability.
	A3.The use of WeChat has improved my thinking ability.
	A4.The use of WeChat has sharpened my analytical ability.
Social Performance	B1.The use of WeChat has significantly improved my interpersonal relationships.
	B2.The use of WeChat has greatly improved my communication skills.
	B3.The use of WeChat has greatly improved my writing skills.
	B4.The use of WeChat has improved my communication and coordination ability.

3.2. Data Collection

In this study, three universities were selected in Lanzhou, Gansu Province, with the snowball method adopted for sampling. A total of 400 questionnaires were distributed and 373 valid questionnaires were obtained after recycling and eliminating invalid ones, with an effective rate of 93.25%.

4. Empirical Analysis

4.1. Test of Reliability and Validity

Reliability is considered as the reflection of the internal consistency and stability of the questionnaire. It is usually expressed by the coefficient, Cronbachs α , which is generally greater than 0.7, but can be relaxed to 0.6. From the test results, the coefficient is above 0.6, indicating desired internal reliability of the questionnaire. The term validity aims to manifest the accuracy of the measurement of latent variables by the items in the questionnaire, including content-related validity and construct-related validity. The previous scales adopted in this study guarantee good content-related validity. Construct-related validity embraces convergence validity and discriminant validity. Factor loading analysis employed by Smartpls software showed that the factor load coefficient of each observed variable is above 0.5, the average extraction variance of each latent variable is greater than 0.5, and the combined reliability of each variable was higher than 0.8, indicating preferable convergent validity of the questionnaire. Further calculation displays that the square root of the mean extraction variance of each latent variable is greater than the correlation coefficient between each variable and other variables, indicating that the questionnaire keeps superior discriminative validity. (refer to table 3 and table 4)

Table 3 Test indexes of the measurement model.

latent variable	Measured Variable	Loading Coefficient	T	AVE	Composite Reliability	Cronbachs α
Convenience Motivation→	C1	0.74	13.30	0.70	0.82	0.60
Convenience Motivation→	C2	0.91	41.10			
Information Acquisition Motivation→	I1	0.76	20.35	0.61	0.83	0.68
Information Acquisition Motivation→	I2	0.77	19.46			
Information Acquisition Motivation→	I3	0.83	33.35			
Social Performance→	B1	0.81	25.42	0.73	0.92	0.88
Social Performance→	B2	0.88	64.48			
Social Performance→	B3	0.85	29.96			
Social Performance→	B4	0.83	40.99			
Convenience Motivation→	A1	0.81	36.94	0.70	0.90	0.86
Convenience Motivation→	A2	0.83	33.78			
Convenience Motivation→	A3	0.87	36.08			
Convenience Motivation→	A4	0.84	39.68			
Motivation for Social Relationship Maintenance→	S1	0.71	16.29	0.68	0.86	0.76
Motivation for Social Relationship Maintenance→	S2	0.86	46.10			
Motivation for Social Relationship Maintenance→	S3	0.85	42.57			

Table 4 Discriminant validity test table of latent variables.

	1	2	3	4	5
1.Convenience Motivation	<u>0.84</u>				
2.Information Acquisition Motivation	0.46	<u>0.78</u>			
3.Social Performance	0.43	0.43	<u>0.85</u>		
4.Competence Performance	0.36	0.41	0.73	<u>0.84</u>	
5.Social Relationship Maintenance	0.38	0.46	0.54	0.51	<u>0.82</u>

Note: The data on the diagonal line is the square root of the AVE value of the variable, and the rest is the correlation coefficient between the variables.

4.2. Path Analysis and Hypothesis Testing

In this study, based on structural equation modeling analysis, SmartPLS software was used to test the model. As can be seen from table 5, the path coefficient from convenience motivation to social performance is 0.23, and the T-value is 5.22, the path coefficient to capability performance 0.14 with the T-value 3.05. The path coefficient from information acquisition motivation to social performance was 0.13, and the T-value was 2.65, the path coefficient to capability performance 0.12 with the T-value 2.10. The path coefficient from motivation for social relationship maintenance to social performance was 0.41, and the T-value was 8.70, the path coefficient of capability performance 0.43 with the T-value 8.73. If the critical value of 1.98 at the significance level of 0.05 is taken as the criterion, the T-value in the above path tests is greater than 1.98, so hypothesis 1, hypothesis 2 and hypothesis 3 are all supported. In the model, the R² values of competence performance and social performance are 31.7% and 37.4%, respectively, indicating preferable explanatory power of the model and integration between models and the survey data.

Table 5 Path coefficient test.

	Path Coefficient	T Value
Convenience Motivation→Social Performance	0.23	5.22
Convenience Motivation→Competence Performance	0.14	3.05
Information Acquisition Motivation→Social Performance	0.13	2.65
Information Acquisition Motivation→Competence Performance	0.12	2.10
Motivation for Social Relationship Maintenance→Social Performance	0.41	8.70
Motivation for Social Relationship Maintenance→Competence Performance	0.43	8.73

5. Summary

In this study, the hypotheses verified by the establishment of equation model and questionnaire survey show the positive impact of WeChat using motivation among college students on their academic performance, which is different from the conclusions of previous studies, among which, for example, the study of Ban Hongyi et al. (2017) and Li Xiaoying (2017) showed despite the development of social ability online, college students' social ability in real life was weakened. Therefore, the subsequent research is expected to conduct a comparative study on the impact of social skills online and offline. In addition, social relationship motivation remains the most striking influence on academic performance. To sum up, students should be guided properly to stimulate their motivation to make the best use of WeChat, improving their academic performance. First, schools are expected to release information related to students' life, study and employment inside and outside the campus through WeChat, making it more convenient for learners to obtain information; and the combination of WeChat and traditional teaching methods tends to break the limitation of learning space and time. Besides, as far as teachers and students are concerned, learning materials and resources sharing on the WeChat platform and the establishment of related topics for discussion are inclined to sharpen students' thinking and communication skills. Second, the top priority is expected to be focused on stimulation of students' social relationship maintenance motivation based on a virtual community for online social learning. Meanwhile, schools could

organize online discussions, dialogues and exchanges on topics that students are interested in, so that these learners' social learning is likely to be developed, which can in turn expand knowledge, broaden horizons, strengthen a relationship, expand interpersonal network, improve individual skills, thus honing their academic performance.

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