The Research on the Social Diffusion Power of Step-Counting Apps: The Case Study of "We Chat Sports"

Lingqi Chen*, Sijia Wang, Yunyi Zhu
Leshan Normal University, Leshan, Sichuan, China
**Corresponding Author.*

Abstract: The transformation of technology has significantly changed traditional social interactions, giving rise to various applications. As a popular social networking application, WeChat has gained widespread application through its step-counting feature. Step-counting apps leverage their online capabilities to enhance users' social abilities both online and offline via the internet. This paper conducts a questionnaire survey and in-depth interviews on the usage of "WeChat Sports," finding that it can enhance the public's social capabilities both online and offline, thus demonstrating its diffusion power. Based on the survey results, this paper proposes strategies related to the diffusion power of such step-counting applications.

Keywords: Step-counting; APP; Social Diffusion Power; WeChat Sports

1. Introduction

With the rise of new media, the structure of rural communication has undergone significant changes[1]. Different media show a trend of integration in terms of communicators, content, means of communication, and audience interaction[2]. In China, after 2012, sports-related apps flourished, with step-counting apps enhancing users' frequency of exercise and social capabilities through their online capabilities and the internet.

This study conducted research through questionnaire surveys and in-depth interviews on the use of "WeChat Sports," finding that the application could enhance users' social capabilities online and offline to some extent. However, it also suggests adopting a variety of content recommendation engines, applying data analysis, and tag strategies to optimize the content recommendation process[3], to further improve user engagement and content productivity.

2. Research Subject and Methodology

2.1 Research Subject

Given the large user base of WeChat and the ease of obtaining research data, this study focuses on "WeChat Sports," an embedded app within WeChat.

2.2 Research Methodology

This study employs questionnaire surveys and in-depth interviews as research methods. Considering the gender and age of respondents, middle-aged men aged 50 and young women aged 23 were selected for in-depth interviews. Based on the results of the in-depth interviews, the questionnaire survey was designed. The respondents were stratified by age for sampling, which unearthed the characteristic features of different groups (and predicted the capacity of each layer in the sampling frame[4]). After stratified sampling, questionnaires were distributed in a snowball manner, over a period of two months, collecting 325 valid responses.

3. WeChat Sports Users' Utilization

3.1 Basic Usage of WeChat Sports

According to the analysis, the use of this app is not directly related to demographic variables, and the results were not significant. Among the 325 individuals surveyed, 48.62% did not use the app, mostly because they had "just heard of it." When asked whether they would use it in the future, 60.13% responded "uncertain." However, there is a significant correlation between family members using the app and the user's own future use.

3.1.1 Broad user distribution

This survey had a wide reach, covering Beijing, Shanghai, Chongqing, Guangdong, Jiangsu, Hubei, Shandong, Shaanxi, Henan, and other

provinces and cities, as well as some overseas Chinese friends. The specific regional distribution is shown in Figure 1.

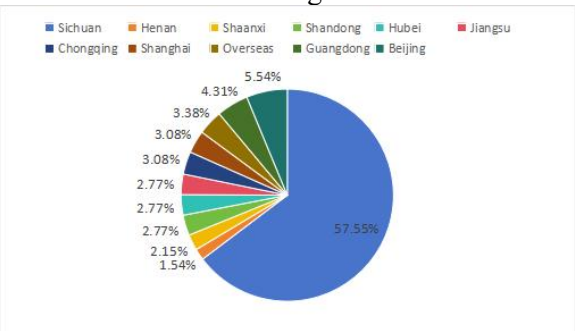

Figure 1. Distribution Map of the Surveyed Group's Regions

3.1.2 Mainly middle-aged and young adults

As shown in Figure 2, teenage and elderly users account for only 3.38% of the total, while middle-aged and young adults between 18 and 50 years old make up about 93% of the total. Thus, the majority of the users in the surveyed population are middle-aged and young adults, especially young adults (18 to 30 years old), who account for 76% of the total number. Additionally, the ranking of attention increases with age. However, whether a WeChat user utilizes "WeChat Sports" is not directly related to their age.

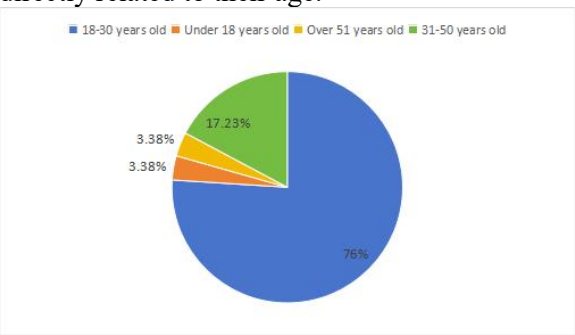

Figure 2. Age Distribution of the Surveyed Group

3.1.3 Female users predominate

Among the surveyed population, the proportion of those who use the app is roughly half and half, but among gender ratios, female users account for 61.54%, while male users account for 38.46%. This indicates that within the surveyed population, the proportion of female users is significantly higher than that of male users.

3.1.4 Users come from a wide range of professions

User professions include students, corporate office workers, employees of various units, lawyers, teachers, farmers, internet industry workers, finance industry workers, and the unemployed, covering almost all occupations. Among these, students, employees of various units, and corporate office workers make up the majority, as shown in Figure 3.

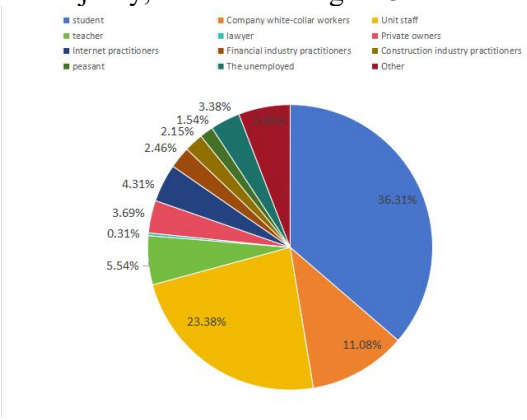

Figure 3. Occupation Distribution of Surveyed Group

3.1.5 Users generally have higher education levels

According to the results, the users generally have a higher level of education, with 46.46% holding a bachelor's degree and 21.85% having a master's degree or higher, as shown in Figure 4.

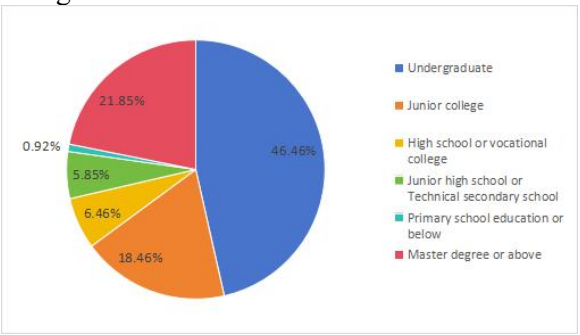

Figure 4. Education Level Distribution of Surveyed Group

The reasons users choose to use the app are not directly related to demographic factors, indicating that the app does not target specific demographics precisely, nor does it push content based on demographic characteristics. The main reason for using the app is due to recommendations from friends and family. Only 7.78% of users started using the app because of advertisements, indicating insufficient efforts in advertising promotion.

4. "WeChat Sports" Diffusion Power

As a communication medium, the app primarily disseminates social efficacy through two methods: online network diffusion and offline interpersonal and mass communication.

4.1 Online Diffusion Power

The app opens up a social network for users through the internet, connecting them in a dispersed, networked structure of communication. Users can expand their social network and increase intimacy online through the app. The results are shown in Table 1.

Table 1. Independent Samples T-Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Standard Error	95% Confidence Interval for Difference	
									Standard Error	Lower Bound
15. In your usage experience, has it increased intimacy with people in your circle (family)?	Assuming equal variances	279.623	.000	56.835	323	.000	6.138	.108	5.925	6.350
	Assuming unequal variances			58.436	166.000	.000	6.138	.105	5.930	6.345

From Table 1, it can be seen that there is a significant correlation between "using 'WeChat Sports'" and "increased intimacy." This indicates that the app can enhance social connectivity among users.

The app also sets up step count rankings for users and sends daily step count ranking lists. Users can pay attention to their own ranking and also like other users' activities. According to the analysis, there is a significant correlation between "liking other users" and "increased intimacy with friends" (as shown in Table 2). The app indeed narrows the intimacy between users through network dissemination.

Table 2. Test of Intimacy Correlation

Correlation				
			Increased Intimacy with Friends	Liking Other Users
Spearman's rho	Increased Intimacy with Friends	Correlation Coefficient	1.000	.929**
		Sig. (2-tailed)	.	.000
		N	309	309
	Liking Other Users	Correlation Coefficient	.929**	1.000
		Sig. (2-tailed)	.000	.
		N	309	309
**. Correlation is significant at the 0.01 level (2-tailed).				

Additionally, test results indicate a positive and significant correlation between "number of friends in the circle" and "attention to ranking" (as shown in Table 3). This suggests that individuals with a larger number of WeChat friends tend to pay more attention to rankings. The interviewee, Ms. Xia, who has over 300 people in her circle, mainly consisting of family, friends, and classmates, checks her ranking daily, likes users who rank high, and shares this with others (as shown in Table 3).

Table 3. Test of Correlation with Attention to Ranking

Correlation					
				Number of Friends in Circle	Attention to Ranking
Spearman's rho	Number of Friends in Circle	Correlation Coefficient		1.000	.883**
		Sig. (2-tailed)		.	.000
		N		309	309
		Resamplingb	Deviation	.000	.000

			Standard Error of Mean		.000	.020
			95% Confidence Interval	Lower limit	1.000	.839
				Upper limit	1.000	.919
	Attention to Ranking	Correlation Coefficient			.883**	1.000
		Sig. (2-tailed)			.000	.
		N			309	309
		Resamplingb	Deviation		.000	.000
			Standard Error of Mean		.020	.000
			95% Confidence Interval	Lower limit	.839	1.000
				Upper limit	.919	1.000
**. Correlation is significant at the 0.01 level (2-tailed).						
b. Resampling results are based on 1000 samples unless otherwise specified.						

Survey results show that as age increases, so does the concern for rankings. From Figure 5, it is evident that individuals under 18 are not very concerned with rankings, whereas those over 51 show more interest in rankings. Interviewee Mr. Chen mentioned that he would like users who reach 10,000 steps. Liking serves a dual purpose: one is to show care for these friends and family members; the other is to encourage them to exercise more and to acknowledge their daily achievements. Ms. Xia mentioned that sometimes she shares screenshots of the step count rankings in her circle, receiving comments and likes from other users.

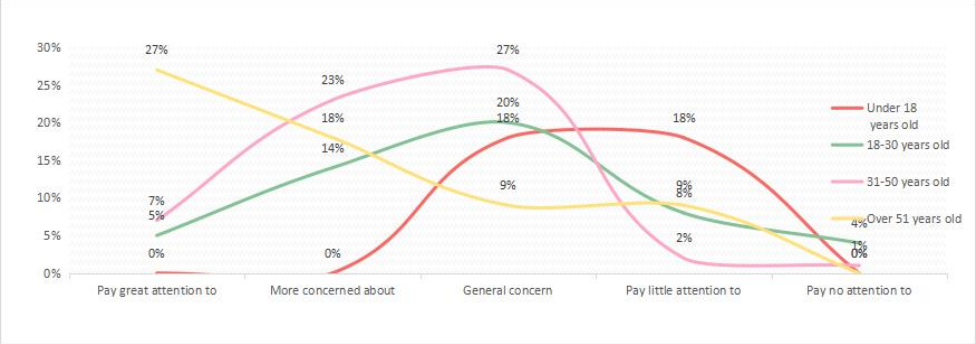

Figure 5. Age and Percentage of Concern for Step Count

Furthermore, users who receive likes can respond with a like to others, thereby enhancing intimacy through interaction and improving social connectivity. Thus, the app expands social connectivity among online users and strengthens its own diffusion power through the mechanism of "user attention to rankings—interaction with other users."

4.2 Offline Diffusion Power

Offline, the app enhances intimacy among users and broadens the scope of dissemination through both unidirectional interpersonal communication and bidirectional mass communication. Users increase offline intimacy by sharing the app in person or by inviting other users to participate in activities, thus expanding the range of dissemination.

Table 4.Test of Correlation between Increased Intimacy and Recommendation

Correlation				
			Increased Intimacy with Friends	Would Recommend to Family and Friends
Spearman's rho	Increased Intimacy with Friends	Correlation Coefficient	1.000	.910**
		Sig. (2-tailed)	.	.000

		N	309	309
	Would Recommend to Family and Friends	Correlation Coefficient	.910**	1.000
		Sig. (2-tailed)	.000	.
		N	309	309
**. Correlation is significant at the 0.01 level (2-tailed).				

As shown in Table 4, sharing "WeChat Sports" with family and friends who have not activated this feature increases intimacy. The results indicate a significant correlation between "increased intimacy" and "recommendation to family and friends." This suggests that the app expands social connectivity among users through word-of-mouth interpersonal communication.

Table 5.Test of Correlation between Achieving Step Goals through Invitation and Increased Intimacy

Correlation				
			Increased Intimacy with Friends	Inviting Family, Friends, or Colleagues to Achieve Step Goals Together?
Spearman's rho	Increased Intimacy with Friends	Correlation Coefficient	1.000	.920**
		Sig. (2-tailed)	.	.000
		N	309	309
	Inviting Family, Friends, or Colleagues to Achieve Step Goals Together?	Correlation Coefficient	.920**	1.000
		Sig. (2-tailed)	.000	.
		N	309	309
**. Correlation is significant at the 0.01 level (2-tailed).				

From Table 5, it is clear that "inviting relatives and friends to achieve a goal together" and "increased intimacy" are significantly correlated. This is because the app not only tracks the user's step count but also records the step counts of other users in their social circle. Increasing step counts together with relatives and friends not only facilitates physical exercise but also enhances closeness, bridging the gap between users. The app expands its offline dissemination through user invitations and sharing, as Mr. Chen mentioned, by inviting his close friends and family to increase their step counts together to reach his daily step goal.

4.3 Information Alienation

This study also discovered the phenomenon of information alienation during the dissemination process.

Information alienation refers to the loss of original content by the subject during the production, dissemination, and utilization of information, becoming enslaved or dominated by it. In this context, it means users resort to unconventional methods to increase their step count, or "step count fraud," to dominate the ranking list. Among the surveyed population, 16.77% admitted to engaging in step count fraud for the sake of rankings. Among these users, "increasing exercise duration" was the most common method, followed by "shaking the phone." The main reasons for step count fraud were "to enhance health awareness" and to satisfy "psychological needs," as shown in Figures 6 and 7.

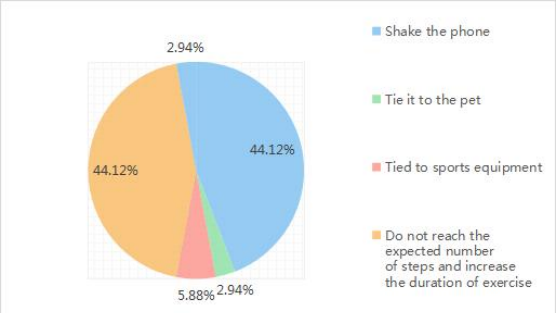

Figure 6. Methods of Step Count Fraud

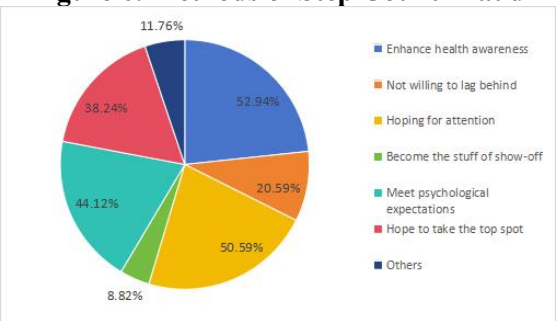

Figure 7. Reasons for Step Count Fraud

To understand whether step count fraud for

rankings aligns with the "Uses and Gratifications Theory," a test was conducted. The results, as shown in Table 6, indicate a significant correlation between "the use of WeChat Sports by other family members and friends of the user" and "the reasons for step count fraud." This suggests that users are influenced by rankings, paying great attention to their position on the leaderboard, even leading to a mentality of comparison and triggering step count fraud behavior.

Table 6. Test of Correlation between Family and Friends' Use of WeChat Sports and Step Count Fraud

Correlation				
			Are other members of your family or friends using WeChat Sports?	What is the reason for your step count fraud? (To meet psychological expectations)
Spearman's rho	Are other members of your family or friends using WeChat Sports?	Correlation Coefficient	1.000	.168**
		Sig. (2-tailed)	.	.002
		N	325	325
	What is the reason for your step count fraud? (To meet psychological expectations)	Correlation Coefficient	.168**	1.000
		Sig. (2-tailed)	.002	.
		N	325	325
**. Correlation is significant at the 0.01 level (2-tailed).				

5. Suggestions for Enhancing the Diffusion Power of "WeChat Sports"

Cyberspace is the forefront of ideological, cultural exchange, and development[5]. "WeChat Sports" is an application embedded within "WeChat," which connects walking activities to the WeChat social network, turning them into quantifiable, visible numbers[6]. However, the social network of this app is limited to the existing user structure and does not form new social networks with strangers. Among the surveyed 325 people, 48.62% have not used the app, indicating that its social dissemination still mainly occurs within closed circles. Therefore, the following methods can be used to enhance its dissemination power:

5.1 Change Perceptions, Expand the User Base

Among the surveyed population, some users "have just heard of" the app and 60% of users are uncertain whether they will use it in the future. Therefore, changing the perceptions of these users becomes key. According to the results, whether family members use "WeChat Sports" is significantly related to whether a user will use "WeChat Sports" in the future. For these users, it is crucial to continue leveraging the large user base of WeChat itself, correctly understand the characteristics of family members, and guide family users to actively share with their family members.

Additionally, it is possible to collect preferences and usage patterns of these users and their family members and friends within a reasonable scope. Timely pushes can be made in other functional modules, such as pushing messages related to "WeChat Sports" in the WeChat Moments module, especially the step count information of closely connected family members and friends.

2. Strengthen Participation to Enhance User Engagement

Continue to enhance the app's functionality to increase user engagement. In the user's homepage, there are "People Followed" and "Donate Steps" modules. In the first module, interactions among users can be increased through likes and comments, such as adding a comment feature on someone's homepage or daily step count, which not only retains user stickiness but also strengthens their sense of participation.

Additionally, the app could be linked with other functional modules. For example, users could post activity-related updates on the app's homepage, which could then be synchronized to WeChat Moments. This way, users are not

only consumers and disseminators but also content publishers.

3. Enrich Resources to Boost Content Productivity

Today, big data and artificial intelligence technologies are profoundly influencing and transforming communication forms[7]. Therefore, these technologies could be utilized within the user group that has already used the app. Through information reception effectiveness and presence, virtual reality content development could be provided with event and scenario design optimization solutions to enhance user experience and product competitiveness[8]. Adding other functional modules and enriching resources can improve content productivity. For example, timely sharing of sports-related tweets on the homepage can allow users to acquire sports-related knowledge by reading these tweets. Transforming the monotony of monitoring friends' step counts into acquiring sports-related resources can enhance the app's utility.

Furthermore, in the "Activity Records" module, where users can view daily step counts and likes received, the dimension of "Activity Records" could be expanded to include users' walking distance, speed, step length, floors climbed, active energy, and calories burned, allowing users to understand their daily activity more comprehensively through data. The introduction of artistic elements and innovation in interactive design could also spark residents' interest and engagement[9]. Additionally, a human-computer collaboration feature could be introduced to overcome human capacity limitations through technological advancements[10].

6. Conclusion

Based on the data analysis of social efficacy, this study concludes that step-counting apps, represented by "WeChat Sports," mainly expand and strengthen their social diffusion power through online network dissemination, while offline, they rely on unidirectional interpersonal communication and bidirectional mass communication. Among the surveyed population, 48.62% have not activated this feature, with the majority being those who have "just heard of it" or "find it meaningless." Therefore, to expand the social diffusion power, step-counting apps should further analyze this group of people and possibly increase advertising efforts. At the same time, further development and improvement of the app could be tailored for different age groups and according to gender, aiming to build a diffusion power ecosystem.

References

[1] Qin Xiuqi, Lin Yan. The Diffusion Power of Rural Broadcasting in the Fight against Epidemic. Youth Journalist. August 2020: 82

[2] Su Fanbo. The Mechanism of Broadcast Hosts' Diffusion Power Generation in the Context of Media Convergence. Contemporary Communication. May 2016: 110

[3] Liu Moxiao. Advanced Personalized Content Recommendation to Enhance User Engagement. Youth Journalist. April 2023: 102

[4] Zhang Weiqun, Cheng Pengdong. Estimation Method Based on Dynamic Adjustment of Unit Weights in Layered Sampling of "Three New" Enterprises. Statistics and Information Forum. March 2024: 3

[5] Hai Qian, Zhang Zhe. Strategies to Enhance the Guidance Power of Cyberspace under the Trend of "Pan-entertainment". Modern Communication. January 2024: 92

[6] Jiang Hong, Long Xiaoxu. Between "Visible" and "Invisible": Individual Life and Digital Interaction in WeChat Sports. Modern Publishing. May 2022: 11

[7] Yu Guoming. Content Technology: The New Productivity of Future Media. Research on Educational Media. May 2020: 6

[8] Qu Qianwen; Che Xiaoping; Qu Chenxin; Li Jinru. Study on the Presence of Virtual Reality Users Based on Information Perception. Computer Science. September 2022: 147

[9] Guan Tian. Study on the Artistic Interaction Design of Urban Environment and User Participation. New Chu Culture. August 2023: 46

[10] Yu Guoming. Content Technology: The New Productivity of Future Media. Research on Educational Media. May 2020: 8

