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## **Social Influence and Multiple Choices: Evidence from Virtual Products Adoption**

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# Social Influence and Multiple Choices: Evidence from Virtual

## Products Adoption

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**Abstract:** This study examines the effect of social influence on the adoption of multiple products for the same category (basic choice and upgrade choice). Based on a unique large-scale data set from an online game community and a competing-risk model, the results show that social influence could significantly elevate users' product adoption on both products, but the effect on users' upgrade product adoption is greater than that on users' basic product adoption. Furthermore, users with middle social status are more susceptible to others' upgrade product adoption than users with low or high social status. In addition, network density positively moderates users' susceptible to the effect of social influence in upgrade product adoption decisions. These results provide pivotal theoretical and practical implications and should be considered by marketers that aim to predict and affect users' adoption of multiple products.

Keywords: social influence, basic product vs. upgrade product, product adoption, competing-risk model

### 1. RESEARCH QUESTION

Social influence has been documented to substantially affect users' product adoption behavior through informative influence and normative influence<sup>[1]</sup>. However, prior research about social influence mainly focused on only one product or two products from different categories, its role on users' adoption decision on multiple choices for the same type of product has been much less. In reality, firms often provide a series of products for a specific type. Understanding the effect of social influence for these firms is beneficial because social influence is cost less than other promoting campaigns. Therefore, our first goal is to examine whether the effect of social influence differs across different choices of the same product (In the following, we define them as "basic product" and "upgrade product") and which choice the social influence is more relevant in users' adoption.

In addition, user-level characteristics and user network-level characteristics are key moderating factors in their adoption decisions. Existing studies showed that users with middle status are more susceptible to adopt a product if the product can help achieve higher status<sup>[2]</sup>. Furthermore, network density also had a positive impact on social influence, for it facilitate the formation of social norm<sup>[3]</sup>. However, these findings are limited to the context of offline community or only one product, whether those factors generate the same effect when users are offered with multiple competing choices is unknown. Accounting for this, our second goal is to examine the moderator role of social status and network density on social influence in the online context of multiple choices.

### 2. MAJOR RESEARCH FINDINGS

To accomplish our objects, we cooperated with a world leading online game firm and conducted a field study in a massive multi-participant online role-playing game. In order to examine users' actual purchasing behavior, we design two virtual communicating tool (basic and upgrade) of a specific product for users to purchase by real money. At the truncation of the experiment, we collected all the log data of 133748 gamers who purchased at least one product and the log data of 8977650 gamers involved in the game.

Following prior studies, we employ a frailty model to estimate a user's purchasing hazard<sup>[4]</sup>. The dependent variable in our model is a categorical variable which captures user's product adoption choice.

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Independent variables include social influence, user's social status and the network density. Moreover, we also control for various variables that can affect user's adoption as well.

Table 1 presents the parameter estimation results. Since Model 3 has the best fit in terms of log-likelihood (-2LL) and AIC, for brevity, we discuss the parameter estimates of that model only.

**Table 1. Main results**

	Model 0		Model 1		Model 2		Model 3	
	Basic	Upgrade	Basic	Upgrade	Basic	Upgrade	Basic	Upgrade
Tie strength	0.004***	0.004***	0.003***	0.003***	0.002***	0.003***	0.003***	0.004
Homophily	2.404**	1.561**	2.492**	1.597**	0.867**	0.042**	0.949**	0.050**
Interaction time	-0.123**	-0.082**	-0.127*	-0.085**	-0.014*	-0.054*	-0.059*	-0.038*
Virtual currency	6.06E-07**	9.45E-07***	1.10E-07*	3.66E-07**	1.05E-06*	1.23E-06**	7.37E-07***	4.05E-07***
Tenure	-1.02E-08*	6.76E-08**	-1.17E-07*	-7.12E-08**	1.15E-07*	1.16E-07*	1.20E-07*	5.75E-08*
Gender	-0.332*	-0.369*			-0.771*	-0.506	-0.705*	-0.540
Social influence (H1)			0.012***	0.016***	0.011***	0.013***	0.017**	0.020**
Social status <sup>2</sup>					-0.001**	-0.001*	-0.006*	-0.001***
Social status					0.106*	0.093*	0.161**	0.068*
Network density					0.107**	0.403***	0.252**	0.512*
Social influence * Social status <sup>2</sup> (H2)							0.000227*	-0.00017*
Social influence * Social status							-0.00187**	0.00192**
Social influence * Network density (H3)							0.013***	0.041***
-2LL	15361.210	16464.712	15198.665	16339.082	13432.066	14042.732	12749.171	13610.920
AIC	15373.210	16476.712	15212.665	16353.082	13452.066	14062.732	12775.171	13636.920

Since Model 3 has the best fit, for brevity, we discuss the parameter estimates of that model only. As table 1 show, social influence has a positive and significant effect on users' adoption of both basic and upgrade product, but the effect of social influence on users' adoption of upgrade product is greater than their adoption of basic product. As to the role of social status, the results suggests that users with middle social status are more (less) susceptible to others' upgrade (basic) product adoption than users with high or low status. For the role of network density, we find that although network density has a significant and positive moderating effect on social influence over users' adoption of both products, the moderating role is greater on upgrade choice over basic one.

### 3. CONCLUSIONS

This article extends extant research about social influence by differentiating multiple products for the same category to gain deeper insight into the effect of social influence on product adoption and the moderator role of characteristics of users and networks. Results in our research illustrate the differential role of social influence on different versions of the same product, further, document the moderator effects of social status and network density, which have broad theoretical and practical implications.

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