

Research on the Influence of Socialization Strategy of Online Educating Platform on Users’ Learning Behavior

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Abstract—This paper researches on the influence of socialization strategies on users’ learning behavior in online educating platform. According to the organizational socialization theory, four typical socialization strategies of brand communities are studied: information feedbacking, interactive supporting, member educating, and information providing. The study reveals that the above four strategies all have positive influences on social identification, and then promote learning frequency and time. The study also illustrates that the economic stimulus (i.e., extrinsic motivation) of platform has influences on the behavior (i.e., learning frequency and time) of users on it. This research sheds light on that extrinsic motivation of learning has enhancing/crowding out effect on the internal motivation of users.

Keywords—socialization strategy, identification, brand communities, organizational theory

1 Introduction

During the New Crown epidemic, offline teaching and learning activities were extended to online learning platforms. The emergence of various online learning platforms has facilitated students’ learning online. The Annual Data Report on China’s Online Learning Platforms 2021 shows that “users of various online learning platforms in China have reached 200 million monthly active online users, and online learning platforms have become an important place for people to learn knowledge.”

In fact, online learning platforms are a special kind of virtual brand community, where students are the users in the community. Many platform managers therefore adopt the management strategy of a virtual branded community to manage the platform’s users on a day-to-day basis. However, most online learning platforms have not been as successful as expected. In fact, research shows that 60% of students who join an online learning platform for the first time leave the platform permanently. Most online learning platforms fail due to member attrition, lack of content and insufficient

interaction. This makes it an important research question as to how the organizers of an online learning platform should run the learning platform and keep it alive.

For online learning platforms, companies, as the organizers of online learning platforms, need to socialize the users of the platform. This is to make users accept the values of the learning platform, establish good social relationships with other platform members, and then integrate into the online learning platform community.

Based on traditional organizational socialization theories and socialization strategies in emerging online organizations, this paper examines four typical socialization strategies: the impact of information feedback, interactive support, member education and provision of information on the socialization of community members and the impact of member socialization on future learning behavioural intentions (frequency of card punching and out of learning, length of clocking in and out of learning) respectively. The study found that the four socialization strategies of the companies had a positive impact on the formation of community identity, which in turn positively influenced the frequency and length of time users clocked in and out of learning online. At the same time, community identity plays a different mediating role in different socialization strategies, and there is a crowding-out effect of financial incentives on the influence of community identity on users’ card punching learning behaviour.

Drawing on the relevant theories of organizational behaviour, this paper initially explores the strategies of enterprise management of online learning platforms and their effectiveness from the perspective of organizational socialization; secondly, it broadens the study of organizational socialization. Previous research on organizational socialization has generally focused on the socialization of members in physical organizations, however, with the increasing number of virtual organizations based on the Internet, the socialization of members in virtual organizations has begun to receive some scholars’ attention, but there is no research that has tested the effectiveness of socialization strategies in online learning platforms. Considering the characteristics of online learning platforms, this study examines the influence mechanism and role of socialization strategies in virtual organizations, thus broadening the research on organizational socialization to a certain extent. Thirdly, the research in this paper may reveal, to a certain extent, the research on the process and mechanism of user socialization in online learning platforms. In terms of practical value, enterprises can adopt appropriate socialization strategies in online learning platforms to improve the socialization of platform users and promote the frequency and length of their online learning.

2 Relevant theories

2.1 Punch card learning

With the deepening of online communication, the meaning and usage of “punch card” has broken through the original linguistic limitations, and now the meaning of “punch card” is derived as “a way to record oneself in order to change some bad habits or develop one’s good behaviour”. It can also be interpreted as “the firmness or approval of a young person’s opinion about something or an attitude”. In the context of young people’s use of the term, ‘clocking in’ is a way of recording behaviour in order to gain recognition or understanding of the culture of the circle [1]. For example, “clocking in”

on online learning platforms, also known as checking in to complete a learning task, means that people use their smartphones to show their learning or reading by sharing links to social networking software with information such as images, videos and geographical locations related to their learning.

2.2 Organizational socialization theory

Organizational socialization is a well-established concept in organizational behaviour and refers to the process by which individuals develop an understanding of organizational values, organizational competencies, desired behaviours and social knowledge in order to become part of an organization and assume organizational roles. The socialization process is the main process by which members adapt to a new job or organization. When a new employee enters an organization, he or she is faced with a completely new environment [2]. The role tasks, codes of conduct and behaviour, organizational norms and culture required by the new organization may be completely different from those they have experienced before, and this is when the new employee needs to understand the organization, adapt to it and integrate into the process. In online learning platforms, the socialization of users is also an important concern for researchers. Socialization is of great importance to both users and learning platforms. In the case of users, socialization can help to improve role clarity, satisfaction, organizational commitment, learning effectiveness and so on [3]. In terms of the platform, socialization can help users integrate into the platform as quickly as possible, increase their online learning activity, reduce user churn and improve the performance of the platform.

2.3 Socialization in online learning platforms

Traditionally, online learning platforms are socially connected, specialised and geographically unrestricted learning communities. However, in recent years, some scholars have pointed out that online learning platforms in the social media environment accommodate a wider range of members and are therefore more heterogeneous and have looser community groups. How to socialize the ‘Tourist’ of an online learning platform into an internal member of the platform and make them active contributors to the learning platform is an important issue [4]. The perspective of organizational socialization offers new ideas to address this issue. Recent research has shown that online learning platforms, like real organizations, have a socialization process in which their users join the platform. This means that the study of socialization is expanding from physical organizations to virtual organizations. At the same time, many scholars have pointed out that the socialization strategies of online learning platforms are based on individual socialization strategies, compared to the institutionalised socialization strategies of traditional brick-and-mortar organizations.

3 Conceptual framework and hypotheses

3.1 Information feedback

Providing feedback to members by the organization is an important way to accelerate members’ role awareness and integration into the organization. In business

organizations, providing new members with knowledge and information about job tasks and job roles can help to improve their level of adaptation, and Ostroff et al. (2017) found that obtaining information about the organization from superiors and colleagues improved members' level of adaptation. Feedback from superiors to subordinates can facilitate members' learning, increase their competence and facilitate the integration of new members into the organization. In an online learning platform, when new members receive feedback on their content contributions and interactions within the platform, it will facilitate their understanding of the norms of the platform's operation, and if the feedback received is positive, users will consider their contributions to be valuable and worthy of continued investment [5]. Thus, when a user contributes valuable content to an online learning platform and is more socially active, the platform will often provide that user with virtual medals or even material incentives, all of which are positive feedback from the platform on the user's engagement with the platform. In addition to positive feedback, when members of the platform violate the operating rules of the online learning platform, they are subject to certain penalties (such as being banned from speaking for a period of time), i.e. negative feedback. This feedback may help users to improve their participation and role clarity, and thus better integrate into the online learning platform [6].

3.2 Interactive support

Interactive support refers to online learning platforms organizing interactive activities for users to facilitate communication between platform members. Users often join online learning platforms because they are seeking knowledge or sharing knowledge, and interaction is an important behaviour for platform members to participate in online learning platforms. Research in the field of organizational behaviour has shown that social and interactive activities organized by the platform management can help users build interpersonal relationships, dispel uncertainty about the platform and gain a sense of support for the platform, thus facilitating the faster integration of new users into the platform after they enter the organization. In online learning platforms, by organizing and facilitating interactive activities between members, platform organizers help platform members gain feedback on their roles in the platform and a sense of belonging to the organization, clarify the guidelines in interpersonal interactions and consciously follow the norms and discipline of the platform. Therefore, facilitating interaction between users of online learning platforms is also one of the common socialization strategies used by platform managers.

3.3 User education

User education refers to the educational activities conducted by online learning platforms for actual and potential users in order to improve their product knowledge and usage related skills. User education plays an important role in user socialization, helping users to use the platform smoothly, enhancing their satisfaction with the platform, improving role clarity and competence in their interaction with the platform, and improving the relationship between users and the platform [7]. User education is widely used in areas with more complex products, such as finance and technology

products. Online learning platforms combine user information needs with the introduction of platform knowledge and are an important channel for user education. Through user education activities, the platform can meet users’ needs for knowledge, enable them to use the platform correctly and realise its value.

3.4 Online learning platform identity

Mael et al. (2019) define social identity as “an individual’s perception of actually or symbolically belonging to a group”, and online learning platform identity is the user’s identification with an online learning platform as a group. The online learning platform identity is the user’s identification with an online learning platform as a group. Recent research has identified three components of social identity: perceptions of group identity, emotional involvement or commitment, and perceived importance of group identity [8]. The socialization of members of an online learning platform may be significantly more difficult than that of members in traditional organizations, and the management of an online learning platform must internalise users’ motivation to participate in the platform in order to maintain a stable and active platform atmosphere and ensure the success of the platform.

3.5 Information feedback and user platform identity

The organizational socialization literature suggests that in order for members of an organization to acquire organizational norms and subsequently adjust their behaviour, individuals must have access to adequate and accurate information about their work group and the organization to which they belong, and Sluss et al (2020) found that by providing employees with information and feedback, companies can help them to take on their roles early, and that these activities provide a corresponding role identity (part of organizational identity). Specifically in online learning platforms, as users are able to receive better information feedback from the platform, they are more motivated to adjust their learning behaviours to conform to the platform’s requirements, form the role needs of the platform users and integrate into the platform [9]. In particular, when the platform provides continuous feedback on the value of platform users’ contributions to the online learning platform, the status of the platform and the recognition of platform users’ contributions to the content of the platform, it will stimulate the platform users’ sense of honour in the platform and increase their level of platform identification. Therefore, the hypothesis is proposed that:

H1: Information feedback in online learning platforms can increase the level of community identification of platform members.

3.6 Interactive support and user platform identity

The need for social interaction is also an important factor that drives users to join online learning platforms. The shared norms, reciprocity principles and platform rituals formed in platform interactions connect platform members to form a collective sense of community, satisfy users’ interpersonal ties and gain social identity, while

forming users' identification with the platform, increasing their level of commitment to the platform and forming a long-term relationship between users and the platform. The strategy of platform interaction will facilitate the building of relationships among platform members, thus enhancing the interpersonal ties between members and increasing their identification and belonging to the platform [10]. The organization of various types of interactive activities in the platform provides a good opportunity for interaction between different users, which facilitates the establishment of relationships between users and other users, forming interpersonal ties and platform embedding, and increasing the willingness of users to have a long-term relationship with the platform. Therefore, it can be hypothesized that providing support and assistance for frequent communication and exchange between users will increase their identification with the online learning platform.

Therefore, the following hypothesis is proposed.

H2: Interactive support in online learning platforms can increase the level of community identification of platform users.

3.7 User education and user platform identity

The literature on user education suggests that user education can help users build product awareness, acquire skills to use the product, enhance the quality of interaction with the company and achieve user socialization [11]. In online learning platforms, enterprises improve users' platform experience through education on platform knowledge and other aspects, which can increase users' satisfaction with the platform and their perception of the positive value of the platform; at the same time, user education helps users gain sufficient knowledge of the platform to improve their ability to participate in the platform and promote their willingness to integrate into the platform, resulting in their identification with the platform.

Therefore, the hypothesis is proposed.

H3: Member education in online learning platforms can improve the level of community identification of platform members.

3.8 Provision of information and user platform identity

The provision of information is a means of extending knowledge to other users in an online learning platform, and is intended to inform platform users about the platform. Therefore, this study argues that in online learning platforms, on the one hand, by constantly updating users with information about the platform and recommending knowledge to platform members, platform managers can increase their understanding of the platform, enhance their confidence and ability to complete their learning tasks, and thus increase their sense of identity; on the other hand, the useful information provided by the platform manager can make the platform members form a closer relationship with the platform and thus gain a higher sense of identity and belonging.

Therefore, the hypothesis is proposed.

- H4: The provision of information in online learning platforms can increase the level of community identification of platform members.

3.9 Platform identification and users' card-punching learning behaviour

Numerous online learning platforms have failed due to the loss of platform members and too low activity levels, and the punch card learning behaviour of platform members plays an important role in the sustainability of the platform. In traditional organisational behaviour, most scholars agree that organisational identity promotes employees' organisational commitment, increases employee satisfaction, job satisfaction and reduces employee turnover. Similarly, because in online learning platforms, the formation of users' platform identity makes the platform identity part of the platform members' selves, creates a strong emotional bond with the platform, and makes them more likely to clock in to learn and contribute more learning time [12]. At the same time, platform identity implies the user's acceptance of other members, and platform members will establish certain emotional ties with each other, making it easier to develop a sense of belonging and increase members' embeddedness, thus influencing members' willingness to continuously participate in the platform.

Therefore, the following hypothesis is proposed.

- H5: The community identity of platform members positively influences the frequency of members' punch cards.
H6: The community identity of platform members positively influences the length of time members spend studying.

3.10 Financial incentives and user clocking in learning behaviour

Financial incentives are an important means of promoting user engagement in many virtual brand communities. However, users' motivations for participating in virtual communities can be divided into internal and external motivations. A sense of belonging and identification with the platform is an internal motivation that satisfies users' need for self-improvement, while financial incentives are an external motivation that satisfies users' material needs [13]. However, studies have shown that users' external and internal motivations can interact with each other. In an online learning platform, users are motivated to clock in to learn out of a desire for knowledge, so if they are rewarded financially for signing in to learn each day, they will actively clock in to learn even if they have no need for knowledge that day [14]. However, once the user has completed the clock and received the financial reward, their material needs are satisfied and they may end their learning for the day. At this point, the external motivation has a crowding-out effect on the internal motivation.

Therefore, the hypothesis is formulated. The model for this study is shown in Figure 1.

- H7: Financial incentives increase the frequency of card punching by platform-identified members.
H8: Financial incentives reduce the length of study for platform-identified members.

4 Research design and empirical analysis

4.1 Purpose of the study

The purpose of this experiment is to test the mediating and moderating mechanisms of our proposed model, i.e. the effect of community identification on the frequency and length of study of members' punch cards, and the moderating effect of financial incentives.

4.2 Experimental design

The online questionnaire was used to survey consumers who participated in the online education information platform "Shanbay Word". The reasons for choosing the "Shanbay Word" platform were: firstly, the platform is growing rapidly in China; secondly, the platform focuses on community building and has a large number of staff to manage the community in order to maintain and promote the relationship between community members and the platform. At present, the "Shanbay Word" platform has a large number of users, and the platform is actively involved in the management of the community, which is suitable for this study. The research questionnaire was first generated through Questionnaire Star, and the link to the generated questionnaire was posted to a QQ group where the community members gathered to invite responses to the questionnaire. To encourage community members to fill in the questionnaire, the research team gave each participant who completed the questionnaire in full a 10 RMB phone fee top-up. A total of 280 questionnaires were posted, and 235 valid questionnaires were retained after eliminating those from the same IP address, with obvious logical errors and incompleteness, with an effective rate of 83.9%. The experiment used a between-groups design, dividing the subjects into two groups, one with and one without financial stimulation.

Variables and discourse items. The variables involved in this study included information feedback, interactive support, member education, provision of information, community identification, frequency of punch cards, and length of study. All constructs and measures were adopted and drawn from previous established scales.

Information feedback. Measurements: the platform gives me timely rewards when I contribute in the platform; the platform tells me the current status of my participation in the platform; the platform tells me how to improve my rank in the platform; and the platform notifies me when I violate the platform norms ($\alpha = 0.829$) [15].

Interactive support. Measurements: the platform often organizes activities to promote interaction and communication among members; the platform encourages platform members to participate in interactive activities organized by the company; the platform provides better conditions for members to communicate and interact ($\alpha = 0.861$) [16].

Member education. Measurement terms: the platform provides learning-related information to help me use the platform features; platform members give me solutions when I have problems using the product; platform organizers value updating knowledge of platform use in the platform ($\alpha = 0.840$) [17].

Providing information. Measurement terms: the platform manager will set it to release information about product internal test and public test recruitment in the platform;

the platform manager will regularly release information about product line online and offline activities in the platform; the platform manager will release information about brand development etc. in the platform; the platform manager will release information about new product release and offers etc. in the platform; the platform manager will introduce and recommend relevant products to the platform members ($\alpha = 0.899$) [18].

Community identity. Measures: I am part of the platform; the success of the platform is also my success; I care about what others think about the platform ($\alpha = 0.858$) [19].

Frequency of card punching. Measured on a Likert-7 point scale according to frequency of punching in monthly, weekly and daily. 1 represents punching in once a month and above and 7 represents punching in daily.

Length of study. The length of time spent studying is expressed in “minutes per session”. Measured on the Likert-7-point scale, with 1 representing 10 minutes or less and 7 representing 60 minutes or more.

Financial stimulus. 1 for financial stimulus, 0 for no financial stimulus.

Testing for common method bias. The first method is Harman’s one-way test, which is an exploratory factor analysis of all the constructs [20]. If the variance explained by the first factor before rotation exceeds 50%, it indicates that there may be a serious problem of common method bias. Using SPSS26.0, the variance explained by the first factor was 33.072%, which was significantly less than 50%, indicating that the common method bias in the data was relatively small and within acceptable limits.

4.3 Experimental results

Main effect test. We first tested the effects of information feedback, interactive support, member education, and provision of information on the frequency of card punching and length of study by means of stepwise regression analysis. The results (as shown in Table 1) showed that feedback, interactive support, member education and provision of information all had a positive effect on the frequency of clocking in and the length of study.

Testing the mediating effect. To test the mediating effect of community identity, we added the community identity variable (as shown in Model 2 in Table 1) to the stepwise regression analysis and tested the effects of information feedback, interactive support, member education, and provision of information on community identity. The results showed that information feedback, interactive support, member education, and provision of information positively influenced members’ community identity, and the test results of Model 3 and Model 4 in Table 1 illustrated that community identity influences members’ frequency of card punching and length of study. The results in the model path coefficient table (Table 2) show that our hypothesis testing is supported.

Firstly, information feedback positively influences community identity ($\beta = 0.33$, $p < 0.001$) and hypothesis H1 is verified. This suggests that communities in which community organizers provide timely feedback on user engagement performance and behaviour, either through system design or direct communication, are conducive to members forming an identity with the community.

Secondly, interactive support positively influences community identification ($\beta = 0.22$, $p = 0.001$), and hypothesis H2 was verified. This may be due to the fact that

interactive support can help community members build interpersonal relationships in the community, enhance organizational embeddedness and a sense of belonging, and identify themselves as part of the organization, thus generating community identity.

Again, member education also significantly and positively influenced community identity ($\beta = 0.24, p = 0.001$) and hypothesis H3 was verified. This suggests that firms acting as community organizers to update product information and help consumers with product usage issues can create reciprocal motivation among community members and help community members identify with that community.

Finally, providing information also significantly and positively affects community identification ($\beta = 0.22, p < 0.001$), hypothesis H4 was tested. This suggests that regular product information, organizing online and offline activities, posting offers and recommending relevant products by the company or platform manager can help community users to access and understand information in a timely manner, thus promoting their social identity.

Table 1. Stepwise regression analysis

Variable	Model 1				Model 2		Model 3		Model 4	
	DV=frequency of clocking		DV=length of study		DV=community identity		DV=frequency of card punching		DV=length of study	
	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>
Information feedback	0.23***	3.59	0.35***	4.59	0.33***	9.01	-0.10	-1.63	0.16	1.86
Interactive support	0.03*	2.89	0.21*	3.79	0.22***	3.51	-0.19*	-2.02	0.08	0.66
Member education	0.42***	3.43	0.18**	4.60	0.24***	3.41	0.18	1.75	0.04	0.28
Provision of information	0.15*	1.98	0.01*	2.88	0.22***	5.04	-0.07	-1.04	-0.11	-1.25
Community identity							0.99***	10.56	0.56***	4.37
Adjusted <i>R</i> ²	0.61		0.47		0.87		0.73		0.51	

****p*<.001. ***p*<.01. **p*<.05

Table 2. Model path coefficients and hypothesis testing results

Path	B	Standard Error	<i>p</i> -Value	Hypothesis Testing
Information feedback → community identity	0.736	0.072	0.000	Support
Interactive support → community identity	0.751	0.081	0.000	Support
Member education → community identity	0.685	0.086	0.000	Support
Provision of information → community identity	0.767	0.069	0.000	Support
Community identity → frequency of clocking	0.777	0.039	0.000	Support
Community identity → length of study	0.791	0.052	0.000	Support

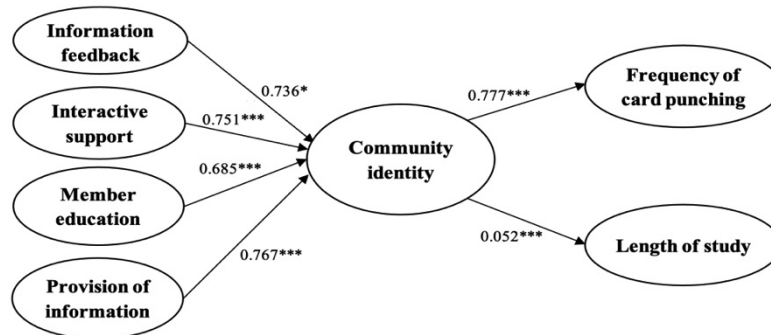


Fig. 1. Model path coefficients

Notes: *** $p < .001$. ** $p < .01$. * $p < .05$.

Analysis of intermediation and regulation paths. To explore the mechanism of socialization strategy’s influence on consumers’ behavioral intention (punching frequency and learning duration), the authors examined the mediating role of community identity in socialization strategy with punching frequency and learning duration, respectively [21]. The test for mediation effects was conducted using the Bootstrap method proposed by Preacher et al. In recent years, it is generally accepted that Bootstrap is more effective and reasonable for estimating mediating effects, and has been widely used in the fields of psychology, consumer behavior, and organizational behavior. For model estimation (Model 14), this paper follows the previous practice of setting the sample size to 5000 and performing model estimation at 95% confidence interval.

First, in testing the mediating role of community identity in the willingness of information feedback on punch frequency, the results showed that in the group with financial incentives, the results of the mediation test did not contain 0 (LLCI = 0.590, ULCI = 0.912), with an effect size of 0.748, and in the group without financial incentives, the results of the mediation test did not contain 0 (LLCI = 0.726, ULCI = 0.982), with an effect size of 0.85. The results indicate that community identity has a significant role in mediating the effect of information feedback on the frequency of card punching by community users. After controlling for the role of community identity on card punching frequency, the independent variable information feedback had a non-significant effect on community card punching intention (LLCI = -0.151, ULCI = 0.082), indicating that community identity is a full mediator of information feedback on card punching frequency. The moderating effect of economic stimulus showed that economic stimulus positively moderated the effect of community identity on punch card frequency (Path d_{im}), i.e., economic stimulus from the platform increased the punch card frequency of community identity users (as shown in Figure 2).

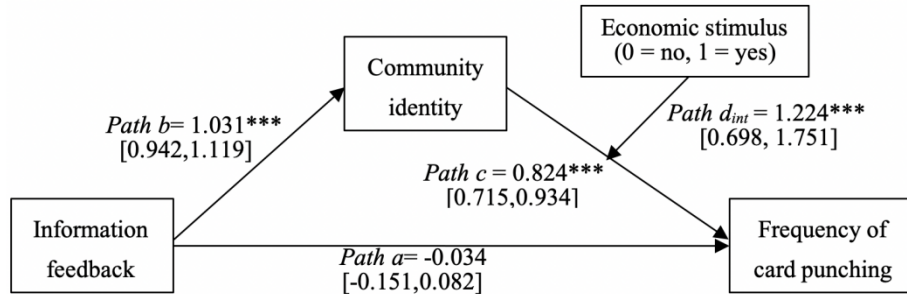


Fig. 2. Information feedback-community identity-mediated path analysis of punch card frequency

Notes: *** $p < .001$. ** $p < .01$. * $p < .05$.

Second, in testing the mediating role of community identity in the willingness of information feedback on the length of study, the results showed that in the group with financial incentives, the results of the mediation test did not contain 0 (LLCI = 0.396, ULCI = 0.635), with an effect size of 0.511, and in the group without financial incentives, the results of the mediation test did not contain 0 (LLCI = 0.937, ULCI = 1.259), with an effect size of 1.09. The results indicate a significant role of community identity in mediating the effect of information feedback on learning duration. After controlling for the role of community identity on learning duration, the independent variable information feedback was not significant for online learning duration (LLCI = -0.106, ULCI = 0.104), indicating that community identity is a full mediator of information feedback on learning duration. The moderating effect of financial incentives showed that financial incentives negatively moderated the effect of community identification on punching frequency (Path d_{int}), i.e., the financial incentives of the platform attenuated the learning hours of community-identified users (as shown in Figure 3).

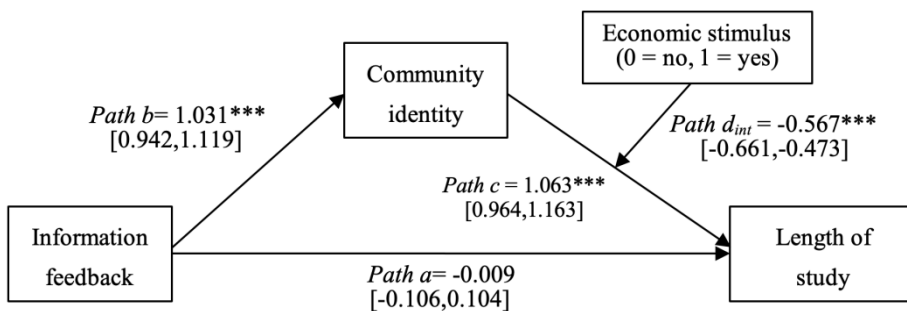


Fig. 3. Information feedback-community identity-mediated path analysis of learning duration

Notes: *** $p < .001$. ** $p < .01$. * $p < .05$.

Third, in testing the mediating role of community identity on the willingness of interactive support on punch card frequency, the results showed that in the group with financial incentives, the results of the mediation test did not contain 0 (LLCI = 0.664, ULCI = 0.900), with an effect size of 0.782, and in the group without financial incentives, the results of the mediation test did not contain 0 (LLCI = 0.761, ULCI = 0.998), with an effect size of 0.879. The results indicate a significant mediating effect of community identity on interactive support on the frequency of card punching by community users. After controlling for the role of community identity on punch card frequency, the independent variable interactive support was not significant for the role of community willingness to punch cards (LLCI = -0.191, ULCI = 0.016), indicating that community identity is a full mediator of interactive support on punch card frequency. The moderating effect of economic stimulus showed that economic stimulus positively moderated the effect of community identity on punch card frequency (Path d_{int}), i.e., economic stimulus from the platform increased the punch card frequency of community identity users (as shown in Figure 4).

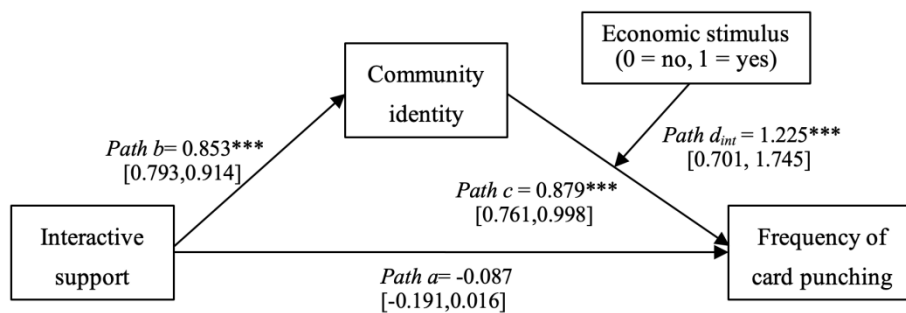


Fig. 4. Interactive support-community identity-mediated path analysis of punch card frequency
 Notes: *** $p < .001$. ** $p < .01$. * $p < .05$.

Fourth, in testing the mediating role of community identity on the willingness of interactive support on the length of study, the results showed that in the group with financial incentives, the results of the mediation test did not contain 0 (LLCI = 0.262, ULCI = 0.500), with an effect size of 0.383, and in the group without financial incentives, the results of the mediation test did not contain 0 (LLCI = 0.770, ULCI = 0.964), with an effect size of 0.866. The results indicate a significant role of community identity in mediating the effect of interactive support on length of study. After controlling for the role of community identity on learning duration, the independent variable interaction support was not significant for the role of community willingness to clock in (LLCI = -0.041, ULCI = 0.147), indicating that community identity is a full mediator of interaction support on learning duration. The moderating effect of economic stimulus showed that economic stimulus negatively moderated the effect of community identity on punch card frequency (Path d_{int}), i.e., economic stimulus from the platform attenuated the learning duration of community identity users (as shown in Figure 5).

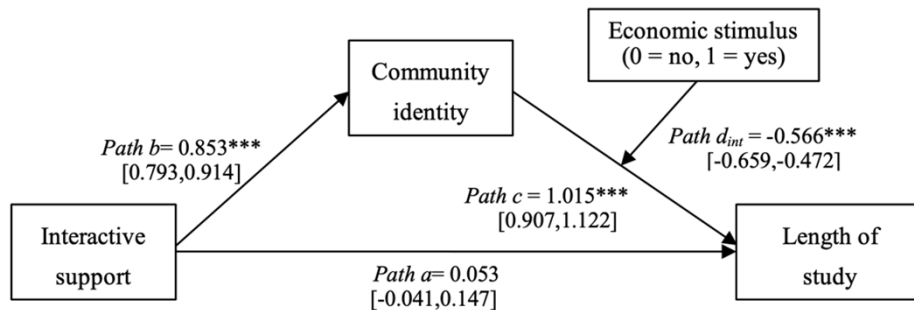


Fig. 5. Interactive support-community identity-mediated path analysis of learning hours
 Notes: $***p < .001$. $**p < .01$. $*p < .05$.

Fifth, in testing the mediating role of community identity on the willingness of member education on punch card frequency, the results showed that in the group with financial incentives, the results of the mediation test did not contain 0 (LLCI = 0.471, ULCI = 0.752) with an effect size of 0.607, and in the group without financial incentives, the results of the mediation test did not contain 0 (LLCI = 0.584, ULCI = 0.804), with an effect size of 0.691. The results indicate a significant mediating effect of community identity on membership education on the frequency of card punching among community users. After controlling for the role of community identity on card punching frequency, the independent variable membership education had a non-significant effect on community card punching intention (LLCI = -0.104, ULCI = 0.119), indicating that community identity is a full mediator of membership education on card punching frequency. The moderating effect of economic stimulus showed that economic stimulus positively moderated the effect of community identity on punch card frequency (Path d_{int}), i.e., economic stimulus from the platform increased the punch card frequency of community identity users (as shown in Figure 6).

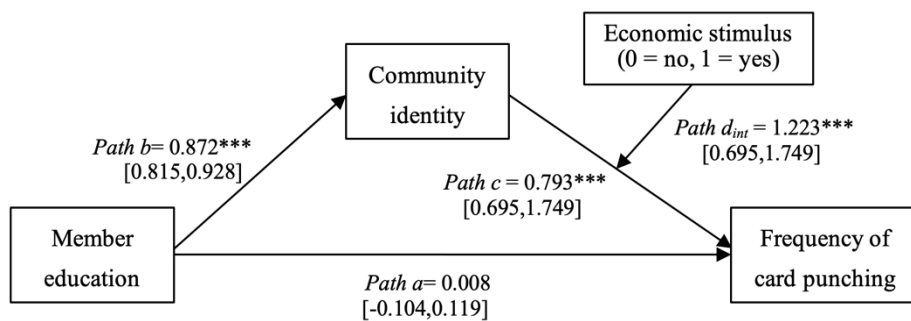


Fig. 6. Member education-community identity-mediated path analysis of punch card frequency
 Notes: $***p < .001$. $**p < .01$. $*p < .05$.

Sixth, in testing the mediating role of community identity on members’ willingness to educate on length of study, the results showed that in the group with financial incentives, the results of the mediation test did not contain 0 (LLCI = 0.268, ULCI = 0.538) with an effect size of 0.404, and in the group without financial incentives, the results of the mediation test did not contain 0 (LLCI = 0.788, ULCI = 1.011) with an effect size of 0.899. The results indicated that the mediating role of community identity on members’ willingness to educate on length of study was significant. 1.011), with an effect size of 0.899. The results suggest a significant mediating effect of community identity on the effect of member education on length of learning. After controlling for the role of community identity on length of study, the independent variable membership education had a non-significant effect on community willingness to clock in (LLCI = -0.067, ULCI = 0.135), indicating that community identity is a full mediator of membership education on length of study. The moderating effect of economic incentives showed that economic incentives negatively moderated the effect of community identification on punch card frequency (Path d_{int}), i.e., economic incentives from the platform attenuated the learning hours of community-identified users (as shown in Figure 7).

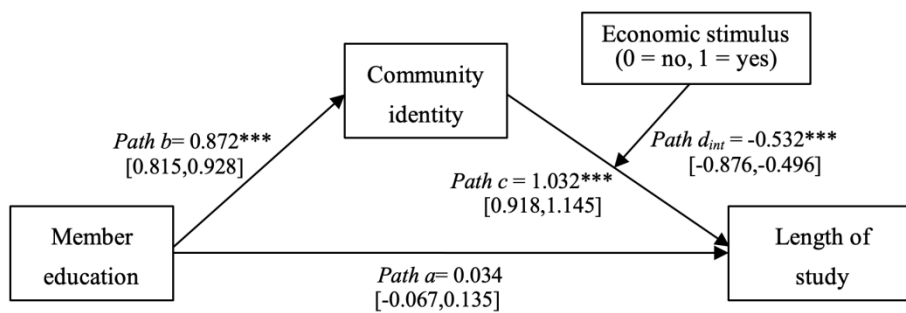


Fig. 7. Member education-community identity-mediated path analysis of learning hours
 Notes: *** $p < .001$. ** $p < .01$. * $p < .05$.

Seventh, in testing the mediating role of community identity on the willingness to provide information on punch card frequency, the results showed that in the group with financial incentives, the results of the mediation test did not contain 0 (LLCI = 0.459, ULCI = 0.724) with an effect size of 0.592, and in the group without financial incentives, the results of the mediation test did not contain 0 (LLCI = 0.570, ULCI = 0.771), with an effect size of 0.670. The results indicate a significant mediating effect of community identity on the provision of information on the frequency of card punching by community users. After controlling for the role of community identity on card punching frequency, the independent variable providing information had a non-significant effect on community card punching intention (LLCI = -0.128, ULCI = 0.051), indicating that community identity is a full mediator of providing information on card punching frequency. The moderating effect of economic incentives showed that economic incentives positively moderated the effect of community identification on punch card frequency (Path d_{int}), i.e., economic incentives from the platform increased the punch card frequency of community identified users (as shown in Figure 8).

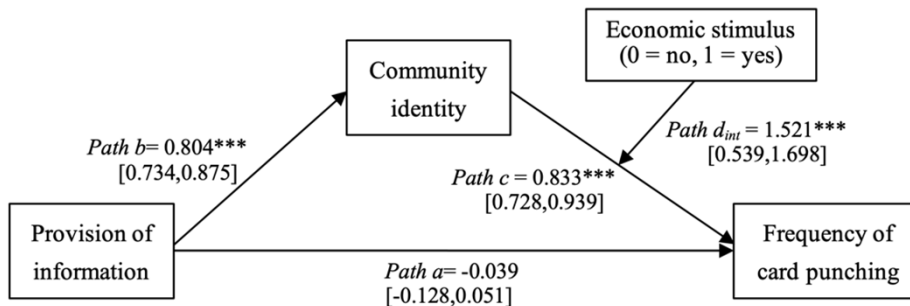


Fig. 8. Provision of information-community identity-mediated path analysis of punch card
 Notes: *** $p < .001$. ** $p < .01$. * $p < .05$.

Finally, in testing the mediating role of community identity on the willingness to provide information on the length of learning, the results showed that in the group with financial incentives, the results of the mediation test did not contain 0 (LLCI = 0.382, ULCI = 0.583), with an effect size of 0.483, and in the group without financial incentives, the results of the mediation test did not contain 0 (LLCI = 0.840, ULCI = 1.040), with an effect size of 0.941. The results suggest a significant mediating effect of community identity on the provision of information on the duration of learning. After controlling for the role of community identity on length of study, the independent variable provision of information had a non-significant effect on community willingness to punch cards (LLCI = -0.203, ULCI = 0.045), indicating that community identity is a full mediator of provision of information on length of study. The moderating effect of economic incentives showed that economic incentives negatively moderated the effect of community identification on punch card frequency (Path d_{int}), i.e., economic incentives from the platform attenuated the learning hours of community-identified users (as shown in Figure 9).

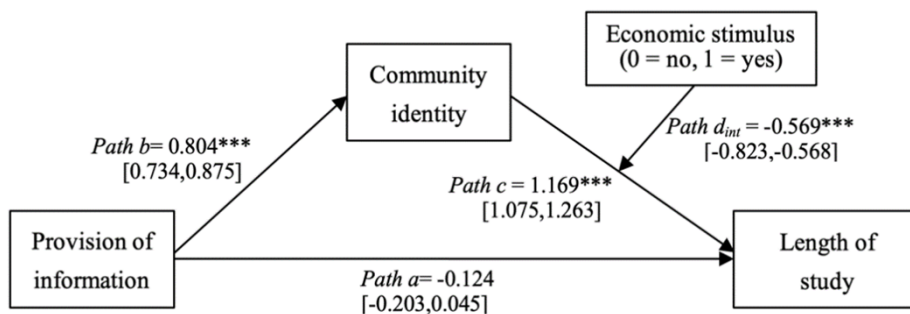


Fig. 9. Provision of information-community identity-mediated path analysis of learning hours
 Notes: *** $p < .001$. ** $p < .01$. * $p < .05$.

The moderating effects of the economic stimulus of the online learning platform on the frequency of punching cards and the length of learning are shown in Figure 10 and Figure 11. The results show that as the economic stimulus of the platform increased, the frequency of members’ punching in the learning platform also increased (Figure 10),

which shows that the economic stimulus played a positive moderating effect on the frequency of learning punching, that is, the external stimulus played an increasing effect on the frequency of learning punching in the platform. However, with the increase of economic stimulus in the platform, members’ learning hours in the learning platform decreased (Figure 11), and it can be seen that the economic stimulus played a negative moderating effect on members’ learning hours in the platform, i.e., the external stimulus had a crowding-out effect on members’ internal motivation.

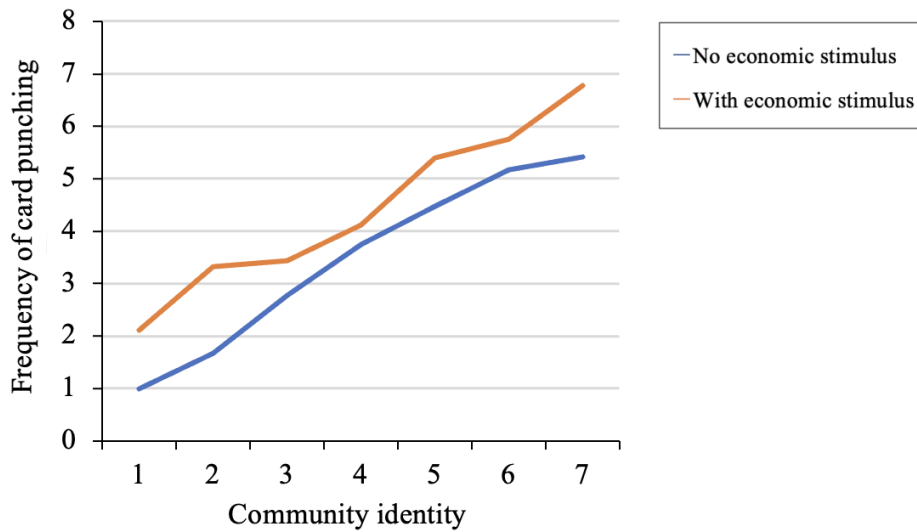


Fig. 10. Positive moderating effect of economic incentives on frequency of card punching

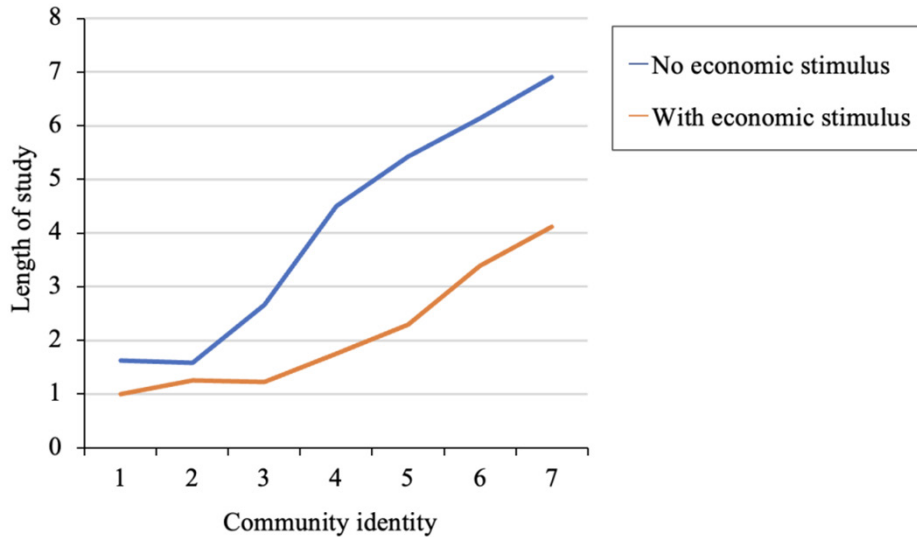


Fig. 11. Negative moderating effect of economic incentives on length of study

5 Conclusion and discussion

In this paper, we examined the influence of social strategies of online learning platform on users' punch card learning behavior through regression analysis model. The socialization strategies include: information feedback, interactive support, member education and information provision, and punch card learning behavior includes users' punch card frequency and learning duration. It is hypothesized that community identity is the mediating factor of socialization strategies on users' punch card learning behavior. The results of regression analysis and mediated path test analysis support our hypotheses H1, H2, H3, H4, H5, H6, H7, and H8. The results indicate that information feedback, interactive support, and member education and provision strategies (i.e., socialization strategies) in online learning platforms positively affect members' community identification level, which in turn positively affects members' punch card learning frequency and learning duration. The financial incentives used by the platform will, on the one hand, increase the frequency of clocking in of platform-identified members, but on the other hand, it will weaken the length of learning of platform-identified members.

6 Contributions and future research

6.1 Theoretical contributions

The theoretical contributions of this paper are, first, the application of user socialization strategies to online education learning platforms. The socialization strategy in the platform is an important factor influencing user behavior, and more importantly, the socialization strategy positively and positively affects the level of community identification of platform members, which is an important variable motivating users to participate in the learning behavior (punching frequency and learning hours) of the platform. Second, the impact of financial incentives applied by companies in the platform on learning behavior is discussed. Financial stimulus is an external motivation to motivate users to learn, and previous studies have shown that external stimulus is an important factor to motivate users' behavior, but this study finds that external stimulus enhances users' learning behavior in terms of punching frequency on the one hand, but diminishes users' learning duration on the other hand, which shows that external motivation plays a crowding out role on internal motivation to learn.

6.2 Management significance

Currently, more and more educational platforms are increasing their investment in platform learning communities. This study finds that platforms can effectively promote platform members' community identification level and thus enhance their platform learning participation behavior by providing strategies such as information feedback, interactive support, enhancing member education, and providing information. In practice, companies can provide timely feedback on users' learning behaviors, enhance user interaction support to help community members build interpersonal relationships,

update product information and organize offline and online activities to promote members’ community identity. In addition, the economic stimulus used by the platform can increase the frequency of users’ punch cards on the one hand, but on the other hand, it has a crowding-out effect on the length of learning, and the platform should pay attention to its negative impact on the length of learning when using economic stimulus.

6.3 Prospects for future research

This paper investigated the effect of socialization strategies on users’ punch card learning behaviors on online education platforms. Future research can also consider the moderating effects of user characteristics on community identity and learning behavior, such as the effects of socialization strategies on the community identity of extroverted and introverted users. On the other hand, this paper takes users of the “Shanbay Word” platform as the research sample, and future studies can consider using users of other learning platforms as research samples to ensure the external validity of the study.

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