

Modelling the Impacts of Social Value on Platform Identity: The Mediating-Moderating Research Design in Live-Streaming Context

Tsai-Fa (TF) Yen ^{a*}, Ping Cai ^a and Jing Qiao ^a

^a School of Management and Research Center for Big Data Marketing, Qingdao City University, Shandong Province, China.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJEBA/2022/v22i23867

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/92657>

Original Research Article

Received 02 August 2022
Accepted 09 October 2022
Published 18 October 2022

ABSTRACT

In the era of digitalization and epidemic, more people deeply rely on digital tools. Digital tools can be used to complete transactions for food delivery, daily necessities and car booking. Live broadcasting is one of the representative products in the digital era. Users' perceived social value and its impacts are important to the society and operators of platform. Fewer studies, however, have verified the relationships among social value, platform dependence, and platform identity. Accordingly, the research purpose of this paper is to analyze users' digital inertia, social values, and the relationships among their dependence and their identity on livestreaming platforms. Data was collected by questionnaire survey and 372 valid samples were received. Findings show that in the relationships between live streaming platforms and users, positive relationships among variables were met; the social value perceived by the users could affect platform identity through platform dependence; and users' perceived digital inertia significantly could moderate the relationship between social value and platform dependence. It is suggested that operators should strengthen users' perception of social value when designing live broadcast activities.

Keywords: Social value; platform identity; digital inertia; platform dependence.

1. INTRODUCTION

Since China has entered the information age, the rapid development and extensive application of Digital technology has given rise to a new economic type, Digital Economy. Compared with the agricultural economy in the agrarian age and the industrial economy in the industrial age, the digital economy is a new economy, new driving force and new form of business, which also leads to the overall transformation of society and economy [1]. On the economic front, the scale of China's digital economy has reached 39.2 trillion yuan in 2020, accounting for 38.6% of GDP [2]. On the social front, research has confirmed that the digital economy can improve social productivity and economic growth rate [3,4,5]. Even so, few existing studies have explored the social value issues under the digital economy, which may lead to a theoretical gap in the social impact of the digital economy.

For example, the era of digital economy emphasizes the integration and utilization of digital tools to promote the development of new media, such as Weibo, Wechat, Douyin, Kuaishou, Himalayas and other social media, which process and send and receive all kinds of text, pictures, video and sound information through various Internet terminals and data platforms. Meet people's needs in life and work [6]. As a result, more and more people use new media tools to deal with daily affairs, such as online shopping, ordering food, booking accommodation and taxis, etc. Handling learning matters such as online lectures and learning [7]; Handle work issues, such as online meetings and communication of work issues; To share daily life, such as leisure and entertainment text messages, life pictures, audio-video short videos, etc. [8]. In this context, people rely on new media and digital tools more and more deeply, and may have a higher recognition of new media and digital tools [6]. However, few studies have explored the issue of social values' dependence and identity on digital tools or media platforms under the digital economy. Clarifying this issue will benefit the development of media platforms and the protection of users' rights and interests, and it is necessary to explore the relationship between the three.

Secondly, research on the theory of consumption value points out that Function value of consumers [9] and Social value [10] and conditional value [11] will affect their purchase intention, Studies on online food delivery also show that these values will affect consumers'

purchase intention [12]. Whether consumers' perceived value produces their dependence on and identification with enterprises, these studies have not clarified the relationship between the three, which makes the application of the theory of consumer value fall short. Similarly, literature points out that perceived value is positively correlated with dependence and identity. After consumers perceive value, they will have a sense of dependence and identity on the products and services of enterprises. A better sense of dependence and identity will have a positive impact on the enterprise's credibility and positive word of mouth [13]. This study focuses on how value affects corporate reputation and reputation. Through the path of dependence and identity, it does not explore the relationship between dependence and identity and the mediating effect, and the application of value theory is still partially limited. In addition, in terms of the relationship between dependence and identity, studies have shown that consumers' attitude will affect word of mouth through dependence and identity, and dependence will affect identity [14], which seems to indicate that consumers will produce identity only after they become dependent on enterprise products and services. However, this study did not explore value, and there is still doubt whether consumers perceive value driven dependence and identity. Therefore, there is still a gap in the theoretical relationship of perceived value, dependence and identity. To explore the relationship between the three and clarify the mediating effect will help the extension and application of the theory of perceived value.

In addition, the above studies discussing value, dependency and identity ignored a situation variable: consumer's inertia. Consumers' inertia is a kind of repetitive behavior formed by consumers' passive purchase, which is used to consuming specific products and purchasing in specific ways [15]. The reason may be that consumers already have buying habits, or lack of motivation to try. They are not willing to try new products or new ways of buying. In this case, inertia has been shown to moderate consumer behavior. In other words, inertia may change the strength or direction of the relationship in which consumers perceive value, dependence, and identity. To explore the influence of consumer inertia is conducive to the broadcasting industry to put forward marketing strategies.

For this study, the research subject of this paper is users of live streaming platforms, and this paper defines consumer perceived value as the

social value of social media perceived by consumers. The dependence is defined as the platform dependence of live broadcast users; Consumer identity is defined as the platform identity of live broadcast users; Consumer inertia is defined as the digital inertia of live streaming platform users using digital tools. In summary, the purpose of this paper is to explore the current situation and relationship of social value, platform dependence and platform identity of viewers on live streaming platforms, test the mediating effect of platform dependence and the regulating effect of digital inertia, and put forward suggestions.

2. LITERATURE REVIEW AND HYPOTHESES

2.1 The Concept of Live Stream

Live Stream is also sometimes called live broadcasting on the internet, live-streaming of integrated media. It is a behavior in which the anchor (announcer) synchronically records and releases the development process of a specific event in a specific place/field (indoor or outdoor), and transmits text, pictures, videos, music and other information to the audience through the Internet platform [16]. Second, live is real-time information (include pre - recorded or live record of information), there is network can receive, the way to present the cover figure video, viewing the user can according to their feedback information to the platform or the host, and some can live rewind, great appeal for the masses of users. Therefore, live broadcasting has the characteristics of real-time information transmission, wide regional information transmission, real-time two-way communication and diversified information presentation.

In addition, for the traditional radio and television media, the live streaming of financial media is the expansion of the traditional radio and television public platform and industrial form to the new business form of financial media. For e-commerce, financial media live broadcast is a very effective new advertising business model. The production of radio and television content can add more links to the process of financial media live broadcast, meet the needs of e-commerce, and realize two-way circle breaking and mutually beneficial and win-win communication mode [17]. As the network platform will push more content for people every day, so that people's vision is broadened to a certain extent, and diversified needs can be

better met [18]. Gradually, some people make use of the network platform live broadcast, engage in sales activities, start e-commerce business, and form a new form of business.

2.2 The Concept of Perceived Social Value

Social value is a dimension of consumption value and a unique form of maintaining consumers from different cultural and theoretical backgrounds [12]. Social value is the capital of a product or its alternatives, which can strengthen the perceived self-image of consumers [19]. In other words, consumers with high social value will increase their willingness to participate by consuming products or services. Therefore, rather than product functionality and performance. These consumers pay more attention to the self-worth, social approval and symbolic meaning to others of the products [20,21]. In this context, the social value perceived by the users of the live broadcast platform may make them attach more importance to their own value, give positive evaluation and publicity to the live broadcast programs beneficial to the public, and thus gain social recognition. On the one hand, users of specific live streaming platforms interact with programs by continuously watching specific program units. On the other hand, share and communicate with family members in the real world to show their significance to others (social value).

For example, consumers may demonstrate their self-worth to be environmentally friendly and earth-loving by watching organic food live and buying organic food. In addition, these consumers who continue to watch organic food live, buy organic food and promote environmentally friendly ideas are also easy to gain community recognition (social recognition) and show their behavior of loving the earth (symbolic meaning to others). In this process, consumers may continue to pay attention to and watch the live broadcast of organic food, forming a living habit (leisure habit); When watching live shows becomes a part of consumers' lives, they are likely to become dependent on the platform. Moreover, due to continuous attention to organic food live broadcast issues, they may have psychological connection and identity with a specific live broadcast platform (live broadcast of organic food consumption programs). Accordingly, the following hypotheses are proposed in this study:

Hypothesis 1: In the relationship between live streaming platforms and users, the social value perceived by users may affect their platform identity.

Hypothesis 2: In the relationship between live streaming platforms and users, the social value perceived by users may affect their platform dependence.

2.3 The Concept of Platform Dependence and Platform Identity

Dependence is a kind of functional attachment between a person and a specific thing, which is a feeling that can be formed in a short time [14]. Because people rely on specific places and facilities to engage in specific activities, they will have dependence with the place and the object under the interaction over time [22,23]. Taking live broadcasting as an example, viewers may watch certain programs for a long time, making watching certain live programs a part of their lives. Users may be in the process of watching the special interaction with the host, the formation of special memories and memories in life; As time goes by, users may have a sense of dependence on live streaming platforms. Accordingly, platform dependence is defined in this study as "the degree of dependence between live broadcast viewers and the live broadcast platform after they interact with the live broadcast platform after watching a specific live broadcast program".

Secondly, compared with dependence, identity is a relatively long-term psychological feeling, which must go through a long period of experience and experience, and the emotion and symbolic significance generated by the other party [23,24]. For live broadcast viewers, they watch certain live broadcast programs for a long time, which indicates that they may be interested in a specific topic and willing to continue to pay attention to it, resulting in emotional and psychological feelings towards the livestreamer and the live broadcast content. This research considers that users' long-term accumulated psychological feelings towards live streaming platforms are platform identification.

Studies have confirmed that when consumers have a sense of dependence based on specific factors and specific things, they will develop a sense of belonging and identity with the passage of time [25,26,14]. This means that in the relationship between users and the live

broadcast platform, if users have formed a sense of dependence with a specific live broadcast platform, they may develop a sense of belonging and identity to the live broadcast platform. In addition, if platform dependence affects platform identity, it also means that in the relationship between live streaming platforms and users, the social value perceived by users may affect platform identity through platform dependence. Accordingly, the following hypotheses are proposed in this study:

Hypothesis 3: In the relationship between live streaming platforms and users, users' platform dependence may affect their platform identification.

Hypothesis 4: In the relationship between live streaming platforms and users, the social value perceived by users may affect their platform identity through platform dependence.

2.4 The Concept of Digital Inertia

Inertia is the mover of loyalty. It is the inertia of customers that makes them repeat purchases when they are inactive or passive. People with high inertia will repeat certain behaviors [15]. If this consumer inertia is applied to live broadcast users, it is the habitual behavior of users, including browsing and reading specific live broadcast platforms and participating in live broadcast programs with specific themes. Accordingly, this study defines digital inertia as "the behavior of users to digital tools who repeatedly browse, click and participate in certain live streaming platforms and activities for certain reasons".

Secondly, in the study of consumer behavior, inertia is the repeated purchase behavior based on consumers' laziness and passivity, which is also the promoting element of loyalty [27,28,29]. In this context, consumers may make repeated purchases due to lack of guiding target behavior, lack of conscious decision change [30,31] (, or follow old habits [32]. Therefore, such as conversion takes time and effort and is repugnant [33,29]. When consumers have high inertia, they will be oriented to buy specific products [15,34]. In addition, consumer inertia has been proved to have the function of regulating attitude and behavior. For example, Anderson and Srinivasan (2003) [31] found that the individual level factors of inertia, purchase scale and convenience motivation can regulate e-commerce satisfaction and loyalty. At a low

degree of inertia, individual satisfaction has a greater impact on loyalty.

The influence of users' digital inertia on social value, platform dependence and platform identity may be similar to the influence of inertia on the relationship between e-commerce satisfaction and loyalty. For example, in the context of low digital inertia, users do not have specific habits of participating in live streaming, and the relationship between perceived social value, platform dependence and platform identity may be weakened. In other words, even if perceived social value and platform dependence are highly correlated, they will not increase the correlation degree because of digital inertia. Relatively, under the condition of high digital inertia, users have fixed browsing and participation behaviors for specific live streaming platforms, which may promote the strengthening of the relationship between perceived social value and platform dependence. Accordingly, the following hypotheses are proposed in this study:

Hypothesis 5: In the relationship between live streaming platforms and users, users' digital inertia may affect social value, platform dependence and platform identity.

Hypothesis 5a: In the relationship between live streaming platforms and users, users' digital inertia may affect the relationship between social value and platform identity.

Hypothesis 5b: In the relationship between live streaming platforms and users, users' digital inertia may affect the relationship between social value and platform dependence.

Hypothesis 5c: In the relationship between live streaming platforms and users, users' digital inertia may affect the relationship between platform dependence and platform identity.

3. METHODS

3.1 Research Model and Hypotheses

This study aims at verifying the relationships among digital inertia, social value, platform dependence, and platform identity in livestreaming context. It focuses on causal relationships of variables and the topic is appropriated to employ the quantitative method.

There are four variables in the conceptual framework (Fig. 1), named digital inertia, social

value, platform dependence, and platform identity. Basically, positive relationships among social value, platform dependence, and platform identity are met while the moderating effects of digital inertia on relationships of above variables are unknown.

Five hypotheses are proposed based on previous studies [14,15,20,29,34]. In the baseline model, that perceived social value of a user is likely to have a positive influence on platform identity in livestreaming context (H1); perceived social value likely of a user is to have a positive influence on platform dependence in livestreaming context (H2); and platform dependence is likely to have a positive influence on platform identity in livestreaming context (H3) are proposed. Furthermore, in the relationship between live streaming platforms and users, the social value perceived by users may affect their platform identity through platform dependence (H4, mediating effect). And in the moderating model, we proposed that digital inertia is likely to impact social value-platform dependence-platform identity relationships (H5, moderating effect) based on our research objective.

3.2 The Instruments of the Survey

Five variables were listed in the causal model. digital inertia (IN) was defined as "the behavior of users to digital tools who repeatedly browse, click and participate in certain live streaming platforms and activities for certain reasons". [14,34]. Three items were adopted to measure IN including "I am used to watching the existing XX brand cosmetics live streaming platform.", "I prefer the original live streaming platform than to trying the new one.", and "I don't like the strange cosmetics live streaming platform of XX brand."

Perceived social value (PV) was defined as "the social benefits of participating the live broadcast comparing with his/her efforts" [20]. It was measured by three items, "I feel happy to participate the live broadcast of XX cosmetics.", "I've benefited a lot from participating the live broadcast of XX cosmetics.", and "Participating the live broadcast of XX cosmetics gave me a feeling of social approval."

This study defined platform dependence (PD) as "the degree of dependence between live broadcast viewers and the live broadcast platform after they interact with the live broadcast platform while participating a specific program" [14,15]. Items including "I have a strong sense of

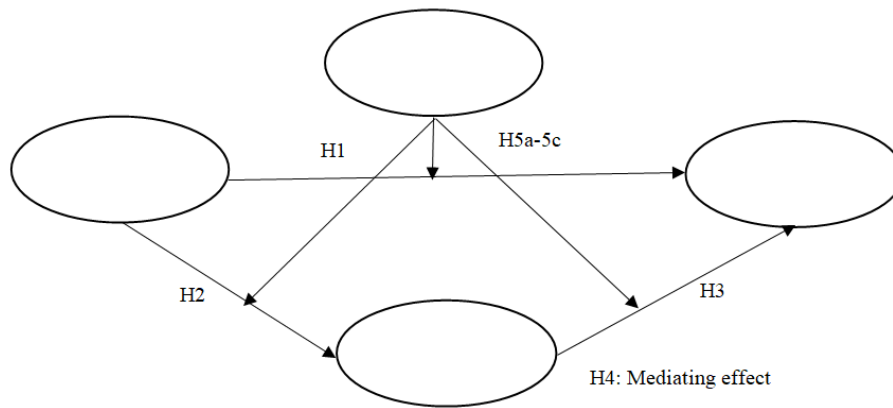


Fig. 1. Research framework

identity with participating XX cosmetics live broadcast.”, “Participating XX cosmetics live has become a part of my life.”, “For me, participating the live broadcast of XX cosmetics is very special.”, “For me, participating the live broadcast of XX cosmetics is of great significance.”, and “Participating the live broadcast of XX cosmetics brought me many memories.” were employed for measuring the construct of platform dependence.

Considering to platform identity (PI), it was viewed as “the extents that users' long-term accumulated psychological feelings towards live streaming platforms” [14,15]. Those items, “I have a deep psychological connection to participate the live broadcast of XX cosmetics.”, “Participating the live broadcast of XX cosmetics, which is better than other long videos.”, “Participating the live broadcast of XX cosmetics can better meet my leisure needs.”, “Participating the live broadcast of XX cosmetics can't be replaced by other activities.”, and “Participating the live broadcast of XX cosmetics is an important leisure activity.” were used to measure PI.

3.3 Questionnaire Survey

Considering to the theme of the study was to verify the causal relationships with in variables, and the data collection requirements of our study such as the needs of large samples of experience on participating the live broadcast, it would be appropriate to employ the questionnaire survey. The population was unknown and set on those users who were experienced on participating the live broadcast during the past six month. They were conducted on site and online for collecting data.

The questionnaire was established on Questionnaire Start System. The link was send to relevant groups in January, 2022. Of 372 questionnaires obtained, about 27.7% were male and 72.3%were from female respondents. At about 32.4% of respondents were 20-40 years of age, 36.6% of respondents were 41-50 years of age, and 31% are over 51 years old. Approximately 9.4% of respondents were below junior high school, 7.5% of respondents were above senior high school, 16.1% of respondents were above junior high school, and 66.9% of respondents were above bachelor degree. Most of the respondents were above junior high school.

With regard to the occupation, 3.5% of respondents work at government related sectors, 21.8% of respondents belong to industrial sector, 23.6% of respondents were commerce/service industry, 19.9% of respondents were farmers, 21.6% of respondents were educational industry, and 9.7% of respondents were retired/else. Approximately 27.5% of respondent's monthly income was below 3000 RMB, 48.1% of respondent's monthly income was 3001-6000 RMB, and 20.6% of respondent's monthly income was 6001-8000 RMB while 3.7% of respondent's monthly income exceeds 8000 RMB. In terms of the frequency of visits within a week, less than 5 times accounts for about 72.8%, 19.4% of respondents visit 6 to 10 times, and 7.8% of respondents visit the platform more than 11 times. The Correlation matrix of measurement was listed in Appendix A.

4. RESULTS AND DISCUSSION

In line with Anderson and Gerbing (1988) [35], two-stage analytical procedures were employed

to validate the measurement model and structural model. It's suggested that the validity and reliability could be assessed by measurement model and hypothesized relationships within proposed model were estimated by structural model using the maximum-likelihood method [36].

4.1 The Descriptive Statistics and Normality

As shown in Table 1, descriptive statistics, skewness and kurtosis were conducted. As expected, all of the absolute values of skewness were less than 3 and kurtosis did not exceed 10, which indicating no departure from normality [37]. Then, the psychometric properties of the constructs were assessed by calculating the Cronbach's alpha in terms of reliability coefficient [38] and the CFA and SEM were carried out in the next section.

4.2 Assessment of the Measurement Model

As shown in Table 2, the standardized factor loadings (SFL) exceed the recommended value of 0.50 and all indicators used in this study significantly loaded on their corresponding factors [39]. The convergent validity of the

constructs in the measurement model were confirmed. Furthermore, AVE values of the constructs were also close to the level of 0.50, indicating that convergent validity of the measurement model was proved [38]. According to Table 3, the squared root of AVEs presented on the diagonal exceed the correlations between the constructs. Thus, the discriminant validity of the constructs was evidenced [39].

4.3 Assessment of the Structural Model

Following the validation of the measurement model, the proposed model with three constructs estimated with structural equations modeling to test the research hypotheses. Three steps were employed to estimate the parameters as well as the hypothesis testing. As shown in Table 4, the relationships of baseline model were estimated in Model 1, Model 2, and Model 3. The overall fit indexes for the Model 3 was adequate ($\chi^2 = 168.5$, $DF=60$, $p=.000$, $\chi^2 / DF = 2.808$, $GFI=0.937$, $AGFI= 0.905$, $CFI= 0.974$, $RMSEA= 0.070$) and the research hypotheses of baseline model were confirmed. As expected, the PV-PI relationship, PV-PD relationship, and PD-PI relationship were significantly and positively confirmed, which supported H1, H2, and H3. The R^2_{PD} was 0.702, and R^2_{PI} was 0.962.

Table 1. Descriptive statistics (n=372)

Question items	Mean	SD	Sk.	Ku.	SFL
Perceived Social Value (VE=75.98%, Cronbach's Alpha= 0.840)					
PV1. I feel happy to watch the live broadcast of XX cosmetics.	3.54	0.81	-.061	-.028	.828
PV2. I benefited a lot from watching the live broadcast of XX cosmetics.	3.41	0.88	.035	-.026	.895
PV3. Watching the live broadcast of XX cosmetics gave me a feeling of social approval.	3.45	0.91	-.082	-.118	.888
Platform Dependence(VE=73.49%, Cronbach's Alpha= 0.908)					
PD1. I have a strong sense of identity with watching XX cosmetics live broadcast.	3.35	1.02	-.171	-.672	.778
PD2. Watching XX cosmetics live has become a part of my life.	3.39	0.89	.029	-.101	.825
PD3. For me, watching the live broadcast of XX cosmetics is very special.	2.86	1.17	.219	-.757	.908
PD4. For me, watching the live broadcast of XX cosmetics is of great significance.	3.06	1.11	.016	-.551	.878
PD5. Watching the live broadcast of XX cosmetics brought me many memories.	3.08	1.07	.004	-.491	.891
Platform Identity (VE=77.65%, Cronbach's Alpha= 0.927)					
PI1. I have a deep psychological connection to	3.15	1.09	-.071	-.519	.873

Question items	Mean	SD	Sk.	Ku.	SFL
watch the live broadcast of XX cosmetics.					
PI2. Watch the live broadcast of XX cosmetics, which is better than other long videos.	3.16	1.04	-.086	-.369	.904
PI3. Watching the live broadcast of XX cosmetics can better meet my leisure needs.	3.15	1.08	-.112	-.462	.882
PI4. Watching the live broadcast of XX cosmetics can't be replaced by other activities.	3.18	1.09	-.088	-.551	.857
PI5. Watching the live broadcast of XX cosmetics is an important leisure activity.	2.84	1.21	.192	-.896	.888
Digital Inertia (VE=78.66%, Cronbach's Alpha=0.864)					
INE1. I am used to watching the existing XX brand cosmetics live streaming platform.	3.34	0.97	-.238	-.138	.858
INE2. I prefer the original live streaming platform to trying to watch the new one.	3.37	0.97	-.330	-.067	.895
INE3. I don't like the strange cosmetics live streaming platform of XX brand.	3.34	0.98	-.277	-.111	.907

SD: Standard deviation; Sk: Skewness; Ku: Kurtosis; SFL: Standard factor loading; VE: Variance extracted

Table 2. Results of CFA (n=372)

Constructs	Indicator	λ	t-values	SMC	CR	AVE
Perceived Social value		0.699	14.871	0.489	0.837	0.633
		0.837	19.043	0.700		
		0.843	19.244	0.710		
Platform Dependence		0.693	15.053	0.480	0.910	0.673
		0.743	16.650	0.553		
		0.890	21.788	0.792		
		0.867	20.857	0.751		
		0.887	21.686	0.787		
Platform Identity		0.825	19.289	0.681	0.926	0.714
		0.874	21.144	0.764		
		0.829	19.452	0.687		
		0.824	19.287	0.679		
		0.871	21.039	0.758		
Digital Inertia		0.778	17.204	0.605	0.867	0.685
		0.843	19.374	0.710		
		0.860	19.978	0.740		

Notes: λ : Standardized factor loadings; SMC: Square multiple correlation; CR: Composite reliability; AVE: Average variance extracted; All t-statistics are significant at 0.01 level; ($\chi^2 = 257.70$, $DF=96$, $p=.000$, $\chi^2 / DF = 2.684$, $GFI= 0.924$, $AGFI= 0.893$, $CFI= 0.969$, $RMSEA= 0.067$)

Table 3. Discriminant validity of constructs

Items	M	SD	1	2	3	4
1.PV	10.41	2.26	0.796			
2.PD	15.74	4.51	0.757**	0.820		
3.PI	15.47	4.86	0.762**	0.897**	0.845	
4.INE	10.04	2.59	0.667**	0.744**	0.759**	0.828

**p<0.05, **p<0.01; PV: Perceived social value; PD: Platform dependence; PI: Platform identity; INE: Digital inertia; Diagonal elements are the square root of average variance extracted. Off-diagonal elements are the coefficients of correlation between factors*

Table 4. Hypotheses testing for proposed model

Paths	M1		M2		M3	
	Estimate	t	Estimate	t	Estimate	t
H1: PV-PI	0.853***	10.63	0.269***	4.38	0.154**	2.63
H2: PV-PD			0.937***	5.00	0.838***	11.03
H3: PD-PI					0.848***	4.67
R ² _{PD}			.072		0.702	
R ² _{PI}	0.727		.950		0.962	
Model fitness						
χ ²	54.7		470.1		168.5	
DF	18		61		60	
p	0.000		0.000		0.000	
χ ² / DF	3.041		7.707		2.808	
GFI	0.968		0.871		0.937	
AGFI	0.935		0.801		0.905	
CFI	0.984		0.903		0.974	
RMSEA	0.074		0.134		0.070	

*P<0.05, **P<0.01, ***p<0.001

Table 5. Results of Mediated Effects (Bootstrap method)

Path	Product of Coefficients		Bias-Corrected 95% CI	
	Estimates	SE	Lower	Upper
Indirect effects	0.710***	0.058	0.607	0.844
Direct effects	0.154*	0.060	0.032	0.269
Total effects	0.865***	0.024	0.814	0.909

*p<0.05, **p<0.01, ***P<0.001

4.4 Mediating Effect Analysis

Firstly, after repeated sampling for 2000 times by Bootstrap method, the model fit basically meets or approaches the theoretical requirements (χ²=168.4, DF=60, P =.000, χ²/DF= 2.808, GFI= 0.937, AGFI= 0.905, CFI= 0.974, RMSEA= 0.070). In terms of variable relationship (Table 5), perceived social value significantly affects platform dependence and platform identity, and platform dependence significantly positively affects platform identity. Hypothesis 1, Hypothesis 2 and hypothesis 3 are supported. Perceived social value not only directly affects platform identity, but also mediates platform identity through platform dependence. Platform dependence is the mediating variable between perceived social value and platform identity, and yielding the predictive power of platform dependence and platform identity being 0.702 and 0.962, respectively.

Moreover, in terms of the mediating effect, the indirect effect is 0.710(p<0.001), and the upper and lower limits of Bias-corrected 95% confidence interval are 0.607-0.844, which excluding 0 (p-value< 0.001) and indicating that the indirect effect of the research model is

significant. Platform dependence acts a mediating role between perceived social value and platform identity. In terms of direct effect, the estimated value is 0.154, and the upper and lower limits of Bias-corrected 95% confidence interval are 0.032-0.269, which excluding 0 (p-value < 0.05) and indicating that perceived social value has a significant direct effect on platform identification. Finally, in terms of the total effect of the mediating effect, the estimated value is 0.865, and the upper and lower limits of Bias-corrected 95% confidence interval are 0.814-0.909, which excluding 0 (p-value < 0.001) and indicating that perceived social value has a significant effect on platform identity.

In other words, perceived social value not only affects platform identity directly (direct effect), but also affects platform identity through platform dependence (indirect effect). Platform dependence has a partial mediating effect, and the mediating effect reaches a significant level. Accordingly, hypothesis 4 is supported.

4.5 Analysis of Moderating Effect

In this study, digital inertia was divided into high and low groups (218 samples in the low group

and 154 samples in the high group) according to the mean, and multi-group mode was used to conduct moderating model analysis. The results are shown in Table 6.

First, the study examines the invariance of measurement patterns in both groups. In this study, the chi-square difference between the completely unrestricted and completely restricted measurement modes was calculated, and the calculation results showed that the adaptor square difference was not significant ($\Delta\chi^2(DF) = (33.5-268.6)/(151-120)=45/31=1.45<3.54$, $p > 0.01$). It shows that the measurement indicators for the two groups of respondents has invariance.

Furthermore, this study examines the differences in structural models between the two groups of respondents. After calculating the chi-square difference between the three structural path models and the baseline mode, it found that the chi-square difference test of PV-PD reached a significant level ($\Delta\chi^2 / \Delta DF=5.27>3.54$, $p < 0.01$), that is, the influence of PV on PD was significantly different across two group of digital inertia. The results are described as follows Table 6.

Firstly, in the unrestricted model, the main differences between high and low groups are the impact of perceived social value on platform identity, and the impact of platform dependence on platform identity. For respondents with low digital inertia, their perceived social value has no significant impact on platform identity, and platform dependence has no significant impact on platform identity. However, for respondents with high digital inertia, their perceived social value significantly affects platform identity; their perceived social value significantly affects platform dependence, and their platform

dependence significantly affects platform identity. In other words, for respondents with low digital inertia, perceived social value only affects platform dependence. For fans with high digital inertia, their perceived social value can directly affect their platform identity, or through the mediation of platform dependence.

Furthermore, compared with the whole sample ($\beta=0.84$, $t=11.03$), the coefficients of PV-PD in unrestricted model was $0.67(t=6.67)$ and $0.83(t=6.63)$, and the coefficients of restricted model was $0.74(t=6.63)$ and 9.55 , respectively. Digital inertia significantly weakens perceived social value-platform dependence (PV-PD) relationships. In other words, when the digital inertia context is not considered, the perceived social value of respondents has a significant impact on platform dependence; However, in the context of low digital inertia, respondents' digital inertia is low, and the impact of perceived social value on platform dependence is not significant. In the context of high digital inertia, respondents have high digital inertia, and the impact of perceived social value on platform dependence is significant, but the influence also decreases. Accordingly, respondents' digital inertia significantly strengthens the relationship between perceived social value and platform dependence, and hypothesis 5b is supported.

In addition, this study further discusses the relationship between perceived social value and platform dependence in the context of high and low digital inertia (Fig. 2). Fig. 2 shows that the platform dependence of the low digital inertia group is higher than that of the high inertia group when the perceived social value of respondents is less than 4.38. On the contrary, when the perceived social value of respondents is greater than 4.38, the platform dependence of the low

Table 6. Hypotheses testing for moderated model

Paths	M1(INEL, n=218)	M2(INEH, n=154)	M3(Baseline model)	M4(Nested model)
	Estimate(t)	Estimate(t)	χ^2 (DF)	χ^2 (DF)
PV-PI	.032(.47)	.382**(2.59)	268.6(120)	269.6 (121)
PV-PD	.670(6.67)***	.831***(6.63)	268.6(120)	273.9 (121)
PD-PI	.962(1.79)	.628***(3.16)	268.6(120)	271.8 (121)
R ² _{PD}	.449	.690		
R ² _{PI}	.968	.938		
Chi-square testing				
H5a	$\Delta\chi^2 / \Delta DF=0.95$			
H5b	$\Delta\chi^2 / \Delta DF=5.27$, Supported			
H5c	$\Delta\chi^2 / \Delta DF=3.2$			

* $p<0.05$; ** $p<0.01$; *** $p<0.001$

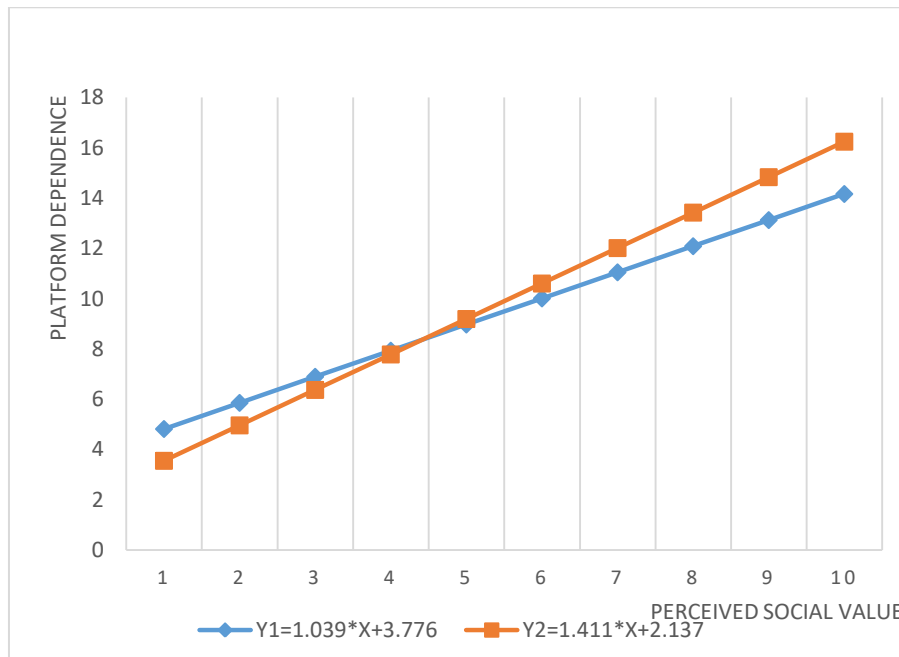


Fig. 2. Moderating effect of digital inertia

digital inertia group is lower than that of the high inertia group. In other words, respondents in the low digital inertia group do not have a specific preference for livestreaming platforms; they do not have special viewing habits; and they do not reject unfamiliar livestreaming platforms. When their perceived social value is relatively low (about 4.38), they will have a sense of dependence on livestreaming platforms. And with the rise of perceived social value, the sense of dependence of live streaming platforms will also rise. But the rise is not as high as that of high digital inertia. For respondents in the high digital inertia group, they have specific preference for livestreaming platforms and special viewing habits. In the case of rejection of unfamiliar livestreaming platforms, as long as they perceive the social value of livestreaming (about 4.38), they are more likely to have a sense of dependence on livestreaming platforms. Moreover, with the increase of perceived social value, the sense of dependence of live streaming platforms will also increase, and the increase is higher than that of low digital inertia. In other words, digital inertia has the effect of reinforcing the relationship between users' perceived social value and platform dependence.

5. CONCLUSION

In the era of digitalization and epidemic, more people deeply rely on digital tools. Digital tools

can be used to complete transactions for food delivery, daily necessities and car booking. Live broadcasting is one of the representative products in the digital era. The host transmit real-time activity information and programs to fans through the internet platform to achieve the purpose of information exchange, brand promotion, leisure and entertainment. Live broadcasting has the characteristics of real-time, interactive and fast, and is loved by the citizens. With the popularity of live streaming, users develop digital habits, which also affect the social value perceived by users, as well as their dependence on and identity of live streaming platforms. However, fewer studies have analyzed the relationships between these variables, and clarifying the relationships among these variables is helpful for enterprises to formulate marketing strategies and governments to formulate management regulations. Accordingly, the research purpose of this paper is to analyze users' digital inertia, social values, and the relationships among their dependence and their identity on livestreaming platforms. After the above analysis, the following conclusions are obtained.

- In terms of the respondents' perception of the current status of the research variables, the average perception of social value is high, and the order followed by digital inertia, platform dependence and platform identity. The respondents' views

on platform identity vary greatly, which are platform dependence, digital inertia and social value in the order. The study found that the average scores of the respondents' perceived social value was high, indicating that the respondents attach importance to their self-worth when participating in live streaming activities, hope to show their significance to others, and gain recognition from others. There is a big difference in the score of respondents' identity with the platform, which highlights the great difference in the degree of psychological connection between the respondents to the live broadcasting platform. The reason for the difference is worth further discussion by the live broadcasting industry and the brand industry.

- Furthermore, in the relationships between live streaming platforms and users, findings show that the social value perceived by users has a significant positive impact on platform identity, social value has a significant positive impact on platform dependence, and platform dependence has a significant positive impact on platform identity. The results are consistent with existing studies [14,15]. It is found that improving the social value perceived by the users is conducive to strengthening users' identification and dependence on live streaming platforms. Improving users' platform dependence will also help strengthen users' recognition of live streaming platforms. Accordingly, brand operators and live streaming platforms should strive to enhance the social value perceived by users, create psychological links, meet their leisure needs, and making it an irreplaceable activity. Finally, let users have a sense of belonging, memories and identity.
- In addition, in the relationships between live streaming platforms and users, the social value perceived by the users will affect platform identity through platform dependence, highlighting the mediating role of platform dependence. The results are consistent with existing studies [14,15]. The results show that compared with simply using social value to predict platform identity, adding platform dependence significantly improves the predictive power of platform identity. Specifically, the mediating effect is significantly greater than the direct effect,

highlighting the important role of platform dependence. Accordingly, brand operators and live streaming platforms should give priority to obtaining users' platform dependence when planning to obtain platform identity. If some activities are designed to meet the leisure needs of the users and become irreplaceable activities, they will be more likely to have a sense of psychological connection and dependence on the platform, which will help improve users' memories of the platform, as well as their ownership and identity of the platform.

- Finally, in the relationships between live streaming platforms and users, users' perceived digital inertia significantly moderates the relationship between social value and platform dependence. It is a new finding of this study and a highlight which was not proposed by other studies. In the digital era, the higher the perceived digital inertia of users, the greater the impact of their perceived social value on platform dependence. This shows the importance of cultivating and inducing users to participate in live streaming activities. Making user prefer and accustomed to participate in live streaming activities can strengthen the relationship between their social value and platform dependence. And it helps to improve users' sense of dependence on live streaming platforms. Accordingly, brand operators and live streaming platforms should give priority to developing schemes to improve users' digital inertia when planning to acquire platform dependence.

ADVICE TO THE MANAGERS

- The average score of social value based on user perception is higher, which is the possible advantage of livestreaming operators and brand operators. Livestreaming operators and brand operators should make good use of this advantage and rationally design activities to continue to enhance the social value perceived by the users. Comparatively, the degree of psychological connection of live streaming platforms is quite different, which is the possible weakness of operators. It is suggested that companies cooperate with universities or scientific research institutions to strengthen research and analysis to find feasible solutions.

- Users' perceived social value has a significant positive impact on platform identity and platform dependence. Operators should strive to enhance users' perceived social value. It is suggested that operators should strengthen users' perception of social value when designing live broadcast activities. In addition to making users feel happy, they should also benefit from material, spiritual and psychological aspects, and feel that others approve of their participation in live broadcast activities. Improving incentives in activities, such as prize response, attention to reward, like reward, retweet reward, share reward, etc., are all directions to consider.
- Platform dependence is the mediating role of social value and platform identity. Operators should strive to improve the mediating effect of platform dependence. It is suggested that operators can cooperate with universities or scientific research institutions to find frequent customers with high frequency and new customers with low frequency through big data analysis, analyze their preferences, motivation to participate in live streaming and related formatted factors of dependence, and develop different platform dependence programs.
- Digital inertia has a strong effect on the social value and platform dependence perceived by the users. It means that the operators should strive to strengthen the moderating effect of digital inertia. It is suggested that the operators can analyze users' digital inertia through background data, or cooperate with university research institutions to analyze the influencing factors of existing users and potential users' digital inertia, and develop solutions to improve digital inertia.

LIMITATIONS AND RECOMMENDATIONS FOR SUBSEQUENT RESEARCH

- This study has verified the relationships among social value, platform identity and platform dependence, and analyzed the moderating effect of digital inertia on the research variables. On this basis, subsequent research can add other moderators of platform identity and platform dependence. Such as moderators of involvement and hedonic motivation, as well as outcome variables such as words

of mouth and recommendation can be tried. It can make the research on platform dependence and platform identity more complete.

- Secondly, this study finds that high digital inertia will strengthen the relationship between social value and platform dependence, and there may be other moderating variables that will strengthen or weaken the relationship between variables. For example, subsequent studies can clarify the influence of variety seeking and reference group on the relationship between study variables.
- In addition, this study only discusses one kind of livestreaming platform and does not compare the different properties across livestreaming platforms. Based on this, future research can compare the differences in the relationship between variables of different types of livestreaming platforms. For example, there are differences between public welfare livestreaming platforms and profit-oriented livestreaming platforms, leisure and entertainment platforms, and further education and learning platforms.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Wang QQ, Xu SY, Tian Y. Twenty years of China's digital economy research: Review and prospects. *Manag Modernization*. 2021;41(06):118-21. DOI:10.19634/j.cnki.11-1403/c.2021.06.027
2. Shao H. White paper on China's digital economy development (2021), China academy of information and communications technology; 2021. Available:<https://mp.weixin.qq.com/s/PypLhzPzJlx6v0vpkRlxEw>
3. Acemoglu D, Restrepo P. The race between man and machine: Implications of technology for growth, factor shares, and

- employment. *Am Econ Rev.* 2018; 108(6):1488-542.
DOI: 10.1257/aer.20160696
4. Graetz G, Michaels G. Is modern technology responsible for jobless recoveries? *Am Econ Rev.* 2017;107(5): 168-73.
DOI: 10.1257/aer.p20171100
 5. Wang C, Li J, Huang Y. Classification, impact and countermeasures of the digital divide, *fiscal Science.* 2022;76(4):75-81.
 6. Yen TF, Zhang QL, Li R. The possible countermeasures of social media marketing. *J Glob Technol Manag Educ.* 2021;10(4):1-10.
 7. Yen TF. Assessing the possible solutions to the problems of we-chat marketing. *Asian J Educ Soc Stud.* 2021a;21(3):13-8.
DOI: 10.9734/ajess/2021/v21i330508
 8. Yen TF. How does audio marketing work? *Asian J Educ Soc Stud.* 2021b;22(3):22-8.
DOI: 10.9734/ajess/2021/v22i330534
 9. Kuo S, Nathania C, Wang A-L, Chen W-L, Yap BM. Study on the experimental marketing and customer intention of design hotel. *Tourism Hosp Manag.* 2018;6: 304-17.
DOI: 10.17265/2328-2169/2018.12.005
 10. Kushwah S, Dhir A, Sagar M. Ethical consumption intentions and choice behavior towards organic food. Moderation role of buying and environmental concerns. *J Cleaned Product.* 2019;236:117519.
DOI: 10.1016/j.jclepro.2019.06.350
 11. Lin PC, Huang YH. The influence factors on choice behavior regarding green products based on the theory of consumption values. *J Cleaned Product.* 2012;22(1):11-8.
DOI: 10.1016/j.jclepro.2011.10.002
 12. Tandon A, Kaur P, Bhatt Y, Mäntymäki M, Dhir A. Why do people purchase from food delivery apps? A consumer value perspective. *J Retailing Con Serv.* 2021; 63:102667.
DOI: 10.1016/j.jretconser.2021.102667
 13. Tournois L. Does the value manufacturers (brands) create translate into enhanced reputation? A multi-sector examination of the value–satisfaction–loyalty–reputation chain. *J Retailing Con Serv.* 2015;26: 83-96.
DOI: 10.1016/j.jretconser.2015.05.010
 14. Yen CF. The relationship between attitude, local dependence, local identity and word of mouth from the perspective of global tourism: A case study of Yibin wine cultural tourism in Sichuan Province. *J Leis Tourism Sports Health.* 2019;06:52-69.
 15. Lin S, Yen TF. Relationship among Marine sports tourist involvement, perceived value, Inertia and reputation. *Island Tourism Research.* 2019;03:28-42.
 16. Yen TF. Finding the possible solutions to the cooperation within livestream and health and wellness tourism. *Asian J Educ Soc Stud.* 2021c;18(1):34-40.
DOI: 10.9734/ajess/2021/v18i130434
 17. Ren L. Analysis of development status and optimization countermeasures of broadcast media live tape. *Audiovisual.* 2021;02:82-5 + 88.
 18. Fang X. Development hindrance and breakthrough countermeasures of network broadcast platform. *Leg Sci Technol.* 2021;09:139-40.
 19. Kaur P, Dhir A, Talwar S, Ghuman K. The value proposition of food delivery apps from the perspective of theory of consumption value. *Int J Contemp Hosp Manag.* 2021;33(4):1129-59.
DOI: 10.1108/IJCHM-05-2020-0477
 20. Khan SN, Mohsin M. The power of emotional value: exploring the effects of values on green product consumer choice behavior. *J Cleaned Prod.* 2017;150:65-74.
DOI: 10.1016/j.jclepro.2017.02.187
 21. Talwar S, Dhir A, Kaur P, Mäntymäki M. Why do people purchase from online travel agencies (OTAs)? A consumption values perspective. *Int J Hosp Manag.* 2020a; 88:102534.
DOI: 10.1016/j.ijhm.2020.102534
 22. Gu H, Ryan C. Place attachment, identity and community impacts of tourism – The case of a Beijing Hutong. *Tourism Manag.* 2008;29(4):637-47.
DOI: 10.1016/j.tourman.2007.06.006
 23. Loureiro SMC. The role of the rural tourism experience economy in place attachment and behavioral intentions. *Int J Hosp Manag.* 2014;40:1-9.
DOI: 10.1016/j.ijhm.2014.02.010
 24. Moore RL, Graefe AR. Attachments to recreation settings: The case of rail-trail users. *Leis Sci.* 1994;16(1):17-31.
DOI: 10.1080/01490409409513214
 25. Su S, Huang Z. Destination Imagery of regular games and behavioral intention of participative sports tourists: the mediating effect of place dependence and place identity. *J Phys Educ.* 2018;51(4):499-518.

26. Zhang L. To construct a model of mountaineer activity involvement and place attachment. *J Phys Educ.* 2006;39(4): 163-77.
27. Oliver RL. *Satisfaction: A behavioral perspective on the consumer.* New York: McGraw-Hill; 1997.
28. Oliver RL. Whence consumer loyalty? *J Mark.* 1999;63(4_suppl1):33-44. DOI: 10.1177/00222429990634s105
29. Yanamandram V, White L. Switching barriers in business-to-business services: a qualitative study. *Int J Serv Ind Manag.* 2006;17(2):158-92. DOI: 10.1108/09564230610656980
30. Anderson RE, Srinivasan SS. E-satisfaction and e-loyalty: A contingency framework. *Psychol Mark.* 2003;20(2): 123-38. DOI: 10.1002/mar.10063
31. Huang M, Yu S. Are consumers inherently or situationally brand loyal? A set intercorrelation account for conscious brand loyalty and nonconscious inertia. *Psychol Mark.* 1999;16(6):523-44. DOI:10.1002/(SICI)1520-6793(199909)16:6<523::AID-MAR5>3.0.CO;2-B.
32. Bozzo C. Understanding inertia in an industrial context. *J Customer Behav.* 2002;1(3):335-55. DOI: 10.1362/147539202764441083
33. Colgate M, Lang B. Switching barriers in consumer markets: an investigation of the financial services industry. *J Con Mark.* 2001;18(4):332-47. DOI: 10.1108/07363760110393001
34. Han H, Kim Y, Kim E. Cognitive, affective, conative, and action loyalty: Testing the impact of inertia. *Int J Hosp Manag.* 2011;30(4):1008-19. DOI: 10.1016/j.ijhm.2011.03.006
35. Anderson JC, Gerbing DW. Structural equation modeling in practice: A review and recommended two-step approach. *Psychol Bull.* 1988;103(3):411-23. DOI: 10.1037/0033-2909.103.3.411
36. Bagozzi RP, Yi Y. On the evaluation of structural equation models. *J Acad Mark Sci.* 1988;16(1):74-94. DOI: 10.1007/BF02723327
37. Nunnally J, Bernstein IH. *Psychometric theory.* 3rd ed. London: McGraw-Hill; 1994.
38. Fornell C, Larcker DF. Evaluating structural equation models with unobservable variables and measurement errors. *J Mark Res.* 1981;18(1):39-50. DOI: 10.1177/002224378101800104
39. Hair JF, Black WC, Babin BJ, Anderson RE. *Multivariate data analysis.* Upper Saddle River, NJ: Pearson Prentice Hall; 2010.

APPENDIX A. CORRELATION MATRIX

Item	M	SD	Perceived Social Value			Platform Dependence					Platform Identity					Digital Inertia		
			PV1	PV2	PV3	PD1	PD2	PD3	PD4	PD5	PI1	PI2	PI3	PI4	PI5	IN1	IN2	IN3
PV1	3.54	.81	1															
PV2	3.41	.88	.600**	1														
PV3	3.45	.91	.584**	.724**	1													
PD1	3.35	1.02	.463**	.509**	.535**	1												
PD2	3.39	.89	.652**	.611**	.591**	.622**	1											
PD3	2.86	1.17	.545**	.615**	.605**	.607**	.680**	1										
PD4	3.06	1.11	.516**	.562**	.595**	.553**	.632**	.774**	1									
PD5	3.08	1.07	.477**	.591**	.627**	.597**	.616**	.802**	.778**	1								
PI1	3.15	1.09	.526**	.617**	.648**	.563**	.571**	.717**	.708**	.749**	1							
PI2	3.16	1.04	.547**	.620**	.627**	.615**	.627**	.747**	.748**	.779**	.801**	1						
PI3	3.15	1.08	.482**	.585**	.563**	.589**	.614**	.686**	.704**	.709**	.712**	.745**	1					
PI4	3.18	1.09	.577**	.601**	.595**	.560**	.600**	.711**	.672**	.702**	.646**	.674**	.712**	1				
PI5	2.84	1.21	.524**	.611**	.626**	.578**	.615**	.774**	.760**	.756**	.685**	.757**	.717**	.753**	1			
IN1	3.34	.97	.556**	.520**	.558**	.456**	.566**	.591**	.613**	.541**	.539**	.613**	.558**	.577**	.594**	1		
IN2	3.37	.97	.480**	.498**	.489**	.496**	.526**	.626**	.620**	.620**	.559**	.644**	.566**	.614**	.583**	.632**	1	
IN3	3.34	.98	.507**	.503**	.526**	.460**	.567**	.582**	.619**	.578**	.591**	.638**	.582**	.644**	.597**	.662**	.744**	1

*p<0.05, **p<0.01

© 2022 Yen et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
 The peer review history for this paper can be accessed here:
<https://www.sdiarticle5.com/review-history/92657>