

# Research on the Influence Mechanism of Co-innovation Intention in Intellectual Property Service of China

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## ABSTRACT

Using theory of planned behavior, along with an analysis of the influence of co-innovation attitude, subjective norm, perceived behavioral control and other factors on co-innovation intention, this research explores the relationships among various factors. The aim of this paper is to construct a theoretical framework for the influence mechanism of co-innovation intention in intellectual property service. Using structural equation modeling to analyze the influence mechanism of co-innovation intention in intellectual property service, the results indicate the following: cooperative belief intensity, prescriptive norm, exemplary norm and resource control ability have a positive influence on co-innovation intention; prescriptive norms, exemplary norms and organizational effectiveness have a positive influence on cooperative belief intensity; and prescriptive norms, exemplary norms and organizational effectiveness have a positive influence on the evaluation of expected results.

**Keywords:** Intellectual property service, Co-innovation intention, Influence mechanism, Technological innovation

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DOI: 10.5530/jscires.6.3.20

Received: 12-07-2017

Revised: 28-09-2017

Accepted: 13-11-2017

## INTRODUCTION

As the key field of high-tech service industry development, intellectual property service plays an important role in technical innovation. In an environment of rapid technological transformation and fierce competition over intellectual property, faced with increasingly competitive pressures, enterprises gradually realize that co-innovation with stakeholders (such as suppliers, cooperative partners, service and providers) is important for improving technological innovation and maintaining a competitive advantage. While co-innovation is currently widely advocated and a hot issue in academic research, co-innovation between enterprises and intellectual property service institutions remains a challenge. Problems such as the short-term instability of co-innovation have seriously affected co-innovation intention in intellectual property service. In the context of intellectual property service, co-innovation intention is an organizational psychological variable that describes enterprises' preferences and

desires to cooperate with intellectual property service institutions.<sup>[1]</sup> Co-innovation intention influences the degree of ongoing cooperation between enterprises and intellectual property service institutions, the innovation ability and performance of enterprises and whether enterprises and intellectual property service institutions will continue co-innovation. Therefore, it is of great theoretical and practical significance to explore the influence mechanism of co-innovation in intellectual property service.

## LITERATURE REVIEW

### The concept of intellectual property service

As a new modern service industry, intellectual property service has received no systematic and comprehensive exposition. At present, domestic and foreign scholars have different understandings of intellectual property service. Some scholars define the subject, object and content of intellectual property service from a macroscopic perspective. For example, scholars such as Peng and <sup>[2,3,4,5,6]</sup> define intellectual property service as a kind of service of intellectual property service institutions or social organizations that provides legal agency, information and consulting, intellectual property personnel training, commercialization of intellectual property and other related services for enterprises and government in the creation, ap-

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plication, management and protection of intellectual property. Some scholars, from a microcosmic perspective, define intellectual property service based on its characteristics. Scholars such as [7,8,9] note that intellectual property represents and allows for innovation, where the goal is to provide services about knowledge and innovation and to realize the value of intellectual property.

According to the above analysis, intellectual property service is a kind of comprehensive service based on related laws and regulations. Intellectual property service institutions and social organizations of all kinds use their knowledge and skills to provide services for subjects of intellectual property innovation (such as enterprises, universities, research institutions and non-service inventors) in the creation, application, management and protection of intellectual property. The goal of these services is to acknowledge the value of intellectual property. From this definition, we find that intellectual property service involves multiple subjects. Among the service subjects are all kinds of intellectual property service institutions and social organizations, and the service objects include intellectual property innovation subjects such as enterprises, universities, scientific research institutions and many others. In addition, as the policy maker of intellectual property, the government also plays an important role in developing intellectual property service. In addition, the content of intellectual property services is also multiple, including not only technical services but also economic and legal services. To some extent, the diversity of subjects and content suggest that it is essential and feasible to provide service assurance for technical innovation in the cooperation of intellectual property services.

### The influencing factors of co-innovation intention

At the low co-innovation intention level, scholars from different perspectives analyze the influencing factors of co-innovation intention, and do so in different ways.<sup>[10,11,12]</sup> Explore the relationship between risk factors and co-innovation intention.<sup>[13]</sup> Note that the level of internal technical resources and innovative talents are the important influencing factors of co-innovation intention in the SMEs.<sup>[14,15]</sup> Find that social capital and social networks have a positive effect on co-innovation.<sup>[16]</sup> Thinks that the co-innovation intention of SMEs depends on the demand for complementary resources and the attraction of potential cooperative partners.<sup>[17,18]</sup>

Explore co-innovation intention from the perspective of promise and trust in relational-embeddedness organization. They consider that cooperative relationships are based on bilateral trust. Therefore, the more bilateral trust, the stronger the possibility and intention of long-term cooperation.

Based on the above literature review, co-innovation intention is influenced by many internal and external factors. However, since the research on external factors focuses mainly on the

relationship of co-innovation between enterprises, it overlooks the influence of intellectual property service on co-innovation intention.

With increasingly fierce competition in the field of intellectual property, as an important auxiliary force of enterprise technological innovation, the development of intellectual property service institutions will have a significant impact on enterprises' co-innovation intention. This furthermore determines the efficiency of co-innovation. Therefore, this research will concentrate on the influencing mechanism of co-innovation intention in intellectual property service, helping enterprises to accurately comprehend the construction and management of cooperative relationships with intellectual property service institutions. The goal is to enhance co-innovation intention, enrich the theory of co-innovation and provide instructions and suggestions for researchers and practitioners.

### The related attribute research of intellectual property service and co-innovation intention

To research co-innovation intention in intellectual property service, it is first necessary to make the relationship between these two clear. From the perspective of strategic alliance,<sup>[19,20]</sup> think that co-innovation is a strategic alliance between organizations to achieve the goal of technological innovation. From the perspective of technology learning and ability acquisition,<sup>[21,22]</sup> define co-innovation as the process of mutual learning between organizations, and an effective way for enterprises to learn technology. From the perspective of innovation value chains,<sup>[23]</sup> define co-innovation as the process of technological innovation and application through cooperation with other organizations. From the perspective of social network effects, which emphasizes non-economic interdependence among organizations,<sup>[22]</sup> and<sup>[24]</sup> think that co-innovation allows enterprises to transcend their own boundaries to achieve resource sharing and complementary advantages. Thus, co-innovation intention is the preference and willingness of enterprises to co-innovate with stakeholders (such as suppliers, partners, and service providers), whose goals are complementary resources, cost reduction, risk prevention, technical learning and to enhance technological innovation.

Due to the diversification of intellectual property service demand, the variety of content and the characteristics of innovation, this research concludes that there are some commonalities between co-innovation and intellectual property service: the enterprise is both the subject of co-innovation intention and the main object of intellectual property service. The goals of enterprises participating in co-innovation are complementary resources, cost reduction, risk prevention, technical learning and enhancement of technological innovation. The diverse service and innovation of intellectual property services can guarantee professional and high-value services for enterprises

in the process of co-innovation, which will help enterprises enhance technological innovation. Thus, the research of co-innovation intention is of great significance for enterprises to achieve co-innovation in the intellectual property service.

## Theoretical Basis and Research Hypothesis

### Theoretical basis

Based on the above analysis of the influencing factors of co-innovation intention, we can see that co-innovation intention between enterprises is influenced by factors such as the level of technology resources, trust, risks and the attractiveness of partners. Therefore, to thoroughly analyze the influencing factors of co-innovation intention between enterprises and intellectual property service institutions, this study relies on the influencing factors of theory of planned behavior, which includes the subject's perception of his own behavior, the influence of social pressure on behavior and whether the subject is able to control opportunities and resources. This study also relies on the characteristics of co-innovation in intellectual property service from the perspectives of co-innovation attitude, subjective norm and perceived behavioral control to analyze the influencing factors of co-innovation intention in intellectual property service.

### Among these perspectives

The co-innovation attitude refers to an evaluation of the preferred degree of innovation subject to co-innovation in a given situation, as well as a comprehensive evaluation of the expected results, which mainly includes cooperative belief intensity and evaluation of the expected results.

Subjective norm refers to the influence of the external environment on subjects of cooperation. That is, subjective norm is the social pressure perceived by cooperative subjects whether they are willing to co-innovate or not, which mainly includes prescriptive norm and exemplary norm.

Perceived behavioral control refers to the degree of difficulty of implementing co-innovation perceived by cooperative subjects. This reflects the subjective perception of the factors which may promote or hinder the implementation of co-innovation, which mainly includes organizational effectiveness and resource control.

### Research hypothesis

#### The relationship between co-innovation attitude and co-innovation intention

On the one hand, the main form of internal motivation for co-innovation is behavioral attitude. Cooperative belief intensity is the expectation of the innovation subject and the intellectual property service institutions to achieve co-innovation, and is influenced by the attitude of innovation subjects toward intellectual property services, as well as the manner and degree of

intervention. In the process of creation, application, protection and management, when an innovation subject realizes its strategic goal of technological innovation, that subject will actively seek cooperation with intellectual property services to better adopt external services and integrate internal innovation. At the same time, intellectual property service institutions can aid technological innovation in areas of agency, law, information, consulting, commercialization, training and other aspects. Such institutions will promote the commercialization and industrialization of innovation achievements and improve technological innovation. Furthermore, to some extent, it will strengthen the identity of innovation subjects and service institutions for co-innovation in the process of intellectual property service while stimulating co-innovation intention.

On the other hand, expected results evaluation is thought of as the positive or negative estimation of cooperative results, where such results are evaluated by intellectual property innovation subjects and intellectual property service institutions. Enterprises hope that participation in co-innovation can bring positive returns to expected results.<sup>[25]</sup> During co-innovation, enterprises and intellectual property service institutions will make an expected evaluation of co-innovation returns. In other words, enterprises will judge whether the result is positive or not. Positive returns lead to a positive behavioral attitude, which can strengthen co-innovation intention; negative returns lead to a negative behavioral attitude, which can weaken co-innovation intention.

#### In conclusion, the research outlined above suggests the following assumptions

H1a: The cooperative belief intensity has a positive effect on co-innovation intention.

H1b: The expected results evaluation has a positive effect on co-innovation intention.

#### The relationship between subjective norm and co-innovation intention

In the co-innovation of intellectual property service, a prescriptive norm is a form of governmental support that is received by innovation subjects and intellectual property service institutions. For innovation subjects, it is difficult to obtain a better environment for innovation without governmental support. Many cases in which enterprises receive governmental support show that, in the process of co-innovation, government provides a good environment and supportive systems for enterprises.<sup>[26]</sup> Under the unconscious influence of this pressure and motivation, innovation subjects will strengthen co-innovation intention in the creation, application, protection and management of intellectual property. Intellectual property service institutions with governmental support can have

better chances of development and provide high-level services for innovation subjects to participate in co-innovation. This will make intellectual property service institutions become important cooperative partners with innovation subjects and enhance the competitiveness of the high-tech service industry. Therefore, based on self-interest, innovation subjects and intellectual property service institutions will enhance executive intention of co-innovation under the influence of policy perception.

In the development of intellectual property service, an exemplary norm is thought of as the demonstrative effect of co-innovation strategy adopted by innovation subjects or intellectual property service institutions. From a knowledge perspective, technological innovation is a kind of knowledge innovation, and organizational learning can be seen as an enterprise that promotes knowledge innovation and improves independent innovation.<sup>[27]</sup> In terms of intellectual property, the cooperation between innovation subjects and intellectual property service institutions will improve innovation efficiency, turning an intellectual property advantage into a competitive market advantage, while also enhancing industry competitiveness. In this cooperative and innovative circumstance, the influence of a demonstration effect can teach other enterprises in the same industry a similar development mode, which has a positive influence on co-innovation intention in intellectual property service.

#### **In conclusion, the above research suggests the following assumptions**

H2a: The prescriptive norm has a positive effect on co-innovation intention.

H2b: The exemplary norm has a positive effect on co-innovation intention.

#### **The relationship between perceived behavioral control and co-innovation intention.**

In the co-innovation of intellectual property service, organizational effectiveness emphasizes the degree of confidence in whether the intellectual property innovation subject and the intellectual property service institutions can accomplish co-innovation on their own. Therefore, the organizational effectiveness of co-innovation behavior comes from the confidence of the intellectual property innovation subject in their own technological innovation ability and from the confidence of the intellectual property service institutions in their service abilities. In the state of competition and cooperation, intellectual property risk has become one of the three major risks that enterprises face.<sup>[28]</sup> The greater risk that enterprises face of losing intellectual property—the more knowledge resources that have been leaked—the higher the probability of illegal misappropriation will be, which furthers the demand of enterprises

to protect their knowledge resources.<sup>[29]</sup> The more confidence in the enterprise's technological innovation behavior capability, the higher the demand for protecting intellectual property will be, and the greater co-innovation intention with intellectual property service institutions will be. Furthermore, when an intellectual property service institution is confident in the high-level and comprehensive intellectual property service it provides for enterprises, it is willing to cooperate with enterprises in a state of mutual satisfaction.

Innovation subjects and intellectual property service institutions need not only confidence to cooperate but also the ability to allocate resources and coordinate friendships needed in co-innovation. Co-innovation in intellectual property service is mainly based on intellectual property—one of the intangible assets. On the one hand, innovation subjects have many intellectual property resources, which need professional service to uphold the value of intellectual property. On the other hand, intellectual property service institutions have many service resources, which need to provide intellectual property services for innovation subjects to realize their value. Because of the constraints of resources owned by innovation subjects and intellectual property service institutions, these parties must cooperate to achieve complementary resources. When both sides reach a tacit understanding of cooperation on needed resources in co-innovation and think they can control the process and results of co-innovation well, they will participate in co-innovation.

#### **In conclusion, the above research suggests the following assumptions**

H3a: Organizational effectiveness has a positive effect on co-innovation intention.

H3b: Resource control ability has a positive effect on co-innovation intention.

#### **The relationship between behavioral attitude, subjective norm and perceived behavioral control**

As the three factors of TPB theory, behavioral attitude, subjective norm and perceived behavioral control are interdependent. In particular, subjective norm and perceived behavioral control have a positive effect on behavioral attitude.<sup>[30,31]</sup> In the process of co-innovation, innovation subjects and intellectual property service institutions devote much time and effort so that they can reduce the uncertainty of the result. So that under this circumstance, the innovation subject and the intellectual property service institutions tend to ask for help with finance and policy from government, which can help to withstand risks and generate a positive behavioral attitude in co-innovation. In addition, they tend to ask experienced and trusty enterprises or institutions for help. When supported, they will generate a positive attitude.

Generally, the organizational effectiveness of innovation subjects and intellectual property service institutions to some extent may affect their behavior attitude. The higher degree of confidence in their cooperative and innovative abilities, the more positive their attitudes will be. In addition, innovation subjects and intellectual property service institutions select-partners and co-innovative content based on their own resources to develop strong points and avoid weak points, which will promote co-innovation. Especially in the process of co-innovation, technological innovation cycle and the uncertainty of intellectual property service value are the key problems in need of innovation subjects and intellectual property service institutions to solve. When innovation subjects and intellectual property service institutions can accurately locate their own resource control abilities in co-innovation, their behavioral attitudes will become more positive.

### In conclusion, the above research suggests the following assumptions

H4a: The prescriptive norm has a positive effect on cooperative belief intensity.

H4b: The prescriptive norm has a positive effect on the evaluation of expected results.

H4c: The exemplary norm has a positive effect on cooperative belief intensity.

H4d: The exemplary norm has a positive effect on the evaluation of expected results.

H5a: Organizational effectiveness has a positive effect on cooperative belief intensity.

H5b: Organizational effectiveness has a positive effect on the evaluation of expected results.

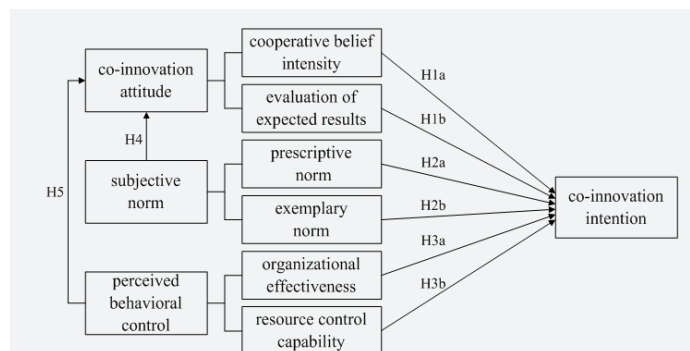
H6a: Resource control ability has a positive effect on cooperative belief intensity.

H6d: Resource control ability has a positive effect on the evaluation of expected results.

### Theoretical framework

Based on the analysis of the relationship among the co-innovation attitude, subjective norm, perceived behavioral control and co-innovation intention, this research constructs a theoretical model that shows that three other variables influence co-innovation intention, as shown in Figure 1.

The influence mechanism model of co-innovation intention in intellectual property service has two parts. First, based on the theory of planned behavior and the characteristics of co-innovation, the model analyzes the influencing factors of co-innovation behavior from the perspective of co-innovation attitude, subjective norm and perceived behavioral control,



**Figure 1: The Theoretical Model of the Influence Mechanism of Co-innovation Intention in Intellectual Property Service.**

while exploring the relationship between these three variables in intellectual property service. Second, the model explores how each dimension of the three variables—co-innovation attitude, subjective norm and perceived behavioral control—affects co-innovation intention in intellectual property service.

### Research Methods

In this research, a questionnaire is conducted to verify the theoretical model and research hypotheses to improve the general applicability of the results.

### Sample selection and data collection

The research group conducts interviews and questionnaires in the field of intellectual property service institutions, enterprises, universities and research institutions in the form of field visits, telephone consultations and e-mail communications. Additionally, the research group also uses a network platform to obtain domestic patent agency industry-related personnel data, especially distribution questionnaires to a forum on Sibos. Sibos is the leading intellectual property professional portal in China, whose users have more than 160 thousand people. The portal is mainly for inventors, intellectual property service personnel, intellectual property management personnel and other industry professionals, and it provides strong support for the acquisition of research data.

The subjects of this research are the intellectual property service personnel, the intellectual property researcher, the inventor and the intellectual property related personnel. A total of 380 questionnaires were sent out, and 341 questionnaires were collected, with a questionnaire return rate of 89.74%. Sixteen questionnaires were eliminated as invalid. Three-hundred and twenty-five of the questionnaires were valid, with an effectiveness rate of "95.3%". Through statistical analysis of the effective sample data, we get the descriptive statistics of respondents' basic information Table 1. Table 1 shows that at the individual level, there are 181 male patent agents in the sample, accounting for 55.7% of the total population surveyed.

**Table 1: Descriptive Statistics of Respondents' Basic Information.**

Sample Characteristics	Classification Criteria	Samples Size	Proportion (%)
Gender	Male	181	55.7
	Female	144	44.3
Age	25 and below	59	18.2
	25-35	164	50.5
	36-45	76	23.4
	45-60	26	8.0
Education	College	26	8.0
	Bachelor's	167	51.4
	Master's	100	30.8
	Doctorate	32	9.8
Title	Primary	77	23.7
	Middle	99	30.5
	Vice-senior	73	22.5
	Senior	19	5.8
	Others	57	17.5
Career	Inventor/Technical staff	69	21.2
	Intellectual property service personnel	93	28.6
	Intellectual property researchers	71	21.8
	Others	92	28.3

Of these patent agents, 50.5% of are aged at 25-30 years old. In terms of education level, Master's degree accounts for most (40.6%), indicating that the research subjects are highly educated.

### Research variables and measurement

To ensure both the reliability and validity of measurement tools and the rationality of the questionnaire's design, the variable design should use as common and effective a scale as possible. Given the aim and theme of this research, as conducted by intellectual property experts and professionals who design questionnaires, we first form the primary measurement scale, and then determine the final measurement scale with exploratory factor analysis. In addition to basic information on the questionnaire, the question for each scale is in the form of a five-point Likert scale (1 represents very unimportant, while 5 represents very important):

### Co-innovation attitude

Based on related indexes of behavioral attitude variables from [32,33] in theory of planned behavior, the items in question include cooperative belief intensity and expected result evaluation, as found in the analysis of intellectual property service content by [34]. Cooperative belief intensity mainly measures the degree to which innovation subjects and intellectual property service institutions are willing to engage in co-innovation. This measure includes 7 items, including services such as information retrieval, text writing, communication and reply, tort litigation, commercialization, patent warning and

patent strategy management. The evaluation of expected results measure the expected return from co-innovation. This measure includes 3 items, including the prediction of patent value, the evaluation of patent quality and the prospects of patent application.

### Subjective norm

Based on related indexes of subjective norm variables by [35,36] in theory of planned behavior, the items in question include prescriptive norm and exemplary norm, as found in research by [37] that enterprises are supported by exploratory innovation. The prescriptive norm mainly measures the guidance, encouragement and degree to which government supports co-innovation behavior in intellectual property services. This includes 5 items, including policy guidance, project support, and financial support. The exemplary norm mainly measures the positive impact of co-innovation among typical subjects within the same industry or in the process of development, which includes 3 items.

### Perceived behavioral control

Based on related indexes of perceived behavioral control by [38,39,40] the items in question include organizational effectiveness and resource control. Organizational effectiveness measures the confidence levels of cooperative subjects who are engaged in co-innovation. This includes 4 items, including the confidence of intellectual property service institutions in their service, the confidence of innovation subjects in their technology research and the confidence of both sides in their resource

**Table 2: The Reliability and Validity of Variables.**

Variable	Question Code	Factor Load	T	Cronbach's $\alpha$	Absolute Fit Index	Relative Fit Index
Co-innovation attitude	XN1	0.724	—	0.829	=2.758 RMSEA=0.074	GFI=0.978 AGFI=0.960 NFI=0.969 CFI=0.991
	XN2	0.714	11.968			
	XN3	0.685	11.494			
	XN4	0.703	11.790			
	XN5	0.678	11.382			
	XN6	0.513	8.592			
Subjective norm	JG1	0.717	—	0.715	=2.758 RMSEA=0.074	GFI=0.972 AGFI=0.934 NFI=0.964 CFI=0.976
	JG2	0.729	11.680			
	JG3	0.591	9.620			
	ZL1	0.774	—			
	ZL2	0.710	12.197			
	ZL3	0.655	11.240			
Perceived behavioral control	SF1	0.698	—	0.746	=2.876 RMSEA=0.076	GFI=0.982 AGFI=0.938 NFI=0.975 CFI=0.984
	SF2	0.697	10.977			
	SF3	0.721	11.153			
	ZX1	0.648	—			
	ZX2	0.886	11.507			
	ZX3	0.772	11.483			
Co-innovation intention	KZ1	0.553	—	0.796	=2.079 RMSEA=0.058	GFI=0.987 AGFI=0.960 NFI=0.976 CFI=0.987
	KZ2	0.632	7.814			
	KZ3	0.804	8.710			
	YY1	0.696	—			
	YY2	0.601	9.121			
	YY3	0.742	10.700			
	YY4	0.588	8.956			
	YY5	0.682	10.116			

control. Resource control mainly measures the degree of control that cooperation subjects have over needed co-innovation resources. This includes 5 items, including the resource control of both sides in a given partnership, cost, the service abilities of intellectual property service institutions, innovative abilities of innovation subjects and the resources that they own.

### Co-innovation intention

Based on the cooperative intention measurement tool developed by,<sup>[41,42]</sup> combined with the characteristics of co-innovation in intellectual property service, as discussed by related experts and scholars, the items measure co-innovation intention by analyzing reasons for co-innovation. This involves 6 items, including research and development of core technology, the improvement of patent protection, transformation efficiency, patent management and service quality.

## DATA ANALYSIS

### Reliability and validity test

This research uses the most common method—Cronbach's $\alpha$  coefficient to test the internal consistency and reliability of the questionnaire. Test results show that the Cronbach's $\alpha$  of each variable is greater than 0.7 (Table 2), indicating that the scale of the questions is reliable. This research uses confirmatory factor analysis with the statistical software AMOS21.0 to test the validity of concept construction. Table 1 shows that the fitting index of each variable is exact and that the standardized factor loading of all items are greater than 0.5, indicating that each variable has a good validity structure.

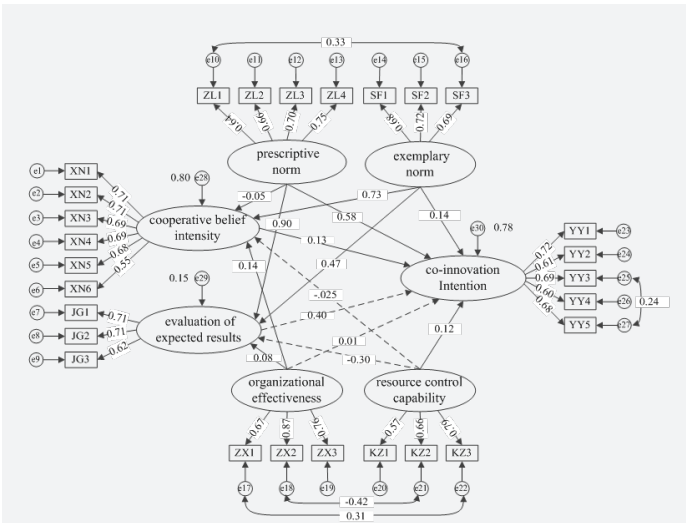
### The correlation analysis

This research uses SPSS18.0 preliminary to analyze the correlation between variables and uses the two-tailed test to assess

**Table 3: The Correlation Coefficient between Variables.**

	Pearson Correlation						
	Cooperative belief intensity	Evaluation of expected results	Prescriptive norm	Exemplary norm	Organizational effectiveness	Resource control ability	Co-innovation intention
Cooperative belief intensity	1						
Evaluation of expected results	0.750**	1					
Prescriptive norm	0.491**	0.521**	1				
Exemplary norm	0.547**	0.595**	0.760**	1			
Organizational effectiveness	0.468**	0.469**	0.424**	0.433**	1		
Resource control ability	0.349**	0.319**	0.326**	0.356**	0.515**	1	
Co-innovation intention	0.574**	0.546**	0.658**	0.665**	0.437**	0.372**	1

\*\* Significant correlations at 0.01 level (bilateral)



**Figure 2: Path Analysis Model of Structural Equation Model.**

the significance. Table 3 shows a high correlation between variables, which grounds a hypothesis about the relationship between the variables.

**Model building and hypothesis testing**

Structural equation modeling software AMOS21.0 was used to identify the relationship between the related variables in theoretical frame and obtain a calculation of the path analysis model of the research (Figure 2). The results show the final fit index: absolute fitness index=1.658; approximate error root RMSEA=0.045; relative fitness index GFI=0.898; AGFI=0.872; NFI=0.879; and CFI=0.947. All indexes satisfy the fitness standard, indicating that the model fitting effect is good. On a further hypothesis, shown in Table 4, cooperative belief intensity, prescriptive norm, exemplary norm and resource control ability each positively influence co-innovation attitude. The standardized path coefficients, namely, 0.134, 0.579, 0.137, and 0.124, all reach the significance level at P<0.001. Prescriptive norm, exemplary norm and organizational effectiveness have a significantly positive impact on the intensity of cooperative

intention. The standardized path coefficients, namely, 0.117, 0.727, and 0.080, all reach the significance level at P<0.001 or p<0.005. Furthermore, prescriptive norm, exemplary norm and organizational effectiveness have a significantly positive impact on the evaluation of expected results. The standardized path coefficients, namely, 0.901, 0.736, and 0.138, all reach the significance level at P<0.001 or p<0.005.

**RESULTS AND DISCUSSION**

This research explores the relationship among co-innovation attitude, subjective norm, perceived behavioral control and co-innovation intention while also exploring their influence mechanism. The research shows the following:

First, in intellectual property service, the more positive the co-innovation attitude is, the more significant the co-innovation intention will be; the more positive prescriptive and exemplary norms are perceived, the more this will benefit the formation of a positive co-innovation attitude; the stronger resource control ability is, the more this will benefit the formation of co-innovation intention. First, enterprises and intellectual property service institutions tend, through co-innovation, to improve technological innovation, resulting in the full protection of intellectual property services, motivating both sides to engage in co-innovation. Then, through co-innovation, enterprises and intellectual property service institutions should be good at seeking government aid, while understanding co-innovation policies through multiple channels. Further, they should fully appreciate the positive prescriptive norm, while also paying attention to similar enterprises, intellectual property service institutions and developmental trends in intellectual property. Using co-innovation to achieve success in real cases is more productive than established enterprises have expected. Enterprises should bring the exemplary norm into full play as a means of self-encouragement. Ultimately, in co-innovation, both sides should efficiently combine the intellectual property resources owned by enterprises with the resources owned by intellectual property service institutions



**Table 4: Parameter Estimation and Hypothesis Testing of Structural Models.**

Hypothesis	Action path	Standard path coefficient	Significance probability	Assume test results
H1a	Co-innovation intention <--- Cooperative belief intensity	0.134	***	support
H1b	Co-innovation intention <--- Evaluation of expected results	0.399	0.356	not support
H2a	Co-innovation intention <--- Prescriptive norm	0.579	***	support
H2b	Co-innovation intention <--- Exemplary norm	0.137	***	support
H3a	Co-innovation intention <--- Organizational effectiveness	0.007	0.532	not support
H3b	Co-innovation intention <--- Resource control ability	0.124	***	support
H4a	Cooperative belief intensity <--- Prescriptive norm	0.117	0.005**	support
H4b	Cooperative belief intensity <--- Exemplary norm	0.727	0.001**	support
H4c	Cooperative belief intensity <--- Organizational effectiveness	0.080	***	support
H4d	Cooperative belief intensity <--- Resource control ability	-0.303	0.397	not support
H5a	Evaluation of expected results <--- Prescriptive norm	0.901	***	support
H5b	Evaluation of expected results <--- Exemplary norm	0.736	0.006**	support
H5c	Evaluation of expected results <--- Organizational effectiveness	0.138	***	support
H5d	The evaluation of expected results <---Resource control ability	-0.245	0.389	not support

to achieve complementary advantages, enhance the innovative resource control ability of both sides and stimulate co-innovation intention. While the impact of expected results and organizational effectiveness on co-innovation intention have not been examined, their influence cannot be ignored.

Second, in intellectual property service, the more positively that intellectual property service institutions view prescriptive and exemplary norms, the stronger organizational effectiveness and intensity of cooperative belief will be. The more exemplary norms are appreciated, the better organizational effectiveness and expected results evaluation will be. First, under the influence of Confucianism, Chinese society has distinct characteristics of high-power distance. Therefore, in the process of co-innovation, enterprises and intellectual property service institutions will tend to show some respect and obedience to organizations with guiding significance. Therefore, in intellectual property service, policy guidance, project support and financial support are means of assisting co-innovation, leading prescriptive norms to play a more positive role in co-innovation intention. In the process of co-innovation, enterprises and intellectual property service institutions will choose a reference development model for replication and research, and exemplary norms will provide support for co-innovation intention. Ultimately, once furnished with high organizational effectiveness, enterprises and intellectual property service institutions will have a high degree of confidence in their own ability to participate in co-innovation and generate strong co-innovation intention. Although the impact of resource control ability on cooperative belief intensity and expected

results evaluation have not been examined, their impact on co-innovation attitude cannot be ignored.

In this research, the questionnaire mainly focuses on eastern parts of China, where intellectual property service industry is highly developed and the sample is easy to obtain. However, since the distribution of the questionnaire has limitations, this research lacks comprehensiveness. Furthermore, the influence of part variables has not been verified. These shortcomings all provide a new direction for future research.

## ACKNOWLEDGEMENT

This work was supported by the project “National Natural Science Foundation of China” (71603038), the project “Social Science Planning Fund of Liaoning Province” (L17BGL021) and the project “Fundamental Research Funds for the Central Universities” (DUT16RW106).

## CONFLICT OF INTEREST

None of the authors have a conflict of interest to declare.

## ABBREVIATIONS USED

RMSEA: Root mean square error of approximation; GFI: Goodness-of-fit index; AGFI: Adjusted goodness-of-fit index; NFI: Normed fit index; CFI: Comparative fit index.

## SUMMARY

None.

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