Research on Trust Transfer of Heterogeneous Information Sharing Based on Infomediary

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ABSTRACT

On the condition of G2B(Government to Business) inter-organizational information sharing, vertical information asymmetry takes up dominant position, especially the credit information asymmetry between banks and government departments. As infomediary between them in the case, credit reporting system is constructed to collect and process government information in China. This research discussed the trust transfer of heterogeneous information within credit reporting system using the method of the multiple mediation path analysis. The result shows trust on information source can transfer to the perceived information quality within credit infomediary directly, and its trust can also be transferred by mediators of relevance, completeness, timeliness and accuracy indirectly. This research will play an active role in academic contribution of inter-organizational heterogeneous information sharing.

Keywords: Trust transfer, infomediary, inter-organizational information sharing.

INTRODUCTION

Credit infomediary, which is private credit bureaus(PCB) or public credit register(PCR), becomes information brokers among banks and between banks and public administration. The PCB is private credit registries to share credit information, and the PCR is non-market institution for credit information sharing [8]. Financial Institutions can get low-cost and unbiased information from the credit infomediary. Developed countries had established perfect credit system for hundred years, with dominated credit information brokers. And Credit Reporting System in China built only about 15 years, but send the depth credit information index of China up 1 to 5 in Doing Business 2014, the same as most European countries.

The credit information index is rising rapidly for three reasons: First of all, almost all the loans could been included in the credit reporting system; Secondly, it covered both positive and negative credit information; Thirdly, it collected credit information not only from financial institutions but also retailers and utilities [24]. The Credit Reporting System in China gathered information of more than 800 million people and 20 million enterprises, from nearly 10 thousand financial institutions and more than 30 public departments.

The information sharing among the financial institutions exchanges similar information, which could be ease to understood and trusted by the information receiver. And the information sharing between the government and bank exchanges heterogeneous information, which can be considered as incredible and unexplainable for the information receiver has no idea about what it represents and how it had been handled. Different kind of institutions always has different flow and mode to collect, screen, detect and process information. As a result, they have different focus with different risk preference and had been alienated in knowledge transmission, which gives up to vertical information asymmetry [4].

As the world largest public credit infomediary, Credit Reporting System serves the financial institutions with 200 items of positive credit and negative information from the government and public departments. The goal is to support the lending decision of banks by supplying further credit information of personal and firms. In fact, the information accumulating in the Credit Reporting System can be divided into three kinds, basic information of identity, credit information of transaction, and tracing information in government and community. And almost all the scholars fellow with the research of the first two, seldom paid attention on the last one. What is the evaluation of heterogeneous information sharing through infomediary to users? Can it reduce vertical information asymmetry between government and banks?

As the main problem in credit rationing, information asymmetry gave rise to adverse selection and moral hazard in credit market [7] [21]. A great many of literatures have shown that information sharing may reduce information asymmetry in the credit industry, especially for the SME loans [1] [8]. But these scholars paid close attention to sharing the same kind of information among banks. It is the focus of contradictions in western countries for institutional reason. And the literatures of information system follow with interest the direct information sharing in supply chain, especially forecast information under uncertainty [15] [17] (Ozalp Lunawat, 2014). Seldom focus on what is the effect of public information sharing in credit reporting system (PCICRS).

A recognition on information is the foundation to be use and make the best use in decision-making, the same as decision of credit risk detecting. Existing studies indicate the information source will affect information quality for the online interpersonal influence [13] [16]. Under heterogeneous information sharing based on infomediary, does the source also effect on perceived information quality, and how? Past research has shown that system design will have an important effect on perception of information quality [14]. But how the characteristics of system output influences perceived information quality? These questions have no answer. And we employ inter-organizational information sharing as a context to analyze above problems.

We had an depth interview around the problem of the last kind for three months. In our interviewing, some loan officers argue that the PCICRS would contribute to their decision making of SME lending because they trust government as a credible information source. Others have the opposite attitude for they questioned the government information. So we focus on two research question in our empirical study as follow:

RQ1. Does the information source impact the evaluation of PCICRS? And how?

RQ2. What the role in trust transfer of Credit Reporting System as credit infomediary?

Understanding the trust transfer mechanism in the process of heterogeneous information sharing based on infomediary is important for theoretical as well as practical reasons. Theoretically, such research can enrich the Inter-organizational information sharing literature by addressing a previously unexplored area of infomediary, namely the third-party services to collect information from information suppliers and supply information service to information demander. Simultaneously, this research examines the multi-median effects between source credibility and information quality, bridging effects of information infomediary during trust transfer, and its transmitting mechanism of such influence processes. For practitioners, this research can help credit infomediaries identify and benchmark alternative influence strategies to motivate inter-organizational public information sharing. Additionally, it also prompts the financial institutions to give proper guidance to its staff and customize these strategies to best use of information from infomediary.

The structure of the paper is as follows. In section 2, we present a brief overview of the practical and theoretical background of heterogeneous information sharing based on infomediary, the two kinds of trust transfer. Then, we describe key constructs and relationships in trust transfer through credit reporting system. The proposed hypotheses are then been tested using empirical data collected from a field survey of perceived information quality of PCICRS. Finally, a conclusion and limitation are presented.

PRACTICAL AND THEORETICAL BACKGROUND

Practical Background

"Adverse Selection" and "Moral Hazard" resulted from information asymmetry can be solved in two methods: Credit Risk Mitigation and Credit Information Sharing. Credit Risk Mitigation is a indirect route to control the loss or risk affect through the means of mortgage and credit derivatives. During the process, the risk can not to be reduced. And credit information sharing is the direct route of risk reduction to deal with information asymmetry.

On the basis of the analysis of policies and regulations and the national conditions of China, the service value network of inter-organizational information sharing though infomediary for credit decision-making can be drawn as Fig. 1.
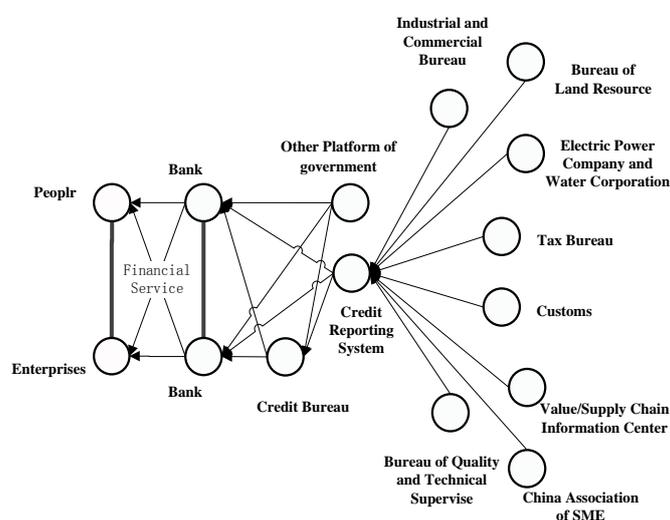

Fig. 1 Service Value Network of Inter-organizational Credit Information Sharing though infomediary

As Dig. 1, Finance Intermediary Agent can be stratified as four levels, the credit service agent of bank, the credit bureau, the infomediary of general information integration service, and the basic government information gathering. These levels are connected through service protocol and contract. First of all, information gathering level, industry and Commerce Department, Taxation Department, and Custom Department take the role of information suppliers and transfer to the infomediary, credit reference centre. Secondly, the infomediary of general information integration service level, Credit reference centre and other platform of government, provide information service by collecting the first-hand information and processes them by credit reporting systems or self owning. The Credit Reference Center of the People's Bank of China will be responsible for integrating and summarizing the information. Other Platform provide service as effective supplement to the credit reference

center on credit risk evaluation and credit management. Surely the bank can directly get data from the Credit Reference Centre and Operation Platform to fulfill the role of credit risk and management. And Credit bureau, regulation of the general information integration service, will govern the standard of market-based credit service. Finally, the credit service agent of bank, serves both corporations and individuals using the information from credit reference centre. The Credit Information and Operation Platform plays a very critical role, and the Credit Reference Center is also important as the hub for G2B information sharing.

Theoretical Background

Inter-organizational information sharing based on infomediary separated the nature and culture. Unlike the shared in the supply chain, the information users can not investigate the information collectors' behavior such as reputation and capability without direct links. But trust on an entity, such as trust on one person, a group or one institution, will be transferred to the associated entity. For example, A trust on B, and C has positive close relationship with B. D is unknown for A, B and C. Usually, A ranks C as more trustworthy than D [20]. As a result, characteristics of information will be identified and transferred by the infomediary, and the trust maybe transferred in the informediary according to trust transfer theory, too.

There are two kinds of trust transfer. One is trust transfer between targets, the other is trust transfer from a context.

First of all, trust transfers between targets, as Fig.2. The target may be assumed to be trustworthy to the extent that the group is perceived to be high confidence in impression [12]. For example, C is to be trusted by A because A trusts B, and B considered C is trusty.
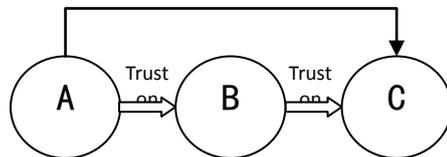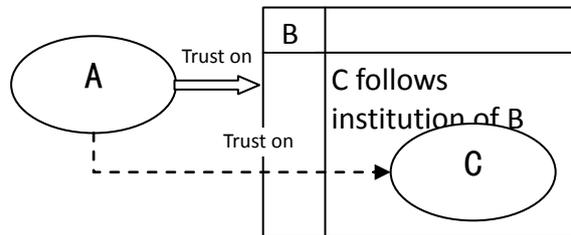

Fig. 2 Trust transfers between targets

Secondly, trust transfers from a Context, as Fig. 3. The trust may be transferred from a place or a organization to an individual. Such as, C is trustworthy, for it belongs to A which has strong structures or strict normative rules. It is the basis of trust on C followed Context A [10].

Fig. 3 Trust transfers from a Context

MODEL AND HYPOTHESIS DEVELOPMENT

Trust Transfer is relevant to understanding perceive information quality of inter-organizational information sharing by informediary because, according to HLM(Elaboration likelihood model), information adoption to large extent depend on the central route, augment quality and peripheral route, source credibility [22] [23]. However, under environment of inter-organizational information sharing based on informediary, source credibility could not be easily investigated through direct contact [13]. Usually, relationship between information source and the quality supplied by the information source is a black box, for the informediary split the ties between information quality and the performance of information source. Meanwhile, according to the literature of public informediaries, the adopt of information in credit decision-making largely relies on the trust on the credit infomediary [3] [19] [27]. What the user's investigation is the natural of information in the informediary, such as, the information supplied by the credit reporting system is relevance or useless, the information of the systems is always accuracy and comprehensive or with substantial omissions and inaccuracies, the information always can be supplied timeliness or update slowly. Relevant, comprehensive, timeliness, accuracy and current is the effective evaluation of system output of financial service department [11]. Later research unified the characteristics for the first full [5]. As a result, we focus the multi-median effects of relevant, comprehensive, timeliness, accuracy of the public information in the informediary.

We first apply trust transfer to the inter-organizational information sharing context, after recognition of particularity of information sharing through informediary. This is justifiable since empathy always plays a key role in the cognitive process according to social psychology, such as, Liking-people are easily persuaded by other people that they like. On the basis of

logical chain of "trust on information source to observable signal, and to information quality", trust on information source to observable signal and then transfer to acknowledge of information through informediary, the research model can be presented as follow, Fig. 4.
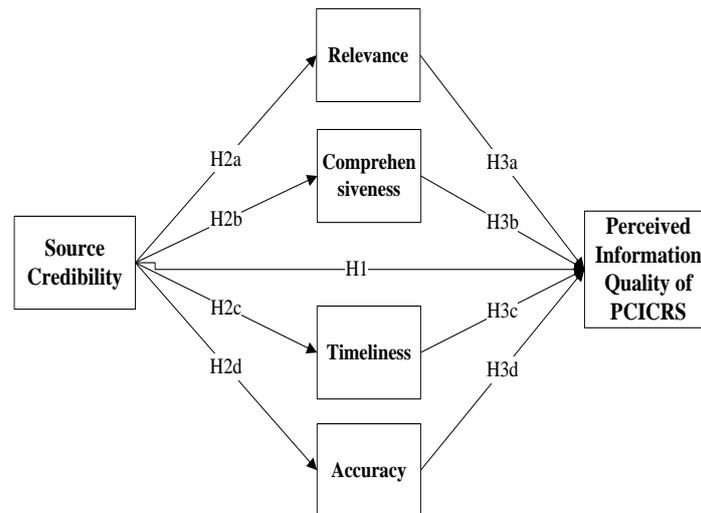

Fig. 4 Research model of Trust Transfer through Credit Reporting System

Trust transfer from the known target to the unknown target that the unknown one was thought to related to the source of the known one [25]. Further studies showed that, the process of trust transfer exists from one online target to another online target, from an online target to an offline target, from an offline target to an online target [2]. The social credit information in the credit reporting will be approved for the source of it is acknowledged. The trust on information source can be transferred to the information as a subset of the source. We thus hypothesize

H1：*Source Credibility has a directly positive effect on Perceived Information Quality.*

Trust transfers from a context to the member in it when the trustor feels security about a situation because of guarantees, safety nets, or other structures, such as enforcement mechanisms [22] (Zucker, 1986). The credit reporting system built up by the people's public bank of China. And the context of the infomediary system, relevance, comprehensive, timeliness and accuracy, are so strict that the users of banks consider information processing by the system is of high quality for it can be well collected, integrated and stored. As a result, we hypothesize

H3a：*Relevance has a positive effect on Perceived Information Quality.*
H3b： *Comprehensiveness has a positive effect on Perceived Information Quality.*
H3c： *Timeliness has a positive effect on Perceived Information Quality.*
H3d： *Accuracy has a positive effect on on Perceived Information Quality.*

Trust is the foundation of Person Decision-making [18].The information source is reliable and the information collected by the system from it will contribute to the nature of informediary, reflect on relevance, comprehensive, timeliness and accuracy. When the information of the source is relevance, comprehensive, timeliness and accuracy, the credit reporting systems will forecast as the same nature.

H2a：*Source Credibility has a positive effect on Relevance.*
H2b： *Source Credibility has a positive effect on Comprehensiveness.*
H2c： *Source Credibility has a positive effect on Timeliness.*
H2d： *Source Credibility has a positive effect on Accuracy.*

As a informediary between information source and supplied information, information will have an effect on the context of informediary as a cue and signal to identify information [20]. So Source credibility and information quality will be mediated by the context of credit reporting systems [25].

H4a： *Relevance will mediate the effects of source credibility on information quality.*
H4b： *Comprehensiveness will mediate the effects of source credibility on information quality.*
H4c： *Timeliness will mediate the effects of source credibility on information quality.*
H4d： *Accuracy will mediate the effects of source credibility on information quality.*

RESEARCH DESIGN

The research developed for two procedures. One is how to collect the data and the responses. Secondly, the other is the measurement of all the variables.

Data Collection and Responses

We collect data from loan officers, audit staff and bank manager, in charge of investigating, reviewing and approving loans. A convenience sample was collected during August, 2013. A total of 175 usable questionnaires were returned and the total samples were 220, with a 84.09% response rate. Among the responses, 52% were male, 48% were female. About 78.78% of respondents attained education level of university or above.

Measures

The measures of the six constructs in our study are listed in Table 1. The measures were borrowed from precedent achievements related. And we made a adaptive modify. A 5-point Likert scale was used.

Table 1 Measures of the constructs

Construct	Definition	Reference
Source Credibility	user's reaction to credibility of the data source from trustworthy and competence	Sussman and Siegal(2003)
Relevance	the degree of congruence between what the user wants or requires and what is provided by the system	Rabjohn et al.(2008)
Comprehensiveness	the completeness of the output information content in the system	Rabjohn et al.(2008)
Timeliness	the availability of the output information at a time suitable for its use in the system	Wixom and Todd(2005)
Accuracy	the user's perception that the information supplying by the system is correct	Wixom and Todd(2005)
Perceived information quality	a user's perceptions of output information versus the user's information requirements, as reliability of the exchange information.	Wixom and Todd(2005)

DATA ANALYSIS AND RESULT

In this part, we will first test the measurement model and then examine the structural model. The structural model will follow three steps, direct and indirect effect, total effect and mediate effects compare.

Measurement Model

The result of testing measurement model is as table 2. Cronbanch's α of Constructs exceeds 0.80 that indicates high internal consistency among the items used in one construct [6]. CFA demonstrates items get together as a way that they should be an intellectual whole. And the factor loading of all items is significant and exceed 0.7. The measurement of scales have good construct validity.

Table 2 Measurement model

Construct	Items	loading	Sig.	Cronbanch's α
Source crdibility	SC1	0.864	0	0.885
	SC2	0.880	0	
	SC3	0.890	0	
	SC4	0.815	0	
Perceived information quality	PIQ1	0.932	0	0.906
	PIQ2	0.913	0	
	PIQ3	0.909	0	
Relevance	OuR1	0.856	0	0.837
	OuR2	0.904	0	
	OuR3	0.845	0	
Comprehensiveness	OuC1	0.892	0	0.926
	OuC2	0.929	0	
	OuC3	0.898	0	
	OuC4	0.901	0	
Timeliness	OuT1	0.906	0	0.914
	OuT2	0.942	0	
	OuT3	0.923	0	

	OuA1	0.921	0	
Accuracy	OuA2	0.944	0	0.928
	OuA3	0.939	0	

Structural Model

The path coefficients and t-value of structural model is estimated as Fig.5. By using PLS for assessing and comparing indirect effects in multiple mediator models, the significant of all paths were tested.
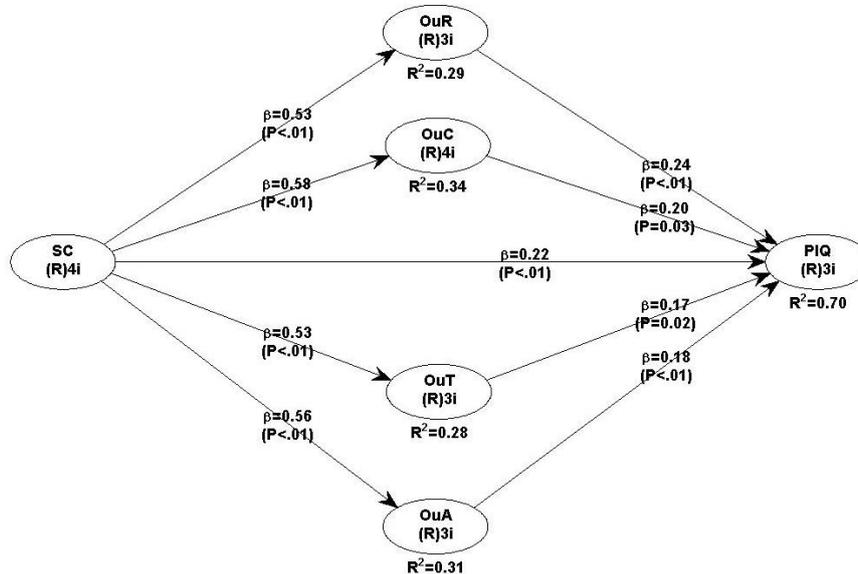

Fig. 5 Result of Structural Model

The result of general SEM analysis is, APC=0.358, P<0.001;ARS=0.384, P<0.001;AVIF=2.554 (< 5 Good). In conclusion, the fitness of the model is good.

And different summary of effects and the valid of model, such as direct effect, indirect total effect, are as table 3.

Table 3 The Total Effect of Different Effects and Model

	Coefficient	SE	P-value
Direct effect of IV on DV	0.217[***]	0.063	P<0.001
Indirect effect of IV on DV	0.439[***]	0.059	P<0.001
Total effect of IV on DV	0.655[***]	0.055	P<0.001
Modal summary	**R^2**	**p**	
DV model	0.697	P<0.001	

After analysis, the results of the study can be summarized as following. Firstly of all, this research confirms the bridging effects of infomediaries during trust transfer and its transmitting mechanism. Secondly, the study demonstrates that the source credibility will directly and indirectly affect perception of sharing information quality, which transmits by characteristics of infomediaries. Thirdly, characteristics of system outputs have mediator effect by the declining order of relevance, comprehensive, accuracy, and timeliness.

CONTRIBUTION AND LIMITATION

The research found the process of trust transfer during inter-organizational information sharing by infomediaries. The study confirmed the important effects of infomediaries system on the recognition of information quality, not only system design but also the perception of system output.

First of all, under the inter-organizational information sharing environment through informediary, either directly or indirectly, evaluation of the information source will affect the evaluation of the quality of the shared information. Directly, characteristics of informediary mediated the relationship of information source and perceived information quality in credit decision-making. Therefore, trust building is the foundation of the trust transfer, credit construction and reputation mechanism is essential.

Secondly, during G2B inter-organizational sharing, trust transfer between targets takes place from the offline information source to online credit information natual in infomediary. This is, the information receiver trust on the target for it belongs to the group which they trust. The trust of an information source (government) have effect on its subset of public information sharing in the informediary, be manifested as the characteristics of information in the informediary provided by the transfer. Meanwhile, trust transfer from a Context appears as online information natual in infomediary to offline information using in credit decision making. That is, the information receiver trust on the information because it is supplied by the credit reporting system. And they believes in its reputation and capability of information collection, screening, and processing. The information handling follow the context of credit reporting system becomes a key cues or signal for financial institutions. As a result, the informediary can bridge the trust formation and transmission of trust.

Some limitations should be noted. First of all, due to time limitation, the sample only collect for one time. A resampling would be helpful in finding the effects of these influence processes over time. Secondly, it can be widely tested in other context, such as the information quality of baidu.com. From the result of our research, we noticed four factors has signification effect on the perceived information quality. And it can be deeply explored the relative importance by comparing their effects in future research.

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