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Swift Trust and Behavioral Change: Facilitating Factors of Crowdsourcing in Chronic Disease Prevention

WU Linqi

Doctor of Management

Supervisors:
PhD Virginia Trigo, Professor Emeritus,
ISCTE University Institute of Lisbon

PhD Sandro Mendonça, Assistant Professor,
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May, 2020

BUSINESS
SCHOOL

Marketing, Operations and General Management Department

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Jury:

PhD Maria João Cortinhal, Associate Professor,
ISCTE University Institute of Lisbon
PhD Virginia Trigo, Professor Emeritus,
ISCTE University Institute of Lisbon
PhD Jorge Correia Jesuíno, Professor,
ISCTE University Institute of Lisbon
PhD Maria José Madeira, Professor,
University of Beira Interior
PhD Zhang Chichen, Professor,
Southern Medical University

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Declaration

I declare that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university and that to the best of my knowledge it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed: Date: June 16, 2020

Name:

作者申明

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作者签名： 日期： 2020.6.16

姓名(拼音)： Wu Lingi

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Abstract

Behind Internet usage habits there is a common vocabulary: trust. In order to promote preventive medicine, Internet medical care has been trying to cultivate user habits and behavior change, but whoever increases trust can go further. The Internet has accelerated the pace of work and life and generalized the temporary involvement of individuals and teams. In many organizations, there is usually no time to develop trust among team members or between the team and customers in traditional ways such as mutual familiarity, experience sharing, mutual disclosure, and verification of commitments. These new situations have led to the study of a new form of trust: *swift trust*. According to Hurd et al. (2017), *swift trust* focuses on expecting that a person has the necessary attributes to be relied upon. In the *swift trust* theory, a group or individual assumes the existence of trust initially, and later verifies and adjusts trust beliefs accordingly. Faced with the problem of the rapid spread of chronic diseases and the high proportion of medical expenses needed to combat them and that have posed challenges to the national finances in China, this thesis focuses on studying the factors that may facilitate the establishment of *swift trust* in the Internet based chronic disease crowdsourcing model.

Grounded on the idea that trust affects behavior and speed affects efficiency, we have reviewed extant literature and, with the help of ROST Content Mining (ROST-CM) text mining software, we dug millions of Internet data and conducted in-depth research on the *swift trust* problem. Results, later verified through two ongoing healthcare projects showed that “profession” followed by “platform”, “dissemination” and “propensity” are the most critical factors that affect the establishment of *swift trust*. These results may be of interest to professionals, organizations and government decision makers in need of establishing and winning trust, and particularly *swift* trust, as an essential ingredient in the sharing economy.

Keywords: Swift trust; Chronic disease prevention; Crowdsourcing; Sharing economy

JEL: M10; M31

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Resumo

Existe uma palavra comum por detrás de todos os hábitos de utilização da Internet: confiança. Com o objetivo de promover a medicina preventiva, alguns cuidados médicos prestados através da Internet têm vindo a procurar motivar os utilizadores para uma mudança de hábitos e comportamentos, mas apenas quem conseguir ganhar a confiança poderá ir mais longe. A Internet acelerou o ritmo da vida e do trabalho e generalizou a participação temporária de indivíduos e grupos. Em muitas organizações, não há tempo suficiente para se criar confiança entre os membros de um grupo ou entre grupos e indivíduos através de formas tradicionais como a convivência e o conhecimento mútuos, a partilha de experiências ou a verificação do cumprimento de compromissos. Esta situação levou ao estudo de uma nova forma de confiança: *a confiança imediata*. Hurd et al. (2017) afirmam que este conceito se refere à expetativa de que uma determinada pessoa reúna os atributos necessários para ser confiável. Segundo a teoria que estuda a *confiança imediata*, um grupo ou indivíduo assume desde logo a presença de confiança e reserva para mais tarde a confirmação da sua existência. Considerando os desafios colocados pelo rápido desenvolvimento de doenças crónicas num país tão populoso como a China e a necessidade de as combater, esta tese estuda os fatores que poderão facilitar a construção de *confiança imediata* no modelo de colaboração aberta através da Internet com vista à prevenção destas doenças.

Partindo do princípio de que a confiança afeta os comportamentos e de que a rapidez afeta a eficiência procedeu-se à revisão de literatura sobre o tema e, com a ajuda do software de mineração de texto ROST-CM (ROST Content Mining) foram recolhidos e tratados milhões de dados extraídos da Internet. Os resultados foram depois confrontados com a prática de dois projetos na área da saúde e revelaram que a "profissão" seguida da "plataforma", "disseminação" e "propensão" são os fatores que mais contribuem para a formação de *confiança imediata*. Os resultados obtidos poderão ser de interesse para profissionais, organizações e decisores governamentais que necessitam de construir e manter confiança e, em particular *confiança imediata*, enquanto ingrediente essencial na economia de partilha.

Palavras-chave: Confiança imediata; Prevenção de doenças crónicas; Colaboração aberta;

Economia de partilha

JEL: M10; M31

摘 要

慢性疾病快速蔓延、慢性病医疗费用的高支出占比，使中国国家财政面临挑战。

中国最先进的医疗设施和医疗人员主要集中在大城市。另一方面，人们对疾病预防的重视程度不够，一些健康预防医学的技术应用往往导致猜疑和不信任。

本研究采用内容分析法，主要针对分享经济中基于互联网的慢性病预防众包模式面临的快速信任问题展开深入研究。

基于信任影响行为，速度影响效率这一基本研究思路，我们进行了大量文献收集整理。

为了找到影响快速信任建立的最关键因素，我们首先通过文献回顾，对影响信任建立的各种前置条件，进行了收集并进行分析。

然而，我们在分析这些文献过程发现，历史上的各种权威论述，主要基于现实工作与生活，而很少基于虚拟网络的研究，基础共享经济与众包模式的研究更是少之又少。

因此，我们选择了内容分析法，并选择了基于互联网数据分析研究的 ROST Content Mining (ROST-CM)文本挖掘软件。

我们发现，技术是基于互联网众包平台上，影响快速信任建立的最重要因素。

为了验证本项研究的结果，我们对深圳赞狮靶向基因（SZG）视力养护项目，进行追踪研究，发现从技术突破角度进行项目推广，不仅更容易获得家长、学校的认同，而且，也会引起专业人士、政府决策者的兴趣与快速信任。

关键词：快速信任；慢性病预防；众包；共享经济

JEL: M10; M31

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首先，我要感谢我的指导老师维吉尼亚教授，在论文撰写的过程中，我遇到从选题，确定研究方法，研究困境的提取等很多问题，但是每次与维吉尼亚老师进行沟通，都可以得到很多启发与鼓励。维吉尼亚老师的工作效率非常高使得我敬佩有加，她会非常及时地回复我的电子邮件并给我提供很多有建设性的意见，同时她还指出了很多论文中的不足让我进行修改，并在一些关键概念的定义、语义的精准传达方面，给出专业建议。我由衷的感谢维吉尼亚老师，如果没有她的辛勤付出和专业指导我是无法完成此论文的。

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List of Abbreviations

APP: Application

CACA: Computer-aided Content Analysis

CHDC: China Hospital Development Conference

COVID: Coronavirus disease

DNA: Deoxyribonucleic Acid

HFN: Hastily formed network

LED: Light Emitting Diode

MCDMS: Mobile chronic disease management systems

NCD: Non-communicable diseases

NGO: Non-Governmental Organization

Q&A: Question and answer

QR: Quick Response

R&D: Research and development

ROST-CM: ROST content mining

SNA: Social Network Analysis

SNP: Single nucleotide polymorphism

SZG: Shenzhen Zanshi Targeted Gene Technology Engineering Co., Ltd.

TF-IDF: Term frequency – inverse document frequency

TV: Television

UN: United Nations

UV: Ultraviolet

WHO: The World Health Organization

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Chapter 1: Introduction

1.1 Research background

Trust and distrust are ubiquitous. Trust is considered to be important, even vital, to the cooperation in all aspects between countries, organizations, individuals as well as between companies and customers. Lewicki's Developmental Theory of Trust posits that trust relationships are multifaceted, complex linkages in which trust and distrust coexist (Lewicki & Bunker, 2018).

With the rise of internet medical care, direct marketing, social media marketing and various emerging biotechnologies, a wide range of health products and services are hard to choose. Some practitioners exaggerate the utility of products or certain technologies, and even sell counterfeit and shoddy products, often causing serious life safety incidents, bringing great confusion to the choice of healthy consumption, and also bringing a crisis of trust to the development of the health industry itself. In this regard China government departments have launched a nationwide crackdown on illegal practices involving health products, in which 11,568 law enforcement officers have been mobilized, and 11,195 firms with health product businesses have been inspected (Luo, 2019).

However, efforts are still not enough as China quickly rose to the rank of the world's second largest economy (UN, 2010) and the amount of its chronic disease patients has surpassed 300 million, still rapidly on the increase, thus producing a continuously larger base attracting a diversified group of suppliers of healthcare products. Expenditure on chronic diseases accounts for 70% of total medical expenditure (Yu, 2016), posing a huge challenge to the national health care system. Meanwhile Chinese President Xi Jinping proposed to advocate a healthy and civilized lifestyle, establish the concept of Comprehensive Health, and change the focus from treatment to promoting people's health.

How do health management organizations can build trust? How to improve the efficiency of chronic disease prevention by establishing a *swift trust* with the target population?

In the process of globalization and marketization, population mobility continues to increase. With the maturity of the internet and communication technologies, economic and social activities have become active, the pace of work and life has accelerated, involvement

of temporary individuals and teams in company operation and social activities has become natural, and temporary teams have become the norm in the 21st century. In many organizations, there is usually no time to develop trust among team members or between the team and customers in traditional ways such as mutual familiarity, sharing experiences, mutual disclosure, and verification of commitments. These new situations have led scholars to study a new form of trust that adapts to the current situation, namely, *swift trust*. According to Hurd et al. (2017), *swift trust* focuses on expecting that a person has the necessary attributes to be relied upon. In swift trust theory, a group or team assumes the existence of trust initially, and later verifies and adjusts trust beliefs accordingly. It is a form of trust occurring in temporary organizational structures, which can include quickly starting groups or teams (Meyerson, Weick, & Kramer, 1996).

As for emergency medical rescue operations in earthquakes and wars, it is easy to understand that swift trust is needed to achieve efficient cooperation because members of the temporary medical group that is formed come from various regions and even countries. However, in chronic disease prevention, patients are considerable in amount and scattered in distribution, and the prevention mainly involves factors such as daily diet structure and living habits, so it is difficult for medical institutions to carry out prevention and intervention in a centralized manner. How scattered and highly mobile health service groups or individuals can establish swift trust with the target population has become an urgent problem that many health management organizations need to solve. Trust in health care relationships is a key ingredient of effective and high-quality care.

Health care relationships do influence satisfaction with care, but recent research has shown that they also influence health outcomes (Robinson, 2016). In addition, from the economic perspective, trust directly affects cost and efficiency, whether it is high or low, trust is the "hidden variable" in the formula for organizational success. Covey and Merrill (2006) even propose a new formula that (Strategy * Execution) * Trust = Results and argue that when trust falls, the efficiency will decline, and the cost will rise.

As China's most advanced medical resources and medical personnel are mainly concentrated in large cities, it is difficult for medical and health care organizations with the core task of curing sickness to save the patients and form a high-quality service system to achieve whole people prevention. On the other hand, advances in medical science and technology cannot completely replace trust. On the contrary, the application of certain new technologies often leads to suspicion and distrust, and even mass controversy due to security concerns. In

a time of media socialization and mobilization, in addition to focusing on constantly updating and developing technologies and devices, the connection between people is more important (Shirky, 2014). A large population and underdevelopment are the two facts China has to face. Since China has 1.4 billion people, any small individual problem multiplied by 1.4 billion will become a huge one whereas any considerable amount of financial and material resources divided by 1.4 billion will become a very low per capita level as former Chinese Premier Wen Jiabao once said in his speech at Harvard University (Wen, 2003).

Due to limited government investment in resources, the trend of chronic diseases is difficult to curb, and it is imperative to establish an innovative prevention mechanism. There is a saying in China that “a person will not shed a tear until he sees the coffin”, which means a person refuses to be convinced until he is faced with grim reality. To guide the healthy and subclinical people to improve their health alertness, make real actions, eat properly, and develop healthy behaviors is the foundation to establish a prevention mechanism. However, it is necessary to involve all citizens in the building and development of the medical care system, with the benefits jointly shared by all.

After the Communist Party of China Central Committee and the State Council released the “Healthy China 2030” blueprint in 2016, which covered areas such as public health services, environment management, the medical industry and food and drug safety, the State Council China's cabinet, has issued a new guideline to implement the country's Healthy China initiative and promote people's health. With a focus on disease prevention and health promotion, the guideline proposed 15 special campaigns to “intervene in health influencing factors, protect full-life-cycle health and prevent and control major diseases”, major health concerns in society, including psychological health, student myopia, child obesity and cancer, will be covered by the campaigns (Xinhua, 2019).

Based on the basic research idea that trust affects behavior and speed affects efficiency, we have collected and sorted a large number of sources to verify the main variables that may affect swift trust, the relationship between swift trust and behavioral change, and the facilitating factors of crowdsourcing in chronic disease prevention.

1.2 Research significance

Theoretical Significance

Along with the popularity of internet and the advent of the internet era, business models

have been shifting from “supply-oriented” to “demand-oriented”. Business model innovation demands neither new technologies nor the creation of brand-new markets; instead, it is more about delivering existing products that are produced by existing technologies to existing markets (Girotra & Netessine, 2014), and because it often involves changes invisible to the outside world, it can bring advantages that are hard to copy. According to (Mitchell & Coles, 2003), the innovation of business models is the most fundamental competitive edge for enterprises, as it can help them increase their market shares and profit. Especially in the Internet-based sharing economy, swift trust is closely related to the rapid transfer of value based on innovative business models.

As part of the public health system, chronic disease prevention organizations play the role of social enterprises, with dual attributes of non-profit organizations and commercial organization complexes.

These definitions apply to trust between individuals and organizations and among individuals, and they also apply to people’s trust in computers, and even trust among computers, which lays a foundation to explore new business models, improve efficiency and cut costs.

This research integrates the perspectives of trust, swift trust and crowdsourcing and aims at playing an enlightening role, by testing the most important variables that influence the establishment of swift trust, to improve the efficiency of chronic disease prevention.

Practical Significance

Sharing economy is a term for a new way of distributing goods and services, a way that differs from the traditional model of corporations hiring employees and selling products to consumers. In the sharing economy, individuals are said to rent or “share” things like their cars, homes and personal time to other individuals in a peer-to-peer fashion (Wikipedia, 2019b). With the rise of the sharing economy, innovative business models, including crowdsourcing, are no longer limited to fund raising, ideas pooling and knowledge pooling. Instead, they have broken traditional service modes including medical healthcare and, in many aspects, they are even disruptive or “destructive” to the traditional mode.

For example, traditional enterprises are all striving to obtain customer loyalty and increase customer spending. However, crowdsourcing platforms pay more attention to empowering customers and encouraging consumers to play the role of sharers at the same time so that they are making money while spending money. It is the core operating philosophy of the crowdsourcing platform to enhance customer engagement and increase their revenue by

improving sharing efficiency and these sharers need to be “swiftly trusted”. One of the major beliefs in traditional management theory is that improvement of efficiency is the most reliable way to increase profits.

With the maturity of smart technologies, the cloud computing platform that provides crowdsourcing services can automatically provide daily catering or nutrient supplements based on the abnormal items in the customer’s medical examination and push health knowledge, service contents and even promotions or free trial products in an accurate and targeted manner. The “swift trust” of these smart cloud services is also a new topic.

Due to the maturity of digital sharing technology, health education has changed from low cost to no cost because education audios and videos can be played repeatedly and retransmitted for indefinite times, by indefinite people and at indefinite hours and locations. These health education contents also need “swift trust” and should be translated into specific preventive actions.

Based on these characteristics, this research collects many relevant research literature and screens the factors that influence the formation of swift trust. On the other hand, we conduct content mining analysis based on interview data and internet data collection, in order to establish a possible new crowdsourcing model so as to improve the efficiency of chronic disease prevention and provide specific countermeasures in actual operation.

1.3 Research content

Swift trust, which influences the behavioral change of the target group for chronic disease prevention, is the main line throughout this research.

We first need to determine which main factors of trust influence behavior change, and to clarify the feasibility from a conceptual, methodological, logical, and scientific basis; then we will further screen which factors are most likely to affect the establishment of swift trust and determine the basic range of impact factors for better verification.

The World Health Organization (WHO) pointed out the key facts about non-communicable diseases (NCDs) (WHO, 2018a). NCDs also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behavioral factors. Tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets all increase the risk of suffering from a NCD (WHO, 2018a). This provides clear clues as to the specific direction of the chronic disease prevention research, while the

list of important facts of the WHO confirms that high blood pressure, overweight/obesity, hyperglycemia (high blood glucose levels) and hyperlipidemia (high levels of fat in the blood) are four key metabolic risk factors contributing to metabolic changes that increase the risk of NCDs.

Chronic disease prevention should focus on the stage when the disease does not occur or when the disease has occurred but is not obvious yet. For healthy people, it is only a potential, not yet established demand. Therefore, if there is no necessary health education or project promotion, few healthy people will take the initiative to go to medical institutions to seek health management programs. To carry out healthy lifestyle interventions, conduct regular physical examination and health assessment, and help the malnourished to get timely supplements of essential nutrients through a crowdsourcing platform require the crowdsourcing staff to actively communicate with the target group and promote a specific crowdsourcing mode. The formation of a swift trust relationship with the target group is key to establishing a crowdsourcing model that integrates commercial and commonweal natures, realizing a self-hematopoietic function and ensuring the sustainable operation of the crowdsourcing platform.

In our research, we consider that propensity trust is an expectation based on needs or demands without which no individual or social institution can function.

Knowledge is an obvious base of these expectations or dispositional trust. By collecting information, futures may be ordered according to their judged probabilities of occurrence, thereby allowing action to proceed with greater confidence and rationality (Lewis & Weigert, 1985). However, information may also reduce, but not entirely eliminate, the perception of uncertainty about future results.

Lewis and Weigert (1985) argue that trust is a functional equivalent of knowledge for basing the expectancies underwriting social action. Trust begins where knowledge ends; it makes confident action possible where knowledge alone would leave the actor in the state of indecision and doubt. Therefore, in the process of designing the theoretical model, we classify personal knowledge as a basic condition for swift trust establishment.

A social order based largely on personal or inter-personal trust characterizes small and relatively undifferentiated societies is changing to a social order based on system trust (i.e., trust in the functioning of bureaucratic sanctions and safeguards, especially the legal system) that characterizes more complex societies (Lewis & Weigert, 1985). According to Luhmann (1982) trust may not just be a basic fact of social life but a basic fact of life since a complete

absence of trust would prevent people from even getting up in the morning. What distinguishes this kind of basic trust in the world is that it is, in contrast to other forms of trust, not even optional. Without this trust, Luhmann says that anything and everything would be possible and such confrontation with the complexity of the world would be beyond human endurance. This author believes that authoritative, legally endorsed third party information is an important pre-factor for swift trust building.

In addition, when designing the theoretical model, we listed communication as an important factor affecting the establishment of swift trust because trust occurs within a framework of interaction which is influenced by both personality and the social system and cannot be exclusively associated with either. Some form of trust is essential to meaningful relationships because it underwrites effective communication (Giffin & Patton, 1971).

In the literature collection process, we have found that there are also many studies in the medical industry about swift trust. For example, when studying the application of "swift trust" to humanitarian logistics, Tatham and Kovács (2010) concluded that humanitarian organizations are clearly embarking on a series of programs designed to improve the competence levels of their staff and there is clear potential for swift trust to be based, in part, on the possession by an individual of the relevant qualification.

In the real world, relationships in teams like these are determined by good faith rather than by a formal contract (Lu & Yan, 2007) . Regarding the importance of building swift trust for temporary groups, Weick (1993) in his analysis of the Mann Gulch disaster in which 13 US fire fighters lost their lives commented that one of the key organizational failings was the near absence of communication among the team members which resulted in a reduction in the level of intra-team coordination. In short, the lack of communication in the early stages of the development of this temporary group heightened its vulnerability to disruption. This author expressed the importance of communication for building trust.

Robinson (2016) aimed at generating trust from summed up patient and family strategies, where efforts were made to reduce relational distance and establish a human connection that contributed to living well with the chronic health problem because they supported an effective relational partnership，such as making jokes, bringing small gifts and inquiring about the well-being of the provider. According to Thorne and Robinson (1988), patients also described a variety of strategies to encourage healthcare providers to be trusted, including the use of medical language, careful use of the health care system and resources, providing concise information about the illness and treatment, withholding information that might

be judged negatively such as noncompliance or use of alternative treatment modalities, and clear, explicit requests for assistance.

Trust is considered to be a determinant on the selection of a psychologist who can ensure patient satisfaction. Trust concept is essential to be introduced into ubiquitous healthcare environment oriented on patients with anxiety disorders. Athanasiou et al. (2018) studied the process of using cloud computing technology to establish a trust evaluation mechanism and two key elements were considered: Personal Interaction Experience (PIE) and Reputation (R).This research has important implications for the establishment of a swift trust mechanism for chronic disease prevention, especially in what concerns the necessity of establishing trustful background on patient-psychologist interactions taking place when a ubiquitous healthcare environment is covered by assisting patients to discover and select trustworthy ubiquitous healthcare providers for interaction. In turn, Murray and McCrone (2015) think that future efforts to develop interventions to establish, maintain or improve trust should focus on the core qualities, interpersonal and technical competence, moral comportment and vigilance that represent modifiable provider behaviors.

Some scholars believe that the evolution of trust in interpersonal health care relationships in the context of chronic illness has three stages: the first consists in safekeeping the beginning relationship stage between patient/family and providers, and is characterized by *naive trust* (Robinson, 2016); in the second stage, named *disenchantment*, naive trust is replaced, as patient/family have a sense of risk in the health care system (Dickinson, Smythe, & Spence, 2006); finally, the third stage is *guarded alliance* during which patients and family members fully understand that chronic diseases require continuing professional care, and understand that they need to have some trust in selected providers. As Entwistle and Quick (2006, P. 400) note, “trust facilitates cooperation and allows people to inhabit a less threatening world”. Other scholars have also collected suggestions from patients and families to establish a trust strategy for health care providers, including providing concise information about the illness and treatment, use of medical language, careful use of the health care system and resources, withholding information that might be judged negatively such as noncompliance or use of alternative treatment modalities, and clear, explicit requests for assistance (Thorne & Robinson, 1988).

The one who enjoys the healthcare service and pays for is not always the same person. How to build trust with payers (this research only considers family members) is another challenge that affects chronic disease prevention. In the case of the aged and people with

mental disorders, it is more necessary to build trust in the health management process with family members rather than with the patient himself. For example, in the region of Beijing, self-reported diabetes, heart disease and strokes are more prevalent in urban than in rural areas. Conversely hypertension and dementia are similarly prevalent in both sites (Liu et al., 2009).

With the application of technologies such as mobile internet and artificial intelligence in the prevention and management of chronic diseases, patients/families also face swift trust in the technologies themselves. Whether it is traditional medicine or new technology, initial trust is the most important (He, Lu, & Zhou, 2008). But, most extant literature research focuses on common experiential trust, which is based on past experiences or interaction between two sides (Kim, Ferrin, & Rao, 2008). Zhu et al. (2017) adopted the "added variables" approach followed by Holden and Karsh (2010) to extract four contextual variables (perceived risk, perceived disease threat, initial trust, and technology anxiety) in order to examine the features of mobile chronic disease management systems (MCDMS) within the specific Chinese healthcare environment.

Initial trust can set the tone for the future relationship (McKnight, Cummings, & Chervany, 1998), so initial trust, as potential users' first impression, helps to decide the future interactive relationship as well as to promote the continuous formation of trust with MCDMS. Zhu et al. (2017) also note that, in China, the importance of initial trust will be given even more emphasis for both chronically ill patients and family members because they are unfamiliar with MCDMS. So far empirical results of "cyber" transaction decision research have found that these effects of trust, perceived risk, and perceived benefit on purchase intentions, ultimately have a "downstream" effect on consumers' actual purchase decisions as "a consumer's trust has a strong positive effect on the purchasing intention as well as a strong negative effect on a consumer's perceived risk" (Brown et al., 2011, p.556). Based on deeper trust considerations, some health care institutions with compassion and caring will want to retain Chaplains' professional services and encourage its continuing development as a unique resource to the hospital as a whole (Swift, 2013). Chaplains, faith leaders and health managers should participate in more research to understand their joint contribution to patient care in what regards the development of trust.

These studies all suggest the importance of initial trust, but do not explain from a deeper level, which factors are key to establishing initial trust. First of all, after reviewing literature on swift trust, we interpret the important variables that affect the formation of swift trust and

generate the driving force of behavior change. By establishing a swift trust mechanism and balancing commercial and service natures, we hope that health management programs targeting chronic disease prevention can be more efficiently implemented.

Next, this thesis sorts out relevant literature according to the logic of swift trust and its power to build relationships considering that the prevention of chronic diseases requires the help of network relationships, because their richness and dynamism can help obtain access to more commercial and public resources.

Finally, through research on swift trust and connecting relationships, a business model structure based on connecting relationships is proposed. In contrast with the traditional linear business model, we study the advantages of the business model based on network relationships so as to provide better guidance to the application of chronic disease prevention.

1.4 Research methods

This section briefly summarizes the research methods used in this thesis which will be described in detail in Chapter 3.

Data and information are collected through interviews, observations, and secondary sources obtained through multi-channels in order to understand the operation status of crowdsourcing of chronic disease prevention in the Chinese background. In-depth overall discussion is conducted, and data are processed by the method of repeated comparison.

1.5 Research framework

To build a well-established conceptual model of trust, we believe that there are at least four challenges to overcome:

1. The first challenge is to define well the construction through definition of variables so as to generate a measurable trust structure.

2. The second challenge is that the structure should be concise in order to be easy to understand and to enable concepts to be distinguished from each other without ambiguity.

3. The third challenge is to connect the correlative concept types. Constructs of different trust structures are different from each other, and we attempt to connect them. A good typology is not a collection of undifferentiated entities but is composed of a cluster of traits which do in reality “hang together” (Tiryakian, 1968).

4. The fourth challenge is to make sure that the structure is connected in a meaningful way. Constructs are of interest only if they are connected to other constructs (Schwab, 1980).

The thesis is organized as follows:

Chapter 1 is the introduction, and expounds the research background, the research significance, the major research content, the summary of the methods and the major research framework.

Chapter 2 presents the literature review, including literature on crowdsourcing, trust and swift trust as well as provides theoretical support to the research

Chapter 3 explains the research methods used and expounds the data sources involved as well as the ways of data processing.

Chapter 4 presents the cycle process of swift trust, forming its basic cycle process through data processing, extracting key constructs and forming propositions. The ROST-CM software is used to obtain research results.

Chapter 5 is a verification case of an eye healthcare project, to verify the main factors that affect the swift trust building in the acceptance process of a prevention device by school and parents. The chapter also gives suggestions of potentially application field of analysis results.

Chapter 6 is the research conclusion, in which a summary is made of the whole thesis, and suggestions are put forward for future research work.

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Chapter 2: Literature Review

2.1 Definition of trust

2.1.1 Basic concept of trust

There are many understandings and definitions of trust, which can be quickly found in the literature through web search engines. It involves multiple disciplines such as anthropology, communication, economics, history, psychology, sociology, philosophy and political science. In discussing various models of trust, it is appropriate to begin with a definition of the concept, although, as observed by Rousseau et al. (1998), in a cross-disciplinary review, it is a 'meso' concept integrating micro level psychological processes and group dynamics with macro level institutional arrangements.

When reviewing the literature, we found that the concepts of inter-organizational, intra-organizational and personal trust have been studied intensively from various perspectives, and there is even a special academic issue in terms of the relationship between trust and control (Bachmann, Knights, & Sydow, 2001). Particularly in the literature related to supply chain collaboration, trust is a core concept (Barratt, 2004). One of the cornerstones of the development of trust in supply network management is through cross-functional and inter-organizational teams (Christopher, Peck, & Towill, 2006). Some scholars (Fawcett, Magnan, & McCarter, 2008) go as far as to call these "supply chain teams" and list a lack of trust as one of the most significant barriers to effective management of supply networks. Within such networks, the supply network itself and competitors are two important dimensions considered in external collaboration (Barratt, 2004), the latter becoming increasingly important in project-based industries (Beach, Webster, & Campell, 2005). Cook and Wall (1980, P. 39) defined trust as "the extent to which one is willing to ascribe good intentions to and have confidence in the words and actions of other people". Farris, Senner, and Butterfield (1973, p. 145) think that trust is "a personality trait of people interacting with the peripheral environment of an organization". Dasgupta (2000) also saw trust as generalized expectations of others.

Although it is too early to reach a consensus on the various concepts of trust, the important results of this research offer a clearer understanding of the cause and effect of trust. It not only develops models that link different causes with trust, but also studies various evolutionary models of trust development. Popa (2005) has proposed the following variables affecting the establishment of trust in temporary groups: premises of group communication behavior and trust, generalized trust, and credibility of influence and initiative. He also believes that the following factors may be affected by the existence or absence of swift trust: traceability of trustworthiness, group performance, and group satisfaction.

2.1.2 Personal trust and organizational trust

Considering the individual differences in the prevention of chronic diseases and the individual behavior effects generated by health education, which are the focus of this thesis, the definition of trust referred to herein focuses on trust between individuals rather than within or between organizations. Although the background of organizations may exert different influences on people, the decisions within organizations are made by people. Therefore, the level of trust within organizations can be regarded as the outcome of a set of personal relationships.

Maguire, Phillips, and Hardy (2001) conceptualize trust as reflecting a calculation of the predictability of others' behavior (calculus based); knowledge based (in which the predictability has been conformed); and identification based (where trust reflects reciprocal and shared interpretive assumptions). Mayer, Davis, and Schoorman (1995) use "cooperation, confidence, and predictability" to distinguish trust from other concepts. The Webster, Random House and Oxford dictionaries give many definitions of the word trust, and the frequencies of terms used in the definitions are: cooperation, confidence and predictability.

Hung, Dennis, and Robert (2004) suggest that the peripheral, central, and habitual routes are three key different routes to trust. The peripheral route reflects the early stages of a relationship in which individuals meet either physically or virtually to form a team or organization. Trust at this stage is based on peripheral cues such as those provided by third parties. The central route is headed to its further development in relationships with a long-term perspective, and the habitual route is headed to a next level where trust is based on patterns that have developed in long-term relationships.

Mayer, Davis, and Schoorman (1995) present a model that separates trust from integrity.

They believe that trust is the mix of ability, benevolence and integrity which are called antecedents. The three characteristics (ability, benevolence and integrity) of trustees are a prelude to trust.

The foundation of trust is an inter-personal emotional connection. As the antecedents of trust, the three factors (ability, benevolence and integrity) have been empirically supported. Aubert and Kelsey (2003) discovered that the integrity dimension of trust (or a person's reliability) is more important in the formation of trust than benevolence (or concern). This means that good intentions do not build trust, but the ability to perform and deliver on commitments does. McAllister (1995) also identified affect-based trust as a dimension of trust (after cognition-based trust). He measured affect-based trust by including items that referred to sharing, openness, sense of loss, concern and emotional investment. McAllister (1995) found that the two forms of trust were related but distinct and that affect-based trust was related to citizenship behavior, or the tendency to help others. Williams (2001) also argued that trust development is influenced through multiple paths: cognitive, motivational, and behavioral. This means that people's judgments about another's trustworthiness are inherently "biased" because of the affect involved in making those judgments.

Hung, Dennis, and Robert (2004) list some application areas of the extended thinking which they also call ''presumptive trust'' while Meyerson, Weick and Kramer (1996) would call it "swift trust". In both cases the authors refer to temporary and virtual teams, and initial encounters in organizations. In the context of chronic disease prevention, extending this thinking to trust is of significance. Sharing platform based on network technology has the characteristics of temporary and virtual teams, the composition of the network is further complicated by the presence of people on the ground (i.e.in the chronic disease prevention area) as well as members from crowdsourcing platform who are virtually connected to the network and manage (part of the) network remotely.

Some research that examines the relationship between interpersonal behavior and trust mostly tends to rest on the premise that individuals' trust about another party affects how they behave in their interactions with the referent of the belief. This willingness is blind and can lead to risks. A higher level of trust in the work partner increases the likelihood of the partner taking risks (e.g., collaborating, sharing information) and/or increasing the amount of risk undertaken. In turn, risky behavior is expected to lead to positive outcomes (e.g., personal performance) and trust may be equated with behaviors that convey risk-taking (Lewis & Weigert, 1985; Deutsch, 2016).

2.1.3 Trust and risk in temporary work groups

According to Mayer, Davis, and Schoorman (1995), the distinction between trust and risk taking reflects the distinction between a willingness to be vulnerable and actually becoming vulnerable. Risk taking therefore stands as the most proximal behavioral outcome or expression of trust (Mayer, Davis, & Schoorman, 1995; Ross & LaCroix, 1996). Mayer, Davis, and Schoorman (1995, p.712) clarify the definition of trust by distinguishing the willingness to take risks and actually taking risks and argue that "trust itself does not take risks, but it refers to the willingness to take risks". In temporary work groups, there is risk every time (Meyerson, Weick, & Kramer, 1996).

Hardin (2001) suggested instead, that acting on trust is what is risky. Therefore, it is not the cognitive or affective trust that puts group members in a risky position, but what they do as a result of their trusting beliefs. Very few attempts have been made to find which behaviors are intrinsically associated with trusting beliefs. Benton et al. (1969) and (Roberts & O'Reilly, 1974) found that lower levels of trust were associated with suspiciousness towards information, whereas high levels of trust were associated with acceptance of information. In the current research, we propose that two behaviors are indicators of trust: knowledge sharing and judgment suspending. McEvily, Perrone, and Zaheer (2003) suggested that knowledge sharing is the closest indicator of trust in work groups. Free exchange of knowledge cannot occur when one party is unsure about the other's behavior (Jones & George, 1998).

In a group without trust, people will refrain from sharing knowledge because they are unsure about how the others will use their knowledge and because possessing some sort of knowledge is also a source of power (Fama & Jensen, 1983). On the other hand, positive attributions of trust will promote knowledge sharing (Williamson, 1985). McEvily, Perrone, and Zaheer (2003, p. 98) defined suspending judgment as a process of adopting an orientation toward another actor that assumes the other party's intentions and motives are benevolent or at least benign. As Ouchi (1979, p. 846) observed, "People must either be able to trust each other or to closely monitor each other if they are to engage in cooperative enterprises".

Lewicki and Bunker (2018) proposed a three-stage model – trust, distrust and trust repair –the result of which is the formation of relationships. They recognize that trust has a cognitive and emotional foundation, but they retain the cognitive dimension of calculus-

based trust and the emotional dimension of identity-based trust, “because feelings of personal attachment toward the other increase” (p. 129).

Temporary groups often engage in highly complex tasks, relying on well-designed knowledge and skills, but they lack formal structure and control. Trust models typically describe the formation of trust as a process with certain prerequisites or initial conditions and certain outcomes.

These models are valuable for the recommendation of trust components, either focusing on different types of trust or trust stages, or studying trust as part of relationship development, but none of these models explains the mechanisms by which trust is formed and its impact on behavior.

2.1.4 Affect, emotion and ambivalence mediates trust

Affect and emotion are included in the Johnson-George and Swap (1982) model of trust. These authors argue that experiencing positive affect or emotion can offer individuals more positive attitude towards others or more positive sense of belongingness. They were the first to consider belongingness as the foundation of trust.

McKnight, Cummings, and Chervany (1998) suggest that personality variables (such as how to deal with trust) affect trust and trust intention, but are too far from behavior, so they cannot predict trust. In addition, ambivalence mediates trust and distrust throughout all stages (Hurd et al., 2017). This may be attributed to that ambivalence is a state of having simultaneous conflicting reactions, beliefs, or feelings towards some object. Stated another way, ambivalence is the experience of having an attitude towards someone or something that contains both positively and negatively valanced components. Ambivalence also refers to situations where “mixed feelings” of a more general sort are experienced, or where a person experiences uncertainty or indecisiveness. Although attitudes tend to guide attitude-relevant behavior, those held with ambivalence tend to do so to a lesser extent. The less certain an individual is in his/her attitude, the more impressionable it becomes, hence making future actions less predictable and/or less decisive (Moss, 2016).

Dirks and Ferrin (2001) analyzed the causes (such as leadership style and participation in decision-making) and effects (such as organizational commitment and job performance) of trust, but they focused on trust in leaders only.

In the theoretical study of the influence of group members on the development of trust, Williams (2001) argues that cognition, motivation, and behavior influence the development

of trust in many ways. Cognitive path refers to people's perception of the credibility of group members. A positive feeling makes people's emotions more positive and encourages positive judgment or credibility of perception. People often use their "feelings" as the information to judge others (Williams, 2001).

2.1.5 The motivational path

The motivational path here is worthy of attention. People want to regard group members as "trustworthy" and may be willing to look for "sufficiently trustworthy" team members. In this case, it is noted that the behavioral path that influences the formation of trust is the least developed. It simply attempts to explain how it affects cooperative behavior when trust exists and does not explain how trust is formed through different behaviors. Although motivation is a salient attribute in the interaction among groups, it may not be the case in groups in a temporary system.

Dirks (1999) found that in high trust groups, motivation was transformed into joint efforts and higher performance, whereas in low trust groups, motivation was transformed into individual efforts. Therefore, trust had a mediating effect on performance.

In turn Williams (2001) found that in permanent groups, group membership, as a major factor affecting development of trust, offers a valuable indication that trust can be established through different approaches. The model refers that trust is the inevitable connection between emotion and cooperative behavior but does not explain how trust affects behavior. This author recognizes that, because different emotions are associated with different cognitive assessment models, the attribution of people after trusting someone may affect their emotional response to that person's behavior.

Young and Daniel (2003) distinguished between cognitive (calculative) trust and affective (emotional) trust. Calculative trust is focused on costs, benefits, and probability of risk, whereas emotional trust is a conglomerate of emotions, including relationship-building emotions (interest, admiration, respect, and liking), relationship-sustaining emotions (affection, gratitude, security, confidence, and acceptance), and relationship-enjoying emotions (appreciation, contentment, and satisfaction).

McAllister (1995) believes that affect-based trust is based on people's attribution behavior towards others' motives. This argumentation goes back to the late 19th century when science became more and more professionalized and finally closed its boundaries, thereby

also excluding amateur scientists from the scientific discourse (Kohring, 2016). We can observe that professionalization is progressing in all the areas of modern society except in the field of science. However, expert knowledge and complex decision-making are insurmountable obstacles to understanding and cannot be verified. This is why laymen must rely on trust. In medical science in particular, there is a "wide gap" between experts and the general public.

Long-term trust relationships depend on cooperation. To achieve this, individuals need to be able to substitute for each other, influence one another, and have a positive attitude towards one another. Trust is a core issue at the beginning of a business relationship, although a secondary concern at the start of a romantic relationship (Lewicki & Bunker, 2018).

2.1.6 Dimensional structure of trust and distrust

In addition, some scholars regard trust as a personality trait (Rotter, 1980). With different personality and cultural accomplishments, individuals tend to have considerable differences in their propensity to trust as shown in the following figure:

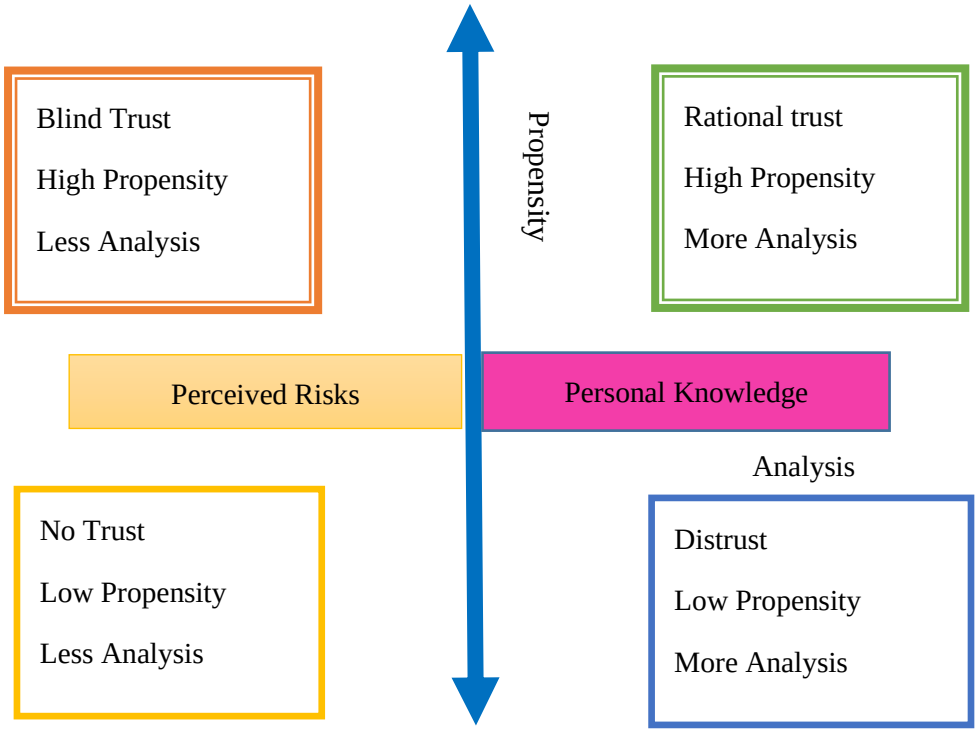

Figure 2-1 Two-dimensional structure of trust and distrust

Based on the above thinking dimensions (see Figure 2-1), we choose the common intersection factors of the three quadrants of rational trust, no trust and distrust in the process of

researching the variables that may affect the establishment of swift trust.

About rational trust, we should probably think more about how to provide some factors that can withstand scrutiny since we may have to face those people who are good at logical thinking and have higher health literacy. According to a study conducted by Popa (2005), in high trust groups, performance is mediated by knowledge sharing, whereas in low trust groups, performance is enhanced by choosing the correct ways to motivate others. McEvily, Perrone, and Zaheer (2003) argued that knowledge sharing, suspending judgment, and safeguarding are processes directly influenced by trust, which they defined as an organizing principle. Dirks and Ferrin (2001) viewed knowledge sharing as an antecedent of trust rather than an outcome of trust. Williams (2001) found support for a mediated relationship between trust and knowledge sharing, showing that a partner's information sharing is predicted by cooperative rewards, which indirectly influence the formation of trust. A cumulative, knowledge-based assessment of each other's behavior over long time periods encompasses familiarity, shared experiences, reciprocal disclosure, threats and deterrents, fulfilled promises, and non-exploitation of vulnerability (Hurd et al., 2017).

About no trust, we should probably think more about how to overcome the factors that cause indecision. We may have to face those who do not even trust themselves and are immobilized by insecurity and protectiveness. People judge others not only by how they look or by how they behave, but also by what they say. When a staff member is perceived as trustworthy, others are more likely to share what they know because they do not fear negative judgment. Manusov and Koenig (2001) explained that communication attributions (or causes of what has been said) are the bases for message interpretations.

About distrust, we should probably think about how to overcome the factors that cause suspicion. We may have to face those who rarely extend trust beyond themselves. Benton et al. (1969) and Roberts and Reilly (1974) found that lower levels of trust or distrust were associated with suspiciousness towards the information, whereas high levels of trust were associated with acceptance of information. McAllister (1995) found that trust influenced performance indirectly by affecting such variables as control-based monitoring, defensive behavior, need-based monitoring, and citizenship behavior. Kramer (1994) supported the assumption that, when people feel overly self-conscious or under scrutiny, they tend to make negative attributions about the others. This fosters a pattern of heightened distrust and suspicion regarding others' motives and intentions. In this situation, people are often difficult to stop suspend their judgment because they are not willing to take any possible risk.

As shown in Figure 2-2, we have established a logical model of swift trust antecedent factors and behavioral changes. Initial trust, perceived risk and perceived benefit, as hypothetical controllable variables, affect the formation process of swift trust, namely, from the establishment of trust, to the generation of behavioral motives, and ultimately to specific behavioral changes.

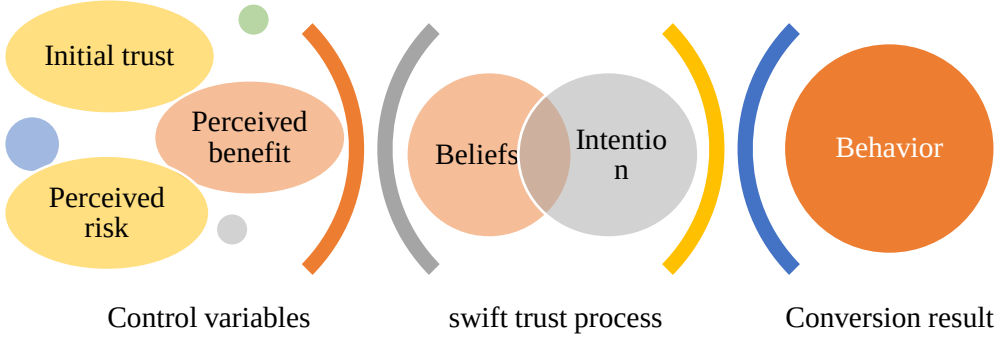

Figure 2-2 The process of Swift Trust and Trust Behavior

2.1.7 Group trust

Cummings and Bromiley (1996, p. 303) maintain that a person trusts a group when that person believes that the group "(a) makes a good-faith effort to behave in accordance with any commitments both explicit or implicit, (b) is honest in whatever negotiations preceded such commitments, and (c) does not take excessive advantage of another even when the opportunity is available" .

In the information age, many important businesses, including online banking and Internet hospitals, are based on communication supported by the Internet or social media. Everyone can become a source of information. Some customer services are being replaced by virtual teams or artificial intelligence robots. The authority and credibility of information are greatly challenged, especially interactive communication, which is more confusing than the choice of query-based Internet information. From 2015 to 2018, for example, 315,000 telecommunications fraud cases were cracked up in China, 870 million fraud calls were intercepted, 804,000 fraudulent telephone calls were closed, and joint public security organs discouraged 452,000 customers and directly recovered economic losses of 2.03 billion yuan (Zhang, 2018).

In a network background, the more homogeneous the group, the greater the trust, hence

the easier it is to sustain network like arrangements. When the diversity of participants increases, trust recedes, and so does the willingness to enter into long-term collaborations (Powell, 1990). Trust is a particularly problematic subject with virtual teams, because it is arguable whether people can be expected to trust each other if they have never met face–to-face (McDonough, Kahn, & Barczak, 2001). Jarvenpaa and Leidner (1999) describe a mechanism of how people solve the trust problem in a short time. Swift trust paradigm suggests that team members assume from the beginning that the other team members are trustworthy. Jarvenpaa and Leidner (1999, p.807) also researched the differences between teams that had a high level of trust in the beginning and teams with a high amount of trust in the end and compared them. They found that to achieve high trust early in the group's life, the team had social and enthusiastic communication and they coped well with technical uncertainty and took individual initiatives. Jarvenpaa and Leidner (1999) suggest that when faced with technical/task uncertainty early in the group's life, teams high on trust were able to solve problems and resolve conflicts in an environment where they were limited to electronic communication. Their study also found that teams communicate both task and social information.

Building trust is the foundation for building a "swift trust" and a person's ability to trust or distrust is based on their life experiences, institutional and societal norms, and relationship experiences. The participant role should be envisioned as that of a contributing clinical trial team member rather than as a product (clinical trial) consumer, it is critical that the participant fully understands and trusts that the dyad is seamlessly partnered and focused on delivering the best care to the participant (Hurd et al., 2017). Another factor asserted to promote trust and cooperation is the anticipation of future association (Powell, 1990). Furthermore, face-to-face encounters are considered irreplaceable for both building trust and repairing shattered trust (Nohria & Eccles, 1992).

In the process of network interaction, what kind of communication behavior may promote the formation of trust is also an element worth exploring. McGrath's (1991) TIP (Time, Interaction and Performance) model suggests that new teams that work on a complex and unfamiliar task and face technological uncertainty will have to engage in all four production modes: inception, problem solving, conflict resolution, and execution. Such teams must also devote time to the various modes of group well-being and member support to be able to progress through problems and conflicts.

After literature review, we take into account the prominence of each variable according to the definition of trust adopted by different researchers and the background of research on

trust, and finally determine the main factors in the formation of trust: universal trust or propensity to trust, and the attribution and impact of credibility. The model presented in this thesis shows all the above variables and that the relationships between them explain the formation of trust in a temporary task group.

In addition, this research is based on the concept of universal trust according to which people tend to regard the world as a place of "justice". The trust factors caused by personality differences will be studied as trust propensity variables. By understanding the mechanism, organizations can form trust through groups or individuals and gain huge benefits. Although trust may be blind, it can also reduce the cost of generating effective transactions and simplify decision making by protecting cognitive resources (McEvily, Perrone, & Zaheer, 2003). The positive results of trust make it a valuable asset for an organization, but what is more important is the establishment of trust, especially swift trust the concept of which is presented below.

2.2 Definition of swift trust

2.2.1 Increased uncertainty and swift trust demand

Traditionally, trust has been verified in the context of long-term interactive behavior. The building of trust has been thought to rely largely on the history of a group and the interactions among members or clients. Considering the fast pace of work in many of today's organizations, there is little time for trust to develop following "traditional" patterns that require familiarity, shared experiences, overcoming obstacles, reciprocal disclosures. With the increase in globalization, change in technologies, and an increased reliance on temporary teams by organizations this is becoming more problematic. Meyerson, Weick, and Kramer (1996) propose that swift trust provides the necessary, initial, cognitive confidence for a temporary team to interact as if trust were present.

Swift trust was first explored by Debra Meyerson and colleagues in 1996. In the swift trust theory, a group or team assumes trust initially and later verifies and adjusts trust beliefs accordingly (Meyerson, Weick, & Kramer, 1996). In this research, swift trust is defined as a form of trust occurring in temporary organizational structures and internet platforms, which can include quick starting groups or teams. Temporary groups and internet media display behaviors that presuppose trust, although they do not have a history of trust development. According to Meyerson, Weick, and Kramer (1996), this form of swift trust is real, not

merely trust-like behavior.

However, swift trust requires an individual to verify that a team can manage vulnerabilities and expectations. Hung et al. (2004) list some application areas of a peripheral route which they also call “presumptive trust”. Meyerson, Weick, and Kramer (1996) coined the term swift trust to describe the need to manage the issues of vulnerability, uncertainty, risk and expectations that surface with the formation of Hastily Formed Networks (HFN). Such networks “exhibit behavior that presupposes trust, yet traditional forms of trust – familiarity, shared experience, reciprocal disclosure, threats and deterrents, fulfilled promises and demonstrations of non-exploitation of vulnerability – are not obvious in such systems” (Meyerson, Weick, & Kramer, 1996, p.167).

There are numerous opportunities for naturally occurring temporary groups and online services that need a fast development of trust. Examples of temporary groups and organizations are: cockpit crews, presidential commissions, firefighting teams, theater and architectural groups, construction crews, auditing teams, negotiation cartels, juries, film crews, election campaign organizations, newly formed cross-functional teams, organizations formed as a result of a merger, new joint ventures, telemedicine, mobile live platform, TV shopping (McKnight, Cummings, & Chervany, 1998; Popa, 2005).

2.2.2 Facilitating factors for swift trust

Swift trust, according to Hung, Dennis, and Robert (2004), has five antecedent conditions that influence trust formation: (1) third party information, (2) dispositional trust, (3) rule, (4) category, and (5) role. As community marketing and sharing models continue to inject new vitality into the crowdsourcing economy, participants often play the dual role of consumers and shared operators, and the conditions affecting swift trust are different from the traditional conditions to establish trust.

Communication behaviors with positive emotions are also listed as main hypothetical variables to establish swift trust. Decisions to trust or distrust, as well as interactions with others, are based on the attributes of the group rather than on the individuals within the group (Hurd et al., 2017).

Considering that (1) chronic disease prevention should include both individualized features and group characteristics; (2) in terms of personality, health status, economic conditions or education level among other features, each individual has great differences; and that (3) in terms of organizational structure, professional level, culture, management, variation is

also substantial, we adopt Meyerson, Weick, and Kramer 's (1996, p.167) definition of swift trust as “a form of collective perception and relation that appears as a response to issues of vulnerability, uncertainty, risk, and expectations.”

2.2.3 The impact of swift trust on behavior and performance

It is found through the literature that trust plays an important role in the change of performance and behavior through certain forms and carriers. Based on this point of view, in the course of the research we believe that it is very necessary to utilize trust as a predictor (e.g., (O'Reilly, 1978)). Some researchers have used this basic idea to examine the main effects of trust on a variety of behavioral and performance outcomes. These effects include effort, conflict, communication and information sharing, organizational citizenship behavior, negotiation behaviors, group (or unit) performance and individual performance. Dirks and Ferrin (2001) according to their research model, firmly believe that trust operates in a straightforward manner: higher levels of trust are expected to result in more positive attitudes, higher levels of cooperation and other forms of workplace behavior, and superior levels of performance (p.451).

Dirks and Ferrin (2001) conducted a significant analysis of the variables of trust-influencing behaviors and results in previous studies, which is instructive for us to define the scope of antecedent conditions that affect the establishment of swift trust. In addition, its practical significance also has some implications for this research. Hereby, we have further simplified the factors, only retaining those whose correlation coefficient is greater than 0.3. Dirks and Ferrin’s (2001) research provides at least three quantifiable references. First, the impact of trust on individual and organizational performance; second, the importance of communication or negotiation to the establishment of trust; and third, impact of the accuracy of perceived information, cognitive/perceived variables, and acceptance of decisions/goals on the establishment of trust. This has also further enriched our understanding of the antecedent factors needed for the formation of trust.

In Table 2-1 below we present a summary of different studies relating the effect of trust on different variables portraying various workplace behaviors and performance outcomes and we may see that although results are not consistent, communication seems to play an important role.

Table 2-1 Main effects of trust on workplace behaviors and outcomes

Study	Primary Thesis Related to Trust	Sig.	r
Communication			
Boss 1980	Trust within group has (+) effect on openness in communication	p	0.37 to 0.59
O'Reilly 1978	Trust has (+) effect on amount of info sent to superior	p	0.32 to 0.48
Smith and Barclay 1985	Trust has (+) effect on openness in communication in Inter-organizational relationship	p	0.47
Zand 1972	Trust has (+) effect on openness in communication in group	p	0.41 to 0.63
Organizational Citizenship Behavior			
McAllister 1995	Trust in co-worker has (+) effect on organizational citizenship behavior	p	0.19, 0.48
Pillai et al. 1999	Trust in leader mediates the relationship between leader behavior and organizational citizenship behavior	p	0.08, 0.31
Podaskoff et al. 1990	Trust in leader mediates the relationship between leader behavior and organizational citizenship behavior	p	0.15 to 0.30
Robinson 1996	Trust in organization has (+) effect on organizational citizenship behavior	p	0.32
Negotiation Processes			
Spreitzer and Mishra 1999	Trust in employees by management has (+) effect on involvement of employees in decision making	p	0.62
Robinson 1996	Trust in organization mediates relationship between psychological contract violation and intent to remain with employer	p	0.37
Tsai and Ghoshal 1998	Trust has (+) effect on resource exchange between units Individual Performance	p	0.90

Earley 1986	Trust in supervisor mediates relationship between praise/criticism and job performance	p	0.43
Rich 1997	Trust in manager has (+) effect on sales performance	p	0.30
Robinson 1996	Trust in organization mediates relationship between psychological contract violation and job performance	p	0.41
	Unit Performance		
Kegan and Rubenstein 1973	Trust within group has (+) effect on group performance	n/ns	-0.31 to 0.30
Zaheer et al. 1997	Trust has (+) effect on inter-organizational relationship performance	ns	0.26 to 0.39
	Satisfaction		
Boss 1978	Trust has (+) effect on sat. with meeting	p	0.65
Brockner et al. 1997	Trust has (+) effect on sat. /support for leader; relationship moderated	p	0.65
	by outcome favorability		
Driscoll 1978	Trust has (+) effect on job sat.	P	0.52
Roberts and O'Reilly 1974	Trust has (+) effect on sat. with communication	p	0.39 to 0.43
Ward 1997	Trust has (+) effect on sat. with work group	p	0.58
Schurr and Ozanne 1985	Trust has (+) effect on sat. with partner	p	0.53
	Perceived Accuracy of Information		
Benton et al. 1969	Trust in partner has (+) effect on perceived accuracy of info.	p	0.34
Roberts and O'Reilly 1974	Trust in leader has (+) effect on perceived accuracy of info.	p	0.26 to 0.50
	Acceptance of Decision/Goal		
Fulk et al. 1985	Trust in supervisor has (+) effect on fairness/accuracy of performance appraisal	p	0.47

Kim and Mauborgne 1993	Trust in management has (+) effect on compliance with decision	p	0.58
Oldham 1975	Trust in supervisor has (+) effect on goal acceptance	ns/p	0.09 to 0.32
	Other Cognitive/Perceptual Variables		
Lind et al. 1997	Trust has (+) effect on procedural justice judgments	p	0.37 to 0.61
Muchinsky 1977	Trust has (+) effect on perceptions of organizational climate	p	0.11 to 0.62
Rousseau and Tijoriwala 1999	Trust in management has effect on beliefs in reasons for organizational change and perceived legitimacy of changes.	p	0.13 to 0.36
Scott 1980	Trust in management has (+) effect on perceived value of management by objectives program	P	0.50, 0.53

Note. Sig.＝statistically significant finding (p＜0.05); *p*=positive, significant effect; Effect sizes reported as *r* (Pearson correlation coefficient). Those studies that examined several types of dependent variables are reported in the table multiple times.

Source: Dirks and Ferrin (2001)

The data analysis of the literature of each researcher in the above table shows that even if trust is formed, it is not equivalent to the change in behavior. There may be only a few trust factors that can change behavior so, which factors can best influence the formation of swift trust? Which aspects of trust can best influence changes in behavior?

In order to identify the antecedent conditions that are most likely to affect swift trust and behavioral change, we have screened for many times the factors that are described or verified to have a direct impact on trust formation in the relevant literature, streamlined antecedent conditions that are susceptible to cause unstable factors such as emotions and personality changes, excluded the antecedent conditions that have no strong connection to the establishment of trust or swift trust, and then, as shown in Table 2-2, compiled a list of the antecedent conditions that influence trust formation to help us establish a model for studying the formation of swift trust and the impact on behavioral change mechanisms.

Table 2-2 Antecedent conditions that influence trust formation

Author	Time	Antecedent conditions
Heider	1958	He argued that people act on the basis of their **beliefs**. He postulated a set of rules of inference by which an ordinary person might attribute responsibility to another person's action.
Jones & Davis	1965	An "alert perceiver" might infer the other person's **intentions** and **dispositions** from his or her behavior.
Mayer, Davis, & Schoorman	1995	Ability or competence, benevolence, and integrity.
McAllister	1995	He measured affect-based trust by including items that referred to **sharing**, **openness**, **sense of loss**, **concern**, and **emotional investment**.
Lewicki &Bunker	1996	Calculus-based, knowledge-based, and identification-based trust.
Meyerson, Weick, & Kramer	1996	A form of collective perception and relating that is capable of managing issues of vulnerability, uncertainty, risk, and expectations
Jones & George	1998	**The attributional processes** involved in trust development.
Maguire, Phillips, & Hardy	2001	Conceptualize trust as calculus based (reflecting a calculation of the predictability of others' behavior); knowledge based (in which the predictability has been conformed); and identification based (where trust reflects reciprocal and shared interpretive assumptions)
Marsh & Dibben	2003	**Dispositional trust** represents an individual's enduring tendency to trust automation. **Situational trust** depends on the specific context of an interaction. **Learned trust** is based on past experiences relevant to a specific automated system.
McEvily, Perrone, & Zaheer	2003	Knowledge sharing and suspending judgment.
Young & Daniel	2003	**Calculative trust** is focused on costs, benefits, and probability of risk, whereas **emotional trust** is a conglomerate of emotions, including **relationship-building emotions** (interest, admiration, respect, and liking), **relationship-sustaining emotions** (affection, gratitude, security, confidence, and acceptance), and **relationship-enjoying emotions** (appreciation, contentment, and satisfaction).
Hung, Dennis, & Robert	2004	Five antecedent conditions that influence trust formation: (1) **third party information**, (2) **dispositional trust**, (3) **rule**, (4) **category**, and (5) **role**.

Trust is a phenomenon that affects in many ways people's behavior towards others, organizations and institutions. The research on how to build swift trust, taking into account the possible positive factors, the factors of distrust and how to avoid or eliminate them, the factors of relationship repair after distrust or loss of trust, which play a decisive role, are also included as part of our literature collection and analysis as a supplement to the research. Deutsch (2016) argued that a distrusting choice means avoiding an ambiguous path that has greater possible negative consequences rather than positive consequences. Rotter (1980) contends that when there is no clear or strong reason for disbelief (namely in an ambiguous situation), if we redefine trust as belief in communication, when most people in the same social group believe that trust is naive and stupid, credulity and trust have some similarities, and trust can be independent of credulity.

According to Uslaner (2015), trust in specific people (interpersonal trust) is more fragile than generalized trust, as it is based upon personal experience and depends on reciprocity. Similarly, institutional trust depends upon perceived trustworthiness and may change over time. Thoresen et al. (2018) noted that unexpected and extreme events of life like threat and loss introduce the idea that our peaceful reality can become a nightmare in an instant, bringing chaos, horror, and loss of trust in the world as we know it. Loss of institutional trust may add to interpersonal difficulties by inhibiting support seeking, particularly over time, because the individual may feel that others are tired of hearing about it, or that they cannot understand them. Such processes have been found to link closely to poor mental health (Thoresen et al., 2014).

Lost trust may take a long time to rebuild, and trust harmed by deception (or perceived deception) may never fully recover (Schweitzer, Hershey, & Bradlow, 2006). From a psychological point of view, initial trust is first acquired through interaction with reliable persons (Rotter, 1980), but for those who have experienced disasters, psychological responses to the disaster may in themselves lead to more negative perceptions of support from authorities who they might have previously trusted (Barnes et al., 2013).

If trust is simply believing in communication, then high trust must be equated with gullibility. Communicating with others, for example reaching out to patients, may strengthen or weaken their institutional trust, and continued trust may contribute to healing while a lack of trust can act to intensify or maintain health problems (Thoresen et al., 2018). Dunn (1988, p.74) stated that, while trust proceeds from the belief of one from whom we hope something good, distrust is “diffidence or doubt that makes one try to find other means”. Worchel (1979)

said that trust and mistrust are two extremes of the same dimension and that "mistrust" is a sense of readiness for danger and an anticipation of discomfort. From this, we can deduce that the premise of building rapid trust is to eliminate the periphery factors that may cause danger or discomfort. While trust reduces (and thus solves the problem of) the complexity of the social system, distrust by itself does not. Hence, McKnight and Chervany (2001) argue that the untrusting must use other strategies to reduce complexity. Distrust is not only the opposite of trust, but "also a functional equivalent for trust" (Luhmann, 1982). One coin, two sides, one chooses between the two.

Lewicki and Bunker (2018) contrasted trust and distrust and argue that these concepts are separate for three reasons: a) they separate empirically, b) they coexist, and c) they have different antecedents and consequents. They also reviewed the analogous literature on positive/negative affectivity, which has evidence that antecedents/consequents differ by positive/negative constructs, to show that the antecedents and consequents of trust and distrust probably differ. McKnight and Chervany (2001) said that distrusting intentions means one is not willing to depend, or intends not to depend, on the other party, with a feeling of relative certainty or confidence, even though negative consequences are possible. The feeling of relative certainty or confidence refers to the intention not to depend on the other party.

Research by Bromiley and Cummings (1995) has concluded that distrust paralyses the capacity for cooperative activity and that lack of cooperation is a typical outcome of distrusting intentions in an organization. Disposition to distrust means the extent to which one displays a consistent tendency to not be willing to depend on others across a broad spectrum of situations and persons (McKnight & Chervany, 2001). Since distrust constructs often reflect such emotions as wariness, caution, cynicism, defensiveness, anger, fear, hate, and a feeling of betrayal (Webb, 1996; Lewicki, McAllister, & Bies, 1998)， as well as uncertainty and lack of confidence, distrust tends to differ in its makeup from trust, which reflects such emotions as hope, safety, assurance, and confidence.

While cognitive components of swift trust are important for the start-up of a team, they may not be sufficient for maintaining trust, especially in the face of high uncertainty and in electronic contexts like virtual teams (Crisp & Jarvenpaa, 2013). According to Meyerson, Weick, and Kramer (1996, p. 190) swift trust erodes with "deviations from or violations of group norms and presumptions about competent...behavior" of the team. Crisp and Jarvenpaa (2013) propose that the normative influence on swift trust may be much more important than originally theorized by Meyerson, Weick, and Kramer (1996).

Normative actions build on early trusting beliefs and help increase confidence in the team's abilities and can help the team overcome obstacles. By setting norms and mutually agreed upon standards, and acting in accordance, the team reinforces the social attraction to the group. Normative actions also promote positive attributions of other group member's behavior. Normative and cognitive components interact in swift trust by working in conjunction with one another (Crisp & Jarvenpaa, 2013). Cognitive components continue to interrelate with normative actions, complementing one another, not replacing one another (Crisp & Jarvenpaa, 2013). In a study by Postmese, Spears, and Lea (2000), normative influences emerged over time, not through preconceived rules. In essence, interaction over time defined appropriate group behavior not preconceived norms. For example, if teams have low early trusting beliefs, strong normative actions may be seen as controlling and inhibiting rather than coordinating and helpful. Some researchers have noted that because many temporary teams are geographically separated or have members from different cultures and social systems, accepted norms could vary significantly (Crisp & Jarvenpaa, 2013).

According to the literature review, we deduce the following logical mind map (Figure 2-3) from four modules: response factors before the establishment of swift trust, forms and carriers of trust, operation process, and impact on behavior or performance changes.

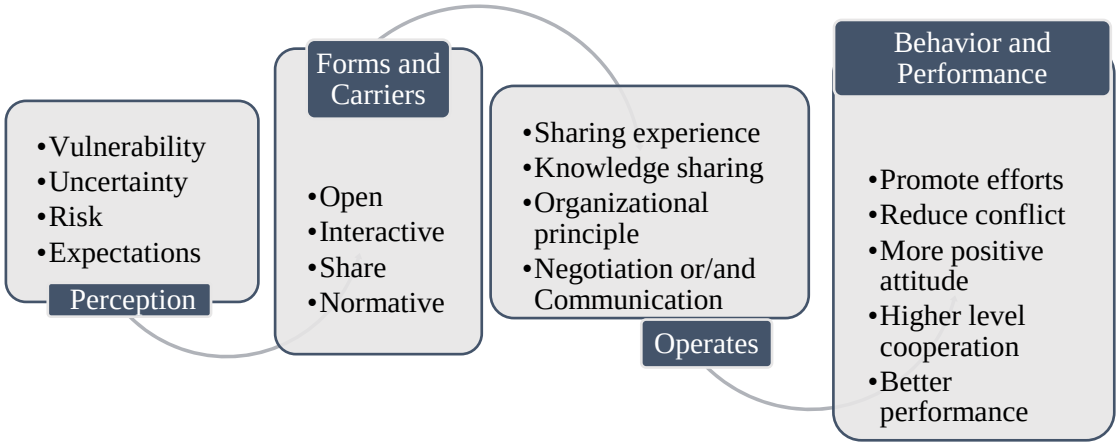

Figure 2-3 The process of swift trust affecting behavior and performance

2.3 Communication and swift trust

From the data analysis of the above literature review，we found that communication plays an important role in the main effects of trust on workplace behaviors and outcomes. Therefore, we have also made corresponding summaries through literature collation, in order

to provide inspiration for the research on swift trust as per Figure 2-4 below. Communication behaviors with positive emotions are also listed as the main hypothetical variables to establish swift trust. Decisions to trust or distrust, as well as interactions with others, are based on the attributes of the group rather than on the individuals within the group (Hurd et al., 2017).

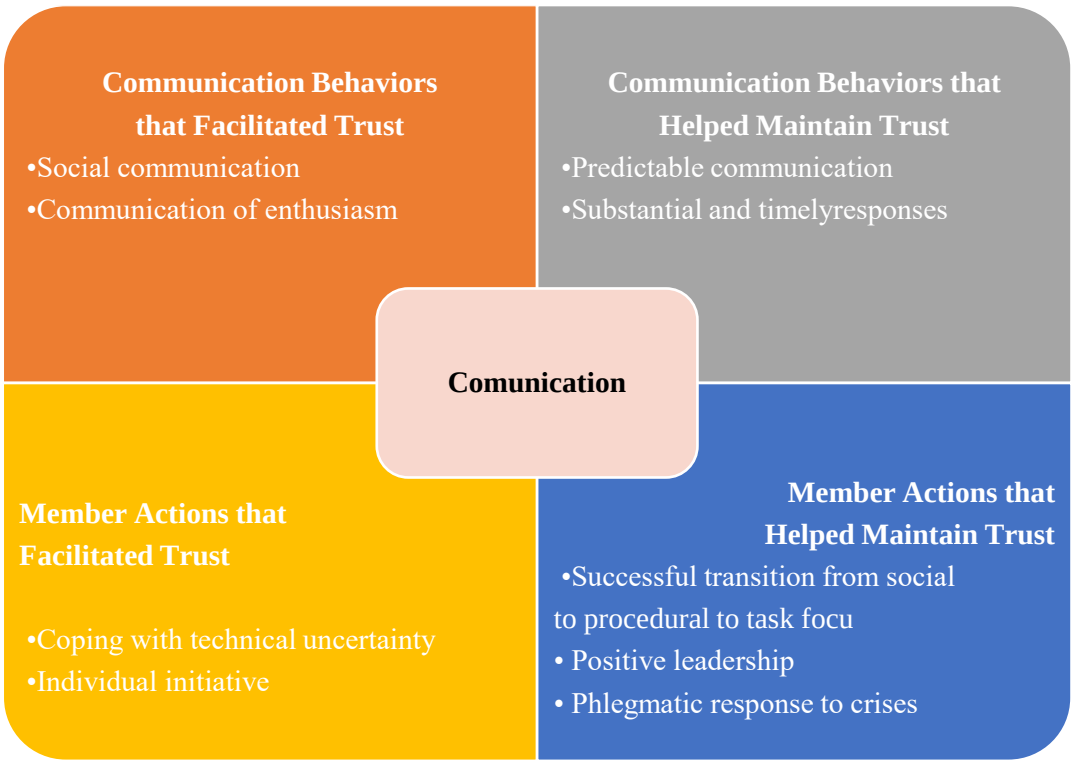

Figure 2-4 Trust-facilitating communication behaviors and member actions

Source: Jarvenpaa and Leidner (1999)

2.4 The definition of crowdsourcing

Howe (2006) first published a definition for the term crowdsourcing in a companion blog post of his June 2006 wired article, “The Rise of Crowdsourcing”, which came out in print just days later.

“Simply defined, crowdsourcing represents the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production (when the job is performed collaboratively) but is also often undertaken by sole individuals. The crucial prerequisite is the use of the open call format and the large network of potential laborers.”

Crowdsourcing is a sourcing through which individuals or organizations obtain goods,

including ideas and finance, from a large, relatively open and often rapidly-evolving group of internet users; it divides work among participants to achieve a cumulative result. The word crowdsourcing itself is a portmanteau of crowd and outsourcing, and was coined in 2005 (Hirth, Hobfeld, & Tran-Gia, 2011).

Major differences between crowdsourcing and outsourcing include the fact that crowdsourcing comes from a less-specific, more public group, whereas outsourcing is commissioned from a specific, named group and crowdsourcing includes a mix of bottom-up and top-down processes (Brabham, 2008).

Today's internet sharing giants, such as Google, Facebook, Twitter, Uber, Airbnb, Didi, Alibaba, rely on the contributions of users as the means to generate value within their own platforms, often with a dominant position, and are responsible for providing a service to a group of passive consumers. The problem with this model is that, in most cases, the value produced by the crowd is not equally redistributed among all those who have contributed to the value production; all of the profits are captured by the large intermediaries who operate the platforms (Filippi, 2017).

Henk van Ess (Claypole, 2012), a college lecturer in online communications, emphasizes the need to "give back" the crowdsourcing results to the public on ethical grounds. His non-scientific, non-commercial definition is widely cited in the popular press: "Crowdsourcing is channeling the experts' desire to solve a problem and then freely sharing the answer with everyone."

After studying more than 40 definitions of crowdsourcing in the scientific and popular literature, Enrique and Fernando (2012, p.9-10) developed a new integrating definition:

"Crowdsourcing is a type of participative online activity in which an individual, an institution, a non-profit organization, or company proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task. The undertaking of the task, of variable complexity and modularity, and in which the crowd should participate bringing their work, money, knowledge and/or experience, always entails mutual benefit. The user will receive the satisfaction of a given type of need, be it economic, social recognition, self-esteem, or the development of individual skills, while the crowdsourcer will obtain and utilize to their advantage that what the user has brought to the venture, whose form will depend on the type of activity undertaken".

The concept of crowdsourcing in this research is based on the definition by Enrique and

Fernando (2012). The crowd here refers to the health management service providers.

2.5 Definition of chronic disease

A chronic condition is a human condition or disease that is persistent or otherwise long-lasting in its effects or a disease that comes with time (Ward & Black, 2016). Chronic medical conditions, including cardiovascular disease, cancer, diabetes, and depression, cause more than half of all deaths worldwide (NIH, 2016). These long-term diseases affect people of all ages, both rich and poor, in every ethnic group. Many chronic diseases have genetic components, which raises disease risk in certain people or populations. The environment can also contribute to risk and so can lifestyle choices, including diet, physical activity and whether or not one smokes. Chronic diseases constitute a major cause of mortality, and the WHO attributes 41 million deaths a year to non-communicable diseases (WHO, 2015). Public health programs are important in educating the public and promoting healthy lifestyles and awareness about chronic diseases. While such programs can benefit from funding at different levels (state, federal, private), their implementation is mostly in the charge of local agencies and community-based organizations (Halverson et al., 1996). Studies have shown that public health programs are effective in reducing mortality rates associated to cardiovascular disease, diabetes and cancer, but the results are somewhat heterogeneous depending on the type of conditions and the type of programs involved (Mays & Smith, 2011).

The World Health Organization (WHO) listed the following key facts about non-communicable diseases (NCDs) (WHO, 2018a): tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets, all of which increase the risk of dying from a NCD. High blood pressure, overweight/obesity, hyperglycemia (high blood glucose levels) and hyperlipidemia (high levels of fat in the blood) are four key metabolic risk factors contributing to metabolic changes that increase the risk of NCDs.

An important way to control NCDs is to focus on reducing the risk factors associated with these diseases. The management of NCDs includes detecting, screening and treating these diseases, and providing access to palliative care for people in need.

The information from the WHO provides a scientific and specific controllable path for chronic disease prevention. It also provides a key and specific preventive tool for this research by establishing swift trust that affects behavioral change.

The World Health Organization also pointed out that poverty is closely linked with NCDs. The rapid rise in NCDs is predicted to impede poverty reduction initiatives in low-income countries, particularly by increasing household costs associated with health care. Vulnerable and socially disadvantaged people get sicker and die sooner than people of higher social positions, especially because they are at greater risk of being exposed to harmful products, such as tobacco, or unhealthy dietary practices, and have limited access to health services. In low-resource settings, health-care costs for NCDs quickly drain household resources. The exorbitant costs, including often lengthy and expensive treatment and loss of breadwinners, force millions of people into poverty annually and stifle development.

2.6 The significance of swift trust test model

To better conduct the research, we have designed the following research framework to display the logics of several of our key constructions, just as Figure 2-5 shows.

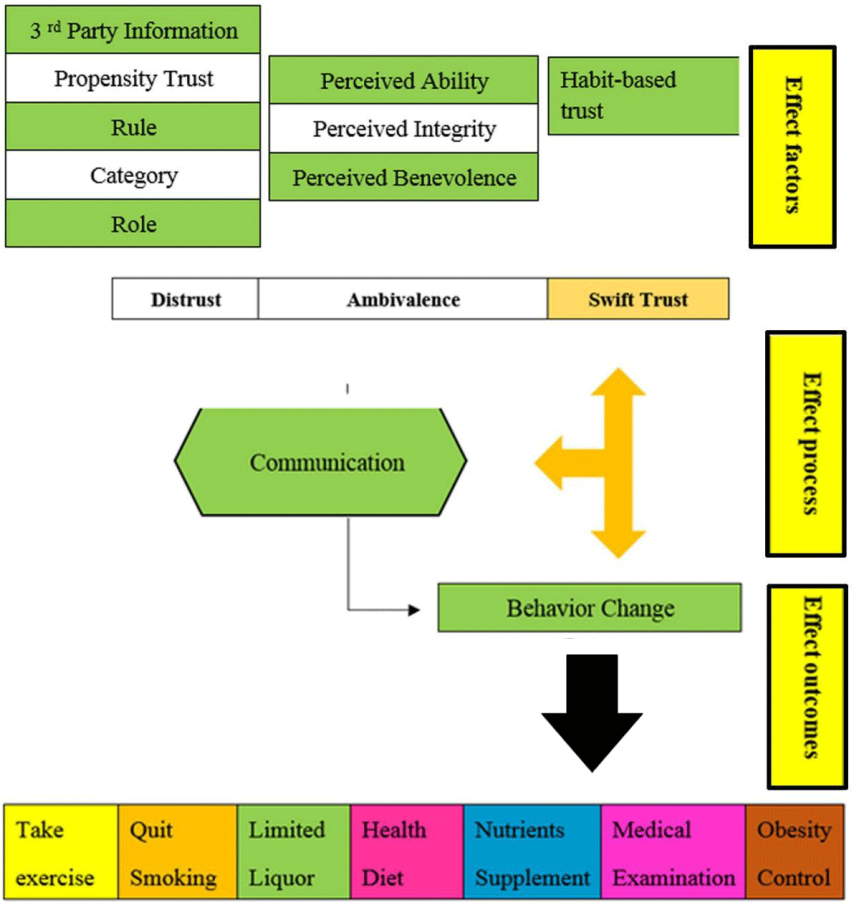

Figure 2-5 Antecedent factors that influence swift trust formation

This is the key question: which factor is the first engine to build swift trust and influence behavior change?

Based on systematic collection and analysis of a large amount of literature, this model screens nine antecedent conditions that affect the formation of trust and swift trust according to the conditions of higher generality, more stable measurability, smaller context bias, and weaker individual personality factors. With the ROST Content Mining System, the large sample collected through the internet and information obtained from relevant case interviews are analyzed, screened, summarized and extracted (the specific research methods will be detailed in Chapter 3), and the influences of each antecedent are compared to determine the key factors affecting the establishment of swift trust.

2.7 The role of swift trust in the cognition of the health care industry

2.7.1 In the tangible service context

In China, chronic diseases are rapidly erupting and spreading. How can new technologies help to positively address this issue? As an emerging service, Internet health care may be convenient and efficient, but what is the most fundamental challenge in the actual service of the public? To make the research on swift trust more relevant to the realities of chronic disease prevention, we have collected hundreds of public media articles on the topics of medical care and trust. Based on the report of Luohu Community Health Service Center, located Shenzhen, Guangdong Provence, a model unit of China's medical reform, Cao (2018) argues that by establishing six resource sharing centers of medical inspection – radiology imaging, disinfection supply, community health management, health management and logistics distribution – the Luohu Hospital Group has realized mutual recognition of test results and medical resource integration with grassroots community health centers, but trust only exists on the basis of medical service ability.

The doctor-patient relationship in China is becoming increasingly tense and violent and humiliating incidents against doctors are frequent mainly due to the fragility of trust between doctors and patients. From a deeper perspective, according to Bai (2016) it is a loss of credibility of the whole medical industry and it is necessary to guide public hospitals to focus on their commonweal nature, urge doctors to return to their pure role of treating diseases, and support the medical practitioners' conscience with a sound medical system. Due to the defects of "congenital heredity", the existing medical service system is not centered on patients;

instead, it has built a so-called medical service system around itself. Before the establishment of a trust system in medical services, patients' trust may not be gained even with fantastic facilities and advanced devices (Shi, 2018).

To build a harmonious doctor-patient relationship, doctors and nurses are the main body. However, due to the lack of medical knowledge and once the condition deteriorates, patients and their families often vent their anger at doctors and nurses since they suffer from both mental and economical pressure. In the interaction between the hospital and the patient, it might be more advantageous to give full play to the role of social media and instant message software as a way to release pressure and allow repeated communication. Social media could actually be used as a process of serving patients and a process of accumulating user trust (Qin, 2018) under the premises that doctors and patients are not enemies and need to join together towards fighting disease as a common enemy. Medical care under trust has the lowest cost (Yan, 2013).

Another factor leading to lack of medical trust is the uneven distribution of medical resources (technology and personnel) along the chain of hierarchical diagnosis and treatment especially at the level of primary health care (Hu, Liu, & Wang, 2016). Why does the medical industry is losing patients' trust? Because patients feel that they are not treated as patients, but are seen as a way to make money (Liu & Wang, 2017). From the prevalence of medical disputes to the frequent occurrence of doctors being murdered, the medical order seems to be increasingly out of control. According to a survey, only 27.14% of doctors have not been subjected to violence, and although 600,000 medical students are trained in China every year, only about 100,000 people are actually engaged in medical work (Luo, 2018). According to the current rules of the industry, if patients or their families disagree with medical results, they should file an arbitration with the Medical Accident Technical Appraisal Committee to determine the responsibility for medical malpractice. However in the specific implementation and due to a double lack of trust in the medical industry and in justice this rational rule of law path is not recognized by the majority (Global-medicine, 2013).

In the past ten years, direct selling of health products has become very popular in China with some elderly people swiftly trusting some companies to purchase a large number of products, which in fact they seldom use. According to Chen (2017) this mainly derives from the effect of five psychological factors: expectation; fear; conformity; celebrity effect; loneliness.

Hence, trust in doctors and medical institutions may be further threatened by the action

of some health product companies that help consumers find doctors to prescribe medicaments, thus causing conflicts of interest as for whether the doctor is serving the patients or the company and leads to ethical issues.

2.7.2 In the intangible service context

One of the biggest problems that Internet medical treatment faces is low trust in the medical service (Zhou, 2016). In addition, it also faces lack of trust in the Internet as such, as account theft and Internet monitoring occur. On the other hand, although there has been a sharp increase in data leakage cases in the past decade, the number of people using Internet has not decreased but increased. For many, the convenience provided by the network is more important than privacy concerns although it is forecasted that the Information Internet of the present will be Value Internet in the future or Trust-based Internet (Quan, 2017).

Regarding the factors affecting the initial trust of users in the context of mobile medical care, Luo and Yu (2017) advises that platform operators should strengthen operations to improve user experience and service efficiency in the following ways: (1) building service scenarios; (2) laying out community health care and building omnichannel services; (3) strengthening the integration of medical resources and paying attention to changes in medical rules; (4) complying with the existing rules system and improving the platform privacy rules; (5) developing usage habits and give appropriate answers to facilitate such habits. Behind Internet usage habits there is a common vocabulary: "trust". Internet medical care has been trying to cultivate user habits, but whoever increases "trust" can go further (Zhao, 2016).

Due to the continuous upgrading of technology and equipment, the concept of "human doctor" is developing in the direction of "human doctor + machine doctor" as, increasingly, doctors rely more on the test results of machines to make a diagnosis. Therefore, to assist in solving the crisis of trust in the medical and health industry, one possible way is to start from practical equipment that is, a machine that must have excellent diagnostic capabilities and be able to ensure adequate safety (Shangyiyun, 2018).

2.7.3 Defining swift trust in health crowdsourcing model

Based on the aforementioned research literature on trust, swift trust, chronic diseases, and crowdsourcing, we redefined swift trust in the context of health crowdsourcing.

On a participatory online to offline crowdsourcing platform, based on the basic needs

of personal and family health consumption and money, consumers take into consideration the participants' knowledge and/or experience, connections, personal skills and social influence, and conduct interactive and sharing promotion. They respond promptly to the uncertainty, risk and consumer expectation of the platform and specific services, form a collective concept and relationship as for swift trust, and ultimately achieve recognition of health management philosophy and services. Through change of behaviors, health is promoted. Crowdsourcers take the advantages that users bring to the platform to provide users with a variety of services and product satisfaction based on health needs.

2.8 Connection relation between swift trust, crowdsourcing and chronic disease prevention

In order to explore the mechanism of action on how swift trust plays a facilitating role in preventing chronic diseases, it is believed that before considering specific qualitative or quantitative analytical methods and selecting analytical tools, the important relationship among three objects needs to be clarified.

They are swift trust, chronic disease prevention and crowdsourcing.

Before clarifying their relationship, we give the following most basic thinking logic:

Only when a person trusts the crowdsourcing platform in the first place, can it be possible for him to accept a health management program in the second step since there is also a trust relationship with the program. Then in the third step, it will be possible to generate the motivation for behavioral change. Finally, in the fourth step, actions of chronic disease prevention will occur.

It is believed that the relationship between swift trust, crowdsourcing and chronic disease prevention is not linear, but correlated in a closed loop as pictured in Figure 2-6 below.

In the literature review, as presented above, there is a definition of swift trust in the context of health crowdsourcing platform. The core content is that consumers should first interact and share with each other on a participatory online to offline crowdsourcing platform, be able to respond promptly to the uncertainties, risks, and consumer expectations of the platform and specific services, form a collective concept and relationship for swift trust, and ultimately achieve the recognition of health management philosophy and services efficiently.

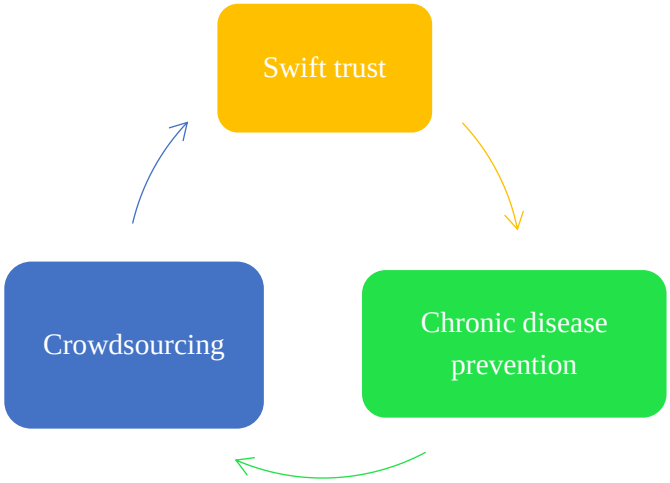

Figure 2-6 Closed-loop relationship between swift trust, chronic disease prevention and crowdsourcing

The crowdsourcing platform has the features of online virtuality and team temporariness, and to form swift trust is an important prerequisite to establish customer link and customer stickiness. In the case of the target population for chronic disease prevention, the disease risk exposure is weak, and even some patients in the early period of chronic diseases such as hypertension, type 2 diabetes, and myopia, often present no obvious signs or discomfort in the early stage. On the one hand, the sense of crisis and prevention motivation are still insufficient, and the demand for crowdsourcing platform business is not sensitive enough; on the other hand, some consumers have high expectations and there is a process for them to recognize the service capability and professional level of the crowdsourcing platform. To establish the core factors of swift trust plays a key transformation role in the formulation of trust between consumers and the crowdsourcing platform as well as the business relationship with the health management program.

With regard to swift trust, we have summarized nine antecedent factors that influence the establishment of swift trust such as third-party information, rules, roles, classification, and capability as per Figure 2-5. As for the prevention of chronic diseases, we believe through literature review that there are three key points to be considered. First, it is necessary to let people see the serious adverse effects and consequences of progressive chronic diseases on the individual and family from the physiological to the economic perspective so that they can recognize the importance of prevention. Second, it is necessary to make people convinced that through life behaviors, dietary and nutritional interventions, chronic diseases can

be effectively prevented. Third, chronic disease prevention requires professional management programs that can be offered by crowdsourcing platforms. Trust is the bond in the establishment of the above three key value points.

In the closed loop as shown in Figure 2-6, swift trust is believed to have a double meaning. The first is to lead consumers to trust that chronic diseases can be prevented, and the second is to lead consumers to trust that crowdsourcing platforms have the ability of effective prevention. Only by reaching swift trust in the crowdsourcing platform, can consumers quickly accept the health management solutions offered by the platform and quickly promote changes towards healthy behaviors.

In order to clearly demonstrate the important mechanism of swift trust in the chronic disease prevention crowdsourcing platform, we picture in Figure 2-7 below the interactions and interactive factors of the three key objects of swift trust, chronic disease prevention and crowdsourcing platform to form a relationship diagram.

Figure 2-7 presents the relationship between the three core parts of swift trust, chronic disease prevention, and crowdsourcing in our research. What we most need to conduct in-depth research on, analyze and finally confirm is what the most key factors affecting the establishment of swift trust are. This can be described as “pull one hair and move the whole body.”

Only by clarifying the key factors affecting the establishment of swift trust can we aim at eliminating concerns of consumers, establish a relationship of swift trust, and attach importance to prevention so as to resolve the concerns of temporariness, service uncertainty and risk of chronic disease prevention crowdsourcing platform, establish credibility of health management intervention programs, and finally form a strong motivation which translates into specific behavioral changes in real life.

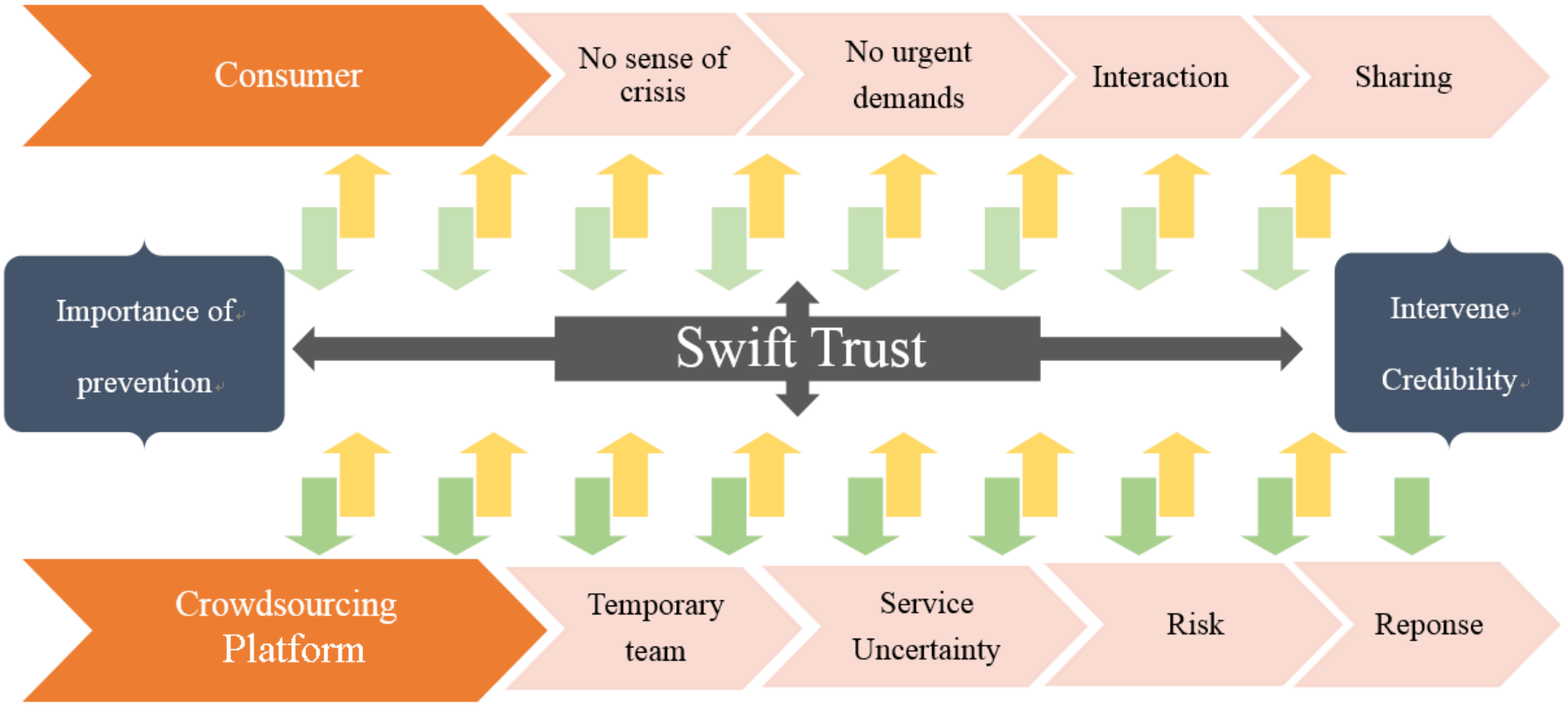

Figure 2-7 Interaction and transformation of trust between consumers and chronic disease prevention crowdsourcing platform

2.9 Literature conclusion

Through review of the above literature, several tasks have been completed. First, the concepts of trust, swift trust and crowdsourcing model based on shared economy and Internet platform, and characteristics of chronic disease have been defined. Second, the potential value and practical significance of research on trust and swift trust in the medical and health care industry under the background of Internet technology have been systematically analyzed. Third, through literature review, it is found that swift trust responds to problems of vulnerability, uncertainty, risk and expectation by establishing open-ended, interactive, sharing and normative relationships with carriers and exerts influence on group (or joint) performance and individual performance through attitude, effort, conflict, communication, information sharing, and negotiation, and the whole logical relationship is expressed in a diagram. Fourth, reverse thinking is adopted to further delve into literature on factors affecting distrust, how to maintain trust and how to develop trust in the electronic environment featuring high uncertainty and virtual teams. Fifth, the important preconditions that influence the establishment of swift trust are summarized, and a basic test model of generalized factors and behavioral influence relationship that can help to resolve the uncertainty conflict and affect the establishment of swift trust is proposed.

In the Internet era of high information traffic, information flow through the transformation of swift trust has an important impact on customer flow, cash flow, talent flow, and resource flow. The establishment of swift trust plays an indispensable role either online or offline, among patients, practitioners and medical and health organizations, and even between closely-knit and loosely operated medical alliances and health management organizations. Therefore, the establishment and maintenance of swift trust plays a vital role in the work efficiency and performance of prevention of chronic diseases both in traditional medical institutions and in Internet-based technical service platforms.

This thesis starts by identifying differences in directions of research on swift trust and prevention of chronic diseases by collecting and analyzing relevant literature in each of the aforementioned research directions. At present, most studies on the importance of trust and swift trust are mainly based on the relationship between behavior and performance, and only a few of them involve the possible factors that influence the establishment of swift trust. However, there is basically no research on which the most important factor affecting the establishment of swift trust is.

With the rise of social media, the increase of population mobility, and the accelerating pace of people's life and work, there is not enough time for people (between people and organizations, and between organizations and organizations) to have a profound understanding of each other before they establish cooperation, choose services or make decisions. Therefore, research on the establishment of the "primary factor" of swift trust may help promote social division of labor, close cooperation, and consumption relations in the context of sharing economy in the Internet era and improve both service and economic efficiency.

Swift trust is an upgraded version of trust. In the collection and review of literature, we focus more on the key factors affecting the establishment of swift trust and their underlying meaning. We choose nine preconditions that are closely related to trust or swift trust to formulate the basic test model (as shown in Figure 2-5), and use the ROST-Content Mining software to mine and analyze the contents of professional academic papers on trust and swift trust as well as news and research reports of the medical, health and health care products industries on the Internet so as to identify the variable with the greatest impact on the establishment of swift trust.

Trust relationships are the carriers of value, and whether trust is formed swiftly or not directly affects the efficiency of the establishment of health management relationship between institutions and individuals. Research on trust and swift trust models shows that the embeddedness of trust and swift trust relationships does exert a significant impact on individual behavior and even economic output. However, for the specific approaches and mechanisms of how swift trust relationship affects the realization of value, it is necessary to first determine the key preconditions that affect the establishment of swift trust, because trust is the basis of all cooperation as well as change (Covey & Merrill, 2006).

By identifying key variables in the building of swift trust this thesis aims at providing a reference for the exploration of innovative management models of chronic disease prevention and at proposing more efficient ways of resource allocation.

In short, without swift trust, there is no swift decision or swift change. Identifying the "primary factor" that affects swift trust is an important way to find out the primary driving force that affects dietary and living behaviors.

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Chapter 3: Research Methods

3.1 Determine research design

3.1.1The rationale for selecting the qualitative content analysis method

The rise of the Internet has revolutionized the field of information dissemination, communication, management, payment and marketing in the traditional sense from tools to practical applications. Many traditional research methods and theoretical models are also facing new challenges. Therefore, when studying swift trust as a facilitating factor of the crowdsourcing mode in the context of chronic disease prevention and management, we tend to select research methods and research tools suitable for the Internet, which has become our primary consideration. Actually, the research based on swift trust belongs to the category of social science and it also involves data statistical analysis and deductive reasoning. One good definition of science is anything that follows scientific methodology and either natural or social sciences use scientific methodology to help advance knowledge (Heckert, 2019).

In the process of reviewing hundreds of research literature, when considering the choice of research methods, there is a certain ambivalence in the choice of qualitative or quantitative research methods. We recognize that empirical studies based on statistical surveys, followed by statistical analysis and hypothesis or proposition testing and empirical studies based on qualitative interviews, participant-observations, archival records, documentation, physical artifacts and focus groups are equally important on an international basis (Gummesson, 2014). Further, Gummesson (2014) also questioned whether the “omnipotent” big data theory - a quantitative method as the future panacea of knowledge development - can truly generate precise predication. In addition, Gummesson (2014) emphasized that making predictions should be meticulously preceded in a systematic way of interaction with the real world.

Although both quantitative and qualitative methods may be used to test and generate theory, different research methods are dominant in natural sciences or social sciences. The key distinguishing feature of science is falsifiability, all good science is subject to being falsified, or proven to be false, by experimental data or observations; anything that cannot

be tested and subjected to the possibility of being proven wrong is not science (Heckert, 2019). Nevertheless, a large number of social science research heavily relies on content analysis, observation and documentation in order to try to understand and explain contemporary phenomena. In other words, different research methods satisfy different needs, scenarios, and situations for corroborating the hypotheses or propositions (Yin, 2017). Continued discussions on the value of case study research is a case in point. Verschuren (2003), for example, argued that case study method lacks clarity regarding the object of study and the reason to study; other scholars even mention that case study research should be described as anecdotal, exploratory, conceptual, and a prelude to quantitative research. However, Gummesson (2014) denies that the key to conducting a successful case study research is to focus on the interaction with data, informants and your inner and outer self.

For this thesis we chose content analysis as a method to process and understand the collected data. According to Qiu and Zou (2003), content analysis is a research technique used to make replicable and valid inferences by interpreting and coding textual material. By systematically evaluating texts (e.g., documents, oral communication, and graphics), qualitative data can be converted into quantitative data. Although the method has been used frequently in the social sciences, only recently has it become more prevalent among organizational scholars.

In the literature of content analysis, many terms have appeared, such as system content analysis, statement analysis, meaning analysis, quantitative content analysis, association structure analysis and qualitative content analysis, analysis and hermeneutic-classification content analysis (interpretation of classification content analysis). Each term applies to a particular theoretical background, research topic or analytical method.

As one of today's most extensively employed analytical tools, content analysis has been used fruitfully in a wide variety of research applications in information and library science (Allen & Reser, 1990). Many current studies use qualitative content analysis, which addresses some of the weaknesses of the quantitative approach (Zhang & Wildemuth, 2009).

During the literature review process, we found different definitions of qualitative content analysis from which we extracted three:

• "any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings" (Patton, 2002, p.453);

• “an approach of empirical, methodological controlled analysis of texts within their context of communication, following content analytic rules and step by step models, without rash quantification” (Mayring, 2000, p.2);

• “a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns” (Hsieh & Shannon, 2005, p.1278).

Qualitative content analysis goes beyond merely counting words or extracting objective content from texts to examine meanings, themes and patterns that may be manifest or latent in a particular text. The three definitions above illustrate that qualitative content analysis emphasizes an integrated view of speech/texts and their specific contexts. It allows researchers to understand social reality in a subjective but scientific manner (Zhang & Wildemuth, 2009).

Quantitative content analysis is used widely in mass communication as a way to count manifest textual elements, an aspect of this method that is often criticized for missing syntactical and semantic information embedded in the text (Weber, 1990), while qualitative content analysis was developed primarily in anthropology, qualitative sociology, and psychology, in order to explore the meanings underlying physical messages.

Qualitative content analysis is mainly inductive, grounding the examination of topics and themes in the data, as well as the inferences drawn from them. In some cases, qualitative content analysis attempts to generate theory. Samples for qualitative content analysis usually consist of purposively selected texts which can inform the research questions being investigated. The quantitative approach produces numbers that can be manipulated with various statistical methods. By contrast, the qualitative approach usually produces descriptions or typologies, along with expressions from subjects reflecting how they view the social world. By this means, the perspectives of the producers of the text can be better understood by the investigator as well as the readers of the study’s results (Berg, 2001).

Qualitative content analysis pays attention to unique themes that illustrate the range of the meanings of the phenomenon rather than the statistical significance of the occurrence of particular texts or concepts. In real research work, the two approaches are not mutually exclusive and can be used in combination. As suggested by Smith, “qualitative analysis deals with the forms and antecedent-consequent patterns of form, while quantitative analysis deals with duration and frequency of form” (Smith, 1975, p.218). Weber (1990) also pointed out that the best content-analytic studies use both qualitative and quantitative operations.

3.1.2 Basic ideas of content analysis

After making the choice of using qualitative content analysis, we want to retain the advantages of quantitative content analysis in order to carry out more qualitative text interpretation. What are these advantages? We would like to emphasize four points:

(1) Integrating data into communication – audience model: fully consider the scope of communication reasoning and the audience's judgment points (such as experience, opinions, feelings), the situation of text production, social and cultural background, the text itself or the objectivity of information.

(2) Analysis rules: follow the rules of procedure, design the material into content analysis units, and analyze them step by step.

(3) Screening of relatively strong relationships: according to research questions, various aspects of text interpretation are divided into different categories, and categories with similar meanings are merged during the analysis.

(4) Reliability and effectiveness standards: the content analysis program has a subjectively understandable premise that compares the analysis results with data from third-party consulting organizations that are publicly released by the media and performs reliability checks. In order to evaluate reliability of the content analysis software, we specially consult members of the trained project in the process of qualitative content analysis to systematically learn data collection methods, content analysis software operation processes, and compare analysis results of content analysis software with practical application scenarios or cases.

3.1.3 Inductive category development

Classical quantitative content analysis has few answers to the question from where the categories come, how the system of categories is developed: "How categories are defined ... is an art. Little is written about it." (Krippendorff, 1980, p.76)

But within the framework of qualitative approaches it would be of central interest to develop the aspects of interpretation, the categories, as near as possible to the material, to formulate them in terms of the material. For that scope qualitative content analysis has developed procedures of inductive category development, which are oriented to the reductive processes formulated within the psychology of text processing (Van Dijk, 1980; Ballstaedt et al., 1981). Figure 3-1 below presents the different steps adopted in the research design of this thesis.

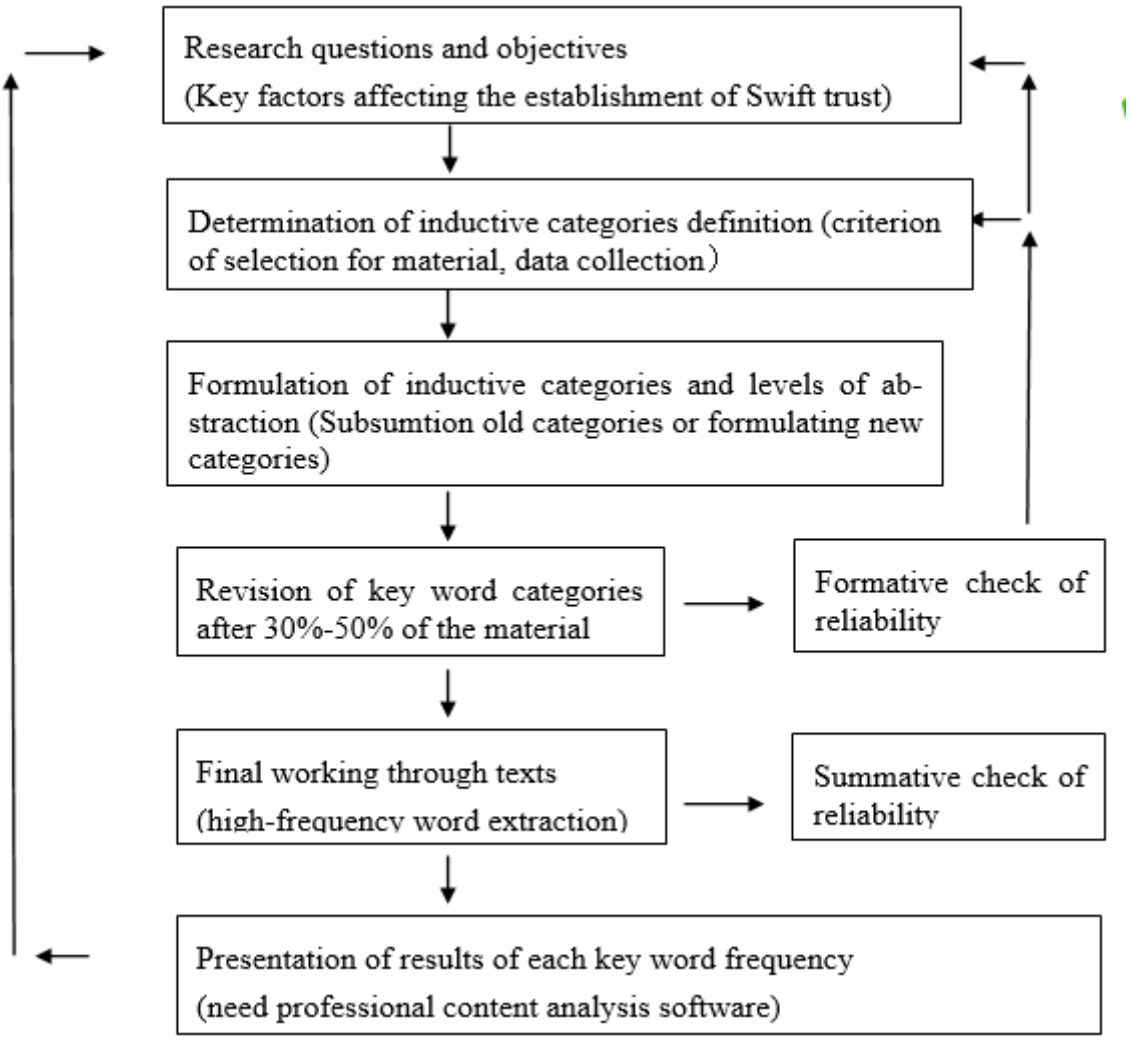

Figure 3-1 Qualitative content analysis steps design

The main purpose of the content analysis process design is to reason out a criterion of definition, derived from theoretical background in literature review and research questions, which determines the aspects of the textual data taken into account. Following this criterion, the data is worked through and categories are tentative and step by step deduced. Within a feedback loop those categories are revised, eventually reduced to main categories and checked in respect to their reliability. If the research questions suggest quantitative aspects (e.g. frequencies of coded categories), then it can be analyzed.

3.1.4 How to identify trust in text

To be objective, scientific, and comprehensive in identifying trust by means of content analysis, there are several important antecedent factors that must be considered.

1) As trust is invisible, how can we identify trust from the text?

2) The information on the Internet is substantial and complicated. How to capture texts that are linked to the research theme?

3). How to screen the key factors affecting swift trust?

In order to clarify the above research path, we have designed a text selection flow chart (Figure 3-2). From the three aspects of trust relationship, industry characteristics and trust factors, the relevant screening conditions are listed.

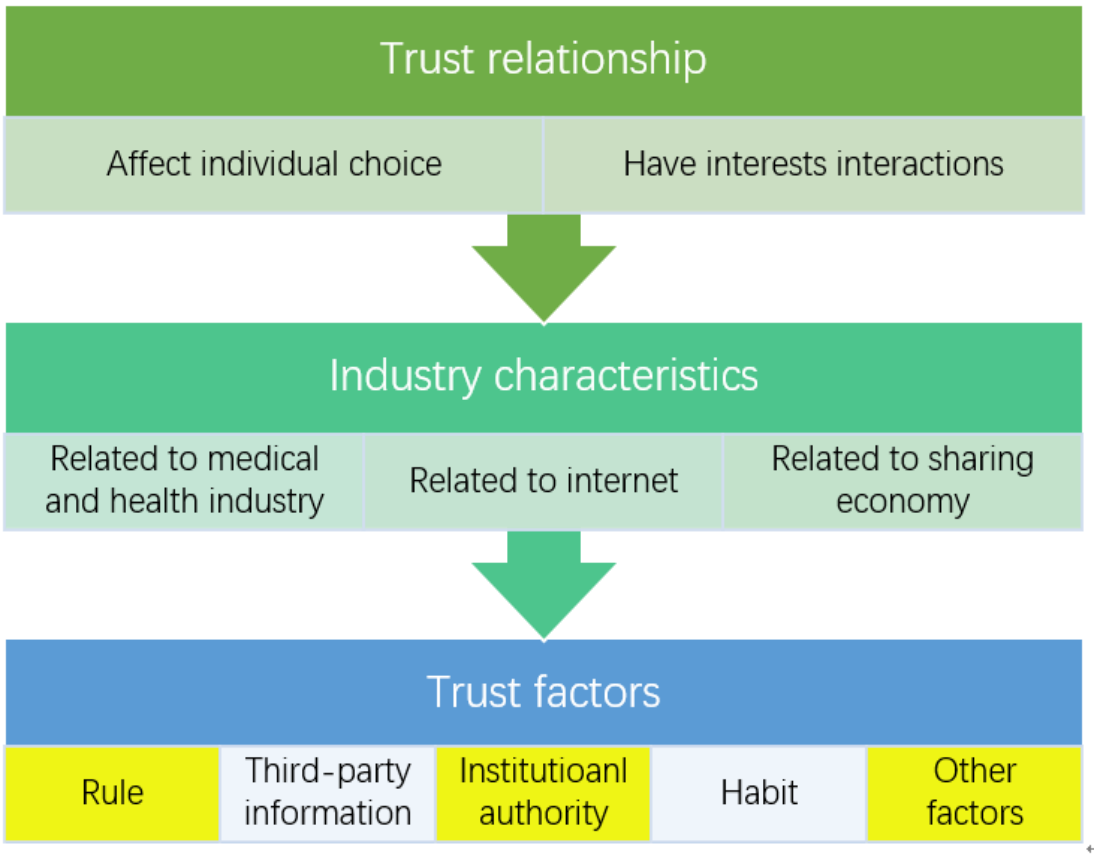

Figure 3-2 Text selection flow chart

As for trust relationship

To resolve the problem of why we can see a trust problem in the text we have set up two filters for the text selection criteria:

a) Trust affects individuals in making choices and this mainly refers to an institution, product or service that encompass certain key factors, which clearly affects the final choice in the process of individual thinking and judgment. For example, there are many specialized hospitals in a city, but patients are more inclined to choose one of them. Here, there are special trust factors that deserve to be explored in depth.

b) There is a trust relationship based on equality and voluntary interaction upon common interests. People are willing to accept the tangible or intangible valuable services provided by the other party (individual or organization) under the condition of having interests. Similarly, they are also willing to provide tangible or intangible valuable services to the other party (individual or organization).

Through large-scale sample data collection, an in-depth exploration of the interactions of interests is conducted to find common trust factors.

As for industry characteristics

Considering that our research is focused on chronic disease prevention based on crowdsourcing, in order to make the text style closer to the research subject and research field, we have considered three aspects of industry screening as follows:

a) It is related to the medical and health industry. As our research focuses on chronic disease prevention, the selected texts are mainly related to the medical and health industry, especially the prevention and management of chronic diseases.

b) It is related to the Internet. As our research focuses on the crowdsourcing platform and involves Internet software applications, people's trust in the Internet directly affects their trust in the crowdsourcing platform.

c) It is related to the sharing economy. As the crowdsourcing platform involves knowledge sharing, information sharing, and benefit sharing, people's acceptance of and trust in the sharing economy directly affects the trust in the crowdsourcing platform and the specific transformation of actual health management programs.

As for trust factors

Through literature review in Chapter 2, it is known that there are many antecedent factors that influence the establishment of trust. In the past research, the concept of trust often exists in traditional industries, organizations or institutions and there are not many studies on factors affecting trust in the sharing and crowdsourcing economies, which are on the rise. Particularly chronic disease prevention through crowdsourcing is still a new thing in China and even in the world as a whole. And identifying key factors related to swift trust may be different from the practice in traditional medical and health management field. For example, in the case of crowdsourcing, people may face a piece of information published on a social media, or they may discuss with each other in a group of strangers. The ability, benevolence and integrity generalized in traditional research cannot be judged or reflected on tradition-

based trust. What factors can influence people to build swift trust and how to screen them? This is the challenge faced by this research and also the research goal and research value that we need to focus on in our endeavor.

3.1.5 Computer-aided content analysis (CACA)

The application of computer technology has greatly advanced the development of content analysis either qualitative or quantitative. In essence, it is computer technology that effectively combines various methods so that the content analysis method has recently experienced renewed interest, promotion and development. As a data management tool, computers have the speed advantage unmatched by manual methods in the process of data collection, storage, editing and sorting. However, the first problem to be dealt with is the conversion of the file format. In addition, establishing a complete classification system is also one of the central tasks of computer content analysis. On the Internet, there are not only a number of specialized research websites for content analysis, but also a number of content analysis software that can be downloaded for free. Discussions on content analysis in relevant forums are also in full swing. For example, at http:// www.textanalysis.info./, there are introduction and application of content analysis and downloading of network resources and software; at http:// www.sphinxdevelopment.co.uk/Products-v4.htm, the functions and usage of a content analysis software is specifically explained.

3.2 Health management crowdsourcing: an example

The crowdsourcing model has just emerged in the field of chronic disease prevention in China, and successful cases are still rare. One case in point is the *Centennial Cloud APP* (internet application program) crowdsourcing platform whose number of members exceeded 30,000 in half a year.

This case is selected as an example to allow for a deeper understanding of the relationship between people with different roles and between people and platforms in crowdsourcing so as to have a relatively clear judgment on the important preconditions that may be involved in the establishment of swift trust in institutions, third parties and technology. In a crowdsourcing platform, what is the basic connection with swift trust? For example, the Centennial Cloud platform has recently expanded the chronic disease health management business of various communities by providing free experience services to the old-age art

troupes from more than 180 communities in Shenzhen. It involves the trust of the head of the troupe in the platform, the trust of the troupe member in the troupe head, and the trust of troupe members in the personnel providing health management service to the platform. By understanding the basic functions and structural relationships of the platform, we may be able to understand the value of these factors which will help to obtain more reliable analysis results.

Figure 3-3 presents the operating framework of the crowdsourcing platform *Centennial Cloud APP* in China. The App was developed and is operated by Shenzhen Jingzhongtang Technology Co., Ltd. based on the philosophy of 4A (Anybody, Anywhere, Anytime, Anything for Healthcare). With an interconnection between online and offline services, the *Centennial Cloud APP* specializes in health management and integrates products and services related to chronic disease prevention such as professional medical examination, gene sequencing, molecular nutrient supplement products, health food, psychological counseling, medical guidance, and exercise management. Consumers can also become consuming-merchandisers at the same time since that, through online social media or offline channel promotion, they can establish groups, share products or service experiences, share and exchange health knowledge, and build results-based social trust. Through sharing, customers obtain coupons from the *Centennial Cloud APP* and can make a wholesale price order for a certain functional product or service (such as insomnia, weight loss, dry eye, constipation, hypertension, psychological counseling, and tumor screening) at any time. If customers want to participate in the business operation, they can also use the coupons and cash to complete the payment and entrust the sales to the platform so as to earn profits from the price difference.

As a crowdsourcing platform, the *Centennial Cloud APP* is committed to meeting the substantial market needs of the healthy, sub-healthy and sub-clinical populations. It is different from direct sales and WeChat sales profit distribution systems, as there is no membership fee, the distribution is not hierarchical, and it is operated in line with laws and regulations. The platform is completely decentralized, with each member doing his best and taking what he needs. Anyone who registers as a member can interact with social resources on their own, communicate the concept of crowdsourcing and positive, scientific health knowledge, and get connected with the huge health consumption needs of the society.

The *Centennial Cloud APP* aims to transform the time cost into time capital by activating the idle human resources (or spare time) and transform the health needs of the connections of each crowdsourcing participant into purchasing behavior so that everyone can get

access to low-cost or free health products. If the crowdsourcing participants can operate and promote professionally and in a large scale like doing business, they can also get considerable economic benefits.

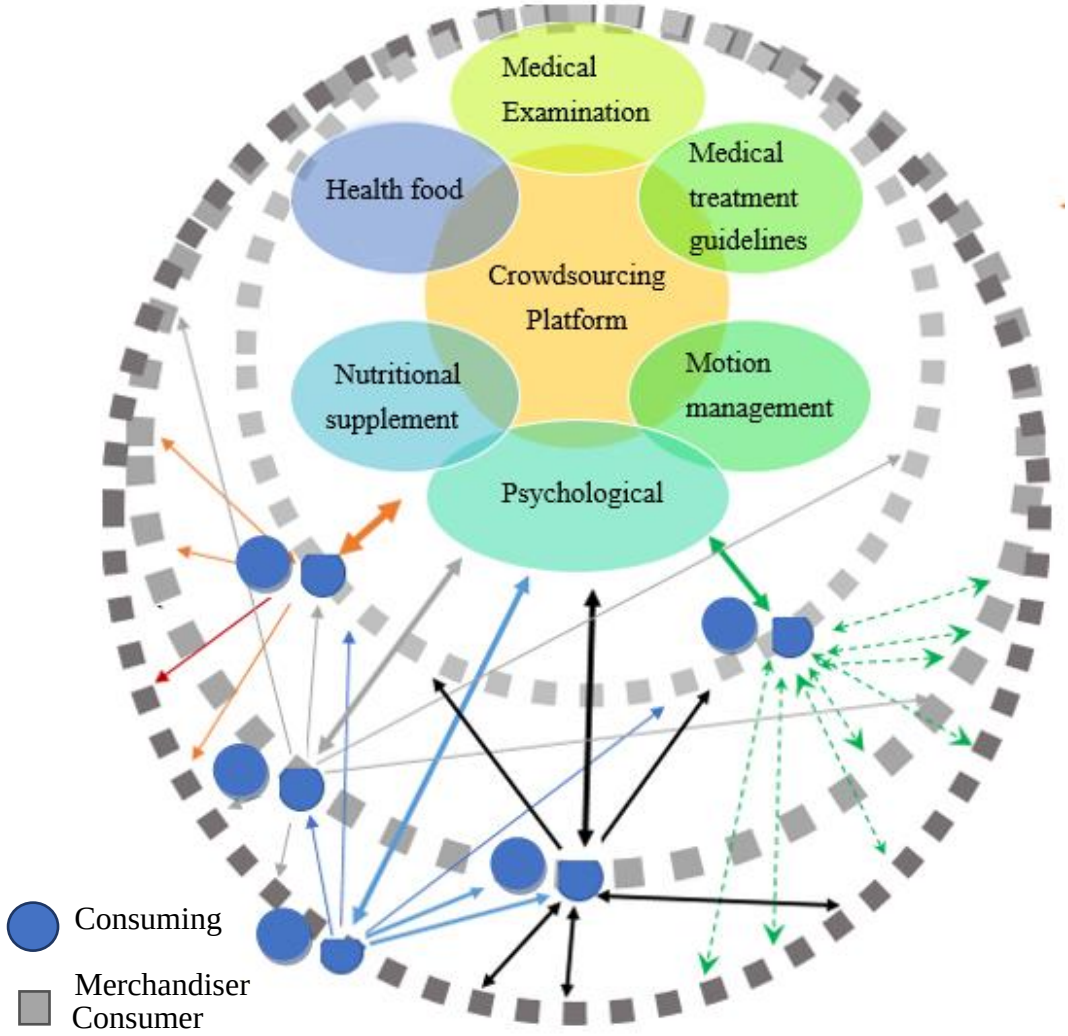

Figure 3-3 Crowdsourcing 4A (Anybody, Anywhere, Anytime, Anything for healthcare) mode structure of *Centennial Cloud APP*.

The consumption reward points provided by the *Centennial Cloud APP* crowdsourcing platform can be exchanged for any medical check-up services and products of the corresponding amount, thus transforming the traditional stereotype of those who would rather spend substantial money treating diseases while not willing to spend money on preventing them. In addition, it aims at fundamentally changing the status quo where people are unwilling or lack the financial affordability to pay for nourishment, psychological counseling, and refined medical examination.

The *Centennial Cloud APP* is committed to enabling every member to live 100 years

in a healthy way, preventing public health problems caused by malnutrition and psychological factors, helping the government to reduce the burden of medical insurance and cultivating tax sources.

3.3 Data collection

Our research is mainly based on the background of the rapid growth of chronic diseases in China. The collected Internet information is mainly in the Chinese language with Baidu (www.baidu.com) as the main search engine.

3.4 Content analysis tools

3.4.1 Text mining software application

Text mining is the extraction of hidden, unknown, and potentially useful information from a large amount of unstructured text data to form a text pool to be analyzed.

"Text mining, also referred to as text data mining, roughly equivalent to text analytics, is the process of deriving high-quality information from text. High-quality information is typically derived through the devising of patterns and trends through means such as statistical pattern learning" (Wikipedia, 2019a).

Text mining usually involves the process of structuring the input text, deriving patterns within the structured data, and finally evaluating and interpreting the output. "High quality" in text mining usually refers to some combination of relevance, novelty, and interest. Typical text mining tasks include text categorization, text clustering, concept/entity extraction, production of granular taxonomies, sentiment analysis, document summarization, and entity relation modeling (i.e., learning relations between named entities). The automatic parsing of textual corpora has enabled the extraction of actors and their relational networks on a vast scale, turning textual data into network data. The resulting networks, which can contain thousands of nodes, are then analyzed by using tools from network theory to identify the key actors, the key communities or parties, and general properties such as robustness or structural stability of the overall network, or centrality of certain nodes (Sudhahar et al., 2015).

3.4.2 ROST content mining

There are many tools for text mining. Considering the range of compatible data formats, the degree of recognition in Chinese and English, the ease of operation of the interface, the analysis of live chat, and the cluster analysis of the whole network, we chose ROST Content Mining (ROST-CM) for this research.

ROST-CM is a large-scale free social computing platform software developed by Professor Shenyang of Wuhan University to assist humanities and social science research (Zhang, Lei, & Yang, 2017). This software can realize a series of text analyses including website analysis, whole Internet analysis, chat analysis, microblog analysis, word segmentation, word frequency statistics, correlation, similarity, sentiment orientation, co-occurrence, co-citing, time series, trend, Chinese and English word frequency statistics, traffic analysis, and cluster analysis.

The specific operation steps of ROST- CM for content analysis are as follows:

Word frequency analysis

The steps of word frequency analysis are: (1) mergers of multiple text files into one; (2) word segmentation; (3) word frequency analysis.

First, before word segmentation, the collected text files should be merged into one text file; then the main interface of ROST-CM is entered and “Batch File Processor” in “Tools” is selected. This tool can help us to merge html, txt, PDF, and doc files into one batch. Second, select the “Segmentation” command in “Functional Analysis” on the main interface, and then select the text file to be analyzed. After the corresponding word segmentation file is generated, it is automatically named: file name_segmented.txt.

Finally, select “Word Frequency Analysis” in “Functional Analysis”, open the text file after segmentation, and a file named “file name segmented word frequency.txt” is generated. For the convenience of analysis, the results can be copied to Excel for sorting and manual removal of meaningless words.

Word frequency analysis provides filter vocabulary, merged vocabulary and reserved vocabulary. Filter vocabulary can help filter out meaningless vocabulary; merged vocabulary can merge words in text analysis; reserved vocabulary is used to determine the words that need to be reserved in the analysis results. In practical operation, it means loading the vocabulary in the corresponding text box. In addition, ROST-CM also provides multiple parameter options to set the analysis process and result output, such as the number of output

words, whether to output single words, and what filter vocabulary is activated.

Feature extraction

Since some words appear in large quantity in the text and others less, it is necessary to seriously consider the choice of how to select these words. In the process of text mining, feature word extraction is to select the words in each article that can represent its characteristics. At present, the commonly used extraction method is TF-IDF (term frequency – inverse document frequency) and the main idea is: if a word or phrase appears in an article with a high frequency, and rarely appears in other articles, it is considered to have a good category distinguishing ability, and will be given a higher weight. It is used as a feature word of the text to distinguish it from other texts.

It is easy to use ROST-CM to calculate TF-IDF: One needs to select “TF/IDF Batch Word Frequency Analysis” in “Functional Analysis”, then select “Batch Open File”, “Calculate Batch File IDF”, and “Calculate TF/IDF Value of the Current File” in sequence. The calculation result will appear in the box in the lower right corner and it can be copied to Excel for analysis.

There are three points to note when using this function. First, the text needs to be divided into several independent text files according to the content; second, after importing the text in batches, right click to “select all”; third, the TF-IDF value is calculated file by file independently.

Result analysis

Through the above steps, the word frequency analysis and the TF-IDF feature words of the already obtained text content are extracted into two sets of analysis results. The algorithms of the frequency statistics of these two sets are different, so the results are not the same. A joint analysis can help us better understand the key points of the research problem. Then, after integrating the analysis results, we need to select a certain amount of words for analysis as needed.

3.4.3 Social network analysis based on NetDraw

Social Network Analysis (SNA) helps to combine inter-individual relationships, “micro” networks, and “macro” structure of large-scale social systems by studying network relationship. Social network represents a structural relationship that reflects the social relationships

among actors. This study uses NetDraw software for co-occurrence analysis of high frequency words.

Developed by Professor Steve Borgatti of Kentucky State University, the social network analysis software NetDraw has a visualized graphical display function, easy-to-learn operation, and excellent open compatibility, and is embedded in many analysis tools such as ROST-CM (Zhang, Lei, & Yang, 2017).

Basic operation steps of NetDraw

NetDraw has been embedded into its application by ROST-CM and does not have to be downloaded separately. It can be called directly from the "Tools" menu of ROST-CM.

NetDraw can recognize many formats, including VNA, DL formats, and formats exported from Ucinet and Pajek analysis tools. If there is already a data file that can be directly analyzed, we need to select the File| Open command, then the corresponding file format in the pop-up dialog box and open the file to be analyzed.

If the file to be visually analyzed is a pure text file, tools must be used to build it into a semantic network file format that can be recognized by NetDraw.

Figure 3-4 gives a snapshot of the options available under the caption "Analysis" in this software.

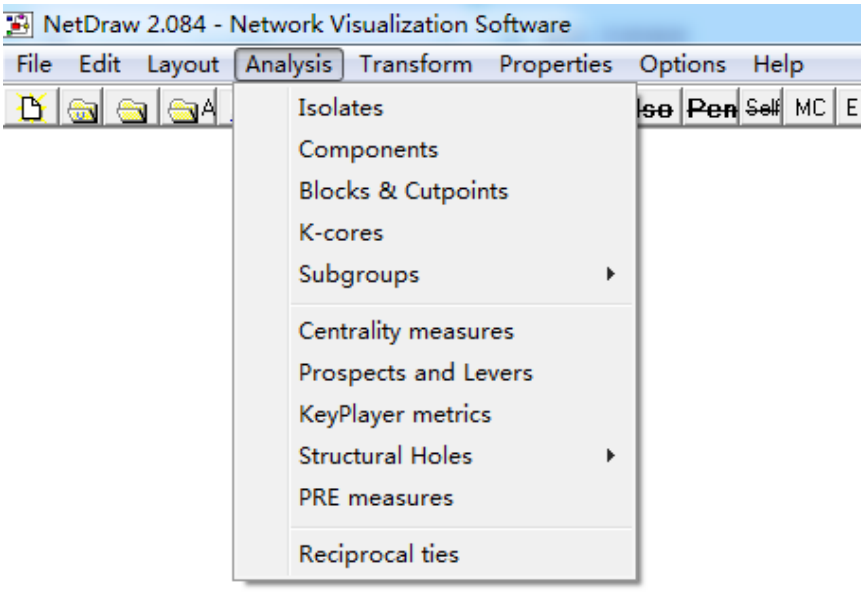

Figure 3-4 Centrality measures window of NetDraw software

Source: Zhang, Lei, and Yang (2017)

Figure 3-5 below, pictures the Node Centrality Measures window. Measures is the factor that selects the node to be calculated. The Set Node Sizes on the right side of the window

determines which factor is dependent on setting the size of the node. In order to more clearly express the hierarchical relationship between nodes, the map is further optimized by changing the color and shape of the nodes.

Figure 3-5 is the visualization map after "Degree" is selected in Measures and Set Node Sizes and the node color and shape are set. In addition, the layout and arrangement of the map can also be changed in the Layout menu. When calling up the Degree value, it is easy to see the high-frequency words with the most direct connections to other nodes. If there is the need to streamline the map, several nodes with smaller Degree values can be removed.

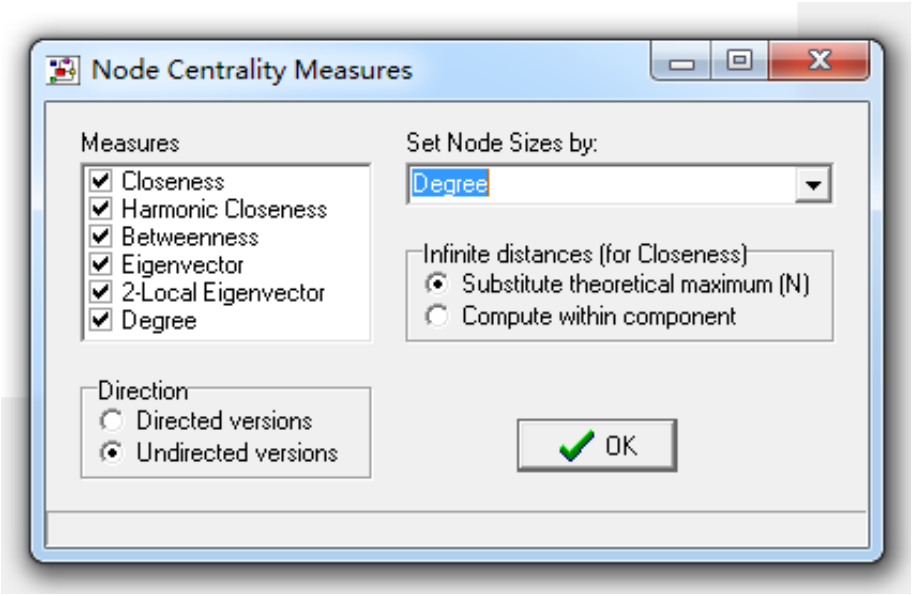

Figure 3-5 Node centrality measures set node sizes window of NetDraw software

Source: Zhang, Lei, and Yang (2017)

High frequency word network analysis method

The main content of the research field can be analyzed through the close relationship between high-frequency words. First, we used ROST-CM to convert the text file into a "co-occurrence matrix file", then selected the "construct matrix", popped up the NetDraw interface, and generated the initial map of the high-frequency word co-occurrence network. In the NetDraw, we selected the Analysis | Centrality Measures | Betweenness command to get a map based on the role of nodes in the network.

In the atlas, the square represents the high-frequency word node, and the larger the node, the greater the role of the node in the network. The high-frequency word co-occurrence relationship between nodes is connected by solid lines, and the thicker the solid line, the stronger the relationship between them.

In the window of Figure 3-6, the individual network nodes are selected. There are two parameter setting panels. The upper one is “Definite Ego Network” and modify the parameters of Geodesic distance FROM (TO) ego can increase or decrease the number of nodes. This option represents the distance between individual nodes and other related nodes, <=1 means that only the most relevant nodes are displayed. If there is the need to know more about the individual nodes, this value can be increased. The Options panel below is used to modify the size and color of the nodes in the atlas. Select the target node on the right side of the window to get an individual network diagram of any node.

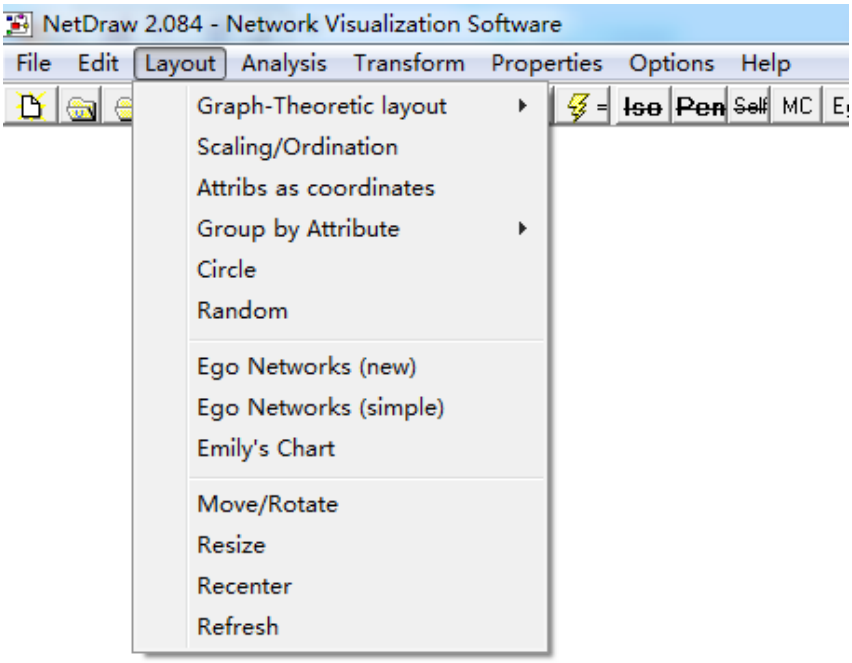

Figure 3-6 Layout| Ego Networks (new) window of NetDraw software

Source: Zhang, Lei, and Yang (2017)

3.5 High-frequency word extraction

Some of the words we searched and preprocessed appeared in large numbers, and some words appeared less. One of the functions of ROST-CM text mining software is to select the words in each article that can represent the characteristics of the feature words. The extraction method is TF-IDF (term frequency – inverse document frequency). The main idea is that if a word or phrase appears in an article with a high frequency TF and rarely appears in other articles, it is believed that this word or phrase has a good distinguishing ability. Such a term is given a higher weight and is used as a feature word of the text to distinguish it from other texts (Zhang, Lei, & Yang, 2017).

Chapter 4: Data Processing, Results and Analysis

4.1 Data processing

4.1.1 Data capture

According to the text selection logic of The Text Selection Flow Chart (Figure 3-2), before data collection, we fully consider the high correlation with the health industry, trust issues, sharing economy, and the Internet platform, and regard them as the precondition for data collection and filtering in the Internet data capture.

The data capture of this research also considers the following factors:

1) The data are mostly based on sources of the Chinese health industry, and the research topic is closer to China's national conditions;

2) The Chinese search engine www.baidu.com is used as the Chinese data capture tool;

3) Trust + internet + medical + health + health products are used as keywords of data search and capture.

It was found that there were 6.12 million items of information with the search keyword "trust + Internet health"; 2.06 million items of information with the search keyword "trust + Internet health care"; and 3.93 million items of information with the search keyword "trust + health care products".

Focusing on the programs in the chronic disease crowdsourcing platform that are closely related with consumers and consumer businesses, we extracted more than 10,000 items of information in terms of nutrition and health products industry news, medical trust related news, professional articles or reports on trust, blockchain and other Internet new technologies from www.baidu.com.

In the process of selecting the source text content, we put the focus on the Internet medical care and Internet health and select professional analysis of professional forums, medical and health industry investment institutions, and legal professionals related to doctor-patient disputes, health products closely related to life, typical industry information of nutri-

tional products, popular postings in online forums, and government macro policies. We pre-processed the text, eliminated irrelevant content, and copied the content to a text file for ROST-CM text mining.

4.1.2 High frequency words processing

First, we use ROST-CM to extract the top ten most frequently occurred feature words: Medical, the Internet, Hospital, Doctors, Service, Information, Trust, Patient, Health, and Health care products (see Figure 4-1). These feature words are highly correlated with the topic of this research and the chronic disease prevention industry.

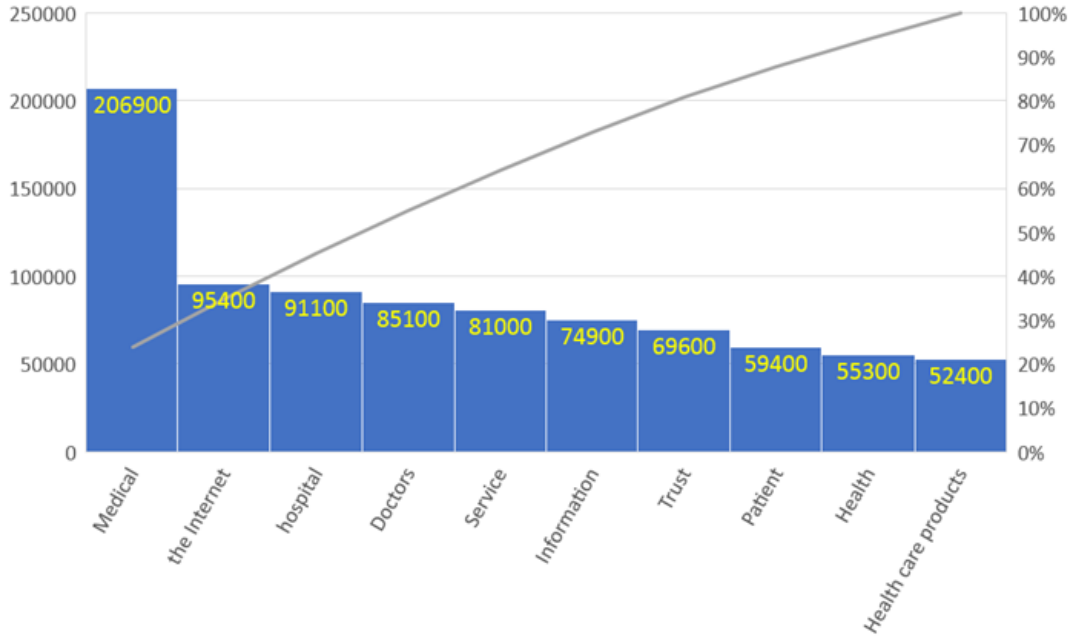

Figure 4-1 Top ten frequently occurred feature words in raw text data

After completing the text pre-processing steps, we delete irrelevant words from the 300 high-frequency words extracted from ROST-CM and replaced them with an umbrella word with a similar meaning. For example, words such as “advertising”, “marketing”, “propaganda” and “third party” are replaced by “information”; “regulation”, “governance”, “policy” and “requirement” are replaced by “rules”; “intelligence”, “professional” and “level” are replaced by “capability”; “insurance” and “guarantee” are replaced by “security”; “quick” is replaced by “swift”. In the end, we identify 43 keywords that are closely or likely to be related to trust (Table 4-1).

Table 4-1 High frequency words in the internet preprocessed text

Rank	Words	Frequency	Rank	Words	Frequency	Rank	Words	Frequency	Rank	Words	Frequency
1	Industry	40800	21	Personnel	10800	41	Promotion	7900	61	Give	6900
2	Infor-mation	32400	22	Government	10700	42	The reason	7900	62	Link	6800
3	Data	28700	23	Supervision	10600	43	Different	7800	63	Direct	6700
4	Institu-tion	27100	24	Risk	10400	44	Content	7800	64	Effective	6700
5	Tech-nology	27000	25	System	10200	45	Under-standing	7800	65	Institution	6600
6	Mode	25400	26	Result	10200	46	Feel	7700	66	Function	6300
7	Product	24900	27	Ability	10200	47	Level	7700	67	Constantly	6300
8	Need	24400	28	Equipment	10100	48	Examina-tion	7700	68	Propose	6300
9	Platform	21000	29	Field	9900	49	Marketing	7600	69	Effect	6100
10	Re-source	18400	30	Participate	9800	50	Compari-son	7500	70	Profession	6100
11	Demand	16900	31	Choose	9700	51	Time	7500	71	Report	6000
12	Com-munity	15300	32	Policy	9400	52	Community	7500	72	Stand by	6000

13	Influ-ences	14500	33	Cost	9200	53	Mutual aid	7500	73	Improve	6000
14	System	14100	34	Surroundings	9100	54	Have	7400	74	High end	5800
15	Obtain	12700	35	Brand	9000	55	Initial	7400	75	Scale	5800
16	Safety	12400	36	Process	8800	56	Fee	7300	76	Know how	5800
17	Insur-ance	12300	37	Quality	8700	57	Communi-cation	7300	77	Expectation	5600
18	Ability	11500	38	Expert	8500	58	Help	7200	78	Coopera-tion	5600
19	Adver-tising	11100	39	Consulting	8000	59	Change	7200	79	Specifica-tion	5500
20	Features	11000	40	Propaganda	7900	60	Standard	6900	80	Intelligent	5400

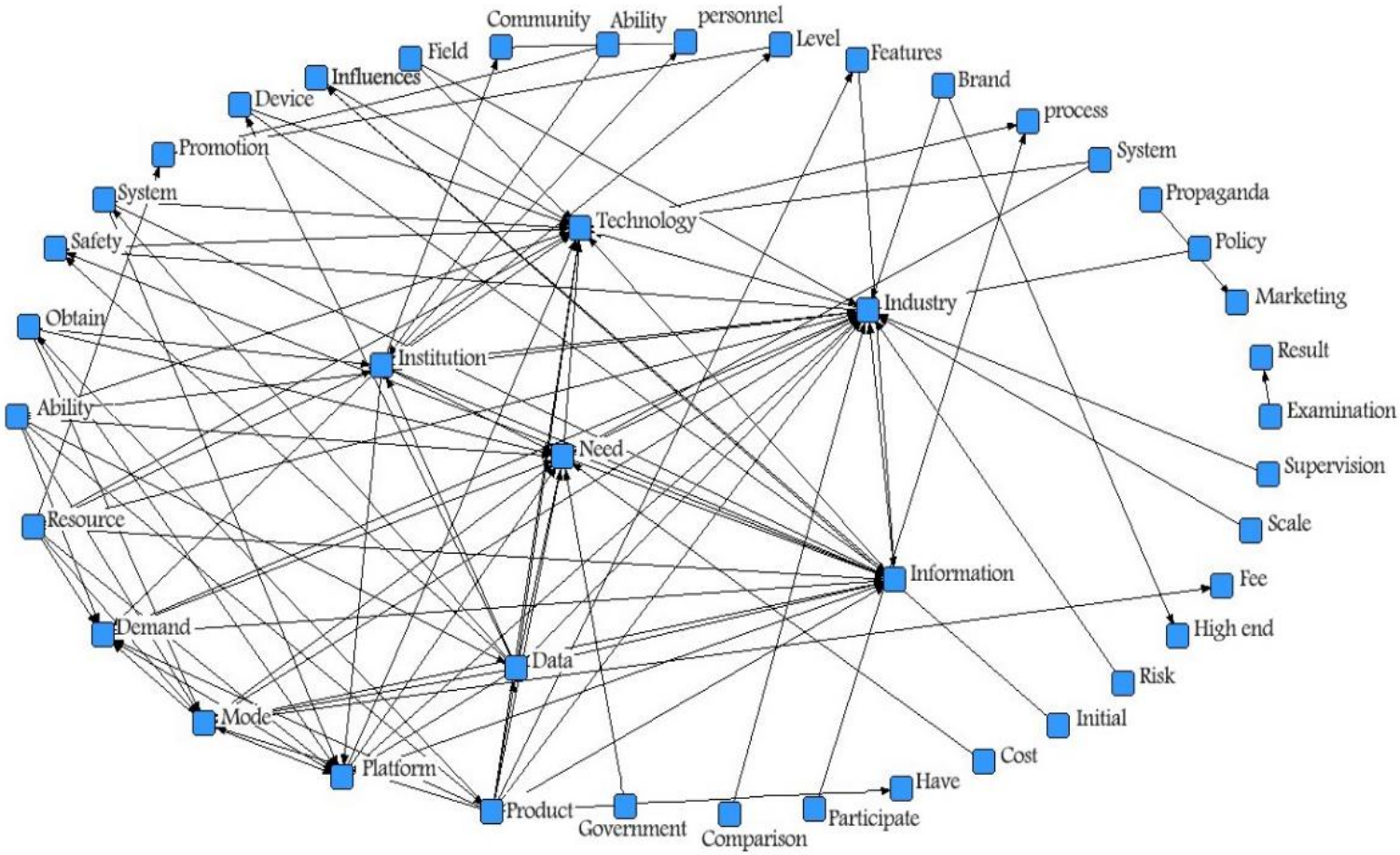

Figure 4-2 Sketch map of the relationship between social network and semantic network generated by text mining data

Based on the above data collection, we use the ROST-CM social network and semantic network analysis function to filter and analyze the preprocessed text, and then start the embedded NetDraw, build the network, and construct the matrix. Then, through the NetDraw analysis function, we run centrality measures, select the degree, set the node size, and generate the matrix pictured in Figure 4-2.

From Table 4-1, we have found that the "industry" classification and correlation matrix have the strongest influence, the "information" and its matrix rank second, the "data" rank third, the "organization" ranks fourth, the "technology" ranks fifth, the "model" ranks sixth, the "product" ranks seventh, the "demand" ranks eighth, the "platform" ranks ninth, and the "resources" rank tenth.

Figure 4-2 generated by the analysis function of NetDraw software can directly demonstrate the association relationship between each high-frequency word. In particular, high-frequency words such as "industry", "technology", "information", "institution", and "need" that have strong correlations with other keywords are prominently demonstrated in the figure.

It is found that the attributes of some afore-mentioned items are similar, and it is necessary to continue to integrate them for analysis. Referring to the high-frequency word data as per Table 4-1, we try to integrate several high-frequency words on the top ranking and found some secrets of the health industry that have received little attention for many years.

The first combination: "information" and "data". In Table 4-1, "Data" can be a form of "information", and "information" can also be used as a form of "data", so they can be completely integrated. The total number of high-frequency words of "information" and "data" in Table 4-1 is more than 60,000, far greater than the word "industry", which is 40,800.

Here, we tend to understand "industry" as a special field.

To give a real-life example, when a toothache patient is ready to be treated, if he has to choose between a hospital and a dental clinic, he will definitely choose the dental clinic. If the patient walks on a street in a strange city and finds a community health clinic, dental clinic, eye clinic, gynecology clinic, internal medicine clinic, and orthopedic clinic, it is likely that the dental clinic may be easier to be swiftly trusted and lead to swift choice.

However, if a friend accompanying him tells him that the doctor in this clinic is not professional enough, that he is even a fake doctor without medical qualifications, and that instead, it would be better to go to the community health clinic where there is a senior dental expert, the toothache patient may change his mind in an instant. This is a vivid scenario

where the impact of information on swift trust may exceed that of the industry. After all, human beings are primates, and in the real world, people's complex psychological activities and differences in their ability to process information affect their behavior.

Therefore, "information" supported by authoritative third-party data is most likely to generate swift trust. This is related to the long-standing huge share of medical advertising in the media.

In the early days when the private hospitals and health care products market was just opening up, medical advertisements in China were widespread and uncurbed. Some illegal medical institutions gradually grasped the importance of releasing "information" by the media to construct swift trust and launched substantial false medical advertisements. The annual growth rate was as high as 80% (Anonymous, 2001) .

The second combination: based on the needs of chronic disease prevention research, we understand the "institution" as an entity that provides public services. The sharing economy based on the Internet platforms is still in the ascendant, and these Internet platforms mostly exist in virtual forms. They establish influence through resource aggregation, rule formulation, brand promotion and online processing to offer services to the public or the niche. We believe that these platforms, despite their virtual characteristics, obviously have the characteristics of institutions, and they even function as an extension of many physical institutions through informatization. Some virtual platforms have also established physical institutions for the needs of offline services, and the most typical example is the rise of "Internet hospitals".

In Table 4-1, "Institutions" and "platforms" can also be integrated, with high-frequency words totaling more than 58,000 times. It may be easier for people to build swift trust in large-scale institutions, which might explain why in China, hospitals in big cities always have queues while in many community medical institutions there are few people seeking medical care.

The third combination: "technology" itself cannot exist independently, and it is more reflected in a capability attribute of researchers or R&D and technical service organizations. Therefore, in Table 4-1, "institutions" and "technology" can also be integrated, with high-frequency words totaling more than 52,000 times, which is similar to the second combination. In some well-known medical and health institutions, there are considerable talented people, advanced equipment and superb technology which help generate a strong sense of trust.

The fourth combination: “Needs” and “data” are combined for analysis. A need is considered to be the amount of a particular commodity that a person is willing to and can purchase at a variety of possible prices within a particular period of time (Mei, Lin, & Chen, 2001). As for need, it may be a synonym or a similar word to demand. Chappelow (2019) gives the following explanations:

(1) Demand refers to consumers' desire to purchase goods and services at given prices.

(2) Demand can mean either market demand for a specific good or aggregate demand for the total of all goods in an economy.

(3) Demand, along with supply, determines the actual prices of goods and the volume of goods that changes hands in a market.

Therefore, we must not only consider that “need” is a kind of potentially measurable “data”, but once the “need” forms specific “data”, it also evolves into an information attribute. Faced with the rapid development of big data, many industries are trying to capture and select the preferences and needs of certain groups of people from various information data and launch big data marketing. Some Internet giants even believe that big data will be a scarcer and more precious resource than oil. Crowd sourcing customer resources are scattered, and the data are collected by the platform to form a data pool so as to classify accurate customers. It will help to offer personalized products and services. Based on the above understanding, we believe that the analysis results of the combination of the “need”, “information” and “data” of the results that have been achieved in reality may have certain guiding significance. In Table 4-1, if “need”, “demand” and “data” are combined, the total number of these three keywords reaches 60,000 times.

The fifth combination is a combination of “products” and “technology” based on the “industry”. Because technology itself cannot exist independently, its carrier is a product or service. There are more than 400 million patients with diabetes and hypertension in China (Peng, 2019). It can be seen from the structural diagram of Table 4-1 that market needs and demands are closely related to the “industry” and are the biggest support. Some technology-leading products and services may be more likely to form trust propensity.

Certainly, we can also try to integrate more similar items, such as “product” and “technology” as well as “platform” and “mode”, but these integrated high-frequency words in Table 4-1 do not reach the highest value of 60,000 times, no more than the first combination. Therefore, no more in-depth analysis is carried out.

As shown in Table 4-1, there are many high-frequency words mined through ROST-CM. These feature words have different correlations with the establishment of swift trust. Several combinations can be formed to obtain several results.

However, this research focuses on one point, namely, which specific factor or compound factor is the first factor that affects the establishment of swift trust?

Considering the accuracy of the research conclusions, we will do an appropriate extension analysis to list the second, third, and fourth influencing factors.

4.2 Results

A further processing of the ROST-CM results is as follows:

1. The high-frequency words with similar semantics and attributes are combined and factor entries are redefined;

2. Then, the newly defined factor entries are further explored to discover the new connotations through open media reports or expert analysis, combined with new trends in the Internet economy;

3. The newly defined factor entries are re-weighted and permutated to verify the primary factor affecting the establishment of swift trust from multiple perspectives through open media reports or relative authoritative industry reports.

Referring to Table 4-1 for high-frequency words statistics, we select the top eleven words: “industry”, “information”, “data”, “institution”, “technology”, “mode”, “product”, “need”, “platform”, “resource”, “demand”.

Based on Figure 4-1 entitled sketch map of the relationship between social network and semantic network generated by text mining data, we have analyzed five combinations of related high frequency words including “information” and “data”, “institutions” and “platforms”, “institutions” and “technology”, “needs” and “data”, and “products” and “technology”.

A further processing of the ROST-CM results is about the variables factors that exert most influence on the formation of swift trust and their important relationships.

Considering everyone’s role as a “recipient” for building swift trust, we interpret these high-frequency words and their combinations as controllable variables, and further translate into specific approaches or goals that may affect people in the real world. For example, we

translate “information” and “data” into “dissemination”, and “industry/category” into “profession”. Considering the organizational property of resource integration, we translate “institution” (in this research, as an organization providing public health services) and “platform” into “platform”, and “technology” into “products”. Moreover, trust in the “profession” overcomes trust in “technology” or “products” so we translated “technology” and “products” into “profession”. As far as healthy consumption is concerned, “needs” and “demands” are both subjective wishes, so we translated them into “propensity”.

Based on people's prudence towards online health consumption, the sharing of crowdsourcing platforms, and the significant orientation of big data and precise needs, we retrieved, optimized and classified again the five combinations in section 4.1.2 to form Figure 4-3:

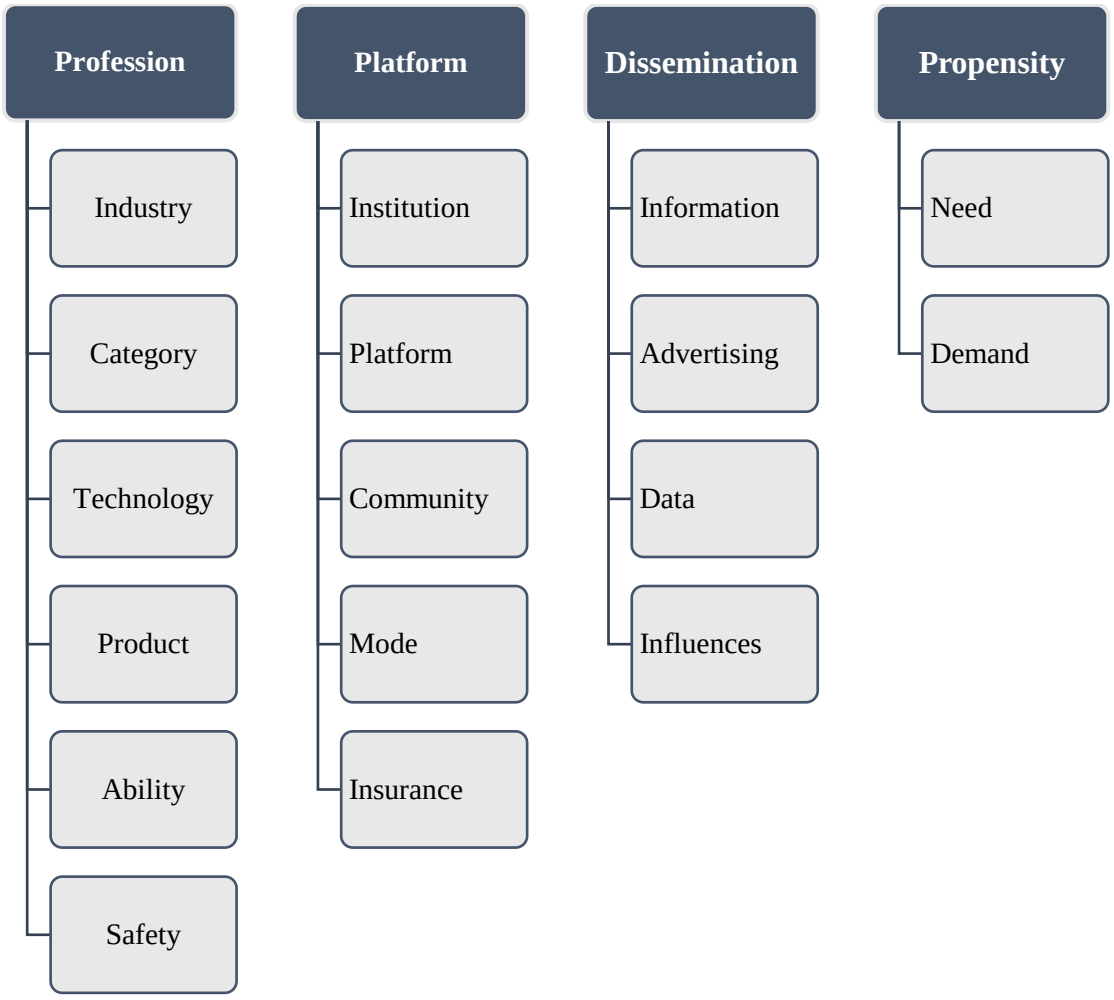

Figure 4-3 The four major factors that affect the establishment of swift trust

According to the above method, we used the ROST-CM content mining software to capture the total number of occurrences of each high-frequency word as per Table 4-1. After

semantic translation, the scores of the high-frequency words were summed separately, and we got the following clusters:

1) Profession

2) Platform

3) Dissemination

4) Propensity

The new order consists in a dimension of descending echelons, which means that "*profession*" becomes the first factor affecting the establishment of *swift trust*.

As per the research results, we compared "profession", the primary factor affecting the establishment of swift trust, with previous research conclusions about prerequisites of swift trust in the literature review, as detailed in the paragraph below, and found that there are similarities in terms such as capabilities, products, classification, security (traceability), and knowledge sharing.

These important research conclusions include:

Mayer, Davis, and Schoorman (1995) believe that trust is the mix of ability, benevolence and integrity which are called antecedents. Lewicki and Bunker (1996) proposed a three-stage model, calculus-based, knowledge-based, and identification-based trust. Popa (2005) considered the following variables affecting the establishment of trust in temporary groups: premises of group communication behavior and trust, generalized trust, and credibility of influence and initiative. He also believes that factors such as traceability of trustworthiness, group performance, and group satisfaction may be affected by the existence or absence of swift trust. Dirks and Ferrin (2001) viewed knowledge sharing as an antecedent rather than an outcome of trust. Williams (2001) found support for a mediated relationship between trust and knowledge sharing, showing that a partner's information sharing is predicted by cooperative rewards, which indirectly influence the formation of trust. Hung, Dennis, and Robert (2004） summed up five antecedent conditions that influence trust formation: (1) third party information, (2) dispositional trust, (3) rule, (4) category, and (5) role.

All of the above research conclusions involve the influence of the term "profession" on the establishment of trust and swift trust. But no study has analyzed "profession" as the primary factor.

4.3 Mapping the relationship between swift trust and the four major influencing factors

In the literature review in Chapter 2, we have sorted out the process of trust formation. People often start with distrust or initial trust, form beliefs after determining the perceived benefit, then produce intention, which finally promote action or behavior change. This is a dimension of ascending echelons and, after combining the high-frequency words determined (profession, platform, diffusion and propensity) with the process of trust generation, Figure 4-4 is generated as follows:

The evolution process of the establishment of swift trust from “initial trust” to “perceived benefit”, to “beliefs & intention”, to the formation of “behavioral change” and variable evolution from trust “propensity” to “dissemination”, to “platform”, to “profession” is demonstrated to us.

The factors affecting the establishment of swift trust are “profession”, “platform”, “dissemination”, “propensity”, and this newly generated relation diagram is named *swift trust V-gradient*.

In the *swift trust V-gradient*, “profession” represents “industry”, “category”, “technology”, “product”, “ability” and “safety” and ranks as the largest influencing factor in the formation of swift trust. The top talents and equipment in China’s medical industry are mostly deployed in a small number of hospitals in megacities and a large number of patients would rather wait in line for a month or two to go to a well-known large hospital. As a result, there appears a group of “hospital appointment scalpers” driving the registration fee in some hospitals from 100 yuan to 500 yuan. Some patients who are unable to get registered would resort to the scalpers in spite of the exorbitant prices rather than get treated in the primary-level medical institutions. Therefore, a “siphon” effect of super hospitals appears (Shuai et al., 2016).

In the *swift trust V-gradient*, “platform” represents “institutions” and “platforms”, ranking as the second largest influencing factor on the establishment of swift trust. The platform includes the meanings of service reputation, brand image and service scale.

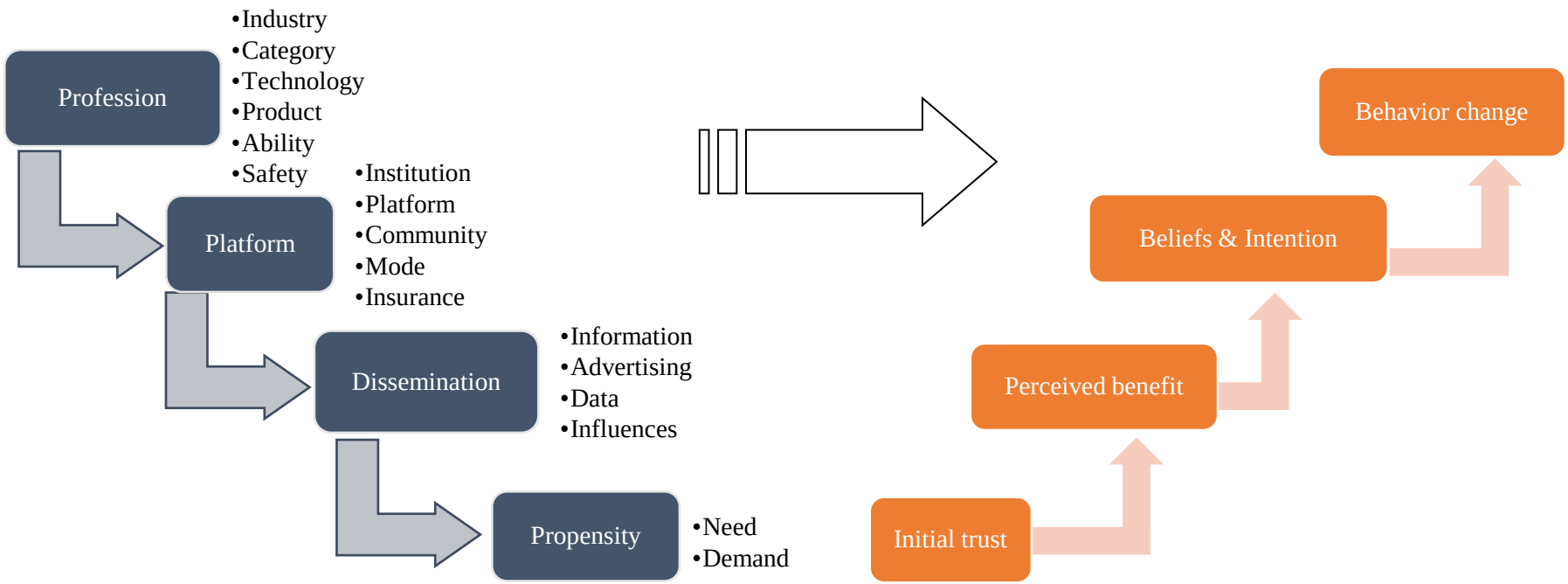

Figure 4-4 Swift trust V-gradient

We have noticed that with the integration of information flow, commodity flow, logistics, cash flow, and talent flow on the internet, many platforms play the role of media, and the media also play the role of platforms (Figure 4-5). However, the human factor, especially employers, plays an increasingly important role regarding trust in the platform and this has become the new trend.

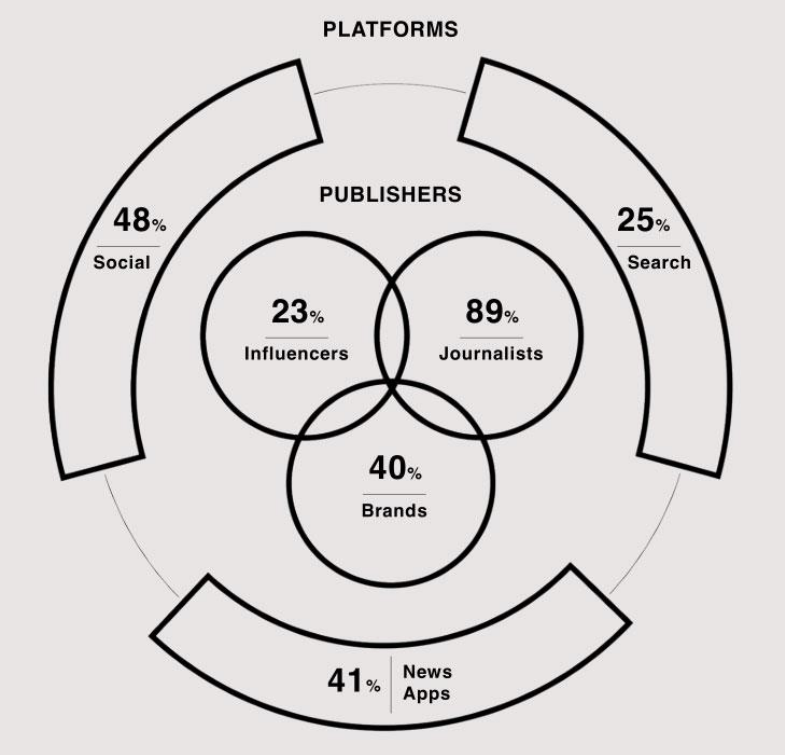

Figure 4-5 "Media" as both content and platforms

Source: Edelman (2018)

According to the 2018 Edelman Trust Barometer released by Edelman Public Relations Worldwide based on the polls of more than 33,000 respondents, the Chinese people have the highest trust in the government and in the media. In China, 82% of the knowledgeable public and 73% of all the respondents expressed trust in the government, enterprises, media and NGOs, but trust in enterprises is still the lowest among the four institutions, which indicates that there is still a long way to go for enterprises to build trust (Edelman, 2018).

In the *swift trust V-gradient*, "dissemination" ranks third in the list of influencing factors on the establishment of swift trust. It contains four main sub-items: "data", "information", "advertising" and "influence". In this regard, we carry out further research as per section 4.4 below.

4.4 Verification of media disclosure information

Regarding the relationship between data and building swift trust, we believe that in addition to understanding third-party data and scientific tools, we should also have a new understanding of big data and carry out in-depth exploration of building trust value.

In terms of public health event prediction, big data is providing a new type of capability to analyze mass value to obtain products and services of great value or gain profound insights (Mayer-Schönberger & Cukier, 2013, p.4). The era of big data has opened up a treasure hunt game, and people's perceptions of data and their attitude toward the potential value released in the transformation from causality to correlativity are the key to this game (Mayer-Schönberger & Kenneth, 2013, p.20).

According to the traditional business logic, products are the bridge between business and customers; under the new business logic, data may be taking on this "bridge" role. In the latest crowdsourcing trend, it is noticed that a higher degree of dispersion means faster value concentration, and it has become an important feature of the sharing economy. Those industries with high dispersion degree such as taxi, tourism, coffee and catering and even education have begun to be transformed by various crowdsourcing platforms, providing useful enlightenment for chronic disease prevention and health management.

There is a Chinese proverb saying that best liquor is also deeply afraid of the alley. This is mainly about the importance of dissemination and that information supported by authoritative third-party data is most likely to generate swift trust. In the context of internet technology, it is necessary to first identify which special attributes might be behind information.

In the process of information collection and processing, it is noticed that the transmission of information is important for the establishment of trust, but the source of information (institution, platform, profession) and the role of the transmitter (profession, relationship) cannot be ignored. Especially in the context of the popularity of internet and social media, information affecting the establishment of swift trust not only comes from authoritative third-parties or rigorous data testing, but also from the consumption experience shared by an acquaintance.

Lewis and Weigert (1985) suggested that trust is based on "'good reasons' constituting evidence of trustworthiness" (p. 970). Although Mayer and Gavin (2005) defined those "good reasons" in terms of ability, benevolence, and integrity, it is still to be demonstrated

the significant, unique effects for all three dimensions when predicting trust.

Internet technology not only connects countries and enterprises in the world, promoting them to globalization, but also connects consumers and promotes communization. The trust between people has not been lost. The rise of social media (social websites such as Facebook and WeChat) reflects the transfer of consumer trust from companies to other consumers (Kotler, Kartajaya, & Setiawan, 2011). For example, the most credible form of advertising in China comes directly from people who are known and trusted by consumers with 85% of Chinese respondents expressing that they fully or partly believe recommendations from their friends and family (Nielsen, 2015). However, trust is not limited to the internal interpersonal circle. In fact, 70% of respondents trust editorial contents such as newspaper articles, while more than two-thirds (68%) of respondents believe in consumers' opinion published online (Nielsen, 2015).

These survey data show that consumers pay more attention to the opinions of other consumers with former experience. This kind of opinion is essentially a form of information in online media, and we summarize it into the category of "dissemination". We believe that these data or phenomena also mean that as the transparency of online information increases, especially the rise of the we-media, as a witness or experiencer, everyone can become a media release center for an event and information will become more fragmented. With the trend of decentralization of information dissemination, corporate advertising and even the influence of corporate brands will continue to be dismantled. The influence of consumer word-of-mouth publicity will increase day by day, a new consumption system dominated by consumers will be formed, and this is also a fundamental reason why we believe that the crowdsourcing model can be an important direction to study chronic disease prevention.

With the development of economy and advancement of science and technology, the factors that affect the establishment of trust and even swift trust may change at any time, and human beings may even become the primary influencing factor. "But the human essence is no abstraction inherent in each single individual. In its reality it is the ensemble of the social relations" (Marx, 1968).

According to our understanding, in real life, compared with general consumer goods, health products or health care services are related to life safety and life quality, so consumers are more cautious in their choices. As far as health is concerned, due to different individual features, the actual demand for products or services are also personalized and differentiated. The experience of one patient or a group of patients with specific health problems may be

more likely to attract the attention of other consumers with similar problems. Therefore, we believe that to establish a consumer-centered crowdsourcing service system in the context of Internet and self-media popularization may provide a driving force to establish swift trust among consumers and contribute to behavioral transformation.

Since consumers are more willing to associate with other consumers, they tend to form the current economic phenomenon of the social circle and, in this trust system, they are likely to gather in acquaintance circles or communities to create and share consumer experiences. Therefore, to develop a crowdsourcing model, it is necessary to get close to the consumers' life to find resonance with them, obtain their value identification and thus own the basis for the continued existence and continuous growth of the company (Chen, 2019a). Under the support of Internet technology, consumers have the control over the decision-making power of "what" and "when" they need. Before the advent of the Internet, customers who wanted to watch TV programs needed to accept the time and content set by the TV station, but today, they can order any interesting TV programs such as news, entertainment or sports at any place, at any time through smart phones and tablets. Therefore, the emergence of information technology, especially social media and online marketing tools, gives consumers not only more choices, but also more opportunities to create and shape individual-centered influences. For example, the popularity of the "Internet celebrity economy" in China is a new phenomenon (Wang, 2018).

In 2018, the number of internet celebrities with more than 100,000 followers kept increasing rapidly by 51%, and the number of top internet celebrities with more than one million followers increased by 23% annually. One of the most important reasons for the growth of online celebrities is the boom in the number of followers. As of April 2018, followers of internet celebrities have maintained a fast growth of 25% year on year and reached 588 million (iResearch, 2018).

From the literature review in Chapter 2, one important feature of the crowdsourcing platform that has been identified links individuals who are independent and have specialized expertise with organizations to collect information, ideas and needs. However, in terms of the social service function, it is also necessary to find a complementary area with customers, understand what their habits and desires are, design platform functions, quickly establish communication and trust with customers, enable customers to participate in interaction, form a social network and eventually form a "symbiotic organization". A crowdsourcing platform needs the establishment of a swift trust mechanism to connect scattered customer needs with

an efficient product or service supply system. It uses Internet technology to achieve seamless connection between the partners, obtain more efficient problem-solving methods and realize a community of common destiny. In essence, this symbiotic organization is an efficient co-operative organization based on customer value creation and cross-domain value network. Members within the formed network realize sharing of resources, value creation and profits. This kind of high-level development cannot be achieved by a single organization (Chen, 2019b).

As an open and symbiotic organization with wide participation of consumers, a crowdsourcing platform has demonstrated advantages over traditional enterprises in terms of resource links, information sharing, suggestion collection, value creation, and consumption guidance. In particular, trust among consumers has diversified the consumers' simple consumption role to become creative persons or even operators, thus changing the top-down value transfer logic of traditional enterprises. Trust transforms from a vertical relationship to a horizontal one meaning that consumers trust each other far more than they trust organizations.

In the course of this study, we found some public reports from the media, which can further confirm the important role consumers play in social media and social influence. For example, Henan Provincial People's Hospital has two websites (English and Chinese comprehensive websites), two "micros" (official WeChat and Weibo), two newspapers (bulletin and hospital newspaper) and two terminals (Tostito and Tencent Penguin accounts), disseminating 15 items of relevant information. It maintains open cooperation with the media and publishes more than 160 reports every year in the national media, establishing a pattern of all-media communication. The brand awareness of Henan Provincial People's Hospital has broken geographical restrictions and the number of patients it attends to continues to rise, having won the "Satisfactory Hospitals Among People" label for many consecutive years (CHDC, 2019).

Another example is the Xiangya Hospital of Central South University which ranks top in China in terms of surgery volume and discipline strength. The hospital leaders believe that there is a miraculous effect for large hospitals to use "small stories" for publicity. It has compiled touching stories from the interactions between doctors and patients, with a purpose to propagandize the hospital with cultural carriers such as flexible and touching words. Many audiences said that they were moved to tears while reading the stories. The unpretentious voice of doctors and patients has narrowed the distance between patients and hospitals and

quietly implanted the friendly and trustworthy brand image of Xiangya Hospital into the hearts of patients (CHDC, 2019).

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Chapter 5: Case Verification and Potential Application

5.1 Necessity and conditions of case verification

The crowdsourcing of chronic disease management involved in this research is mainly based on the Internet sharing model, so all sources of data collected come from network capturing.

Focusing on the programs in the chronic disease crowdsourcing platform that are closely related with consumers and consumer businesses, we extracted more than 10,000 items of information in terms of nutrition and health products industry news, medical trust related news, professional articles or reports on trust, blockchain and other Internet new technologies from www.baidu.com.

We fully consider the high correlation with the health industry, trust issues, sharing economy, and the Internet platform, and regard them as the precondition for data collection and filtering in the Internet data capture. The data capture of this research also considers the following factors: 1) The data are mostly based on sources of the Chinese health industry, and the research topic is closer to China's national conditions; 2) The Chinese search engine www.baidu.com is used as the Chinese data capture tool; 3) Trust + internet + medical + health + health products are used as keywords of data search and capture. It was found that there were 6.12 million items of information with the search keyword "trust + Internet health"; 2.06 million items of information with the search keyword "trust + Internet health care"; and 3.93 million items of information with the search keyword "trust + health care products".

We analyzed through ROST-CM and concluded that professionalism is the primary factor that affects the establishment of swift trust. However, considering that these data come from the Internet and the information sources are scattered, we believe that it is necessary to verify the research results with a specific case. For this endeavor, Shenzhen Zanshi Targeted Gene Technology Engineering Co., Ltd. (SZG) Based in Shenzhen, Guangdong Province, was selected.

We have designed the following conditions to be verified through the case:

(1) Consistency: The results of the case verification analysis should be consistent with the analysis results of ROST-CM used in this research.

(2) Universality: The verification case should reveal the application significance.

(3) Reality: The verification case should have followed the crowdsourcing technology applied to healthcare management.

(4) Uniqueness: The verification case should reflect the results of this study as the core and unique factors that affect the establishment of swift trust.

Chronic diseases such as diabetes, hypertension and arteriosclerosis tend to cause chronic ocular diseases, and if progressive myopia is not controlled, it will cause chronic ocular diseases that are difficult to reverse, such as glaucoma and cataract.

Myopia is becoming a global epidemic and public health problem, and the World Health Organization has released statistics for this (WHO, 2018b). Globally, it is estimated that approximately 1.3 billion people live with some form of distance or near vision impairment. With regards to distance vision, 188.5 million have mild vision impairment, 217 million have moderate to severe vision impairment, and 36 million people are blind and in what concerns near vision, 826 million people live with a near vision impairment. With population growth and aging the risk that more people acquire vision impairment will increase.

The myopia rate among young Chinese is already one of the highest in the world, at 70 percent for high school and college students and nearly 40 percent for primary school pupils (Ma, 2019), raising the prospect of a significant swath of the country’s population suffering from loss of sight or blindness in old age (Moore, 2011).

Even myopia is challenging China’s development. Myopia in China is making it hard to find enough qualified jet fighter pilots (Gardner, 2018)。

China President Xi Jinping called for more efforts to protect children's eyesight. As myopia is becoming more prevalent and affecting people at a younger age, this is also a major problem that is related to the future of the nation and deserves great attention, the trend cannot be allowed to continue (Xu, 2018).

Shenzhen Zanshi Targeted Gene Technology Engineering Co., Ltd. (SZG) is a Shenzhen-based organization focusing on research and development of eye care products via a crowdsourcing promotion method. Its crowdsourcing partners are from more than 30 provinces, municipalities and autonomous regions in China. International clients from Malaysia, Canada and other countries have proactively required to become partners. In addition, SZG

has also received the support of the Ministry of Health of Laos and has worked together with local enterprises in Laos to jointly promote a children and adolescent myopia prevention and control project to be included in China's "Belt and Road" strategic cooperation project database. The "Belt and Road" strategy, initiated by China in 2013, holds high the banner of peaceful development, actively develops economic partnerships with countries along the line and jointly creates a community of shared interests, a community with a shared future and a community of shared responsibility for political mutual trust, economic integration, and cultural inclusion.

SZG mainly promotes an innovative targeted nutritional eye exercises for the visually impaired. By using eye nutrition supplement ball massage pens based on nutritional genome technology to replace the eye finger massage of traditional eye exercises, it is possible to promote the flow of the lymphatic plexus, vascular plexus, muscle plexus and nerve plexus of the eyes. The micronutrients contained in the massage pen can penetrate through the skin to supplement some of the nutrients needed by the eye. After application in tens of thousands of people, it has been verified that within eight minutes, myopia patients can read one to six more lines of words in the visual chart and many patients with severe myopia can reduce the myopic degree by more than 200 degrees within two months. For those with presbyopia and muscae volitantes most can feel a significant improvement within ten days.

It is believed through our analysis that the eye health management project implemented by SZG fully complies with the principles of universality and reality and needs to be verified by specific cases to make verification conclusions on consistency and uniqueness.

5.2 Fission effect of professional technology

After reviewing all the application projects developed by SZG, we focused on two specific implementation projects, the Zen-wise team and the Kunming team, which are operating through crowdsourcing.

Established in 2018, the Zen-wise team is an independent health crowdsourcing platform focused on the field of vision care. Headquartered in Shenzhen, it promotes SZG nutrition eye care concepts and products. In two years it has attracted 36,000 registered members and more than 2,000 active crowdsourcers. Through WeChat online group, webcast, offline experience and offline outdoor training, the project provides students, people using

eyes excessively, and chronic ocular patients caused by diabetes and hypertension with services such as prevention knowledge, eye care and eye nutrition supplements. The Zen-wise team fully achieved the transformation of products in the consumer market by establishing a swift trust relationship at the consumer level.

The Kunming Team was founded in 2019. Based on the Kunming Eye Hospital and Kunming Jin'an School vision health protection system, it boasts a core leadership team composed of PhD experts graduated from Harvard Ophthalmology, nutrition experts, and influential entrepreneurs in Kunming. Through joint organization with government agencies of youth eye protection, cooperation with professional maternity and childcare hospital for infant eye gene sequencing, and joint promotion of nutrition eye exercises with schools, the team is devoted to carrying out prevention of youth myopia and adult eye fatigue.

The Kunming team took a unique approach and used the policy advantage of Kunming being listed by the Ministry of Education as a pilot zone for reform of children and adolescent myopia prevention and control. By establishing swift trust relationships with relevant government departments, the Kunming team affects government decision-making and in turn affects public health policy development.

First, the SZG research and development department systematically summarized the technical innovations of the vision maintenance and intervention products presented to government departments, marketing channels and end customers, and offered trials for policy makers of competent departments and marketing channel leaders.

Second, the SZG research and development department also reports to and communicates with many authoritative ophthalmologists in China. Cell function and gene enhancement technology is a new thing for the ophthalmological circle that relies on wearing glasses and surgery for physical refractive changes for myopia correction. The research orientation and method have attracted strong interest of ophthalmologists. Some experts even propose that they are willing to cooperate in the research of related topics and are willing to conduct clinical verification.

Third, the SZG research and development department cooperates with public interest organizations such as schools, Lions Clubs, and Bright Express to carry out a large number of public welfare promotions, so that students and parents feel the benefits in person.

Fourth, the SZG research and development department independently developed the V300 + eye gene chip. Through gene sequencing of thousands of single nucleotide polymorphic SNPs on 311 vision-related genes, mutation genes were found. Through gene big data analysis, from the experimental structure, the main DNA environmental causes of (including chemical DNA toxins such as pesticides and heavy metals, nutritional factors such as nutrient deficiency, LED blue light damage, insufficient UV radiation) visual impairment were identified.

Fifth, the SZG research and development department optimized and simplified the product promotion form, and for the first time proposed targeted nutrition eye exercises. On the basis of traditional eye exercises which alleviate eye fatigue by improving eye microcirculation and relaxing muscles, the targeted nutrition eye exercises add subcutaneous penetration of the nutrition function. After about four minutes of massage, the vision improvement is instant. SZG has applied for intellectual property protection from the State Intellectual Property Office and reported it to the national education authority to apply for a pilot promotion nationwide.

Considering the uniqueness of the verification case in terms of speciality, SZG R&D technicians provided us with the specialized features of SZG eye care products and technical services from several levels such as New Research Orientation. These are considered to be the basic data of how SZG eye care products obtain swift trust by parents, ophthalmologists, and policy-making departments. We organized them into the following table:

Table 5-1 Summary of technological innovation of SZG eyesight maintenance products

Innovative content	Important technological innovations and principles
New Research Orientation	**1). Form deprivation myopia:** relieve muscle tissue and arterioles around the eye, improve choroidal blood flow and nutrition, achieve incrassation, and improve refractive error caused by long-term reading. Neurotrophic factors and retinal opsin enhancement factors are supplemented by microcirculation infiltration. **2). Defocus-induced myopia:** regulate the fibroblast growth factor gene FGF family and collagen fiber synthesis gene COL family incrassated sclera through active neurotrophic factors (micronutrients and growth factors and gene promoters), change the elastic modulus, maximum load and maximum stress of scleral biomechanics. **3). Gene augmentation:** regulate the expression of retinal photo-sensitising proteins, neurotransmitters, mitochondrial light transduction and other related genes, and enhance vision function, even realize amblyopia reversal by supplementing the vision genome with specific gene ligand nutritional factors (especially promoters or enhancers),
New Intervention Mechanism	Offer targeted nutritional supplementation to sclera, ciliary muscle, visual cells, secretory gland cells, nerve cells, pigment epithelial cells caused by chronic malnutrition, provide molecular nutrition donors, stabilize the genome, improve cell metabolism in ocular tissue and periocular muscle tissue, and activate and enhance cell function. Prevent and reverse myopia in a physiological sense, and quickly and effectively relieve xerophthalmia, muscae volitantes and presbyopia. Detailed maintenance measures **4). Nutrition eye exercises** (Roll-on massage pen with various plant extracts and nutritionally enhanced active cytokines)） Through massage and subcutaneous penetration of active molecular nutrition, the conduction, transportation, and metabolic mechanisms of the eye nerve plexus, lymph plexus, muscle plexus, and vascular plexus are improved. 5). Spraying nano-robot

	Through the nano-small molecule nutrition spray, it promotes the rapid absorption around the eye, supplements nutrition, and relieves eye fatigue. 6). Targeted formula eye nutrition food Oral supplementation for specific molecular nutrition required for ocular tissues and cell metabolism to ensure cell function. Product formulas, approvals from government regulatory authorities, and certification from product quality and safety authorities of all the products are revealed to the customers.		
Technological Approaches	Targeted nutrition research category	Intervention mechanism	Cell function and gene expression regulation
Cellular Metabolism	Micro arterio-vein Lacrimal gland microtubule Muscular tissue Nerve conduction	Improve blood circulation of the eyeballs and periocular muscles, promote lacrimal gland, aqueous humor secretion, and glandular microtubule patency, promote cell metabolite exchange, regulate intraocular pressure, and promote nerve conduction	Sufficient supply of cytokines required for cell metabolism and secretion of glandular cells and enhanced function
Gene Molecular Nutrition	Retina and macular dystrophy	A. Regulate nine types of opsin (peptide) gene expression; B. Molecular nutrition activates conversion mechanism from all-trans-retinol ester to cis-retinol; C. Gene transduction from enhanced optical signals to neural signals	Enhance the expression of genes such as RPE65, and explore the regeneration of visual cells through the differentiation mechanism of amacrine cells, Mueller cells, and pigment epithelial cells
	Neurotrophy	Supplementation of neurotransmitters	GPCR gene cyclic activation mechanism
	Corneal nutrition	Activate and supplement tear film consisting of mucin, lipids and water through the lacrimal gland to maintain	Corneal cell self-repairing function, prevent scratches and keratinization, mucin

		corneal development, improve refraction, enhance immunity, and repair corneal scratches	lysozyme is beneficial for bacteriostasis
	Sclerotic fiber protein synthesis nutrition	Provide molecular nutrition donor, enhance COL gene sclera collagen fiber synthesis in a targeted manner and incrassate sclera	Supplement donor and collagen fiber synthesis gene express transcription factor and growth factor
	vitreous body nutrition	Improves vitreous body turbidity (muscae volitantes) by secretion of nutrients from the aqueous humor and supply of nutrients from choroids	
	Ciliaris and periocular muscle nutrition	Improve muscle contractility and neuromuscular junctions to prevent loss of regulation capability	
Genetic Diagnosis	1. Vision genome sequencing (about 311 genes)	Stabilize the genome from the nutritional environment to prevent susceptible genes in tissues such as the retina, choroid, macula, sclera, and fundus blood vessels from mutations due to chronic malnutrition, which can cause various visual impairments and organic lesions. Regulate cell function and regeneration through gene expression to achieve physiological treatment of myopia and other visual dysfunction	

5.3 The additive effect of crowdsourcing and profession

Zen-wise team which mainly combines online WeChat group marketing and offline experiential marketing through meetings and exhibitions. The team recruits some consumers to become crowdsourcing partners for project promotion. From August 2018 to September 2019, a total of 23 theme promotions with more than 50 participants were held in Shenzhen and Guangzhou, 8 theme promotions with more than 200 participants were held in Kunming and Chengdu, and a total of 4 theme promotions with more than 500 participants were held in Zhuhai, Beijing, and Suzhou. In Hengdian and Beihai, two theme concerts with more than 5,000 participants were launched. The team also participated in two large-scale international beauty fairs in Guangzhou. In addition, SZG also establishes business cooperation with many associations and organizations such as Herose Club and Entrepreneurs Association. One year after the project was launched, Zen-wise team attracted more than 12,000 effective customers and 60% of registered members have shared the products with others through crowdsourcing platform software and the number of fans who learned about the product by scanning the QR (Quick Response) code to the platform reached a total of 36,000.

The promotion of the Zen-wise team's eye care project has several subjects, including the sharing of patented technology principles for correcting vision through gene regulation, strong supporting policies of nationally-supported vision projects, on-site sharing of user experience, explanation of crowdsourcing money-making models, travel appreciation meetings, visits to research and development institutions, online group courses, and live Q&A by healthcare experts.

Myopia cannot be cured under current medical technology and, according to the notice jointly issued by six ministries of China, including the National Health Commission, the Ministry of Education and the State Administration for Market Regulation, institutions and individuals are prohibited from using overstatements and misleading words implying that their myopia treatments could cure the eye disease (Zhang, 2019). Based on the government's strict regulatory environment, how can a vision health management institution gain the trust of customers and establish a healthy business system through crowdsourcing?

The Zen-wise team has surveyed all visitors, found in the business development process that 90% of customers are primarily concerned with product effects and technological innovation. About 20% of customers with visual impairments actively pay for their products after they have experienced the product for the first time and become consumers; more than 70%

of parents of myopia students are most interested in technical principles. They participate in product experience activities and experience vision improvement on the spot. When they witness the vision improvement data of other customers, they proactively become consumers.

The Zen-wise team also used "8 minutes means more than 1-6 lines of visual chart" and "afraid of myopia, use the magic pen" as the main promotion language in the national market and international expo.

The Zen-wise team has proved through practice that the core element of swift trust establishment is *profession*, and it is related to specific factors such as *industry*, *category*, *product*, *technology*, *capability*, and *safety*.

5.4 Campus test

In turn, the major task of the Kunming Team is campus vision prevention and control. Myopia students are product users and their parents are the payers. In the implementation cases of the Kunming Team, what we want to verify is whether professionalism is the primary factor affecting the choice of students with myopia and their parents in what concerns eye health management programs.

The Kunming team first made pilot experiments in Jin'an Secondary School and Elementary School, in which parents and schoolteachers participated together to experience the "targeted nutrition eye exercises". On August 25, 2019, the first day of the Autumn semester, 99 students with myopia, parents and teachers participated in the trial. After the trial, they could read at least one more line in the eye chart with the naked eye, and six lines more at most. The SZG research and development staff reported to the students' parents and teachers about the technical innovation principles and safety of products and the company's legal qualifications.

From 2nd September to 28th October 2019, a total of 90 students from Jin'an Secondary School and Elementary School participated in the "Targeted Nutrition Eye Exercises". The school hired Kunming Eye Hospital as a third-party vision monitoring institution. The director of this hospital PhD Duan Zhihuan received a double doctorate degree in ophthalmology and clinical psychology from Harvard Medical School and is a well-known ophthalmologist introduced by the local government. She was curious about the genetic technology and decided to personally participate in the data comparison. In the first month, 90 students participated in the SZG targeted nutrition eye exercises intervention, and a total of 64 myopia

students were effectively controlled among which 48 students had at least achieved naked eye vision reversal of one eye, and 16 students had vision reversal of two eyes. In the third month, after testing, the effective control rate reached 66%.

5.5 Potentially application field of analysis results

Trust is the foundation of the establishment and sound operation of team, family, organization, country, economy, and even civilization. The analysis results of swift trust not only affect the efficiency of chronic disease prevention actions, but also have application value in terms of formulation of public policies, improvement of the efficiency of enterprises and NGO decision-making and execution, the efficient and orderly development of social movement, the implementation of disaster relief, and the integration of temporary teams as Figure 5-1 depicts.

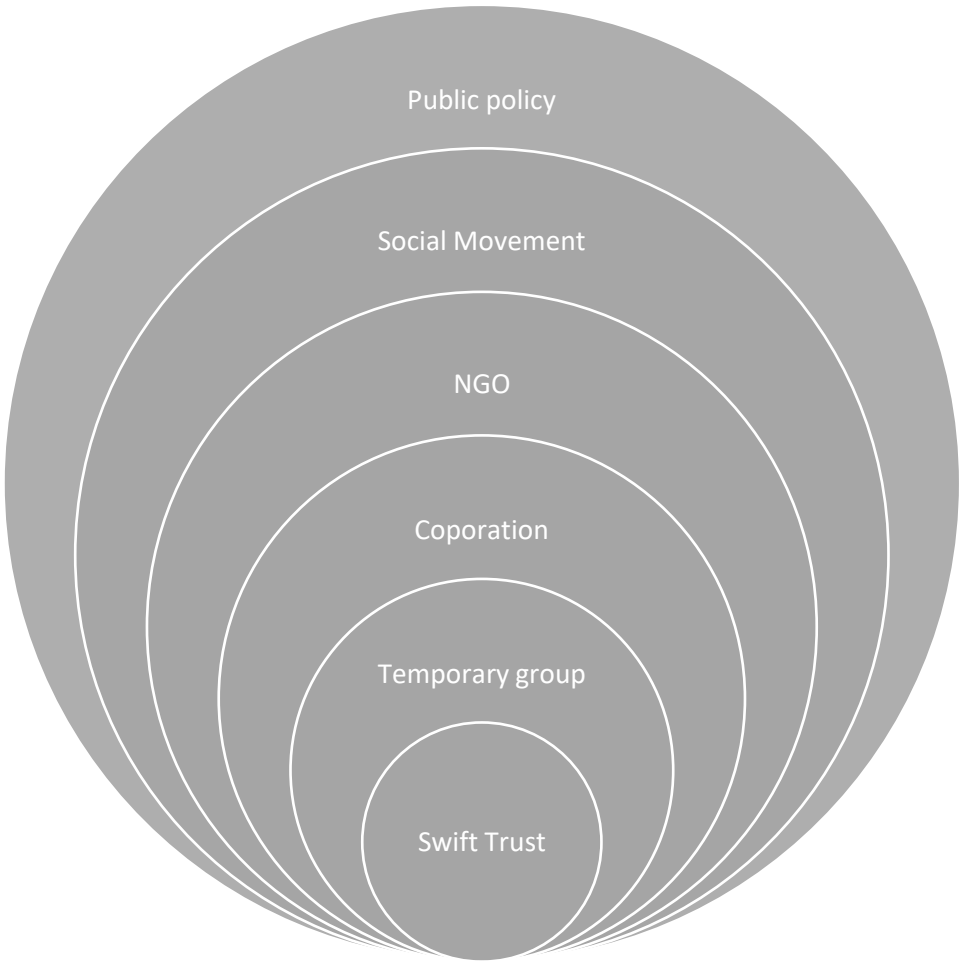

Figure 5-1 Swift trust impact waveform

Potential application of analysis results in public policy

The pressure of social issues, the need of government management, and the development needs of political science have led to the emergence of the public policy discipline (Liu, 2008). Their main functions are to allocate social resources, regulate social behaviors, solve social problems, and promote social development. In particular, the government strategically uses resources to coordinate economic and social activities and formulate management policies, distribution policies, redistribution policies, and legislative policies.

Public policy involves ensuring the public's equal access to public essentials. By arranging and deploying various public programs, all citizens can have access to national natural and intellectual resources, and financial funds are allocated through direct subsidies and insurance. With the goal of meeting the minimum material needs of citizens, various tax revenues are directed to various aid programs and the government power and resources are used to change the public environment (He, 1990).

Public policy is the product of government agencies, and different government systems lead to different public policies. Public policy is a reflection of the value preference of political elites. In the policy formulation, the initiative of formulating public policies is completely controlled by the political elites who are in the dominant role. Public policy is the product of the balance of interests of the group, and it is the result of mutual compromise in the group. Therefore, the establishment of swift trust among the public directly affects the efficiency of policy implementation (Chen, 2011).

If the antecedent factors of establishing swift trust with the public are found, the efficiency of public policy implementation will be directly affected. As for swift trust, our analysis results are that *profession* is the first factor affecting the establishment of swift trust.

If the public policy formulation or implementation department can consider the formulation, publicity and implementation of public policy from the factors in the professional level, the dual efficiency of decision-making and implementation might be improved.

Potential application of analysis results in cooperation

A medium-sized or larger enterprise is basically a small society where the issue of trust is ubiquitous. For example, employees' trust in leaders, mutual trust among members of the leadership team, employees' trust in corporate strategy, system execution, and product quality, and employees' trust in revenue expectation are invisible cultural icebergs lurking under the sea level.

As summarized in the literature review chapter, trust has important connections to workplace communication, organizational member behavior, negotiation process, individual performance, organizational performance, satisfaction, perceived accuracy of information, and acceptance of decision/goal, and it directly affects the efficiency and effectiveness of business operation.

Swift trust not only plays an important role among internal departments and among people, but also directly affects the efficiency of suppliers, distributors and other partners until the customers make purchase decisions.

Profession was found to be one of the core factors that determine the establishment of swift trust for the enterprise. As an example we may consider the development of the mobile phone industry.

Through technological innovation, Apple's mobile phone successfully integrated the concept of smart tablet personal computer and digital camera, which not only ended the glorious history of Motorola and Nokia mobile phones, but also took away the market share of digital camera manufacturers. At its peak, Apple shipped 250 million mobile phones per year (Knowyourmobile, 2012). Huawei is committed to the research and development of 5G communication technology, and its mobile phone shipments surpassed Apple in 2019 and impacted chip makers such as Intel and Qualcomm as well as operating system service providers such as Google. US President Trump personally worked together with global allies to suppress this Chinese enterprise. However, Huawei released its own operating system in its global developer conference - Harmony OS - which is the world's first micro-kernel-based cross-device distributed operating system. It not only can replace Android, but also supports existing global standards. If there is no alternative, Huawei will upgrade all its mobile phones to Harmony OS overnight. Huawei "has experienced the relentless pressure from one of the world's most powerful state machinery, and yet it is still alive" (Ren, 2019).

No matter whether it is Nokia, Motorola, Apple or Huawei, the reason why they can win customer recognition within different social systems, races, languages and cultural backgrounds on a global scale lies in the technological innovation of enterprises and products, which can promote the swift trust of customers.

In order to make it easier to understand the role of swift trust between the enterprise supply chain and consumers, we formulated the following diagram based on literature review and analyzed data:

According to trust-facilitating communication behaviors and member actions (Figure 2-4) and main effects of swift trust on workplace behaviors and outcomes (Figure 5-2), we can clearly understand the mechanism of action of trust. Swift trust can promote communication efficiency and in turn ultimately promote the operational efficiency of enterprises and enhance their competitiveness.

On the Internet-based e-commerce and sharing economy platform, trust has become a commodity through a special big data evaluation model. For example, in the electronic mall, products that are highly praised by customers are more likely to be put in the forefront of the display window, thereby gaining more trust and more sales opportunities. Shared taxis on the Internet platform are more likely to be trusted and can receive call orders more easily due to good credit and high star rating. There is also an emerging Internet finance in which customers do not have to meet each other and do not need collateral since through big data evaluation, they can apply for credit loans. In essence, it is the conversion of trust to a commodity attribute.

Potential application of analysis results in NGOs

With the opening of the market and increased economic activity as well as the increasing number of migrants, a new form of economy based on the Internet has emerged, such as online job hunting, e-commerce, various online interest groups, and volunteer recruitment, which has led to the formation of temporary internet groups. When it concerns an offline organization, it may refer, for example, to temporarily recruited construction engineering teams, street dance groups, temporary AIDS rescue teams, or disaster relief teams.

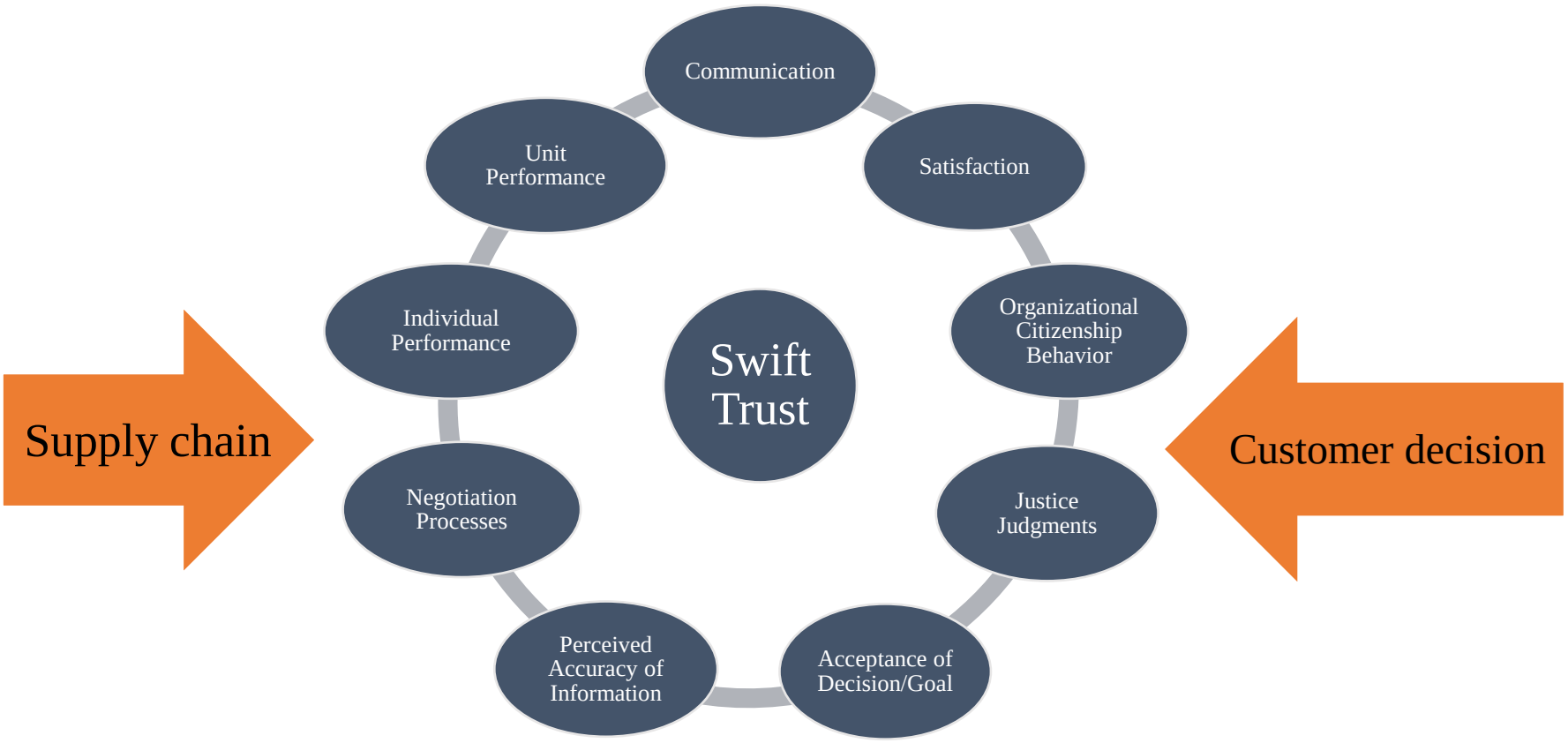

Figure 5-2 Main effects of swift trust on workplace behaviors and outcomes

For non-governmental organizations (NGOs) that deal with major disasters, temporary recruiting teams of employees, namely, those from the "on-call" list and other promoters are often used. All of these additional resources have limited work experience in specific NGOs, so their contact with the organizational rules are often temporary communication and there is even no time for systematic training. Uzi, Zeev, and Eyal (2005) named these interim action groups as hastily formed networks (HFNs). Other similar concepts to HFNs are those of "emergent (or emerging) multi-organizational networks" (NRCNA, 2006) or "emergent response groups" (Majchrzak, Jarvenpaa, & Hollingshead, 2007). For example, in the case of rapidly-occurring natural disaster relief, it was estimated that more than 400 official international NGOs and more than 5,000 related staff immediately took action after the 2004 Southeast Asian tsunami occurred in Indonesia (Völz, 2005). Of course, there are some rapidly occurring non-natural disasters such as terrorist attacks (the United States 9-11 event for instance). The commonality of these disasters is their sudden occurrence. Head (2000) describes these as: (1) crisis driven, (2) task-orientated, (3) self-evolving, (4) time-sensitive, (5) composite and (6) temporary. In order to more intuitively show the relationship between these factors and swift trust and swift action, we designed the following relationship diagram.

As it may be seen from the figure, with the emergency task as the center, the temporary teams can establish swift trust and then take quick action. This is the most critical part of the HFNs' execution of the emergency task. The elements are distributed around the relationship created by the intersection of the two main axes and play different roles.

How to swiftly develop trust in HFNs and transform it into systemic implementation efficiently is crucial to disaster relief operations. We believe that the analysis results of this study may have important potential application value for NGOs.

It can be seen that the actual experience, professional level and rescue equipment of the members of the temporary rescue team directly affect the efficiency of the rescue. This is consistent with the conclusion that *profession* is the primary influencing factor based on our screening of the factors affecting the establishment of swift trust through content mining analysis. Therefore, our research on swift trust and behavioral change may provide useful enlightenment for NGOs in the allocation of human resources, equipment and facilities, and the establishment of specialized network synergies.

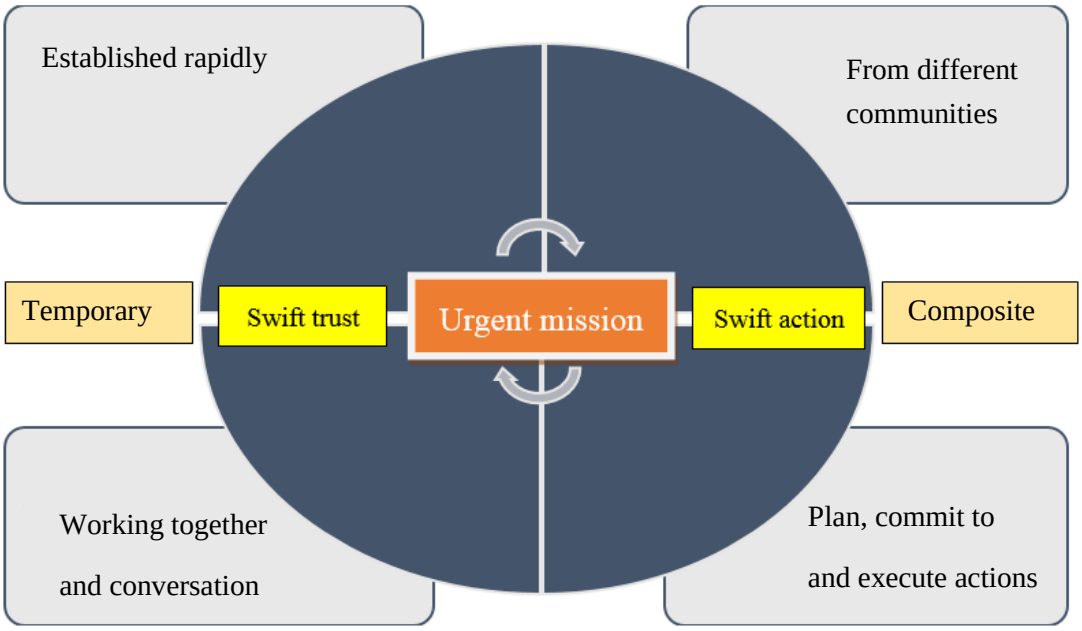

Figure 5-3 Swift trust establishment in urgent missions

In a humanitarian context, HFNs can be described as "co-located teams in short term local projects" with inter-sectoral partnerships (Fitzgerald, 2004) that link humanitarian organizations (i.e. aid agencies and humanitarian NGOs) to governments, local communities, business (suppliers and logistics service providers) as well as the military; all these together forming the humanitarian aid supply network (Kova Cs & Spens, 2008).

These emergency response relief groups are characterized by rapid establishment, originate from different communities under a unified planning, commitment, and implementation to undertake emergency missions, just as Figure 5-3 shows. Majchrzak, Jarvenpaa, and Hollingshead (2007) emphasize their self-evolving nature, going further by suggesting that their membership has no pre-existing structure, roles, tasks or expertise. In other words, an emergent response group develops, migrates and reorganizes, gaining and losing membership in an unstructured way. The most important issue facing temporary members is how to build swift trust, reach consensus and perform tasks in hastily formed networks (HFNs).

Through equipment of professional command team, professional facilities and professional execution team, swift trust can be effectively established, and swift action can be formed. Our analysis results may give valuable inspiration.

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Chapter 6: Conclusion

6.1 Zooming out and zooming in

During the topic selection for this study we have thought from the perspective of two dimensions: “Zooming out” and “Zooming in”.

First, the research orientation is focused on an important and challenging global topic in the field of public health management, which is the prevention of chronic diseases. We put the research subjects in China and consider from a demographic perspective the research value and significance of internet data mining.

With the rise of internet medical care, direct marketing, social media marketing and various emerging biotechnologies, a wide range of health products and services are hard to choose. Some practitioners exaggerate the utility of products or certain technologies and even sell counterfeit and shoddy products often causing serious life safety incidents, bringing great confusion to the choice of healthy consumption, and also bringing a crisis of trust to the development of the health industry itself.

However, efforts are still not enough as China quickly rose to the rank of the world’s second largest economy (UN, 2010) and the amount of its chronic disease patients has surpassed 300 million, still rapidly on the increase, thus producing a continuously larger base attracting a diversified group of suppliers of healthcare products. Expenditure on chronic diseases accounts for 70% of total medical expenditure (Yu, 2016) posing a huge challenge to the national health care system.

Afterwards, we crystallized this macro-level topic and focused on the important and critical links of chronic disease prevention and how to build trust to affect change of behaviors.

Then, considering that the prevention of chronic diseases is not only a matter for the health system, but also a matter for everyone’s concern and it has systemic, social, and individual nature, we directed the research to the emerging crowdsourcing model of health management. For prevention efficiency considerations, we further focused on the issue in a “Zoom in” style and selected swift trust as the core of the issue. Then we conducted a data

mining analysis of "one-centimeter-wide and one-kilometer-deep", focusing on the most core factors affecting the establishment of swift trust.

The analysis is carried out according to the research logic of "Zooming out" and "Zooming in".

In the overview of research background in Chapter 1, this study briefly analyzes that under the background of China's rapid development as a developing country, the rapid spread of chronic diseases and the high proportion of medical expenses for chronic diseases have posed challenges to national finance.

From the data collected for the research background it was found that there are many factors that cause the problem, but the most fundamental lies in the fact that China's most advanced medical facilities and medical personnel are mainly concentrated in big cities. Medical institutions with the core task of treating patients and saving people have limited investment in prevention, so it is difficult to form a high-quality service system for universal prevention. On the other hand, people do not pay enough attention to disease prevention, and some technical applications of health preventive medicine often lead to suspicion and mistrust. Raising the alertness of health for healthy people and those at the early-stage of chronic diseases, stimulating them to take real action and training them to adopt a proper diet and cultivate healthy behavioral methods are the basis for establishing a preventive mechanism. It is imperative to establish a health prevention and security system by the people and for the people.

Based on the basic research ideas that trust affects behavior and speed affects efficiency, we have collected a great deal of literature.

Considering that in the process of globalization, marketization and networking, population mobility has continued to increase, the pace of work and life has accelerated and temporary employees and teams participating in company operations and social activities have become the normal, in many organizations, there is usually no time to use traditional methods such as familiarity with each other, exchange of experiences, and mutual disclosure and commitment to develop and verify mutual trust among team members or group customers. Research on swift trust has become a primary issue for health management organizations to build customer trust, promote health products, health technologies, and health services.

In the literature review, we collected literature concerning the concepts of trust, swift trust, crowdsourcing, and chronic diseases and defined them respectively.

In the literature review, we also sorted out the relationship between communication and swift trust.

Then, we conducted an in-depth analysis of the relationship between trust, swift trust, crowdsourcing, and chronic diseases.

It is believed that chronic disease has the characteristic of universality and requires the participation of the general public. Crowdsourcing, as a form of sharing economy based on mobile network, is an important form of future health management and chronic disease prevention. Trust is the most important foundation for crowdsourcing, and swift trust is the core to rapidly affect people's behavioral change and prevent chronic diseases.

6.2 Analytical methods and tools based on internet data

In order to find the most critical factors that affect the establishment of swift trust, we first reviewed the literature and collected and analyzed the various preconditions that affect the establishment of trust.

However, in the analysis of the literature it is found that various authoritative statements in history are based mainly on real work and life, and rarely on virtual networks. The research on the basic sharing economy and crowdsourcing model is rare.

Therefore, we chose the content analysis method and the ROST Content Mining (ROST-CM) text mining software based on Internet data analysis research. According to the text selection logic of The Text Selection Flow Chart (Figure 3-2), before data collection, we fully consider the high correlation with the health industry, trust issues, sharing economy, and the Internet platform, and regard them as the precondition for data collection and filtering in the Internet data capture.

Focusing on the programs in the chronic disease crowdsourcing platform that are closely related with consumers and consumer businesses, we extracted more than 10,000 items of information in terms of nutrition and health products industry news, medical trust related news, professional articles or reports on trust, blockchain and other Internet new technologies from www.baidu.com.

We explained the usage of text mining software. Then we processed and analyzed the text data, and finally draw conclusions to form a logical model.

In using ROST Content Mining (ROST-CM) text mining software, we followed the

ensuing analysis logic:

1) Data collection is mainly focused on the medical and health industry

2) Mining and sequencing are used to detect high-frequency words

3) Similar or related high-frequency words are combined and processed and re-sequenced

4) Relationship graph of high-frequency words is generated by software

5) The processed high-frequency words are sequenced

6) Data are processed and conclusions are drawn

It is found that *profession* is the most important factor affecting the establishment of swift trust on the Internet crowdsourcing platform.

Considering that these data come from the Internet and the information sources are scattered, we believe that it is necessary to verify the research results with a specific case.

We have designed the following four case verification conditions:(1) Consistency, (2) Universality, (3) Reality, (4) Uniqueness. In order to verify the results of this research we tracked the vision maintenance program of SZG and found that the program promotion from the perspective of technological breakthroughs and professional service team not only made it easier to obtain recognition of parents and schools, but also aroused the interest of professionals and government decision makers and won their swift trust.

We then listed the research results of the key factors of establishing swift trust and the value that may be generated in areas such as public policy, NGOs and business.

6.3 In COVID event, professionalism has the primary impact on the establishment of swift trust

COVID-19 is the infectious disease caused by the most recently discovered coronavirus. This new virus and disease were unknown before the outbreak began in Wuhan, China, in December 2019.

The efficient successful control of COVID-19, a major global public health event in China, is closely related to the establishment of swift trust of the public on a series of epidemic prevention policy measures.

We collected data on the summaries of the entire anti-epidemic action released by the

Chinese government website and authoritative news media and analyzed and re-validated the key factors. It is found that professionalism is still the primary factor for the public to establish swift trust and the functional departments to quickly take actions in major public health events.

1) Professional teams are easier to establish swift trust than senior officials

Li Wenliang is an ophthalmologist who was called the "whistleblower" of the epidemic because he issued a protective warning to the outside world as early as December 30, 2019. In the early stage of the outbreak, the major leaders of Hubei Province and Wuhan did not pay attention to his call and Dr. Li even received a subpoena and warning from the local public security department, causing Wuhan to miss the best epidemic prevention period and become a serious epidemic outbreak center in China. Many key officials in Hubei Province and Wuhan were removed from their posts. The central government quickly established an expert team composed of academicians from the Chinese Academy of Engineering and the Chinese Academy of Sciences and released the fact that the COVID virus spread from person to person from a professional perspective, suggesting that everyone should wear a mask. The expert team also made a professional suggestion on the lockdown of Wuhan and the nation-wide isolation, which were adopted by the government. China quickly formed a consensus and action for the whole nation to fight against the epidemic, and finally became the first populous country that successfully controlled the epidemic, winning recognition from WHO.

The Fortune magazine announced the world's "greatest" 25 anti-epidemic leaders, of which Li Wenliang ranked first:

"After becoming one of the first to sound the alarm about a new virus emerging in his city, Li was detained by local Chinese authorities and forced to recant his warning. Within days of his release, the 34-year-old doctor returned to treating patients, only to become infected by the all-too-real disease, and then, on Feb. 7, to succumb to it. Dr. Li's bravery—both in the face of the coronavirus and the state—inspired China and ultimately the world (Fortune, 2020)."

2) Professionalism has the primary impact on the establishment of swift trust

From January 24 to April 15, 2020, over more than 80 days and nights, the Chinese government mobilized 315 medical teams and 35,591 professional medical personnel from all over the country to support Wuhan. This is the largest medical support operation since the founding of the People's Republic of China. The professional medical personnel fully

played the role of the vanguard and commando and won the high trust of the people with practical actions.

From a research perspective, we collected hundreds of news reports to conduct content analysis and found that professional medical personnel needed to establish double swift trust when participating in the fight against the COVID-19 virus in Wuhan. First, in the emergency screening process of participating aid personnel, the first factor considered by each hospital is the professionalism and experience in the field of diagnosis and treatment of infectious diseases. The second is that the professionalism of doctors in treatment is the key to establishing swift trust between doctors and patients.

We extracted some doctors' understanding and feeling of trust from interviews with doctors assisting Wuhan by the news media, from which we can verify that professionalism exerts the primary and even decisive influence on the establishment of swift trust in the emergency of public health events.

According to Zheng Jisheng, an attending physician in the Department of Respiratory Medicine of Tongde Hospital of Zhejiang Province, "The value of a doctor is to heal the wounded and rescue the dying. The existence of a doctor is only meaningful when he receives the patient's recognition. The trust and gratitude of the family of the treated patients to the doctor will last for a lifetime. It should also be the highest pursuit of every doctor (Duan, 2020)."

According to Yang Yuting, a nurse in the Department of Neurology at the Affiliated Hospital of Guizhou Medical University, "Medical staff are the hope of the patients. Until I came here (Wuhan), I began to understand the desire from the eyes of the patients. It was their trust that filled me with strength (Zhu & Shi, 2020) ."

Yang Xianfeng, deputy director of the Department of Respiratory Medicine, Yuncheng Municipal Central Hospital, Shanxi Province, has extensive clinical experience and participated in the prevention and treatment of the SARS epidemic in 2003. Aunt Ding and her husband who were treated by him were both infected with COVID. "At first, I felt very painful, and I always asked the doctor whether I could survive or not. Dr. Yang always held my hand and said firmly, 'No, you are with us, you will definitely recover', recalled Aunt Ding "At that moment I just felt that the doctor was very firm and trustworthy (Deng, 2020) ."

According to Liu Peipei from Caoxian People's Hospital of Heze, "My parents are both medical workers and they support me, telling me that "the reason why leaders send you

there is because they trust you, and you must try your best.' The day I left, my father went to work and did not see me off. He knew I had left through the news (Zhang, 2020)."

6.4 Deficiency and prospects for future research

This research adopted the content analysis method, and mainly conducted in-depth research on the swift trust problem faced by the Internet-based chronic disease prevention crowdsourcing model. Chronic disease management based on the Internet platform is an emerging topic, with very few research documents available for collection, and most of them are studies under traditional conditions. Many classical methods and conclusions about trust and swift trust are far from enough for online data collection and analysis. Therefore, we have summarized the following three aspects in terms of the main deficiencies in this research and prospects for future research.

(1) This research is based on online data mining. We believe that regardless of the research method and analysis steps, the conclusions drawn will be more or less limited by the amount of data collected, the data scope and the basic functions of the text mining software. Different researchers may have different understandings on the connotation of certain high-frequency words, which may cause deviations in the classification of certain keywords, resulting in inaccuracy of the results. This provides important inspiration for the improvement of content analysis methods in the future, especially with the continuous upgrading of big data algorithms, the maturity and popularization of block chain and the Internet of Things. In the field of data mining and analysis, it is worth further improvement to keep abreast with the times.

(2) The scope of chronic diseases is very wide, and this study is relatively broad. There is no precise study for a specific disease type. The conclusions are only verified through the program of myopia prevention and control. Therefore, this deficiency also provides implication for further research on the prevention of a certain chronic disease through the establishment of swift trust to realize more scientific allocation of resources and improvement of prevention efficiency.

(3) This research mainly focuses on the crowdsourcing model based on Internet sharing technology, not involving more comprehensive data mining with online and offline interactions. We believe that future improvement in this respect will have more practical application significance to promote chronic disease prevention and more online and offline interactions.

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