

Analytical interpretation of e-commerce in china based on the background of rapid economic development

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Abstracts: Rural e-commerce has the potential to be a powerful catalyst for regional economic development and poverty alleviation. Rural e-commerce can bridge the urban-rural divide, contribute to regional economic growth, and improve the well-being of rural populations. So, the study of Liangshan Prefecture's experience provides us with a valuable opportunity. Rural e-commerce needs to be led by the government and fully mobilize the participation of e-commerce enterprises, consumers and poor households. However, due to the unstable relationship between these three parties in poverty alleviation, it will hinder the realization of poverty alleviation goals. Most of the previous studies only described the one-way influence between the two, but rural e-commerce is a systematic project, and other influencing factors can be added (Bai, Yu & Jiang 2022). Consider poverty alleviation in the context of regional economic development, and then study the impact of rural e-commerce on poverty alleviation. Liangshan's experience is mainly aimed at revealing the role of rural e-commerce in regional economic development and poverty alleviation, because a large number of previous studies have investigated the contribution of e-commerce to agricultural development, but there is a lack of empirical evidence on the impact of e-commerce on rural poverty alleviation. Therefore, research based on the impact of rural e-commerce on regional economic development and poverty alleviation helps to establish a solution theory for the huge challenge of poverty alleviation in China and globally.

Keywords: Development context; economic development; e-commerce; integration research

INTRODUCTION

In recent years, the rapid growth of e-commerce has revolutionized the way people conduct business and interact in the global marketplace. While the initial focus of e-commerce was predominantly urban-centric, there has been an emerging trend of rural e-commerce, which is proving to have a profound impact on regional economic development and poverty alleviation. Market Access and Expansion. Rural e-commerce provides a platform for rural entrepreneurs and small businesses to overcome the geographical constraints that limit their access to broader markets. Through online marketplaces and digital platforms, rural producers can directly connect with consumers locally, nationally, and even globally. This expanded market access allows rural businesses to reach a larger customer base, increasing their sales potential and revenue. By connecting rural producers with urban and international markets, rural e-commerce enables them to tap into new demand sources, driving economic growth and fostering regional development. Employment Generation and Income Opportunities. The growth of rural e-commerce leads to the creation of new job opportunities and income generation within rural communities. E-commerce platforms empower individuals to become micro-entrepreneurs by setting up online stores or participating in online marketplaces. This enables rural artisans, farmers, and craftsmen to showcase and sell their products directly to consumers, bypassing traditional intermediaries. By reducing the dependency on middlemen, rural producers can capture a larger portion of the value chain, resulting in increased income levels and poverty reduction. Enhanced Infrastructure and Digital Connectivity. Rural e-commerce necessitates the development of essential infrastructure, including reliable internet connectivity, logistics networks, and secure payment systems. As rural areas adopt e-

commerce, investments in digital infrastructure become crucial, spurring the development of telecommunications networks and broadband connectivity. These improvements not only support e-commerce activities but also benefit overall rural development. Access to reliable internet connectivity enhances information flow, enables online transactions, and facilitates communication, empowering rural communities with access to information, knowledge, and services required for economic growth.

THEORETICAL

2.1 Theoretical introduction

Activity theory originated from the classical philosophy of Kant and Hegel, formed from Marx's dialectical materialism, and proposed by Vygotsky. Activity theory is the research result of social cultural activities and social history. Activity theory is a theoretical framework that conceptualizes human activities by focusing on the dialectic relationship between the consciousness of human beings and the natural and social reality, which is mediated through the use of "tools." The theory has its intellectual roots in the cultural-historical school of Russian psychology (Ilyenkov 1977, Leont'ev 1978, Luria 1979, Vygotsky 1980).

In terms of its development, activity theory has experienced three main stages of development. The first generation of activity theory(Figure 2.1) was proposed by Vygotsky(Vygotsky, L. S 1980), The theory is composed of three elements and holds that the influence of subject on object is mainly realized through intermediary tools. This theory emphasizes the role of intermediary tools, and by building an intermediary bridge between the subject and the environment, the unit of analysis surpasses the tendency of "stimulus-response" dualism, and Bridges the gap between the individual and the social structure to a certain extent(Engeström 2001), but ignores the influence of social situational factors on individual activities and behaviors to a certain extent.

Figure 2.1 First generation activity theory

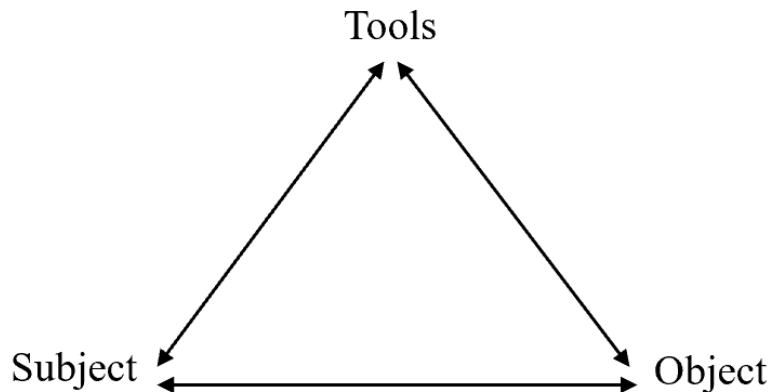
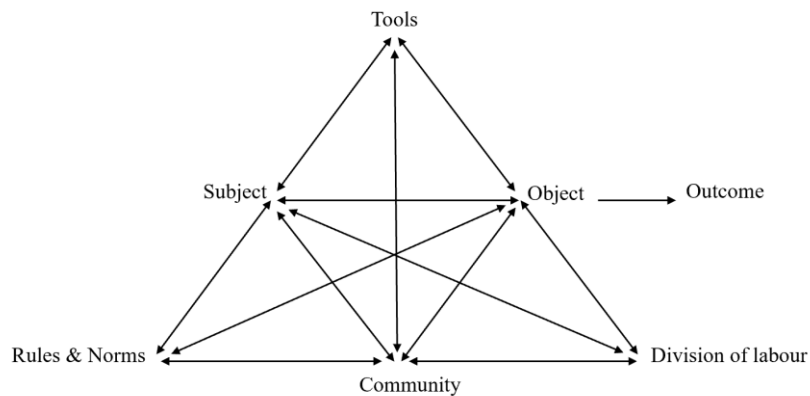


Figure 2.2 Second generation activity theory



The second generation of activity theory(Figure 2.2) is represented by Leont' ev(Leont' ev, A. N 1981), who believes that activity is the basic unit of all social and cultural practice organization, and is also the regulatory mechanism for the continuous development of subject cognition. Therefore, he incorporated rules, community and division of labor on the basis of the first generation theory. The

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second generation activity theory includes seven elements: subject, object, result, rule, division of labor, intermediary tool and community. These factors influence and restrict each other, and the contradictions between them constitute the driving force of the development of the activity system. The second generation theory considers the influence of the community and other elements of the activity system on the subject, but ignores the possibility of the subject being in multiple activity systems and the communication between different activity systems or cultures(Yan Yi & Yang Luxin 2017).

The third stage, represented by Engeström, constructs the basic structure of activity, proposes the learning mechanism of extended learning, and analyzes the development process of activity system and the relations between activity systems from the perspective of dynamic evolution. The basic unit of analysis in activity theory is activity. The activity system contains three core components (subject, object, and community) and three minor components (tools, rules, and division of labor). The secondary components in turn form the links between the core components. Building on the concept of activity, In 2015, Engeström developed the modern version of activity theory that studies an activity as a system, called an activity system, which consists of 8 interconnected components (Figure 2.3). The activity subject carries out the activity because of some internal or external motivation, and in the process, the activity causes the result to change through the transformation of the object. In addition, when carrying out activities, activities will also be restricted by some rules or norms and carried out under the guidance of rules and norms. Subjects need to interact with the community, and community members can promote the activities through reasonable division of labor. Table 2.1 summarizes the definitions of the 8 components of an activity system.

Figure 2.3 Engeström(2015) activity theory

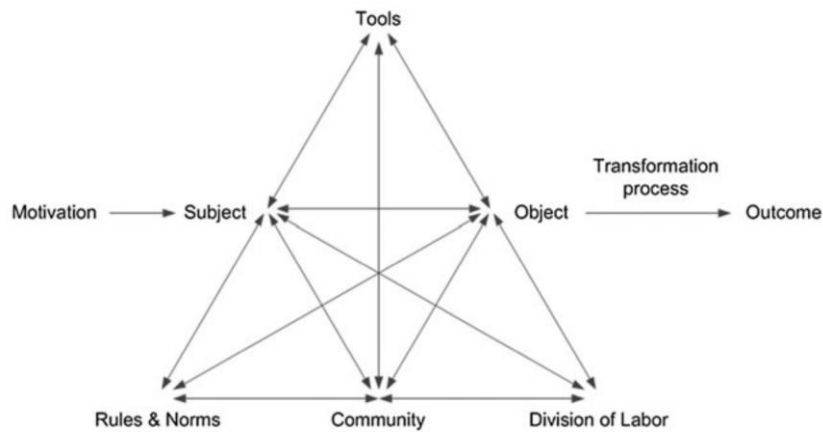


Table 2.1 Definitions of components of an activity system

Component	Definition
Subject	A subject is an agent (a person or collective) that acts upon the object.(Karanasios 2018)
Object	The object is the problem, situation or focus of the activity, and anchors the activity.(Karanasios 2018)
Tools	Tools are “culturally established artefacts” that “humans on most occasions interpose between themselves and the object of interest, thereby enabling them to act more effectively”.(Karanasios & Allen 2013)
Motivation	Motivation is “the stimulus for the activity” or “the reason(s) for the activity taking place.”(Karanasios 2014)
Rules & Norms	Rules and norms, either explicit or implicit, “define what behaviors are appropriate.”(Karanasios 2018)
Community	Community consists of “individuals or groups other than the subject who have the same general object, but are distinct, and with whom the subject interacts.”(Karanasios 2014)
Division of labour	Division of labour is “the way tasks are divided and roles and hierarchies structured” in performing an activity.(Karanasios 2014)
Outcome	Outcome is the product or consequence of the transformation processes through which the subject acts upon the object. It may or may not be the desired outcome of the subject.(Karanasios & Allen 2013)

According to activity theory, an activity is realized through a series of actions (Allen, Karanasios & Slavova 2011; Karanasios 2014). An action is a conscious step taken by the subject towards its goal (Karanasios 2014). In this sense, understanding actions taken by a subject is critical to understanding the functioning of the activity system. Different activity systems can be interconnected to form complex organizational and societal situation (Crawford & Hasan 2006, Karanasios 2018). For example, one activity system could produce tools for another activity system. When the tool-producing activity system transforms, it can cause high-level contradictions among activity systems and consequently forcing the other activity system to transform too (Engeström 2015). The connectedness of different activity systems allows humans to design and implement intervention mechanisms that improve the outcome of one activity system by transforming its connected activity systems (Karanasios 2018, Karanasios & Allen 2013).

Conflict is the motivation of the development of activity system, and the collective gets extended learning in the process of solving the conflict. Contradiction is the basic element of the development of activity system and the main reason for the expansion and change of object. Engeström put forward that in different stages of activities, there are contradictions at the primary, secondary, tertiary and quaternary levels(Engeström 2001). Table 2.2 shows the fourfold contradiction in the activity system.

Table 2.2 Four contradictions in the active system

Hierarchy of contradictions	Definition and description
Primary contradiction	The contradictions within the subject, the contradictions within the individual elements of the active system.
Secondary contradiction	Intersubjective conflict, conflict between different elements of active chest pain.
Tertiary contradiction	The contradiction between the new and old activity mode, the contradiction between the new activity mode or goal in the activity system and the old activity system.
Quaternary contradiction	The contradiction between adjacent activity systems, the contradiction between the subject's practice in the target activity system and the adjacent activity system.

Therefore, this paper combines activity theory with qualitative research for two main reasons. First, because activities can only be understood in context, the researcher must be present to experience the activity in situ(Jonassen & Rohrer-Murphy 1999 & Kuutti, K 1991). Whatever the focus of the research, the researcher should also be an active participant in the process. Second, because at its very core Activity Theory is socio-constructivist, a paradigm that is aligned with qualitative research, scholars using Activity Theory also employ a variety of qualitative methods: interviews, observations, historical document analysis to obtain the different perspectives needed to understand that activity(Kuutti 1991 & Jonassen & Rohrer-Murphy 1999 & Roth & Lee 2007).

2.2 Reasons for choosing activity theory

This study chooses to use activity theory mainly for two reasons. First, as a few previous studies pioneered, it has been theoretically fruitful to apply activity theory in studies of information technology and economical and societal development (Hasan, Smith & Finnegan 2017; Karanasios 2014; Karanasios & Allen 2013). Activity theory focuses on theorizing the mediation role of “tools,” which is essential to understand the complicated influences of the tools on the ultimate societal outcomes and all the collateral changes and rearrangements during the transformation processes (Karanasios & Allen 2013). Poverty alleviation, as a complex social challenge, is deeply rooted in ethnic, cultural, historical and economic backgrounds. Rural e-commerce itself is a complex system. To understand the impact of rural e-commerce on poverty alleviation and regional economic development, we need a theoretical framework that can track the dynamics of interconnected complex systems. This need can only be possibly fulfilled by non-reductionist theories, such as activity theory, that can retain the complex nature of the phenomenon rather than simplify it into linear relationships (Hasan, Smith & Finnegan 2017).

Second, activity theory is an incarnation of the theory of the solution (University of Southern California et al. 2016). Unlike regular theories that are focused on explanation and prediction, a theory of the solution focuses on theorizing how and why a sophisticated problem can be resolved in a certain way (University of Southern California et al. 2016). Activity theory has been featured by its emancipatory power of guiding and empowering subjects in their object-oriented activities (Karanasios 2014). As Engeström commented, “most of our scientific ventures into social reality perpetuate the status quo; to the extent that we include ecological contexts in our research, we select and treat them as sociological givens rather than as evolving social systems susceptible to significant and novel transformation ... I was convinced that research needs to be actively involved in making the world better” (Engeström, 2015, pp.

xiii). In particular, study on rural e-commerce, can benefit from activity theory's emancipatory power to empower the relevant subjects in addressing grand societal challenges.

So, considering the inherent complexities in both poverty alleviation and e-commerce ecosystems as well as the involvement of governments, we need a theory to help us form a holistic view of rural e-commerce and the regional economy of poverty alleviation and development. Moreover, poverty alleviation is such a grand societal challenge that we are interested in developing a theory of the solution (Mahajan 2016) that may help to explicate and prescribe a solution mechanism. Both considerations led us to choose activity theory as our primary theoretical lens to study the significance of rural e-commerce for poverty alleviation in regional economic development.

SIGNIFICANCE

3.1 Theoretical significance

At present, the study of rural e-commerce has become one of the hot spots of academic research. The research course of rural e-commerce has changed from exploring the feasibility and development model of rural e-commerce, to studying how to use rural e-commerce for poverty alleviation, to combining rural e-commerce with rural revitalization and development in the near future. With the vigorous development of rural e-commerce by the government and e-commerce enterprises, China's rural e-commerce has made a breakthrough. A large number of farmers in poor areas have started e-commerce and conducted online shopping, which has laid a rich foundation for academic research. At present, the overall literature on rural e-commerce, regional economic development and poverty alleviation is large, but the proportion of studies on the significance of rural e-commerce for poverty alleviation in regional economic development through activity theory is still small. Therefore, the main theoretical significance of this study includes the following 4 aspects.

First of all, there are few existing literatures on rural e-commerce, regional economy and poverty alleviation activities through activity theory, which are mainly concentrated in the fields of education, health care and culture. This study can be used as an important supplement of activity theory to the research field of rural e-commerce, and make up for the deficiency of activity theory in this research field.

Secondly, based on the activity theory, this study defines the difference between rural e-commerce in regional economic development and poverty alleviation, again analyzes how to reduce poverty through rural e-commerce, and again demonstrates the role of e-commerce ecosystem in solving the problem of poverty reduction (Li et al. 2019).

Third, studying the impact of rural e-commerce on rural economic development helps to explore the impact of new technologies and new forms of business on traditional rural economies in depth and provides theoretical support for rural industry upgrading and transformation.

Finally, rural e-commerce is an emerging field, especially e-commerce poverty alleviation is a new topic, from the current domestic and foreign research in this field, the academic community's attention to this topic needs to be strengthened. Under the existing conditions, this paper tries to collect and sort out relatively complete materials, and provides certain theoretical support for future research through the research and analysis of the significance of rural e-commerce for poverty alleviation in regional economic development.

3.2 Practical significance

This study compensates and improves the previous single case study in the background of western China. Based on the previous study of Longnan in northwest China, this study mainly focuses on ethnic areas in southwest China, testing and enriching the previous theory in another context. At the same time, based on the time line around 2020, the specific measures and effects of the government on the sustainable development of regional economy and the prevention of poverty through rural e-commerce are analyzed. This study provides a reference for China and other developing countries similar to China to promote regional economic development and poverty alleviation in the process of rural e-commerce. Therefore, the main practical significance of this study includes the following 3 aspects:

From the perspective of the government, government agencies have continuously promulgated and improved positive policies to promote the development of rural e-commerce, further improved the market mechanism, and formed a rural e-commerce model that suits the needs of regional economic development. Secondly, the cooperation between the government and the e-commerce platform is conducive to the integration of resources, the use of mature e-commerce platform system and operation mode, combined with market demand, tap the characteristics of high-quality resources in rural areas, further expand and improve the sales channels of agricultural products, accelerate the pace of poverty alleviation in poor areas, prevent the return to poverty, and promote the stable and sustainable development of regional economy. Finally, the government needs to continuously improve the comprehensive quality of farmers, stimulate the endogenous motivation of poor farmers, and promote

poor farmers to improve their e-commerce skills.

From the perspective of e-commerce enterprises, first of all, e-commerce enterprises provide market opportunities and low-threshold entrepreneurship opportunities for poor farmers. The e-commerce platform can fully integrate into the market by carrying out rural e-commerce, which can effectively establish local well-known brands and enhance the labor skills of practitioners through market-oriented operation. Secondly, e-commerce enterprises actively respond to relevant government policies, promote the development of rural online shopping consumption through institutional innovation and model innovation, improve the Internet of poor people, and change their production and life style.

From the poor people. First of all, poor households can make full use of the policy support, laws and regulations and e-commerce platforms provided by the government through rural e-commerce, actively participate in entrepreneurship training, exhibition activities, etc., constantly expand the social network, break through the limitations of the original rural communities, and lay a good market public relations for the development of e-commerce. Secondly, poor households are a very important part of the rural e-commerce system, but also an important part of poverty alleviation, rural economy is also an important part of regional economic development, and improving the income level of poor households is an important prerequisite for promoting e-commerce poverty alleviation and regional economic development.

METHODOLOGY

According to the research questions and theories, this study mainly adopts the case study method and the literature study method. Previous scholars particularly noted that the case study method was preferable when applying activity theory perspectives to complex phenomena (Sam 2012). For this specific research, we also adopted the case study method based on the following considerations. First, the case study method can better address the how and why types of research questions and help understand the essence and complexity of the underlying mechanisms (Benbasat, Goldstein & Mead n.d.). Second, the research area of rural e-commerce and poverty alleviation is still in the development stage, and the theory is still developing, which demands more qualitative studies for theorization (Edmondson & Mcmanus 2007; Eisenhardt n.d.). Third, as activity theory emphasizes analysing the cultural-historical contexts of the subjects, the case study method has the strength of studying an ongoing phenomenon in its contexts (Yin, 2009). Finally, using the case study method also allows us to better contextualize our findings, which has been argued as particularly important when studying phenomena in developing economies (Davison, Kien & Ying 2008; Walsham, Robey, & Sahay 2007).

Literature research is the most basic method to carry out research work. Researchers collect data related to the research topic from existing literature through literature search and reading. The core task is to collect, sort out and sublimate the previous research results, summarize the internal relations between research phenomena, and form new research questions and viewpoints. Based on this method, firstly, the existing relevant literature is collected and read, the relevant content of the paper is screened and integrated, and then the literature is combed and analyzed to clarify the previous research results and the latest research progress in this field. Secondly, by mastering relevant research trends at home and abroad, summarizing research ideas around research topics, and finding the right research entry point. Finally, the literature research method can be compared and summarized from the aspects of theory, method and data, so as to identify the main problems existing in the research field as a whole, understand the existing research ideas and methods, and provide directional guidance and methodological support for the full paper.

DATE ANALYSIS

Under the guidance of activity theory (Allen, Karanasios & Slavova 2011; Crawford & Hasan 2006; Karanasios 2014), we conducted data analyses in the following 4 steps:

Step 1. Identify the activity systems in the poverty alleviation efforts.

First, we constructed a timeline based on field interviews and analysis of archival documents, and established a narrative for the rural e-commerce we identified. Then, through these statements, we preliminarily identify two different activity systems, one is the impact and significance of rural e-commerce on regional economic development, the other is the impact and significance of rural e-commerce on poverty alleviation. We need to keep an eye on the evolution and interaction of these two active systems.

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Step 2. Identify the components of the activity systems.

In this step, we focused on identifying the constituents of each activity system, including both its components, specific actions, and contradictions. So we need to encode both the interview transcripts and the archival data we collect. Our coding strategy is a “partway between the a priori and inductive approaches” (Miles & Huberman 1994), in which we used activity theory to develop a general coding scheme and then develop detailed codes inductively. The research team repeatedly read the interview transcripts and archival documents to capture their meanings. Finally, we matched the codes to the components and actions of the activity systems we identified to obtain a holistic understanding of the activity systems.

Step 3. Identify the evolving and interconnected relationships between the activity systems.

In this step, we focus on analysing the evolution and interrelationships of the systems of activity we have identified. We begin our analysis by tracking changes in the various components of the rural e-commerce system, then go back to the coded data to understand the root cause of these changes. In many cases, these changes can be attributed to components in the ReCD (Rural e-commerce ecosystem development) activity system, which we use as an opportunity to understand and conceptualize the intervention of one activity system in the evolution of another.

Step 4. Identify the roles played by the governments.

In this step, we come to realize the unique and important role played by grassroots governments in different systems of activities and the relationship between them. In order to better theorize the role of government, we begin to analyze the data again, focusing on government actions and their effects on active systems and the relationships between active systems. We developed theoretical explanations of the role of government and repeated our findings against the literature until we reached theoretical saturation (Eisenhardt 1989).

It should be noted that big data collection and analysis in this study is a cross-overlapping and simultaneous process. The analysis of data begins with data collection and ends with the writing of the research report. The data analysis in this study should pay attention to the following three aspects:

First, the researchers carried out the preliminary sorting and archiving of the initial data. The initial stage of data analysis starts from the time of data collection. The core data of this study is interviews, literature, documents and other relevant data. From the beginning of receipt collection, researchers need to establish relevant folders to classify different data. The classification of documents includes interviews, papers, documents, archives, online communication, etc. During the research process, as soon as new data is obtained, the researcher needs to immediately file it in the appropriate folder to avoid omissions and filing errors. This stage is mainly to help researchers establish sensitivity to data analysis, and to guide further data collection and analysis.

The researchers transcribe the various raw data they obtain. Data transliteration and data collection are interleaved. Especially for interview data, which is the core data source, researchers need to translate it in a timely and accurate manner. In general, the preliminary translation should be completed on the day or the next day after the interview, and then the researchers will manually proofread the machine translated data to avoid forgetting valuable details and other information in the interview process. During the verification process, remove repeated catchphrases from the interview (e.g., um, um, yes, yes) or obvious redundancy (e.g., this is it, this is it). The translation and proofreading of field observations are only for content that is closely related to the research question. After the data transcribing was completed, the researcher numbered the data according to the data type, interviewees, interview date and other formats, such as: interview - Kan Zhiqiang -2-20240207, indicating the second interview with Kan Zhiqiang on February 7, 2024. Other data types are numbered similarly to interviews. The numbering of various types of data facilitates the researchers to manage and reference the data efficiently. At the same time, in order to protect the privacy of the interviewees and facilitate the subsequent research reference, the researchers have processed the interviewees' pseudonyms during the data processing.

Second, the researchers coded the data. In the first stage, the data has been classified and archived, and on this basis, the researchers begin to write data reports and perform data analysis. First, researchers need to write a data report on the interview data according to the order of interviews. The data report is the initial analysis of the interview data. Researchers read the data repeatedly, carefully analyze the meaning of the data, label the chunks, and form an open code. When encoding, the language of the interviewee is adopted as far as possible (Saldaña, J 2009). At this stage, researchers need to keep an open mind and try to find key event clues and main content in the data. After writing the data report for each interview text, researchers need to read and analyze the data report repeatedly, and summarize the data according to the themes in the data report, and classify the data with the same theme in different interview reports. Then the researcher adopts critical event analysis (Webster, L & Mertova, P 2007) to carefully

read the text data of different interviewees at different stages and find out the key information of each stage. Notes and memos were used in the data analysis. In order to record instant comments and reflections on the data, the researcher combined the interview notes and confirmed the theme through notes and memos. The interview ideas are carried out one by one by province, city, county, township and village. Due to the different nature and focus of work at different levels, the interview questions will be different. For example, the provincial and municipal level mainly understands macro data and policy formulation, while the county and township level data mainly focuses on policy implementation and data effectiveness. Other supplementary data, such as observation data and daily communication data, serve as a supplement at the micro level, reflecting the implementation effect of policies and feedbacks existing problems.

Third, use relevant theories and concepts to analyze and discuss the data. In the first-level coding stage, key topics in the research are extracted; in the second-level coding stage, the same topics are summarized and summarized; in the third-level coding stage, activity theory is used to summarize and elaborate. When analyzing and interpreting data, researchers ask analytical questions to help researchers better understand the research topic from a theoretical perspective in the data analysis stage.

CONCLUSION

While stimulating regional economic development, rural e-commerce has also promoted the effect of poverty alleviation. On the one hand, our rural e-commerce market size and economic growth rate continue to lead the world. As the most active and developing part of the digital economy, it has become an important driving force for the sustained resilience of the economy. On the other hand, rural e-commerce has released the online shopping behavior of poor people, improved their Internet awareness, inspired their entrepreneurial behavior, encouraged the vast number of poor people to participate in the rural e-commerce industry chain, and broadened the channels for increasing income.

This study mainly discusses the current situation and focus of rural economic transformation, which is the development of rural e-commerce. However, due to the vast territory of China, there are significant differences between each region and area. Therefore, the main research content of rural economic transformation is how rural e-commerce can better adapt to the local environment and more deeply integrate the rural characteristics of different regions. The traditional agricultural industry structure has a strong demand for cheap labor and is essentially an extensive economic development model (Wang & Zhang 2020). The new rural industry structure, mainly based on e-commerce, has a low dependence on resources and higher profits, and is essentially an intensive economic development model. Developing rural e-commerce can effectively promote the adjustment of the industrial structure in rural areas, which is more in line with the current demand for industrial supply-side reform and the increase in the proportion of the tertiary industry.

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