Development of a Cross-border Business-to-Business-to-Consumer (B2B2C) System to Enhance Enterprise Performance: A Case Study of Legend Harvest Group

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by

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Abstract

This research focused on the efforts of Legend Harvest Group (LHG), a California startup, to realise its cross-border business-to-business-to-consumer (B2B2C) e-commerce business opportunities. The issues identified during the research demonstrated that an operational B2B2C system is more complicated than a manually operated business-to-business (B2B) trade. The complexities of cross-border e-commerce platforms include insufficient data transparency, logistical obstacles, and Customs hurdles. LHG encountered difficulties in understanding and dealing with these obstacles. My research focused on analysing the technological, operational and organisational requirements and finding the critical elements and leverage points of adopting a new B2B2C system. I developed a platform–system–technology–human (PSTH) conceptual framework based on my literature review that served as the theoretical blueprint of this action research. I adopted a participatory action research (PAR) method and a purposeful sampling strategy to conduct an action research study. The sampling population comprised LHG's executives, as well as board members, officers, employees, and consultants associated with the company. I applied a qualitative approach as the most suitable choice in action research study, using interviews, semi-structured discussions, and observations to collect data. This research was based on three action cycles. Each action cycle consisted of four phases: reflect, plan, act and observe. The first action cycle (AC1) focused on scanning the environment to identify the barriers preventing LHG from adopting a B2B2C system. The second action cycle (AC2) addressed the technological, operational and organisational requirements, and collaborated with a Software-as-a-Service (SaaS) provider to implement a trial run and collect actual data. The third action cycle (AC3) involved an in-depth thematic analysis to evaluate the trial-run results and proposed an integrators network for LHG's future B2B2C system development. Research accomplishments include initial identification of sixty-one emergent codes as barriers to

LHG's supply chain automation quest, categorisation of these codes into fifteen actionable themes, and, finally, selection of five actionable themes as critical elements to follow in adopting a B2B2C system, namely, process automation (A), SaaS adoption (S), supply chain integration (I), collaboration (C) and trust (T). From post-trial-run analysis, I recognised these five themes as the key integrators and proposed a B2B2C supply chain model to cope with the cross-border e-commerce platforms. The interdependent nature of these five integrators led to the conceptualisation of an "ASICT" network that can be used to tackle the platforms' demands. Based on the research findings, I learned that a sustainable B2B2C system will depend not only on technology implementation such as SaaS adoption, supply chain integration and process automation, but also on human interaction such as collaboration and trust. This research concluded that these five "ASICT" integrators are critical elements, and that trust and collaboration are the key leverage points in the company's efforts to develop a cross-border B2B2C system. The benefits projected by adopting the B2B2C system included not only reducing LHG's transactional costs but also enhancing its enterprise performance by automating and integrating the supply chain, allowing the management to map operational efficiency with financial outcome and to transform the e-commerce supply chain into a value chain.

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Chapter 1 – Introduction

1.1 Background

Despite its being a developing country, China has become the second-largest Internet economy in the world. Most of the successful Internet companies in China are involved in selling consumer products to the country's massive population (Chen and Ku, 2016). To incentivise the electronic commerce (e-commerce) industry, the State Council of China announced in 2018 the cross-border e-commerce combination tax, which reduced the import duty and created an exemption from value added tax (VAT) on any items purchased for personal use costing less than RMB 2,000. This policy quickly altered the Chinese luxury goods market and created opportunities for small online sellers to enter the Chinese consumer market without any physical stores in China. Xia (2016) noted that cross-border purchases by Chinese consumers amounted to RMB 259 billion (USD 40 billion) in 2015, accounting for 6 percent of China's total online consumer spending: further, Xia predicted that these numbers would double by 2017. He also observed that most Chinese Internet giants had entered the cross-border business-to-consumer (B2C) and business-to-business-to-consumer (B2B2C) markets, as had many smaller rivals and startups. Aiming to promote cross-border e-commerce trades, the guidance[1] published by the State Council advocated cross-border e-commerce as an effective way to combine "Internet and international trade," that is, to grow imports and exports (Wang et al., 2017). However, this recent cross-border deregulation presented unfamiliar territory for foreign companies due to protectionist policies, Customs regulations and currency control. In the past, these imports had been a grey area, in which problems with the Chinese Customs Authority were frequently encountered. Furthermore, the

[1] Guidance by General Office of the State Council on the Promotion of Cross-Border E-Commerce in a Healthy and Rapid Way. June 2015. Beijing, China. Available online: http://www.gov.cn/zhengce/content/2015-06/20/content_9955.htm (accessed on 12 February 2020). (In Chinese.)

lack of traceability in online retailing had led to many claims against the major Chinese e-retailers.

Legend Harvest Group (LHG) is a California startup, specialising in exporting and diverting US and European luxury goods to online retailers in China. From 2016 onward, LHG established itself as a reliable business-to-business (B2B) supplier to Kaola.com, a premium Chinese cross-border site with a strong reputation for selling exclusively authentic branded products (indeed, the site has recently been acquired by Alibaba). LHG's core competence was its ability to source traceable luxury brands, such as Coach and Swarovski. With its modest success, two more major cross-border platforms, Tmall and Jingdong (JD), also joined LHG's client list. In 2018, the new cross-border e-commerce combination tax (11.2 percent) went into effect in China to promote B2B2C imports through reduced duties and VAT exemption. In order to take advantage of the new tariff, the CEO and investors of LHG contemplated the development of a B2B2C system. This new tariff policy made me decide to join LHG as a trade finance partner. Since then, I have observed the organisation's growth and have advised the CEO on strategic financial planning. Unlike B2B transactions that only required LHG to deliver goods to a handful of corporate customers, a B2B2C system would require LHG to deliver orders swiftly and directly to mass consumers in China. B2B2C transactions are far more complicated than manually operated B2B trades, and development of such a system would require LHG to automate its supply chain system in order to exchange marketing, financial, and logistical data online. The CEO felt that missing the B2B2C opportunities would be a huge loss. Despite several barriers, LHG's management team was willing to collaborate with me on this action research to explore the company's potential B2B2C opportunities.

1.2 The Practice-Based Problem and the Research Questions

While there was an opportunity, doing B2B2C business would involve LHG to understand the content-related and context-related complexity. The content-related complexity is due to the multidimensional B2B2C market, insufficient data transparency, technology adoption barriers, supply chain collaboration, cross-border logistical obstacles, indirect buyer–seller relationship, cyber trust, and product traceability. Moreover, workflow synchronisation, particularly the technological requirements to clear Customs online, would require LHG to automate its submission process. Combined with the fact that an automated B2B2C system itself is extremely complex, these obstacles could prove even more challenging.

The context-related complexity is that all these things must be navigated in the context of China, with the ambiguity of Chinese Customs' cross-border e-commerce policy, tariffs, and regulation. Due to the complexities of these context-related hurdles, LHG had not developed its own B2B2C business. Not only were the investment and the technological learning curve high, LHG also faced operational, logistical, and organisational challenges. The practice-based problem I identified was: "Lacking a clear understanding of the complexity of the cross-border B2B2C business in China, LHG was not able to develop an actionable framework for adopting a B2B2C system."

To investigate my practice-based problem, the main research question (RQ) was: "How can LHG develop a framework for adopting a B2B2C system between the US, China and Taiwan, to realise its cross-border e-commerce opportunities?" To study my main research question, the following were my sub-research questions for this thesis:

RQ1: What is preventing LHG from adopting a B2B2C system?

RQ2: What are the requirements for LHG to adopt a B2B2C system?

RQ3: What are the critical elements and key leverage points of the new B2B2C system?

1.3 Cross-Border B2B2C Trade

B2B, B2C and B2B2C are the three popular modes of cross-border e-commerce in China. Many scholars, such as García et al. (2002) and Wang et al. (2011), note that B2B and B2C represent different levels of e-commerce operations; B2B2C is a hybrid of B2B and B2C. B2C is more sophisticated and complicated than B2B, particularly with respect to selling pages and order fulfilment logistics. The consumer's expectation of B2C speed is much higher than that of B2B (García et al., 2002; Le and Yan, 2011). B2C buyers expect orders to be delivered within a reasonable timeframe, which requires high-level logistics arrangements in the supply chain. Some sellers may have to outsource their logistical operations to professional third-party logistics (3PL[2]) providers to meet B2C buyers' expectations (Wang et al., 2011).

B2B2C is similar to a consignment arrangement between a large selling platform (big B) and a small seller (small B). It enables platforms to expand their product categories without the burden of carrying heavy inventory, and gives small sellers access to a large pool of consumers. From a logistical point of view, the main difference between B2B and B2B2C lies in which party receives the ordered goods directly from the small B. A cross-border 2C (to consumer) operator must be able to deliver its goods to the consumers. Cross-border 2C fulfilments demand a high degree of logistical collaboration among supply chain members. From a financial perspective, the main difference between B2C and B2B2C is who collects the payments from the consumers first. In B2B2C mode, payments are first collected by the EMP platform sellers.

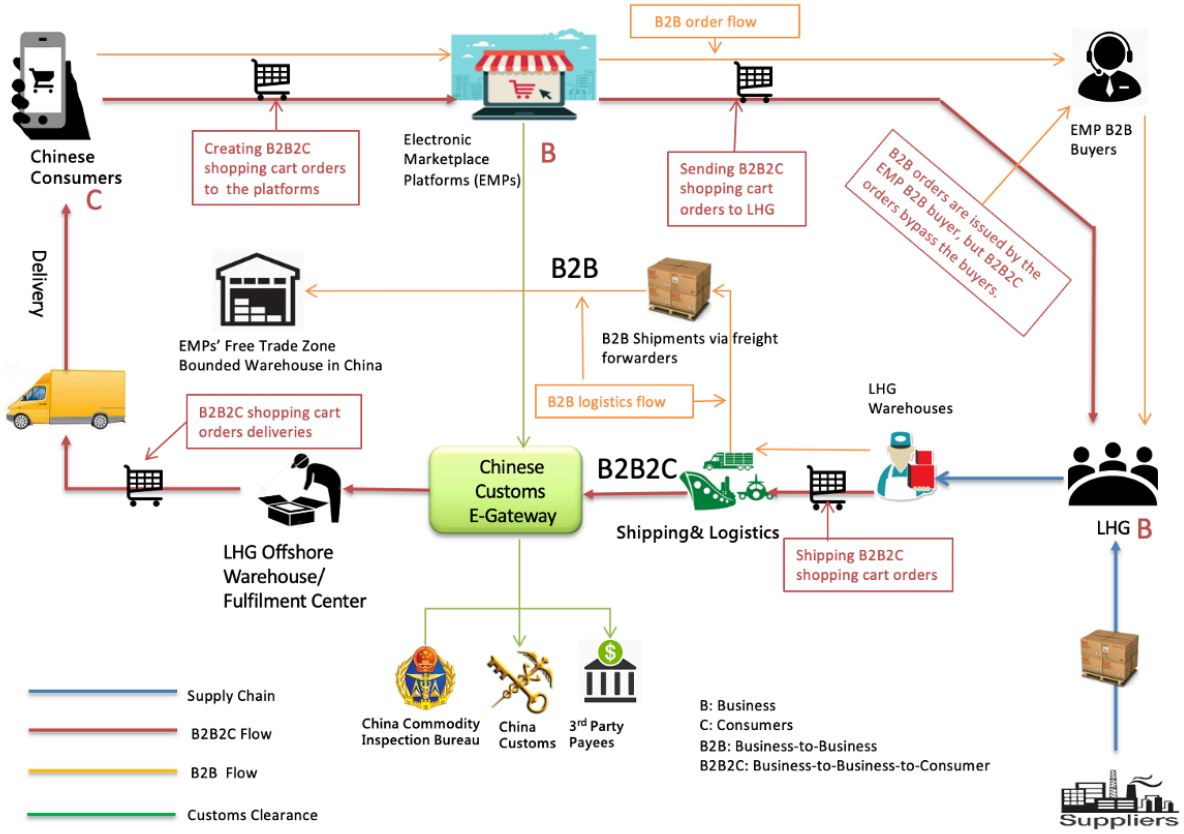
[2] A 3PL company provides shipping, warehousing, and fulfilment services to the clients, as an integrated outsourced solution-provider.

The technical and logistical barriers are steeper in cross-border e-commerce than in domestic transactions. In 2017, the Chinese Customs Authority set up an electronic gateway (e-gateway) for digital clearance. The e-gateway was a crucial regulatory breakthrough, enabling the Chinese Customs Authority to process high volumes of data electronically, including order, product, logistical and payment information, and to collect tariffs online in an efficient manner. The three digital documents required for e-gateway clearance (order, shipping and tariff slips) could be generated online, bypassing the cumbersome procedure for bureaucratic approval. This process is called SDDP (三單對碰, pronounced "San Dian Dui Peng" in Chinese)[3]. Once the B2B2C operators implement SDDP, ordered goods can be sent to shoppers in China from an offshore or free-trade zone (FTZ) warehouse.

There are tangible and intangible borders that a B2B2C order must cross to enter China. The tangible border is the geographical barrier; the intangible is the virtual one. Figure 1.1 represents my preunderstanding of LHG's cross-border trade, illustrating B2B2C trade flows. The red lines show the B2B2C order flow from the customer to LHG via the EMP platform, tracking how the goods were delivered to the customer in China; the blue lines illustrate how the supply chain was processed; the yellow lines show the conventional B2B transaction; and the green lines show the e-gateway clearance of the Chinese Customs Authority.

[3] SDDP means three Customs slips to be matched for e-gateway clearance. The three slips required by the e-gateway are order, payment, and shipping slips, which indicate the data, payment, and logistics information.

Figure 1.1 My Preunderstanding of LHG's Cross-border Trade Flowchart



1.4 Academic Ideas

The literature review aimed to develop a conceptual framework to narrow down my action research to the applicable academic ideas, which primarily focused on the e-commerce platforms, supply chain system, data technology, and human factors.

In the digital economy, multisided platforms formulate access strategies allowing multiple users (buyers/sellers) to collaborate on pricing, products, and other competitive strategies (Evans et al., 2011). In contrast to the single-sided (B2B) markets, the multisided (B2B2C) EMP markets have multiple groups of stakeholders (Hoppner, 2015). The platforms, which are generally focused on offering quality service to buyers, are reluctant to invest in extending their support to sellers, because the needs of the buyers are much easier and cheaper to fulfil (Duch-Brown, 2017). Notably, the multisided platform theory postulates

that data technology facilitates multiple businesses to collaborate to add value. Nonetheless, integrating the marketing, technology, warehouse and logistics is considered by Zhang et al. (2012) to be less valuable because it can overleverage an enterprise's capacity without a core competency.

Data technology (DT) is used by many EMP platforms to predict logistical demands and instigate collaboration within the supply chain (Li and Huang, 2014; Liang et al., 2016; Vinum and Skjoldager, 2001). Some researchers, such as Yu (2016) and Zhu (2011), had identified a problem of asynchrony among data, money, and logistics exchanges. Data and money exchanges were online digital transactions that occurred far more quickly than the delivery of cross-border orders. Many scholars, such as Chang (2010), Chang and Graham (2012), and Khatun and Miah (2016), believed that supply chain integration was the key to overcoming this asynchrony. They suggested the use of software and data technology to integrate the supply chain. Chang (2010) noted that a B2B2C system could be automated using warehouse management software (WMS) and enterprise resource planning (ERP) software to integrate with the different systems. Using application programming interface (API) to interlink the systems, a small company could access mass consumers online (García et al., 2002). Some scholars, such as Mata and Quesada (2014), suggested that a small company could outsource its B2B2C system to SaaS (software-as-a-service), which could provide software solutions to quickly help its clients to establish a B2B2C system. In such SaaS adoption theory, software could be accessible online, and PaaS (platform-as-a-service) would often be offered by an EMP platform to provide turnkey solutions for participating sellers (Le and Yan, 2011; Zhao and Li, 2013).

According to Lin et al. (2006), greater trust in the supply chain yields better financial performance. Yu and Khushalani (2013) noted that an e-supply chain company should focus on value creation rather than cost-cutting. To measure a B2B2C system, many scholars

examined human factors such as trust, care, perception, quality, and credibility (Agag et al., 2016; Jiang et al., 2016; Shan et al., 2010; Vincent et al., 2017; Zuo et al., 2013). Value-based management includes the realisation of the commonly shared value by most stakeholders (Yücesan, 2016). In the digital economy, value is not derived from exchange of products and services, but from exchanging knowledge that increases the effectiveness of the supply chain (Meiszner, 2017).

To organise my literature review, these academic ideas were grouped into technology and normal business sectors. The discussion of the technology sector included process automation, supply chain integration, and SaaS collaboration, whereas normal business issues included trust and collaboration.

1.5 Action Inquiry Focus

My research focused on action inquiry made up of three action cycles (ACs). I strategically incorporated the action-in-research method and data collection processes into a live participatory case study. Coghlan and Brannick (2014) noted that action research on a case study could unfold through the cycles of data gathering, taking action, reviewing, and further planning for new action. McKernan's (1996) action research model also proposed a research design for scholars and practitioners to induce organisational changes through continuous cycles.

Each of my three action cycles consisted of four phases: reflect, plan, act, and observe, drawing on the ideas of McKernan (1996) and Coghlan and Brannick (2014). The plan and act stages required team members to collaborate with each other, while the reflect and observe phases required the researcher to contemplate the previous and upcoming action cycles. Each cycle involved six or seven participants from LHG's stakeholders. The duration of each cycle ranged from one to two months.

To explore the dilemma of LHG's inaction to adopt B2B2C, my main research question was: "How can LHG develop a framework for adopting a B2B2C system between the US, China and Taiwan, to realise its cross-border e-commerce opportunities?" The three research sub-questions were: First, what is preventing LHG from adopting a B2B2C system? Second, what are the requirements for LHG to adopt a B2B2C system? Third, what are the critical elements and key leverage points of a new B2B2C system? To investigate these three sub-questions, the first action cycle (AC1) focused on observing the environment and collecting data from the participants to learn the reasons for the organisational inaction that had been hindering LHG's development of a B2B2C system. My interview questions were based on a strengths, weaknesses, opportunities and threats (SWOT) analysis to investigate the weaknesses and threats of LHG's B2B and B2B2C business, and the barriers that needed to be overcome to improve them. The second action cycle (AC2) conducted a trial run to investigate the B2B2C system requirements. The third action cycle (AC3) undertook an in-depth thematic analysis to evaluate the trial-run results to identify the critical elements for forming a B2B2C system network. Using these action cycles, I intended to implement actions for improving LHG's efficiency that could shorten delivery time, reduce transactional costs, and attain competitive advantage. The goal was to create a knowledge network of B2B2C system that could form an actionable proposal for enhancing LHG's supply chain capacity and efficiency. Table 1.1 summarises my action cycle activities.

Table 1.1 Action Cycle Summary Table			
	Action cycle 1	**Action cycle 2**	**Action cycle 3**
Objectives	Problematisation	Actions	Reflections
Timeline	1–2 months	3–4 months	5–6 months
Participants	7 participants, including the management and consultants	7 participants, including the management and consultants	6 participants, including the management and consultants
Tasks	Data collection: interview via questionnaires	Data collection: semi-structured discussions	Data collection: interviews and semi-structured discussions
	Initial data coding	Data coding and analysing	Thematic analysis
	Environment scan	Discussion of technological, operational, and organisational issues	Analysis of the trial-run outcomes
	Literature review	SaaS adoption discussions	Extraction of critical elements to develop a network of integrators
	SWOT analysis	B2B2C trial-run experiment	Post-trial-run analysis on the network of integrators
	Barriers identification via data coding	Isolate an integrated solution from the trial-run experiment for organisational change to improve the problem	Produce a report for the future B2B2C system proposal

1.6 Thesis Structure

Although this thesis was a case study, I followed the key research design and requirements of action research to structure my thesis. In Chapter 1, I present an overview of my research objectives, the literature review, the research design, the methodology, and the outcomes of my action research on LHG's B2B2C system. Chapter 2 is dedicated to a literature review I conducted to understand the academic ideas relevant to B2B2C and is focused on the theories that could be applied to develop a conceptual framework for my action research. Chapter 3 contains a discussion of my research design, including the ontological and epistemological foundation, methodology, modalities, approach, inquiry methods, and techniques. Chapter 4 features a discussion of how I implemented these action cycles to collect data from the participants and analysed them to extract meaningful codes and themes for formulating

actions to improve LHG's B2B2C operation. In Chapter 5, I examine the actionable themes based on the thematic analyses. I also discuss the critical elements and key leverage points, extracted by analysing the thematic review of their relationships and relating them back to the literature to triangulate and arrive at a B2B2C e-supply chain integrator network, which concludes the study. Chapter 6 discusses the lessons learned as a researcher, our organisational learning as a team, and the collective effort of this research in creating actionable knowledge.

1.7 Conclusion

My thesis was a purpose-driven research project, the objective of which was to help LHG realise its cross-border B2B2C e-commerce business opportunities. To achieve this goal, I applied action research design to investigate the barriers preventing LHG from adopting a B2B2C system. I implemented a trial run to learn the requirements, and examined the positive and negative impacts of the trial run. I applied a qualitative approach to identify five actionable themes (process automation (A), SaaS adoption (S), supply chain integration (I), collaboration (C) and trust (T)) as the most critical elements for B2B2C adoption, thus developing an ASICT B2B2C system integrators network for LHG's adoption. Among these five themes, I identified trust and collaboration as the two key leverage points, formulating actionable knowledge for LHG to transform its e-supply chain into a value chain. Finally, I examined the valuable lessons learned through this action research as my reflection of this thesis journey.

Chapter 2 – Literature Review

2.1 Introduction

The aim of my action research was to initiate actions to resolve LHG's problem by understanding the relevant barriers and requirements and by developing a suitable B2B2C system proposal. In this chapter, I undertake a review of the relevant literature pertaining to B2B2C.

The Internet has drastically changed the way we do business. Businesses are transforming themselves to cope with the digital economy at an unprecedented speed. According to Agag et al. (2016), the use of the Internet, "big data", and artificial intelligence (AI) will continue to change the way businesses buy, sell, and trade. Internet entrepreneurs such as Jeff Bezos (Amazon) and Jack Ma (Alibaba) have expanded their e-commerce empires by transforming their single-sided B2B businesses into multisided B2B2C ecosystems. Their innovations have created B2B, B2C, and B2B2C online selling models (Clark, 2016). E-commerce companies such as eBay and Amazon have made B2B, B2C, and B2B2C models popular in the United States. Scholars are increasingly interested in studying the B2B, B2C, and B2B2C phenomena in China due to the tremendous commercial success of Chinese Internet giants, collectively known as the "BAT" (Baidu, Alibaba, and Tencent). Many Chinese scholars have researched the BAT's B2B and B2C models to further their e-commerce theories (Chang, 2010; Shan et al., 2010; Wang et al., 2011; Wang et al., 2017). In order to get a fuller picture of the existing B2B2C models, I also examined scholarly articles related to B2B and B2C in other developing countries (Agag et al., 2016; Anwar, 2017; Chang and Graham, 2012).

The lack of literature about the way a small business develops a cross-border e-commerce system (Wang et al., 2017) necessitated the development of my own conceptual framework. I concluded that a strategic literature review of related academic studies would help me identify the practices, theories, factors, and applications required to identify action

themes for my research. Since e-commerce is a rapidly evolving industry, many electronic business (e-business) technologies and models have already become obsolete. Therefore, most of the articles I selected for this literature review were published after 2005. This thesis intends to overcome LHG's inability dilemma to broaden its business from its B2B practice into a more complex B2B2C platform. This necessitates understanding the way a small business can cope with multisided platforms in the digital economy.

This literature review is the theoretical foundation of my action research. Six major research topics are explored in this chapter. They are: (1) the complexity of multisided platforms; (2) B2B, B2C, and B2B2C e-commerce models; (3) e-commerce supply chain integration; (4) technology and software adoption for the e-supply chain; (5) value chain and ecosystem; and (6) measurement of e-commerce enterprise performance. These topics are categorised into offline business and online technology sections for discussion. The online issues are often related to technology factors, whereas the offline issues might be said to refer to "normal" business and human factors. The search for academic journals and industrial articles was conducted using the databases of the University of Liverpool's (UoL) library and Google Scholar. The main keywords used included cross-border e-commerce, multisided platform, B2B, B2C, B2B2C, e-commerce supply (e-supply) chain, e-supply chain finance, e-commerce value (e-value) chain, and Alibaba.

2.2 The Multisidedness of Cross-Border B2B2C E-Commerce

In the early 2000s, social scientists, such as Jean-Charles Rochet and Jean Tirole, observing the emerging phenomenon of the platform economy, developed the two-sided market, multisided market, and multisided platform theories to analyse the multisidedness complexity of the digital economy (Evans et al., 2011). Evans and Schmalensee (2007) noted that a multisided platform is a catalyst network that creates value by bringing different customers

together to interact for their mutual benefit. Catalysts in the network reduce sourcing efforts, facilitate matching, and promote users to share their values.

Since the creation of the Internet, the way businesses exchange goods and services has changed dramatically, shifting from buyers and sellers conducting primarily face-to-face negotiations to a virtual space unifying multiple parties performing strictly defined tasks to complete transactions. According to Weyl (2010), multisided markets have three features: a multiproduct firm that is a platform capable of providing different services to the various sides of the network; the welfare of users being dependent on their participation in other sides of the market; and, finally, platforms having power to settle the price on both sides of the transactions.

In contrast to the single-sided (B2B) platforms, multisided (B2B2C) platforms have multiple groups of stakeholders (Hoppner, 2015). A multisided platform provides an entry to cultivate multiple markets and creates pricing, product, and other platform strategies to enable multiple customers to internalise their externalities (Evans et al., 2011). The multisided platforms are complex ecosystems: dynamic, adaptive, collaborative, organic, and cyber-physically distributed. The multisided platform implies multisided operations with multi-business models for multiple purposes and stakeholders (Meiszner, 2017). Rochet and Tirole (2006) suggested that most businesses in the digital economy are multisided to some degree. However, businesses tend to be de facto single-sided platforms because the network effects tend to diminish to zero when the number of customers moves toward infinity. Additionally, they argued that network effects are essential to multisided platform existence. Figure 2.1 illustrates the network effects of multisided platforms compared to single-sided markets (Deloitte, cited in Meiszner, 2017). Multisided markets form an interdependent ecosystem in which value is no longer created by the goods and services provided by sellers

but through collective knowledge-sharing to co-create and collaborate to provide proactive products and services by the users of the platform (Meiszner, 2017).

Figure 2.1 The Comparison of Single-Sided Markets Versus Multisided Platforms

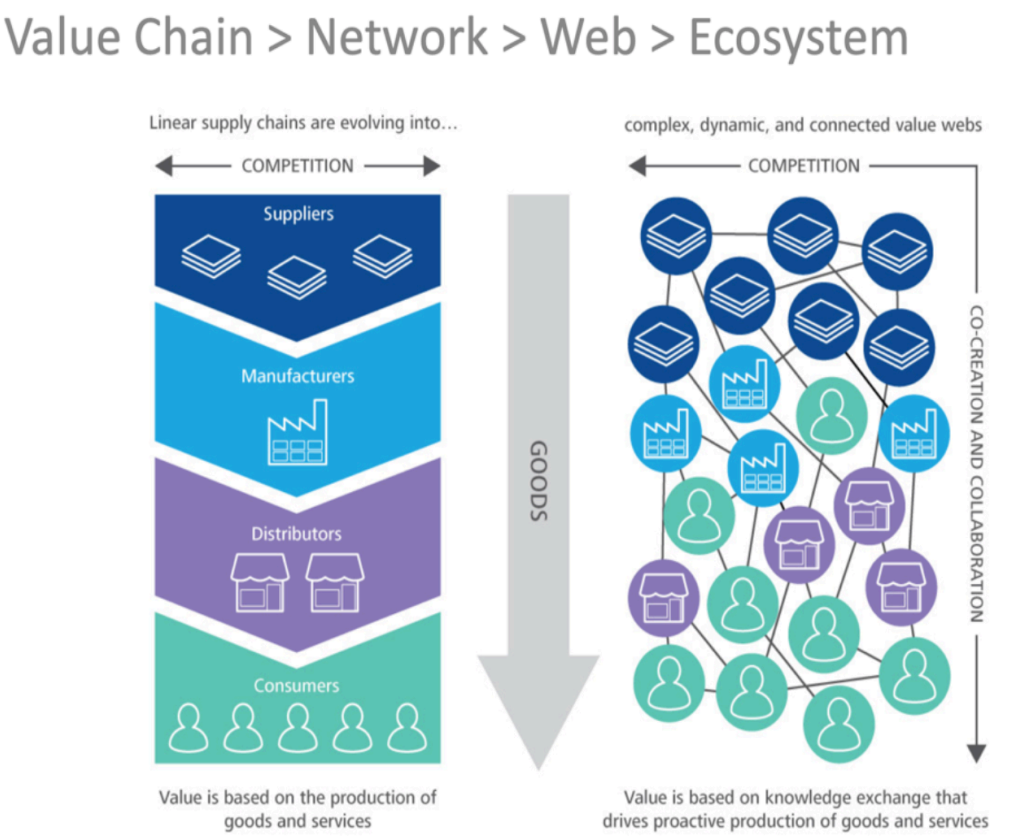


Image Source: https://dupress.deloitte.com/content/dam/dup-us-en/articles/supply-chains-to-value-webs-business-trends/Fig1_Supply-chains-evolve.jpg

Weyl (2010) argued that, compared to single-sided markets, platform markets are more likely to be inefficiently fragmented due to cross-network effects. Duch-Brown (2017) pointed out that multisided platforms generally care more about buyers and are reluctant to invest in support for sellers. However, sellers need higher-level services, compared to buyers' simpler requirements. Buyers receive a higher quality of services, while the service quality experienced by sellers remains "degraded." This inequality increases the platform complexity. Although most of the multisided platform theories have not addressed cross-

border obstacles, they nonetheless provide an academic interpretation to break down the complex issues of B2B2C e-commerce.

Economists such as Rysman and Evans (cited by Sanchez-Cartas and Leon, 2019) noted that "multisided markets" are difficult to define; the term "multisided businesses/platforms" is better. Evans et al. (2011) preferred to use the term "multisided platforms" to describe these businesses since they offer a system for customers to collaborate, and support increased interdependence. Piao and Han (2010) referred to the e-commerce multisided platforms as the electronic marketplace (EMP). To avoid confusion, in this thesis I collectively refer to them as EMP platforms or simply as the platforms.

My concern with the multisided platform theory is that it is missing an applicable theoretical framework for the practitioner to adopt to untangle the complexity of the B2B2C platform multisidedness. Therefore, I go on to examine the offline business and online technological aspects of B2B, B2C, and B2B2C to identify the literature relevant to my action research.

2.3 Offline Business Issues of B2B, B2C, and B2B2C

In this section, I evaluate the literature about regular business issues of the platform economy, mainly focusing on offline business issues affecting most businesses to understand various theories for interpreting B2B, B2C, and B2B2C business models. This section covers logistics, supply chain, value chain, finance, and enterprise performance.

2.3.1 Overview of B2B, B2C, and B2B2C

Wang et al. (2011) observed that the Internet can allow small businesses to directly access consumers through B2B2C platforms. B2B is defined as business (B) to business (B); B2C as business (B) to consumer (C); and B2B2C as business (B) to business (B) to consumer (C)

(Agag et al., 2016; Wang et al., 2011). In the early years, the e-commerce market was dominated by B2B, occupying 80 percent of the market. Le and Yan (2011) predicted that B2C would outgrow B2B in China. Xu and Li (2017) found that B2C accounted for 29.7 percent of market share in 2012, which rose to 45.8 percent in 2015.

Vincent et al. (2017) argued that B2B buying decisions are different from B2C buying decisions. B2C mainly deals with consumers, but B2B buyers must consider multiple parties in the purchases they make. As a result, B2B organisational procurement decisions require consideration of more factors. According to Vincent et al. (2017), B2B buying decisions are complex processes that combine a multilayer perceptron neural network (MLP-NN) and an analytical hierarchy process (AHP) for analysing the multiple cognitive criteria of buying decision-making (BDM). Le and Yan (2011) argued that the fundamental difference between B2C and B2B lies in the management information system's (MIS) shopping cart feature on the selling platform, which is critical for the buyer to execute the buying action. A B2C site requires more complex contents for its selling platform to keep track of orders and shipments. The authors explained that the "Site+MIS" differentiates B2B and B2C and can be realised through the combination of Microsoft's Active Server Page (ASP) and Structured Query Language (SQL) data management. García et al. (2002) proposed a hybrid model, which merged B2B and B2C models, with information and communications technology (ICT) enabling these models to integrate their platforms through an extensible markup language (XML)-based communication protocol, using the computer server as an intermediary between buyers and sellers. They further suggested that the XML protocol can seamlessly control dimensional access to the server for different users, so that a B2B and B2C e-commerce platform could co-exist within the same XML system. Unlike the hypertext markup language (HTML), XML allows users to define their own tags and share their data across different systems on the Internet. By integrating B2B and B2C platforms, an enterprise

does not need to outsource its B2C operation to third parties, which minimises its dependence on outsiders. Le and Yan (2011) described two different B2B models: a self-built platform by a company with sufficient internal resources to operate on its own, and a co-sharing platform in which small companies participate. The benefits of a co-sharing platform include cost reduction and risk control. For example, Alibaba is the largest co-sharing B2B platform in China. It provides easy access for startups to enter the global market through its online platforms. Amazon is among the largest co-sharing B2C platforms in the world, allowing millions of small vendors to reach a wide consumer base. The success of Amazon and Alibaba has proved that co-sharing B2B and B2C platforms are viable business models (Le and Yan, 2011).

Reflecting on García et al.'s (2002) and Le and Yan's (2011) theories regarding hybrid or co-sharing B2B/B2C sites, they emphasised the MIS aspects, but might have underestimated the supply chain complexities and logistical differences of B2B and B2C platforms, which I will discuss in the following sections.

2.3.2 B2B, B2C, and B2B2C Logistics

Yu (2016) argued that there are many emerging risks in Chinese e-commerce; these issues greatly affect perceptions of quality, trust, security, and privacy. The most challenging issue is logistics, due to the inconsistency of information, logistics, and payment flows. Tremendous infrastructure, including warehouses, transportation, geographical coverage, and fulfilment, needs to be in place for online sellers to engage in B2B and B2C delivery. According to Yu (2016), for corporate buyers and consumers it is crucial that they are able to trust that they will receive the ordered goods within the expected timeframe. The distance between buyer and seller in cross-border B2C e-commerce is a tangible factor that raises the transaction cost (Wang et al., 2017). The Cainiao Network of Alibaba is now promising

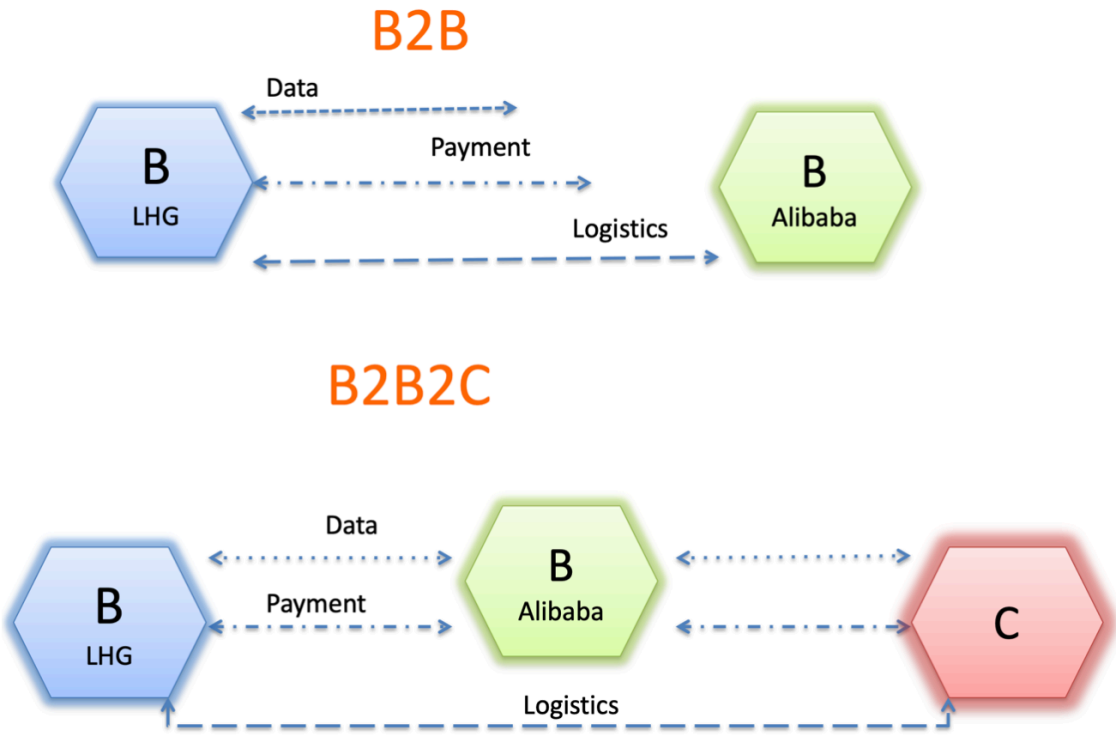
same-day and next-day delivery to compete with physical bricks-and-mortar stores and traditional retailers (Li, 2017).

Several Chinese scholars have studied B2B and B2C logistics using mathematical calculations in the hope of discovering the most cost-effective delivery method for the B2C supply chain. Li and Huang (2014) applied non-linear integral calculus to predict B2C enterprises' logistical growth based upon the site users' interface data. According to Li and Huang, data technology has helped to automate the e-commerce standard operating procedure (SOP) decisions in the supply chain. Wang et al. (2011) also applied mathematical calculations of transaction costs by isolating the physical flow from the order and payment flows, and proposed a theoretical framework to understand the complexity of B2B2C logistics.

Harrington and Srai (2016) noted that, for B2B systems, digitisation, concept of operations (ConOps), and 'smart' supply chains can help operators to synchronise transactions, and achieve 'just-in-time, just-in-place, and just-in-sequence' efficiency, supporting multi-organisational service networks. Zhu (2011) argued that, among the three flows within B2C e-commerce (data, payment, and logistics), the logistical flow is the most challenging. Zhu also noted three central foci within B2C's logistical flow: product, client, and supply chain. Product logistics focuses on the physical arrangements to ensure that all the processes and steps are executed properly and punctually. Client logistics focuses on using the enterprise's intranet to analyse the needs of buyers within different departments of the organisation and between different supply chain members. Supply chain logistics relies on integration to achieve a higher degree of collaboration among the supply chain members, thereby reducing costs and increasing efficiency. He further argued that the supply chain central protocol logistics flow design is the most critical arrangement for improving supply chain efficiency. Figure 2.2 shows the cyber-physical distribution mechanisms in three

exchanges: data, payment, and logistical flows (Yu, 2016; Zhu, 2011). The data and payment exchanges are swift online activities executed at a digital speed, but the delivery of physical goods is a transportation task occurring at a much slower pace.

Figure 2.2 B2B Versus B2B2C



Wang et al. (2011) proposed that the B2B2C platform is a unique and efficient way for small companies to access the global market with relatively low barriers. They differentiated the two Bs of B2B2C as follows: the first B (small B) stands for the manufacturer or vendor who is relaying to the middle B (big B), which involves a middleman or a selling platform to sell its products to consumers (C). The B2B2C platform can be valuable for small and mid-size enterprises (SMEs) to utilise the data and information they have acquired from their customers for marketing, operation control, and customer management. To improve the B2B2C operation, the data, payment, and logistical flows must be synchronised as far as

possible to create value in the supply chain. They further pointed out that, depending on the big B, B2B2C has three logistical patterns: direct, indirect, and self-style. The direct logistical pattern occurs when the small B ships the product directly to the C. The indirect logistical pattern implies that the big B outsources its logistical centre to a third party. The self-style pattern involves the big B having its own logistical centre. Based on Wang et al. (2011), if the first B of B2B2C is a small B, perhaps the term "b2B2C" can be used to better understand the scale and relationship.

For a startup like LHG to qualify for the Chinese government's reduced cross-border tariff, the arrangement for fulfilment cannot be B2B or B2B2B. It must be B2C or B2B2C (Wang et al., 2017), the direct logistical pattern noted by Wang et al. (2011), in which imported goods must be shipped to Chinese consumers directly from overseas. The barriers of cross-border e-commerce involve insufficient transparency about delivery, Customs holdups, intricate returns logistics, and ambiguous pricing policy (van Heel et al., 2014). For small businesses to overcome cross-border B2C logistical obstacles, Zhao and Li (2013) argued that it is more cost-effective for small businesses to adopt the B2B2C e-commerce model through professional logistical services provided by a SaaS provider. They suggested that SaaS adoption can efficiently resolve technological bottlenecks for a small B2B business and automate its logistical flow to a B2B2C value chain.

In contrast to online virtual transactions, logistics requires the physical transportation of goods from manufacturers to consumers, and the complexity increases when delivering across national borders or shipping to remote locations. Consequently, outsourcing fulfilment and delivery to a third-party expert is a popular solution. For example, Xu and Li (2017) suggested that small sellers should outsource logistics to a third party, which should be selected based on multiple factors related to qualified 3PL. They applied the AHP method to weigh various options in selecting a 3PL centre, and concluded that the criteria for choosing a

B2C enterprise's 3PL should not only be based on cost but should also encompass various factors, such as quality, flexibility, speed, geographical coverage, and information transparency. Additionally, Xia et al. (2014) discussed the emerging conflict of interest between e-commerce platforms and their 3PLs, where the e-commerce company begins building up its own logistical system, while the 3PL starts expanding into e-commerce. They noted that, in China, 3PL outsourcing is still not a viable solution for the EMP platforms due to 3PL performance quality. However, according to them, the conflict may sometimes help improve the integration of the EMP platforms with the 3PL. A platform can anticipate future trends by incorporating logistics and fulfilment, and a 3PL can learn about an e-commerce operation by running an EMP platform. However, Wang et al. (2011) argued that, while the direct logistics B2B2C pattern may be the simplest and most effective option for small businesses, the final choice of the logistics pattern should be subject to each business's requirements.

My concern with Wang et al.'s (2011) and Xu and Li's (2017) theories is that, while they have explored the benefits of the outsourcing aspects of 3PL logistical arrangements, they have overlooked the complexity of supply chain collaboration, which I will discuss in the next section.

2.3.3 B2B, B2C, and B2B2C Supply Chain Collaborations

Chang and Graham (2012) suggested that B2B supply chain collaboration requires management of the synergy between the supply chain logistics and the e-commerce data network. In contrast to the traditional supply chain, e-commerce requires the supply chain members to collaborate to a higher level to meet the requirements of a fast-paced e-commerce environment. Knowledge management of information technology is critical for supply chain collaboration.

Chang (2010) researched the influence of B2B on the supply chain within the Taiwanese information technology (IT) industry. He advocated the use of the critical success factor (CSF) method to achieve B2B e-supply chain management (e-SCM) integration. ICT adoption is one of the most popular methods for the Taiwanese original equipment manufacturing (OEM) and original design manufacturing (ODM) industries. Integrating the supply chain management (SCM) and ICT enables e-SCM, and the data and information can be shared and communicated through the inter-organisation information system (IOIS) and the electronic data interchange (EDI) system. The integration of an e-supply chain is a complex process because members of the e-supply chain must be willing and skilful enough to integrate the technical (XML, EDI, Java), applicational (WMS, ERP, customer relationship management, SCM), and managerial levels (Chang, 2010; Vinum and Skjoldager, 2001). Shared knowledge and value among the supply chain members is a prerequisite for collaborative action. Chang (2010) suggested that each technical, applicational, and managerial task should be a CSF to achieve B2B supply chain integration. Overall, it is imperative to develop a collaborative culture among supply chain members who are transforming the e-commerce supply chain into a collaborative commerce (c-commerce) value chain (Chang, 2010; Wilderman, 1999).

The shortfall of Chang's (2010) theory is that it mainly analyses the impact of ICT adoption on B2B supply chain integration, but is missing a qualitative analysis of human and social factors for developing a collaborative supply chain culture, which I will discuss in the next section.

2.3.4 Trust, Perception, and Ethics

Anees-ur-Rehman et al. (2018) discussed the impacts of branding on the financial performance of small B2B businesses. External branding, including marketing and

advertising, are tactics for generating brand awareness and sales leads. However, B2B brand credibility is more effective when a small business promotes its brand through internal efforts, conveying corporate values and culture to customers and stakeholders. The internal branding effort requires employees to be trained in their company culture and values to execute their work. These researchers further argued that SMEs' ability to build trust by keeping their promises is critical for B2B brand credibility. Using data collected from 260 small companies in Finland which was analysed through the factoring structure equation method (SEM), they concluded that a brand-oriented strategy does impact on the commercial performance of small companies.

Mingione and Leoni's (2020) recent empirical study examined an Irish B2B2C financial technology (FinTech) firm, GlobTech. They uncovered that the co-branding of B2B and B2C created a synergistic performance for the firm to compete in the B2B2C multi-stakeholder marketplaces. Mingione and Leoni (2020) developed a model of six human factors (interdependency, direct approach, trust, strategic alignment, adaptive modus operandi, and knowledge-sharing) as the main attributes to formulate a firm's successful B2B2C marketing. From their collected interview data, they found that successful branding can effectively enhance trust-building among online consumers and create value in the B2B2C marketplace.

Some scholars, such as Lin et al. (2006), Zuo et al. (2013), and Agag et al. (2016), have focused their studies on the effects of human factors on B2B and B2C e-commerce. Lin et al. (2006) asserted that trust, switching costs, and information-sharing are three important criteria for measuring B2B supply chain performance. The authors suggested that the higher the trust that exists among an e-supply chain, the lower the transaction costs and order cycle time, the higher the added cost for a customer to switch to another supplier, and the better the web "stickiness" (average number of minutes that a visitor stays on a website) of a B2B site.

Information-sharing facilitates trust among the supply chain members and lowers the inventory required, making the supply chain more efficient. Additionally, information-sharing can improve trust between buyers and sellers, thereby streamlining the process to reduce fulfilment costs.

Bashee (2017) argued that cost management is critical to supply chain performance, due to the role absorption in the inter-organisational relationships between the supplier, manufacturer, and customer. Trust and commitment are important elements for reducing costs. Nonetheless, improving trust and commitment has not been explored, and establishing trust and commitment for small companies in cross-border trades is challenging (Bashee, 2017). Holma (2014) suggested that, in a cross-border supply chain of suppliers, manufacturers, and customers, the B2B relationship should be triadic rather than sequential. The supplier–leader–customer collaboration suggests an integrative interaction that could yield greater benefits than a single-loop relationship. Drawing from Bashee's (2017) and Holma's (2014) arguments, a collaborative relationship can facilitate double-loop learning to enhance integration, and double-loop learning can have deep socio-cultural impacts on the organisation's learning (Argyris, 1994). Thus, Holma's (2014) theory provides a good basis for my action research about improving the triadic B2B2C electronic transaction.

Zuo et al. (2013) argued that human factors engineering (HFE) could be an evaluation indicator of a B2C website's service quality. They also applied the Kano model and quality function deployment (QFD) to obtain credible quality requirement (CQR) frameworks for their analyses. Multiplayer electronic service quality factors include website design, ease of use and convenience, transaction, delivery, returns, and customer care. Agag et al. (2016) observed that the Internet has changed the way we do business, as ICT enables small businesses to compete globally using technology. Agag et al. (2016) proposed that value can be created and realised between buyers and sellers through online exchanges. They further

argued that the buyer perception of seller ethics (BPSE) is the most critical element. Buyers need the assurance that sellers will deliver goods on time, which is a vital aspect of BPSE, particularly in cross-border B2B or B2C transactions.

Similar to Zuo et al.'s (2013) HFE theory, Jiang et al. (2016) conducted a quantitative study to identify five key factors of B2C service quality: carefulness, dependability, user-friendliness, confidentiality, and product information. According to Jiang et al.'s (2016) findings, these factors are important for customer-perceived values, which lead to B2C shopper loyalty online. Shan et al. (2010) argued that consumer purchase decisions are largely based on benefit and risk assessments. Company reputation, price, and shopping experience strongly impact on consumer-perceived risks and benefits.

Benzidia (2013) identified three types of EMP platform: transactional, informational, and collaborative. The transactional and informational platforms help buyers and sellers complete trades with suitable conditions and low cooperation. However, a collaborative platform can significantly enhance both the buyer–seller relationship and product design. Benzidia (2013) asserted that, in the collaborative supply chain, conflicts and misunderstandings might occur due to conflicts of interest and cultural differences. Trust and transparency are thus essential elements for overcoming these barriers. An EMP platform should provide tools for the users to enhance data visibility to ensure that each step in the supply chain is reported or discussed. A SaaS provider, such as salesforce.com, which allows users to access their software via the Internet, can enable an EMP platform to experiment for a trial period of up to a year before implementation. Company users can employ the tools of SaaS to experiment with the integrated e-supply chain and can fix problems occurring during the trial period, building trust without incurring much risk. Moreover, Web 2.0 technology allows social networks and e-commerce sellers to intertwine. Mata and Quesada (2014) identified a new business platform called social commerce (s-commerce), in which sellers use

virtual communities to market products. They suggested that it is much easier to create trust among friends within the same communities on social networks. Facebook pioneered s-commerce, which now represents an alternative method of digital marketing. In China, Alibaba uses a social network service (SNS) API for linking social media, and JD's collaboration with the top Chinese social media (WeChat) has boosted their sales (Piao and Han, 2010).

Thaw et al. (2009) discussed the security risks faced by B2C consumers. They used the factor analysis and Pearson correlation coefficients to examine the effect on consumer trust of data privacy and security issues of B2C sites. Their statistical analysis showed that consumers' confidence in making online purchases is significantly and positively correlated with the trustworthiness of B2C sites. Their study suggested that online shoppers are often exposed to technological risks in e-commerce and that they genuinely worry about sending their data online due to security issues. Thus, trust is an important factor for the purchase decision.

Although these articles addressed the human factors in the B2B and/or B2C contexts, the complex multisidedness of the B2B2C supply chain was not addressed. Unlike B2B or B2C, the relationships between buyers and sellers in B2B2C transactions are indirect and asynchronous, which adds an extra layer of complexity. In addition, the articles did not effectively address the issue of how to measure human factors such as trust and ethics in action research. I assume the ways of measuring human factors could be biased, depending on the settings and environments.

2.3.5 The B2C Value Chain and Ecosystem

Holma (2014) presented the concept of the adoption chain to examine the supplier–leader–customer relationship. Holma argued that the adoption process is as important as the

outcome. Thus, it is imperative that all stakeholders cooperate. Yücesan (2016) advocated shifting the evaluation of the supply chain from a cost to a value analysis, emphasising that the key to creating a value chain is capturing the value of everyone who interacts with the company's products in a transaction process. Yücesan (2016) proposed that the supply chain is an ecosystem consisting of independent organisations with no clear hierarchical structure. Yücesan further explained that value is only provisional in the ecosystem due to competition, customer preferences, and technology. Yücesan's value-based management (VBM) is a matrix model of two sets of factors: horizontal factors, including vision, strategy, and enablers, and vertical factors, including context, illustration, and technicalities. Therefore, VBM can be initiated by incorporating new thinking and technology. Yücesan argued that value creation is measured not only by cost reduction but also by the capacity for organisational learning, allowing the management to track the operational performance with the financial outcome. Value-based management does not simply refer to profitability but also includes the realisation of the values commonly shared by most stakeholders.

Zhang et al. (2012) observed that Internet technology facilitates the collaboration of various businesses or individuals by adding value to a product or service. This collaboration is the core value in the e-business operation. They compared the values of various B2C and consumer-to-consumer (C2C) models and suggested that models with lower transaction costs and reduced inventory are more valuable. They found that the electronic catalogue model is superior to the electronic buyer model because it requires lesser inventory. Referencing Porter's (2001) five forces competitive theory (buyer, supplier, competition within, new entrants, and substitute), Zhang et al. (2012) preferred Anderson's (2003) "long tail" strategy of using the Internet to reach bespoke and segmented markets. They suggested looking beyond the value chain theory and focusing on the analysis of mobbing effect versus long tail strategy, which is the economy of scale versus innovation-driven valuation. They also

believed that the e-business model of integrating the marketing, technology, warehouse, and logistics functionalities is considered less valuable due to the potential for overleveraging of the functions without a key innovation and core competency.

Gou et al.'s (2020) recent case study of Card Union investigated how a FinTech company can develop innovative B2B2C models to cope with the constantly changing e-commerce environment to deliver various products and services in China. The continuous evolution of B2B2C had necessitated that the firm reinvent their business models to capture B2B2C opportunities. The authors argued that, despite the indirect relationship of platforms and consumers in the B2B2C ecosystem, a platform such as Card Union had leveraged its innovated data technology into point-of-sales (POS) terminals in small retailers to expand its product and service categories to consumers. Gou et al. (2020) also observed that such development was built on the existing relationships between Card Union and small retailers, which allowed Card Union to leverage its long-tail B2B2C network effects and economies of scope and scale. The authors demonstrated how Card Union successfully applied continuous processes of innovation to realise its B2B2C opportunity in China.

Contrasting to Zhang et al. (2012) and Guo et al.'s (2020) viewpoints on the innovative value chain, Liang et al. (2016) argued that talent, technology, and logistics are barriers to small B2C enterprises, due to limited resources. Using information technology management (ITM) and cloud computing to automate operations can overcome these obstacles with relatively low investment. Automation will enhance efficiency and competitiveness, thereby creating value for the entire B2C supply chain. Lyu et al. (2014) developed a smart B2C e-commerce system that can be achieved by applying the artificial societies, computational experiments, and parallel systems (ACP) approach which utilises AI generated by computers to analyse and understand customers' interests to enhance system efficacy and customer satisfaction. They argued that the ability of e-commerce to capture,

store, and analyse data to predict the behaviours and decisions of consumers and buyers will be the next key value chain creation in e-commerce (Lyu et al., 2014).

Aziz and Ahmad (2010) studied the Malaysian government-sponsored B2B supply chain integration program using XML-based RosettaNet software and concluded that electronic supply chain integration should not be forced because that would threaten participants. Integrating the B2B supply chain must be clearly valuable and beneficial for its members. Lee and Whang (2001) pointed out that e-business supply chain integration requires information-sharing, synchronisation, workflow coordination, and new business model implementation. The successful functioning of a B2B e-supply chain requires several rapid and complex processes. The web-based supply chain framework proposed by Aziz and Ahmad (2010) has three major elements: interface, integration, and common support. Having an intelligence controller follow the purchase order (PO) and purchase order acknowledgement (POA) should be the main intelligence control for the interface, integration, and common support of the B2B transaction. Aziz and Ahmad (2010) also emphasised the potential infringement issues of the e-supply chain's intellectual property caused by using an electronic exchange without proper legal authorisation. In the platform economy, supply chain value is not derived from the traditional exchange of products and services but through an exchange of knowledge that allows the users to co-create an ecosystem that transforms a supply chain into a value chain network (Meiszner, 2017).

I was unable to find applicable case studies that used action research to successfully transform an e-supply chain into an e-value chain. According to Yücesan (2016), a supply chain is an ecosystem consisting of independent organisations with no clear hierarchical structure; creating an e-value chain could be a long-term effort. A practitioner would be unlikely to gain support and rally actions for change without suitable benchmarks to effectively improve the e-supply chain performance.

2.3.6 B2B2C Supply Chain Performance

Yin et al. (2011) developed an analytical and mathematical model to calculate the cost–benefit analysis (CBA) of supply chain performance. Tobin's q, which is calculated using the formula of q = market value / (total assets – total liabilities), can be a useful tool to evaluate supply chain performance (Zong, 2005). Wang et al. (2017) used transaction costs, including regulatory, logistical, and tariff costs, to measure the supply chain performance of cross-border e-commerce. Although cross-border B2B2C has lower tariff costs compared to B2B, logistical costs are much higher, due to online consumers' expectation of speedy deliveries. While the reduced cross-border e-commerce combination tariff offers clear benefits to consumers, the benefits for small businesses have yet to be confirmed by researchers.

In addition to a CBA, Yu and Khushalani (2013) of KPMG asserted that long-term value is more important. They argued that the supply chain should be shifted from cost-cutting to value-based and that companies should focus on core value creation and innovation rather than cost reduction and revenue enhancement. Critical actions include automating procurement procedures with software and data technology, improving efficiency through streamline simplification, and controlling risks.

Fink (2006) suggested using corporate management performance (CMP) to measure the performance of an e-commerce company. He proposed breaking down the operation of an e-commerce company into six operational variables for an enterprise performance evaluation: visitor relationship management (VRM), B2B, B2C, customer relationship management (CRM), electronic procurement (EP), and ERP. Among these, VRM, B2B, B2C, and CRM are external performance variables, while EP and ERP are internal. Fink (2006) explained that e-business enterprise performance could be measured through B2B activities and efficiency and effectiveness operations. VRM measures how a website attracts customers;

CRM looks at using a customer database to manage the customer relationship; EP addresses the information technology required to automate procurement; and ERP focuses on using software to integrate organisational resources. According to Fink (2006), three crucial elements are applicable for measuring B2C supply chain effectiveness: reduction in delivery time, volume of service requests met and resolved over the web platform, and order fulfilment satisfaction. He further argued that it is not practical to develop matrices that can integrate value and functionality, and that the researcher can develop different generic theoretical models to break down various companies' value assessments. For example, cost is more sensitive in B2B, but order delivery time is more highly valued in B2C.

For the purposes of my action research, I disagree with Fink's (2006) assumption that it is not practical to develop a matrix to integrate value and functionality. As a scholarly practitioner, I believe a framework or matrix should be developed to identify the obstacles and objectives. The cost, efficiency, and value could be integrated with functionalities in a table. These measurements should include both qualitative and quantitative elements that are meaningful for stakeholders.

2.3.7 B2B and B2C Supply Chain Finance

Ma and Li (2011) suggested that the data and logistics flows must be analysed to understand e-commerce supply chain finance. Additionally, the innovative B2B finance method is different from conventional trade finance programs. Preeminent e-commerce companies, such as Alibaba and Treasure Islands, have introduced digital credit to help SMEs attain working capital for their online orders. There are two innovative types of supply chain financing: electronic warehouse receipt financing and electronic order financing. Electronic warehouse receipt financing helps SMEs use third-party warehouses to secure asset-based loans against their inventories or receivables. Alternatively, for smaller sellers without any

assets on hand, Alibaba provides electronic order financing, in which sellers can leverage Alibaba orders to obtain financing from traditional banks, and third-party lenders can verify online orders for credit consideration. Yu et al. (2013) noted that Alibaba has developed e-commerce financial services for its B2B, B2C, and C2C transactions. The e-finance service offered by Alibaba has helped many small and micro-companies attain credit to buy or sell on its platforms. Yu et al. (2013) predicted that the B2C e-finance service would outgrow B2B in China due to cloud computing and the big data revolution. Appendix 1 is a sample of Alibaba's electronic order to LHG.

According to a *Global Finance* survey (Singh, 2018), the line between B2B and B2C finance is blurry, and many services have been merging. Sonny Singh, the senior vice president of Oracle's Global Finance Service, noted that from the bank's data exchange perspective B2B and B2C are very similar transactions. Banks would require a deeper understanding of the digital transactions to distinguish them. Liang and Xu (2012) claimed that there are two major types of financial services for e-commerce: B2B, in which credit is given by the business within an e-commerce platform, and public-to-business (P2B), in which the credit evaluation is performed by the e-commerce platform but the loan is provided by an external public lender. They identified three Internet financing methods using cloud computing technology: third-party payment, crowdfunding, and people-to-people (P2P) loans. Third-party payment sites, such as PayPal and Alipay, provide loans that traditional banks do not. Crowdfunding platforms, such as Kickstarter and Indiegogo, can help startups raise seed capital and fund their projects through public donations or investments. P2P funding services, such as Prosper and LendingClub, can evaluate credit applications to provide small unsecured loans for individuals and consumers.

2.3.8 Alibaba's B2B and B2C Business Models

According to LHG's management, Alibaba is its biggest customer. Therefore, it is important to understand Alibaba's B2B, B2C, and B2B2C models. Clark (2016) argued that Alibaba's financial breakthrough was a result of its CEO Jack Ma's strategy to expand from B2B to B2C (Taobao), to defeat eBay in the Chinese B2C market. Taobao was able to establish trust between buyers and sellers quickly, by using faxes to secure payments made by buyers for prompt delivery decisions. Meanwhile, eBay was unable to set up a credit system since there was no credit card or PayPal type of secure payment mechanism for online transactions in China (Clark, 2016).

In 2017, Tmall, a subsidiary of Alibaba, had 69 percent of the B2C market share in China, while JD had 19 percent (Xu and Li, 2017). Alibaba has proclaimed itself to be China's largest e-retailer, achieving unprecedented gross merchandise volume (GMV) over USD 25 billion in one day, November 11, 2017 (Carson, 2017). Wu et al. (2016) found two factors that had contributed to Alibaba's success: value migration and a synergistic IT platform. Wu et al. (2016) argued that value migration is Alibaba's underpinning operational principle, driving its internal and external resources synergistically to capture 95 percent of asynchronous data. The SWOT analysis report of Alibaba by Bhasin (2017) noted that the strength of Alibaba lies in its presence throughout the ecosystem (wholesale, retail, warehouse, logistics, and supply chain finance), and in leveraging its use of cloud computing to deliver PaaS to its small Bs. Ironically, such an end-to-end solution has enabled counterfeit sellers (Schuman and Ho, 2015). Conversely, Alibaba's main competitor, JD, is a vertically integrated company, owning its inventory, warehouses, data, and distribution, which has also achieved an impressive USD 11 billion sales in a day (Carson, 2017).

2.3.9 Empirical Studies on B2B2C in the Chinese Context

Despite the success of domestic platforms such as Alibaba and JD, cross-border e-commerce (CBEC) is not an easy business to attempt to enter for foreign companies in the Chinese B2B2C markets, due to the complexity of the Chinese context. Although there is a lack of empirical studies investigating how a small business can deal with platforms' complexities to develop a CBEC system (Wang et al., 2017), it is important for LHG to understand the complexity of CBEC in China. This sub-section discusses the empirical studies that are relevant to the Chinese CBEC context, including market, logistics, tariffs, and cultural complexities.

Yu et al. (2019) noted that Chinese CBEC is a unique market, which has multilateral, ambiguous, and time-sensitive characteristics. They found that reputation is the biggest barrier to CBEC in China, and that payment security and timely delivery are also major hurdles. Therefore, a CBEC business seeking to compete in China should innovate its marketing strategy, automate its logistics process, shorten Customs clearance, improve payment security, and hedge the currency exchange rate. They argued that China is where CBEC opportunities and risks co-exist, and that foreign companies seeking to enter China should consider transforming their models from B2C to B2B2C to resolve local contextual issues.

Wang et al. (2018) noted that the logistical elements of CBEC consist of warehousing, sorting, packaging, and shipping, with offshore and bonded warehouses common solutions in China. Supply chain technology adoption increases the difficulty of CBEC logistical processes. The complexities of cross-border supply chain management include collaboration, channel distribution, and operation outsourcing. CBEC firms must consider plasticity, precision, and speed when planning their logistical solutions. Liu et al. (2015) noted that the

main logistics hurdles in China are inadequate policies, poor knowledge development, insufficient infrastructure, and deficiency of cross-border third-party logistics (3PL) companies. They suggested CBEC firms should form strategic alliances, adopt offshore warehouses, collaborate with 3PLs, and study the Chinese laws and policies to develop cross-border infrastructure. Chinese tax rules are overly complex and constantly evolving, particularly in CBEC imports. Ran (2018) noted that a significant difference exists between the C2C postal tax and the B2B general import tax rate, on the same items sold for less than RMB 2000. For example, an item sold by C2C will be charged only 10% postal tax, compared to 32% if sold by B2B (tariff rate of 15% and value-added tax of 17%). To evade the high tariff, importers often split a large shipment into single postal articles to qualify for C2C's lower rate. Ran (2018) argued that the intention of the new tariff was to promote B2B2C imports and effectively curb C2C postal activities, incentivising Chinese consumers to buy from bonded CBEC operators. Ran (2018) also argued that, compared to other CBEC models, B2B2C can yield higher tariff revenues to Chinese Customs, as well as improving consumer welfare.

Wang et al. (2020) pointed out that information, logistics, and finance are three major workflows that complicate CBEC supply chain relationships in China. The authors suggested that these relationships can be enhanced by trust, commitment, risk mitigation, and customer satisfaction. Shao and Shi (2018) examined the role of trust in the UK–China cross-border trade, and concluded that a framework of trust would need to be established before cross-border knowledge transfer. They argued that B2B2C is more effective than B2B or B2C in cultivating the relationship with Chinese counterparts, which can lead to successful CBEC joint ventures.

Mensah et al. (2020) studied the influence of national culture on the adoption of CBEC. They found that complex social factors, such as power distance, collectivism,

avoidance, and ambiguity, are major barriers for the Chinese to adopt CBEC. The term 'guanxi,' which translates as 'private relationships,' is a unique business context in China, and represents a major obstacle for foreign firms wishing to conduct business in China (Robertson and Athanassiou, 2009). Kaunonen (2013) argued that the way the Chinese embraces professional and personal relationships is unseen in other cultures, and that guanxi could be either an advantage or an obstacle. These recent empirical studies confirm that CBEC phenomena have started to gain attention in Chinese academia, and that B2B2C is an emerging subject of interest. Nonetheless, knowledge of the Chinese B2B2C context is still at an early stage; there remain many unknowns to practitioners and scholars. My research aims to explore deeper into this field.

2.4 The Online Technology Issues of B2B2C

This section examines the literature about technical B2B, B2C, and B2B2C issues.

2.4.1 Web 2.0 and API Technologies

The definition of Web 2.0 is technologically ambiguous. According to Mata and Quesada (2014), Web 2.0 is a social movement rather than a technological innovation. They argued that Web 2.0 has different applications for social networking and in e-commerce, but that the convergence in marketing creates a synergistic effect called social commerce. In contrast to Web 1.0, in which the platform pushes marketing content to its users, Web 2.0 uses the collective intelligence of the public to pull in targeted communities using social media. Collective intelligence is the driver of Web 2.0 e-commerce, and various companies can play their roles and use their expertise virtually. Anwar (2017) asserted that the success of Alibaba can be attributed to Web 2.0 technology which creates advanced and unique shopping experiences for online shoppers. Web 2.0 technology helped Alibaba survive the post-dotcom

crash and emerge as one of the largest B2B platforms in the world. It further enabled Alibaba to launch its powerful B2C sites (Taobao in 2003 and Tmall in 2008). Alibaba also created a technology platform (Alimama), a cloud data service (Aliyun), a 3PL network (Cainiao Network), and a FinTech company (Ant Financial Services). All these services support the success of small businesses on the Alibaba B2B2C platform.

To unify the multisided platform's routines, tools, and protocols, Alibaba developed various APIs for software linkages. During the Singles Day sales period, the company created a data platform called Skynet, which allowed participants to collaborate and reduced transaction costs significantly, thereby enabling businesses to pass savings on to consumers. Alibaba also developed a logistical network called Groundnet, integrating its warehouses and distribution centres with thousands of 3PL companies to deliver orders. To avoid an overwhelming volume of payments crashing computer systems, Alipay and traditional banks in China co-developed a special code to process payments swiftly without requiring the conventional authentication steps to log in and out. Jack Ma, in a speech to Korean students in November 2015 (Pettyfer, 2016), claimed that a "data technology era" was about to begin. According to Ma, DT is quite different from IT. He argued that IT is proprietary information technology, whereas DT emphasises sharing and responsibility.

Open API technology was introduced by eBay and Amazon in the early 2000s. Piao and Han (2010) discussed how the proliferation of Web 2.0 technology allows e-commerce platforms to interact with their users. E-commerce companies, such as Taobao, eBay, and Amazon, have used Web 2.0 infrastructure to construct an Internet-based e-business structure for buyers and sellers to collaborate online. Furthermore, Amazon Web Services (AWS) and Taobao Open Platform (TOP) provide an open API, which allows sellers accessing the platform through the software provided by SaaS to complete online transactions. Different APIs include those of users, shoppers, buyers, traders, retailers, customer services, and

logistics, addressing all aspects of e-commerce activities. They concluded that Web 2.0 and API technologies enable SaaS to grow on Alibaba's and Amazon's platforms, and advocated using an SNS for public relations and promotion.

He et al.'s (2007) research focused on Web 2.0 technologies, including Asynchronous JavaScript and XML (AJAX) and the Really Simple Syndication (RSS) push model for a service-centric SaaS application. They claimed that Web 2.0 enables data and information to be exchanged and shared over the web and that SaaS providers could use it to facilitate B2B enterprise integration (EI). Web 2.0 technology accelerates the interaction between buyers and sellers and makes the supply chain become adaptive and collaborative. In Web 2.0, information flows are shorter and more effective, improving communication between different parties in a supply chain. They proposed using SaaS to build Web 2.0-based EI to promote supply chain integration.

The problem with He et al.'s (2007) suggestion to use Web 2.0 to accelerate supply chain integration is that it assumes that all players will have equal access in the multisided platform's supply chain. As Duch-Brown (2017) pointed out, multisided platforms generally care more about buyers and are reluctant to invest in support for sellers. I believe this inequality increases the platforms' complexity and becomes a barrier for small sellers to be integrated in the e-supply chain. It is important for me to explore other supply chain integrators, which I will discuss in the next section.

2.4.2 Supply Chain Integrators: ERP, WMS, SaaS, and PaaS

Zhao and Li (2013) argued that SaaS, which allows users to access software through the Internet rather than buying the software as a product (SaaP), can help small businesses to quickly establish B2B2C operations, including warehouse and inventory management, logistics, and payment processing. Furthermore, SaaS expertise can provide customer data to

the network sellers. SaaS providers can interact with the assigned platform seller and provide feedback to suppliers and manufacturers for improving their product design and analysing product trends. Zhao and Li (2013) proposed that SaaS providers can help small businesses to integrate data from the network seller's warehouse and inventory management software to increase efficiency in logistical arrangements. Specialising in data management, SaaS providers help clients reduce risk and deepen their understanding of the complex operation of B2B2C. For example, Alisoft, a SaaS provider by Alibaba, can help its clients to manage the risk of Alipay to prevent return or buyback compensation. Guo et al. (2013) asserted that the relationships binding independent software vendors (ISVs) with SaaS and customers are non-linear and therefore should be examined distinct from the classic economic equilibrium theory, which assumes that revenue and cost tend to reach market equilibrium. On the contrary, in a SaaS supply chain, as marginal revenue increases, marginal costs may diminish. Therefore, as the sales volume increases, the supply chain should amplify the benefit of information exchange through the SaaS and ISV. An ISV can efficiently process and analyse data, and SaaS can provide software services to integrate and manage data on the platform. Such integration in the SaaS supply chain could effectively improve the online ecosystem.

Trebilcock (2014) discussed several notable trends in supply chain software: ERP, supply chain planning (SCP), WMS, and transportation management software (TMS). The major challenge is to combine different software into the SCM framework by incorporating ERP, WMS, and TMS in a one-stop solution. According to Trebilcock, SAP, Oracle, and JDA are the top three software providers. Information sharing and data transparency across the supply chain change the shared responsibilities of the members in supply chain execution. Meanwhile, the WMS and ERP are used as supply chain integrators and continue to strengthen the industry.

Huynh and Chu (2016) discussed using SAP proprietary ERP software versus open-source ERP software. ERP can process procurement transactions in a matter of minutes, avoiding a conventional thirty-day process. An ERP system can also reduce transaction costs, shorten lead times, and improve supply chain transparency. Therefore, it is beneficial for businesses to incorporate ERP into the supply chain. They further stated that SAP's domination of the ERP market has been challenged by a few open-source ERP software companies, such as Apache OFBiz, Compiere, Openbravo, and xTuple. These open-source ERP software packages can be low-cost alternatives for SMEs. However, they warned that open-source ERPs are still maturing and have not yet been fully implemented on a mass scale.

The warehouse is an integral part of the supply chain. WMS can provide data intelligence to transform a warehouse from a passive storage facility into a proactive part of SCM (McCrea, 2017). McCrea observed that the new trend in WMS involves incorporating the warehouse control system (WCS) and warehouse execution system (WES) functions together with AI to add value. Additional managerial responsibilities can be assigned to warehouses, such as inventory control and drop shipping. For example, Amazon aims to keep the least possible amount of inventory in its warehouses for the shortest possible period.

Verwijmeren (2004) described the principal anchors of a supply chain management system as ERP systems, WMS, and TMS. However, popular supply chain software products, including EDI, are mainly designed for data exchange, yet lack the AI to integrate dynamics in the supply chain network. ERP is suitable for manufacturing and trading companies to run their inventories and materials; WMS is primarily for warehouses or wholesalers to run their logistics arrangements; and TMS is mainly used by forwarders to arrange and fulfil shipments. Therefore, supply chain engines (SCEs) are an integral part of supply chain software systems for providing information, communication, and management. Verwijmeren

(2004) asserted that an inventory management engine (IME) is a critical engine within a supply chain, which can be implemented across the network system. He argued that dynamics and flexibility are important elements for integration. Thus, different software technologies, such as Java Enterprise, COBRA, and Web service, can be applied to various SCEs.

Yu (2016) suggested two types of e-commerce model: transactional and business service. The transactional model focuses on online transaction-related services, such as Alibaba's selling platform, while the business service model deals with operational tasks that support transactions through various applications. Yu also noted that application service providers (ASPs) could assist SMEs in going online using their expertise in technological platforms to design a solution for integrating ERP, mobile sale system, and WMS for B2C operational tasks. Although B2C is often asynchronous, an integrated ASP increases the synchronisation of data, thereby reducing any apparent business risk. Khatun and Miah (2016) found that few small business owners and managers are sophisticated enough to make strategic technical decisions within the rapidly changing B2C environment. For them, it comes down to whether to outsource or internalise their operations. Therefore, it is imperative to internally develop a decision support system (DSS) to assist small business owners and managers in making strategic decisions for their supply chain growth.

Mata and Quesada (2014) defined three different models in the Web 2.0 ecosystem: PaaS, SaaP, and SaaS. They noted that most Web 1.0 sites are SaaP, focusing on driving Internet traffic and volume, while Web 2.0 sites are SaaS platforms emphasising network effectiveness. Web 1.0 e-commerce sites use a client–server SaaP for operating software on local computers, while SaaS uses cloud computing, allowing multiple users to collaborate online. SaaP can create a stand-alone selling page; it is a simple IT solution, mainly to store and present information. In the SaaS model, the software vendor provides a flexible service that can interact with other systems, such as Amazon Webstore. Mata and Quesada asserted

that mega-e-commerce companies, such as Amazon and Alibaba, are using Web 2.0 technology to enrich their platform services, upgrading from SaaS to PaaS modes for buyers and sellers to trade.

Thau (2014) observed that most B2B2C marketplace platforms operate in both B2B and B2C modes. For example, Alibaba and Amazon operate simultaneously in all e-business modes. Although these e-business modes have different philosophies and target customers, they can share the same selling pages. However, Thau (2014) argued that it is unfair for the platform itself to compete with the merchants in the same system. The Japanese online retailer Rakuten is shifting from B2B to B2B2C in order to achieve a fairer and more ethical practice. With its recent acquisitions of Buy.com and Webgistix, Rakuten is redefining the borderless B2B2C between Japan and the US.

Researchers and businesses have debated SaaP versus SaaS. SaaS is stored on the provider's central server for cloud computing, and licensed users can access the software through the Internet. Conversely, SaaP software is sold as a product and stored on local computers on the client side. Sehlhorst (2008) argued that the SaaS model is superior to the SaaP model, due to the high ownership, infrastructure, update, and maintenance costs of SaaP. Wang and LeBlanc (2016) asserted that neither SaaS nor SaaP is a perfect solution, and proposed a hybrid model – Web in Dew (WiD) – which uses Dew4 computing technology to merge SaaP and SaaS models into one open, flexible model. Wang and LeBlanc explained that Dew computing is different from cloud computing and that the software can be accessed via a Dew site as well as via a website. For example, http://www.salesforce.com is the website for Salesforce's SaaS platform, and http://mmm.salesforce.com provides Dew access.

[4] Dew computing is an information technology that combines cloud computing with end devices such as PCs or smartphones.

Since it has compatible interfaces, both platforms can be synchronised and updated periodically. Therefore, the WiD model is a complementary system to SaaP and SaaS; it is more flexible for users, allowing them to collaborate on both systems (Wang and LeBlanc, 2016).

Wiengartena et al. (2015) examined e-business applications within e-supply chain structures. The e-business application facilitates upstream and downstream supply chain integration, adding value to it. Examining it from a resource-based contingency perspective, Wiengartena et al. developed a quantitative model to measure the regressions among e-business applications, supply chain integration, and financial performance by host countries' regulatory quality. Based on the data collected from 637 companies in different countries, Wiengartena et al. concluded that e-business efficacy, supply chain integration, profitability, and the regulatory environment are positively correlated.

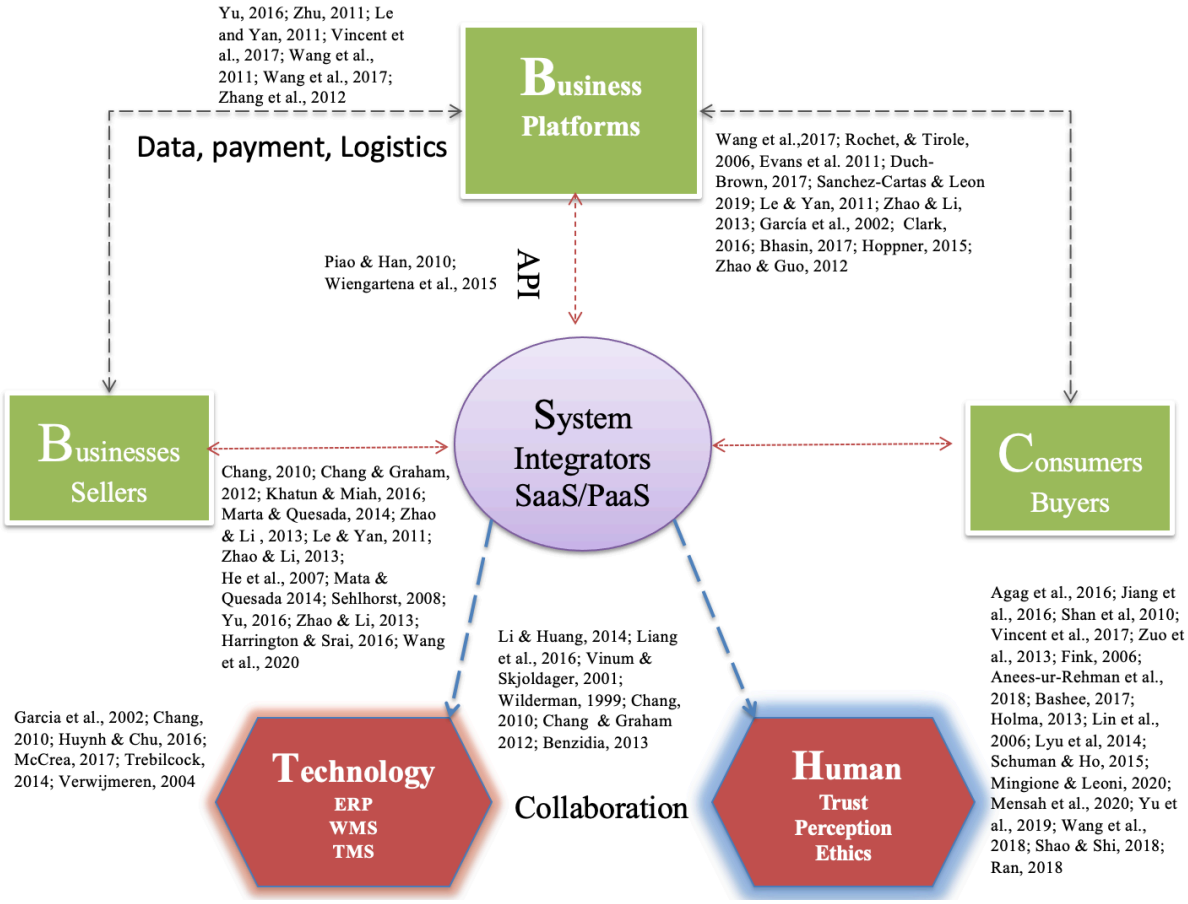
Aziz and Ahmad (2010) noted that the extension of e-commerce is ubiquitous commerce (u-commerce). U-commerce mobile technology increases human-agent interaction with data processing on mobile devices because it enables ubiquitous input of more intelligence. Furthermore, the authors suggested combining u-commerce with SaaS, which allows users to access the system from any location, thereby increasing the learning frequency and facilitating integration.

Although ERP, WMS, SaaS, and PaaS are effective technical integrators, there is no suitable framework to help me understand the linkages to formulate an action plan for the development of a B2B2C network. In addition, human factors, such as trust and collaboration, also need to be considered as integrators. For this reason, for my action research I will have to further examine the literature in order to develop a conceptual framework that is easy for me and the participants to understand.

2.5 The Platform–System–Technology–Human Conceptual Framework

During the literature review process, I found meaningful problem domains to tackle the obstacles and barriers to the company's growth. This knowledge refined my research, allowing me to focus on the tangible and intangible factors hindering LHG's B2B2C system development, and led me to think critically about how my action research could disentangle LHG's inability dilemma. The integration of an e-supply chain is a rather sophisticated project, with online and offline system synchronisations requiring heavy investment and technical expertise. Reflecting on the multisided platform and e-supply chain theories, I developed a platform–system–technology–human (PSTH) conceptual framework, illustrated in Figure 2.3, as the theoretical blueprint of my action research. It is a useful map for linking the scholarly theories with business practices. In the framework, system integrators (SaaS/PaaS) are the key catalysts for developing a B2B2C system that tackles the complex platform barriers. The framework integrates the technical requirements and strategic planning needed to collaborate and cope with the B2B2C platforms. The PSTH framework identifies problem domains that can facilitate LHG's development from B2B to B2B2C by combining technical integration and human collaboration. The literature illustrates that e-supply chain integration could be outsourced to a technical platform (PaaS or SaaS). However, it needs supporting elements to be sustainable. The four action theme domains of the framework are platform, system, technology adoption, and human factors. I have also listed in the figure the literature related to each action theme. Based on the framework, the domains are interrelated and must function as a network.

Figure 2.3 The PSTH Conceptual Framework



2.6 Key Perspectives and Debates Related to B2B2C

B2B2C is a fairly recent business phenomenon. The literature related to B2B2C includes various interpretations from different perspectives. I critically examined the existing literature, extracted the key debates surrounding B2B2C, and carefully selected my theoretical positions that could guide me into my action cycles for developing a B2B2C system with my participants. These positions must be based on actionable knowledge, and easy for my participants to comprehend. Drawing from my literature review, I summarised five major debates, including single-sided versus multi-sided platforms, internalising versus outsourcing solutions, system integration versus key innovation, direct and indirect

relationships, and cost-based versus value-based performance. Below is a summary of the key debates and my preferred positions based on my preunderstanding of LHG's practice-based problem.

1. Single-sided versus Multi-sided Platforms

The debate of the platform theories relates to single-sided versus multi-sided platforms. Evans and Schmalensee (2007) and Meiszner (2017) argued that the multi-sided market can create better value due to knowledge-sharing on multi-user platforms. However, Weyl (2010) argued that multi-sided platforms are fragmentised due to network effects. Duch-Brown (2017) was concerned about the platforms' inequality, favouring the buyers' needs and discriminating against the sellers. Examining the context of B2B2C business, it was apparent to me that B2B2C is dominated by multi-sided platforms.

2. Internalising versus Outsourcing Solutions

The debates on technology adoption include the pros and cons of internalising versus outsourcing data chain operations. Khatun and Miah (2016) argued that business owners and managers are capable of making good decisions on whether to outsource or internalise their operations. Le and Yan (2011) preferred the co-sharing platforms, whilst García et al. (2002) argued that companies can build up a B2B2C system by integrating B2B and B2C databases themselves. Liang et al. (2016) and Verwijmeren (2004) suggested that companies should use ERP or WMS as a system integrator to automate their systems. On the other hand, Zhao and Guo (2012) and Zhao and Li (2013) preferred to outsource B2B2C operations to outside experts such as SaaS and 3PL providers. Considering LHG's resources, capacity, and knowledge, I selected the outsourcing strategy for practical purposes.

3. System Integration versus Key Innovation

Lee and Whang (2001) advocated the use of e-business applications to integrate the supply chain. Zhao and Li (2013) and Guo et al. (2013) argued that a SaaS integration method is

more beneficial than a key innovation approach. Conversely, Zhang et al. (2012) argued that a firm integrating the marketing, technology, warehouse, and logistical functionalities is overleveraged without a key innovation and core competency.

4. Direct and Indirect Relationships

The debate surrounding buyer–seller relationships is focused on direct versus indirect relationships. Agag et al. (2016) noted that buyer perception of seller ethics (BPSE) is the most critical factor in a virtual transaction. However, this interpretation is based on a linear buyer–seller relationship. Conversely, Holma (2014) noted that, in a B2B2C supply chain, the buyer–seller relationship is indirect and triadic. Meiszner (2017) also pointed out that the multi-sided market's supply chain is a dynamic relationship web. In this debate, I agree with Meiszner (2017) that, in the B2B2C supply chain, the relationship between buyers and sellers is indirect.

5. Cost-based Versus Value-based

There are two different perspectives to evaluate B2B2C enterprise performance: cost-based versus value-based. Wang et al.'s (2017) empirical study on cross-border B2B2C focused mainly on consumer welfare in terms of transaction cost reductions. Yin et al. (2011) also suggested the use of cost-based analysis (CBA) to measure supply chain performance. In contrast, Yücesan (2016) advocated value-based management (VBM) to examine enterprise performance. Fink (2006) argued that cost is more sensitive in B2B but order delivery time is more highly valued in B2C, and suggested that e-businesses' enterprise performance be evaluated using corporate management performance (CMP), which includes tangible and intangible factors of VRM, B2B, B2C, CRM, EP, and ERP. In this cost-versus-value debate, I selected value-based analysis as my preferred theoretical position for measuring LHG's enterprise performance.

2.7 Conclusion

I found that there is a lack of empirical studies investigating how a small business can deal with the platforms' complexity to develop a CBEC system. Most of the cross-border research seeks to explore B2B2C transaction cost reduction and consumer welfare (Wang et al., 2017). My literature review focused on creating a PSTH conceptual framework (Figure 2.3) that can lead to the development of an actionable framework for LHG to manage cross-border B2B2C complexity problems. Considering the action cycle timeframe of this research, I strategically weighted more heavily the major technological and operational devices of B2B2C development that are suitable for a pilot run, such as SaaS and SCI. The human factors, such as trust and ethics, were not ignored, but served as the minor devices to extend my understanding of complex cross-border B2B2C in the Chinese context.

To illustrate the key perspectives of the B2B2C-related literature, I created Table 2.1, Key Perspectives and Debates Related to B2B2C, justifying the theoretical positions that I applied in the action cycles to align with my research goals and objectives.

Table 2.1 Key Perspectives and Debates Related to B2B2C

Key Perspectives	Debates	Main Literature	My Positions
Platforms	Single-sided vs. Multi-sided Platforms	Weyl (2010); Duch-Brown (2017) vs. Evans & Schmalensee (2007); Meiszner (2017)	Multi-sided Platforms
System Integrator	Internalising vs. Outsourcing	García et al, (2002); Verwijmeren (2004); Liang et al. (2016) vs. Zhao & Guo (2012); Zhao & Li (2013); Le & Yan (2011)	Co-sharing
Technology Adoption	Integration vs. Innovation	Lee & Whang (2001); Zhao & Li (2013); Guo et al. (2013) vs. Zhang et al. (2012); Yu et al. (2019); Gou et al. (2020)	Integration
Human Factors	Direct vs. Indirect Relationships	Agag et al. (2016) vs. Holma (2014); Meiszner (2017)	Indirect Relationship
Enterprise Performance	Cost-based vs. Value-based	Wang et al. (2017); Yin et al. (2011) vs. Yücesan (2016); Fink (2006)	Value-Based

To simplify the content- and context-related complexity of potential B2B2C systems, I selected the development of an actionable framework: multi-sided platforms interpretation, outsourcing strategy, supply chain integration, indirect buyer–seller relationship, and value-based performance. From the key debates, I understood that B2B2C should be a complicated multi-sided platform comprising indirect buyer–seller relationships. I believe that, for LHG to tackle the content-related and context-related complexities and transform itself from B2B to B2B2C, the company should study how to integrate its supply chain by outsourcing its digital transformation to third-party experts in order to rapidly adopt technology, improve knowledge-sharing, and cultivate relationships in the Chinese CBEC context, to form an e-value chain.

Through this literature review, I developed a comprehensive model to solve B2B2C problems. The literature review has allowed me to identify actionable knowledge in the existing literature to turn the digital threats of B2B2C into a realisable business opportunity for LHG. To conclude, this literature review has allowed me to understand the complex practice-based business problem, and helped me to formulate a conceptual framework.

Chapter 3 – Research Design

3.1 Introduction

I applied action research in a case study to examine the company's issues, to untangle its operational obstacles and to develop its technical capacity, and to motivate the organisation's members for change. It was essential for me as a practitioner/researcher to understand my epistemological position as one of four main paradigms: strong positivism, positivism, social constructionism, or strong constructionism (Easterby-Smith et al., 2012). I selected social constructionism as my epistemological position because my choice of research method was participatory action research (PAR). Because my thesis was a case study, the research methods adopted were qualitative. Specifically, the research methods were interviews and semi-structured discussions over a period of six months, aiming to identify performance improvement suggestions using the new B2B2C system.

An action researcher's initiatives should be contextual, in which relationships and interventions are the essential elements. An outsider could probe the logistical, operational, and technical issues, but the abstract and ambiguous human factors are much better observed and understood through internal research (Moore, 2007; Woodside and Baxter, 2013). To justify my role as a participatory action researcher, I followed Moore's (2007) notion that all actions should be contextual and that only someone involved in the company has a sufficiently deep understanding of the social, cultural, and informal structures of an organisation to conduct research actions.

Action research should entail systematic thinking and paying attention to issues of power. First-person inquiry is more appropriate for action research, especially when group politics are involved (Marshall, 2016). Rigg and Trehan (2008) warned us that, in cross-border B2B2C supply chains, many differences can exist among stakeholders. However, these differences can be reconciled using action learning set mechanisms. Effective insider action research should have a well-defined topic, a structured learning scheme, and clear

objectives (Roth et al., 2007). To facilitate members' trust in the collaboration, I strategically formed action learning sets (Revans, 1991) in my action cycles. The first step in forming an action learning set is for the researcher to purposefully select participants who are key decision-makers to the organisation (Revans, 1991). This chapter discusses the research methods of the thesis, an action research case study designed to resolve LHG's practice-based problem by developing an actionable framework.

Drawing from my research questions and the knowledge gained from the literature review, I had strategically selected a qualitative approach as my research paradigm. My method of data inquiry was a case study. The data collection method included interviews, semi-structured discussions, observations, and documentation. My research modalities were action, exploratory, and appreciative. My action research was participatory insider research using three action cycles to investigate, explore, intervene, and reflect to improve LHG's current supply chain problems. Each action cycle had its own objective with four phases: reflect, plan, act, and observe. Each action cycle continuously produce actionable knowledge for developing a cross-border B2B2C actionable framework. Data collection was an ongoing process that took place in parallel with the actions of each cycle. The primary data was collected from surveys, interviews, and group discussions. Secondary data was collected from the literature review, observation, and documentation. The interviews and group discussions were recorded and transcribed for data analysis, I coded the data in two steps: first, thematic coding, i.e., extracting the codes from the raw data and grouping them into emergent themes; second, axial coding, linking and analysing the relationships between themes. Figure 3.1 illustrates the research design.

Figure 3.1 The Research Design Chart

3.2 The Practice-Based Problem and Research Questions

Drawing from the literature, I developed an understanding of the content-related complexities of cross-border B2B2C, which includes the multi-sided platforms, information-sharing, technological hurdles, CBEC supply chain bottlenecks, indirect buyer–seller relationship, cyber trust, product traceability, workflow synchronisation, and Customs clearance. Combined with the fact that an automated B2B2C system is extremely complex, the digital transformation of LHG's business model was even more challenging. Furthermore, the context-related issues intensified the complexity of LHG's cross-border B2B2C development. For example, the digital transformation needed to occur within the Chinese

context and so was affected by the unique Chinese culture and relationships, multi-dimensional market conditions, and the ambiguity of Chinese tariff rules and regulations. Hindered by these complexities and hurdles and by the high investment and technological learning curve, LHG was unable to develop its own B2B2C business for growth. While there was an opportunity, doing B2B2C business would require LHG to acquire adequate knowledge with which to untangle the content- and context-related complexities and develop an actionable framework. Hence, the practice-based problem I identified was: "Lacking a clear understanding of the complexity of the cross-border B2B2C business in China, LHG was not able to develop an actionable framework for adopting a B2B2C system."

Weill and Woerner (2018, p. 1) noted that 'digital transformation is not about technology; it is about change.' The authors argued that digital disruption can represent a threat or an opportunity for an organisation. An organisation should carefully research a suitable digital business model (DBM) to manage its digital transformation as an opportunity. I followed Weill and Woerner's (2018) approach to tackle my practice-based problem. The research question I developed was: "How can LHG develop a framework for adopting a B2B2C system between the US, China and Taiwan, to realise its cross-border e-commerce opportunities?" To study my research question effectively, I broke it down to three research sub-questions:

RQ1: What is preventing LHG from adopting a B2B2C system?

RQ2: What are the requirements for LHG to adopt a B2B2C system?

RQ3: What are the critical elements and key leverage points of the new B2B2C system?

I incorporated these three RQs as the action inquiries for the action cycles. These action inquiries explored, evaluated, and developed a B2B2C system using PAR (MacDonald, 2012). I used three action cycles in this research; these will be discussed in detail in the following sections.

3.3 My Roles in this Research

I joined LHG in 2017 due to my long-term friendship with the founder and CEO. He approached me in early 2016 about his new venture, a business exporting luxury goods to China. Scepticism prevented me from participating until the Chinese government announced a favourable cross-border e-commerce policy in February 2017. These new regulations motivated me to participate in the startup in the capacity of partner or trade financier. Since then, I have observed the organisation's growth and have advised the CEO on strategic financial planning. We share a common goal of developing LHG to be an efficiently run e-commerce business with lower operational costs, larger transaction volumes, and higher added value to the supply chain.

I agreed with Marshall (2016) that it is not feasible to distinguish inside from outside because action researchers cannot be separated as two entities. I was aware of Coghlan and Brannick's (2014) notion that the explicit and tactical knowledge of someone involved in the company can be advantageous for action but that the insider/outsider role duality is often confused due to the researcher's participation. The authors noted that primary access includes the inside of the organisation while secondary access includes sensitive documents and additional data. For qualitative research, primary access is often granted more easily to someone involved in the company than to an outsider, but this may not be the case for secondary access, because of internal politics and possible conflicts of interest (Coghlan and Brannick, 2014).

In addition to my role as researcher, I also saw myself as an insider with the capacity to initiate actions to change the company. This distinctive combination of qualities provided me with the internal support to collect data from the participants. I first discussed the purpose of my study with the participants, and then, if they agreed to participate, I provided further details about the research. More importantly, it was imperative for me to comply with the

UoL's ethics policy, keeping the participants anonymous and using pseudonyms to protect their identities.

3.4 Action Research Methodology

As an action researcher, it was important for me to understand my research philosophy before the start of the research. In contrast to the positivist approach, which pursues data robustness and objectivity without manipulation, intervention is crucial for action research. Because my research project was a case study focusing on an organisation, my ontological position was nominalism rather than realism, my epistemological position was interpretivism or social constructivism, and my preferred research approach was qualitative. My action research did not attempt to generalise a theory that can close the reverence gap between theory and praxis (Eden and Huxham, 2005). As a scholarly practitioner, I focused on changing LHG through my intervention. The participants were asked the research questions to get their opinions for improvement, which would add value to the research.

As an action researcher, I found it important to be neutral towards all stakeholders and to avoid being trapped in the status quo of the organisation (Moore, 2007). It was my intention to apply my research skills and knowledge to my actions, focusing on a pragmatic method that would meaningfully impact on the organisation. I analysed the work-based problem from interpretivist perspectives, which entailed exploring the cultural, political, and social aspects of the organisation. Action research is a practitioner-oriented approach which allows for a researcher's purposeful participation and strategic intervention (Marshall, 2016). I used the action research results as actionable knowledge that could assist the participants in developing a B2B2C system at LHG. This type of research required significant organisational access and support from senior management to acquire qualitative data. Fortunately, LHG's

CEO and senior members agreed to work with me because they perceived this study as beneficial and contributing to their strategic goals.

3.4.1 Method of Data Inquiry – Case Study

Creswell (2013) suggested five methods of inquiry for qualitative management research: phenomenology, narrative research, ethnography, grounded theory, and case studies. Woodside and Baxter (2013), arguing that extensive knowledge of B2B relationships can only be acquired through emic research, suggested case studies as the best way to study cross-border B2B relationships. They further noted that only an insider involved in the company would be able to understand the complex relationships within a supply chain system. Considering these points, my action research required planning and action strategies on issues that needed to be improved. Therefore, single-case-study PAR was most applicable for my research objective.

To effectively adopt a case study inquiry, I applied the unit of analysis (UOA) method suggested by Yin (2009) for my data analysis, which generates and categorises data for content analysis. A typical UOA can be tangible, such as an individual, group, or organisation, or intangible, such as a social phenomenon, policy, value, or principle. According to Yin (2009), a UOA is a code that can be extracted from participant narratives. It should be tight but meaningful, to allow the readers to appreciate the data robustness of the analysis (Graneheim and Lundman, 2004). Robson (1993) noted that the data could be drawn from specific RQs related to the UOA, ensuring the rigour of a study. I planned to use the key themes that emerged from my data coding as the UOAs to enhance the new B2B2C proposal in my third action cycle.

Yin (2009) noted that it is imperative for a technology-based company to understand whether the most important UOA is a technology, group dynamics, or both. Thus, I examined

my work problem using not only technical but also social and organisational aspects. The change decision should start with the management team, and actions they take should be collaborative, requiring sense-making and storytelling techniques for the management team to work together (Dolan and Bao, 2012). As an action researcher, I communicated flexibly on action inquiries and always explored according to the environmental settings and contextual relationships. I also attempted to be sensitive to the power structure of the supply chain.

3.4.2 Research Modality – Action, Exploration, and Appreciative Inquiries

Research modality is an important element of inquiry effectiveness. Many action research modalities can be considered, such as self-reflective inquiry (Marshall, 2001), where the researcher reflects between inner and outer consciousness; human inquiry (Reason and Rowan, 1981), which contends that cooperative inquiry will promote human welfare; and collaborate inquiry (Heron, 1996), where the researcher is also the initiator who collaborates with participants in the inquiry. Because my design entailed action research, my main research modality was action inquiry (Torbert, 2001), using actions comprising subjectivity, intersubjectivity, and objectivity, all of which allow action researchers to intervene and collect data. Torbert (2001) suggested that action inquiry can help an organisation learn and transform through continuous live actions and movements. Thus, that action inquiry is suitable for an action researcher who is using qualitative data.

In addition to action inquiry, my research modalities were also exploratory and appreciative. Exploratory inquiry involves collecting data through different methods such as observations and interviews (Easterby-Smith et al., 2012). This method of inquiry was suitable because it was compatible with my action inquiry approach and did not assume the solution to the problem of the case study. In action research, the problem and the solution are often ambiguous unless they are further explored through action cycles (Gummesson, 2000).

Similarly, exploratory and action inquiries were a good combination for my case study, which was an evolutionary process that generated new ideas and suggestions for improvement.

Further, I also adopted the appreciative research modality advocated by Bushe (2012), who stated that an appreciative interaction between the researcher and participants often encourages positive collaboration. This style of research is designed to overcome employees' resistance to providing data to researchers. Coghlan and Brannick (2014) also suggested using appreciative inquiry for intra-organisational studies among employees and stakeholders, without detaching from reality in the attempt to achieve objectivity. To overcome the challenges and conflicts caused by my intervention, I applied appreciative enquiry methods (Cooperrider and Srivastva, 1987) such as good storytelling and sense-making (Weick, 1995) techniques in order to motivate participants to support the actions. A researcher's appreciative attitude encourages participants to collaborate. Appreciative inquiry helped participants to accept my engagement and intervention, making it a suitable research modality in addition to action inquiry.

3.4.3 Ethical and Political Considerations – Insider Action Research

A researcher who acts as a leader or a change agent and intervenes in an organisation's operation has several potential pitfalls. Although the aforementioned exploratory and appreciative inquiries were useful modalities for gathering data from my research participants, it was possible that participants might be confused by my role as a scholarly practitioner. Goodpaster (1991) noted that the insider researcher who is involved in the company should be aware of the stakeholder paradox – conflicts that occur between stakeholders and shareholders. Reynolds (1999) suggested that researchers should position themselves lower in the hierarchy to promote collaboration and lead altruistically. An insider

researcher should renegotiate the role tactically by applying political entrepreneurship to gain access, trust, and support from senior managers by guiding them away from a strongman style towards a leaderful organisation. Coghlan and Brannick (2014) asserted that it is essential for a researcher to be sensitive to each member's capacity and capability for change. They noted that political entrepreneurship is an important skill to allow a researcher to obtain suitable access and support from appropriate stakeholders. Sometimes, managers and researchers, under pressure to produce results of profits, fail to uphold their ethical and moral standards (Trevino, 1986). Thus, it was important that I rigorously comply with the policies of the UoL Ethics Committee. To minimise any bias, I encouraged all the participants to communicate openly without fear of serious consequences, in the knowledge that the CEO, board members, and investors had expressed their strong support, understanding that this research was for a noble cause and for the benefit of all stakeholders, and knowing that all data collected would be anonymous.

3.5 Action Research Design

My thesis research design was based on three action cycles. The first problematised LHG's supply chain barriers. The second explored the requirements for tackling the barriers identified. The third drew on the findings of the second, to find the critical elements and key leverage points for creating a B2B2C system proposal. These action cycles were based on the action inquiries that I had absorbed from the literature and related data. Each had its own objectives and obstacles, and I linked them to find new approaches to LHG's supply chain problem. According to Coghlan and Brannick (2014), case study action research can combine data collection, analysis, planning, and action. McKernan (1996) suggested that deliberate action research can promote necessary actions to investigate problematic situations through interlinked action cycles. Following the McKernan (1996) and Coghlan and Brannick (2014)

frameworks, my research design featured three action cycles, each of which included four stages: reflect, plan, act, and observe. The plan and act phases encouraged participants to collaborate, and the reflect and observe phases encouraged them to think critically, evaluate, and plan for the next action.

My action research activities allowed me to experience what Coghlan and Brannick (2014) referred to as a "meta-learning" process. Zuber-Skerritt and Perry (2002) argued that learning experiences occur concurrently: the first is the principal action cycle of construct, plan, act, and evaluate, and the second is the action cycle itself, to uncover the hidden unknowns that are revealed during a learning cycle. Each action cycle unit required the participation of stakeholders, management, consultants, and industry experts. Each action cycle lasted between one and two months.

The purpose of the first action cycle (AC1) was to problematise the LHG business model. I focused on finding issues by scanning the environment and studying the current system's inefficiencies and ineffectiveness through interviews. The second action cycle (AC2) focused on action planning. Specifically, I reviewed the results from AC1 and developed a feasible plan for a B2B2C system, as well as implementing trial testing. The third action cycle (AC3) focused on evaluation, using reflection to identify UOAs for evaluating the work plan with the participants. Through these action cycles, I explored and uncovered specific themes and developed an action plan tailored to LHG's situation in order to generate improvements. I aimed to establish a suitable action plan for LHG to deploy a B2B2C system. I believed this plan would allow the company to increase its operational efficiency and create a value chain.

3.5.1 Sampling Method – Purposeful Sampling

My sampling method – purposeful sampling – was carefully chosen according to the inquiry method. Strauss and Corbin (1990) referred to purposeful sampling as theoretical sampling because it underpins the axial coding for unfolding a notion. They suggested beginning with a homogeneous internal sample of individuals to develop the theoretical framework, followed by a heterogeneous external sample of people outside LHG who are familiar with the business domain to confirm that the theory holds, even under researcher intervention. Strauss and Corbin (1990) suggested that theoretical and purposeful sampling are identical for the case study's inquiry method. Therefore, purposeful sampling was a strategic sampling method allowing me to explore my conceptual framework (Figure 2.3, page 57). I selected specific participants for my action inquiry, including executives, technical experts, consultants, change agents, and decision-makers. Although my sample population was small, I followed Strauss and Corbin's (1990) purposeful sampling method to include both internal LHG and external participants in the different action cycles.

3.5.2 Participants

I planned to recruit participants who were motivated to contribute to the development of a B2B2C system. The criterion for participant selection was to include only the decision-makers and influencers who could affect the operation of LHG. The internal participants included LHG's executives and managers. The external participants included consultants and industry experts who would contribute to the action learning sets. Furthermore, each participant had different responsibilities and expertise which helped me to analyse the data from different perspectives. The sampled participants overlapped because my action inquiry required continuous involvement of the same participants in all three action cycles. I selected

six or seven participants for each action cycle including internal and external members. This sample size allowed me to effectively manage action cycle tasks in a startup organisation. Most participants had experience in cross-border e-commerce, and most were bilingual Asian Americans fluent in both English and Chinese. The internal participants were selected based on their importance to the company and because of their participation in past decision-making teams. External participants had experience in process automation and supply chain integration, and/or cross-border B2B/B2B2C operations. However, due to LHG's financial budget, I could only afford to assign two or three outside consultants or advisors in each action cycle.

My three action cycles required a core project team to carry out the entire process of action research with the benefit of continuity. I used the same management team (one board member, one senior executive, one finance executive, and one operations executive) in all three action cycles, with slight variations in the other internal and the external participants. The seven participants in AC1 were one board member, one senior executive, one finance executive, one operations executive, one manager, and two industry experts. The seven participants in AC2 were one senior executive, one board member, one finance executive, one operations executive, and three industry experts. The six participants in AC3 were one senior executive, one board member, one finance executive, one operations executive, and two industry experts. I followed UoL Ethics Committee policy in dealing with these participants. They had already reviewed the participant information sheet, agreed to participate, and had signed the consent form. I kept all the data I collected from these participants securely in my computer with password protection and in locked cabinets. To protect the participants' privacy, I compiled, summarised, and anonymised the data using a coding system.

My research participants were "CC,"[5] a senior executive and a board member of LHG, responsible for sales and marketing operations; "PH," a board member of LHG, responsible for corporate finance and finding strategic partners in Taiwan and China; "JY," an executive responsible for running the US B2B and B2B2C operations, including buying, warehousing, and logistics; "JW," an executive responsible for trade finance, cash flow, and B2B and B2B2C operations in Taiwan; "BZ," a former manager of LHG, now working for a major B2B2C operator in Shanghai that specialises in collaborative merchandising and marketing with major selling platforms in China, a B2B and B2B2C expert with hands-on experience selling luxury goods to EMP platforms such as Tmall and JD; and "SX," a manager at LHG, responsible for B2B and B2B2C selling to Chinese EMP platforms in the US.

Participants from outside LHG also contributed to this research. The first external participant was "AC," a senior executive of a major B2B2C operator in Taiwan and China, experienced in working with SaaS, having developed a SaaS system specialised for Taiwan–China cross-border transactions; he was working as a consultant for LHG. His company developed an effective B2B2C system with Red, a leading Chinese SaaS provider, Internet influencer, and key opinion leader (KOL) platform. In 2017, Red established a cross-border 3PL service called Redelivery to enable seamless B2B2C e-commerce for its small seller clients. AC was considered to be the leading industrial expert in cross-border B2B2C by his peers in Taiwan. The second external participant was "WC," a former senior executive of China Data of Taiwan and an expert in big data security and exchange as well as supply chain automation and integration technology. The third participant was "WJ," a senior executive of

[5] To comply with UoL's ethics requirements that all participants should be kept anonymous for their privacy and protection, all participants are coded using fictitious names with two-letter codes.

ZBRT, a major B2B and B2B2C supply chain company in China. ZBRT had handled over RMB 10 billion in supply chain management for its Chinese clients over the previous five years. WJ was extremely knowledgeable about supply chain management, Chinese Customs regulations and policies, and China–US cross-border e-commerce, and also had a good grounding in how Amazon and other EMP platforms work. WJ worked as an advisor to LHG.

3.5.3 Data Collection Methods – Interviews, Discussions, and Observations

According to Creswell (2013), data collection is an organised activity that includes scouting sites, recruiting participants, gaining access and support, resolving problems at sites, and gathering, recording and safekeeping data. Creswell suggested five data collection methods: narrative study, phenomenology, grounded theory, case study, and ethnography, within which a variety of techniques may be used (e.g. extracting data from narrative study, documents, interviews, observations, or artefacts). Easterby-Smith et al. (2012) discussed different methods of qualitative inquiry for various types of management research, noting that the choice of data collection method depends on the research design, role, and nature of the qualitative data. For the case study method, Yin (2009) suggested that an insider researcher should be thoughtful while considering ways to collect data in a case study. From a methodological perspective, the data collected must answer the research objective, which was how to realise LHG's cross-border B2B2C e-commerce business opportunities. Marshall (2016) noted that action researchers must pay attention to organisational politics when accessing qualitative data. Qualitative data collection demands diligent work in the field, performing data analysis while drilling down tremendous amounts of data to a few themes. The data collection method should be sensitive to the specific issues of each action cycle.

I used questionnaire interviews in AC1, held semi-structured discussions in AC2, and conducted interviews and semi-structured discussions in AC3. I used the Internet to conduct

interviews, if face-to-face interviews proved not to be possible (Lee, 2000). Additionally, I followed Yin's (2009) recommendation to collect information from documents and observations, travelling to LHG's sites in Los Angeles, Taipei, Shenzhen, and Shanghai for meetings, discussions, and interviews. I used an audio recording device or tool to record interviews and discussions, but the audio was not used to expose participants' identities. The Voice Memo smartphone app was a useful and convenient tool. I communicated with my participants if any ethical issues or conflicts of interest arose in the field. To ensure data privacy, I filed and stored the data in secure, private, and password-protected computers. I stored any documents collected from the field in a locked cabinet.

Another consideration was how to design suitable interview questions. I followed Creswell's (2013) suggestion to develop four or five key elements that would answer my research questions. In AC1, I developed the interview questions through a literature review and my research questions. The main themes of my interview questions were, first, to explore participants' views on LHG's strengths and weaknesses; second, to investigate the technological, operational, and organisational requirements and challenges for developing a B2B2C system; and, third, to identify the barriers for LHG to develop its B2B2C system.

AC2 employed appreciative inquiry (Bushe, 2012). This technique allowed the AC2 participants to collaborate and freely exchange ideas and opinions. To avoid serious conflicts, the researcher may initiate debates intentionally (Joni and Beyer, 2009), and I guided the arguments among the participants to avoid personal biases. An action researcher can act as a manager by stimulating the participants' minds (Peddler, 2008). I used semi-structured discussions to promote collaborative learning among the group members in AC2 to deploy a trial-run B2B2C system.

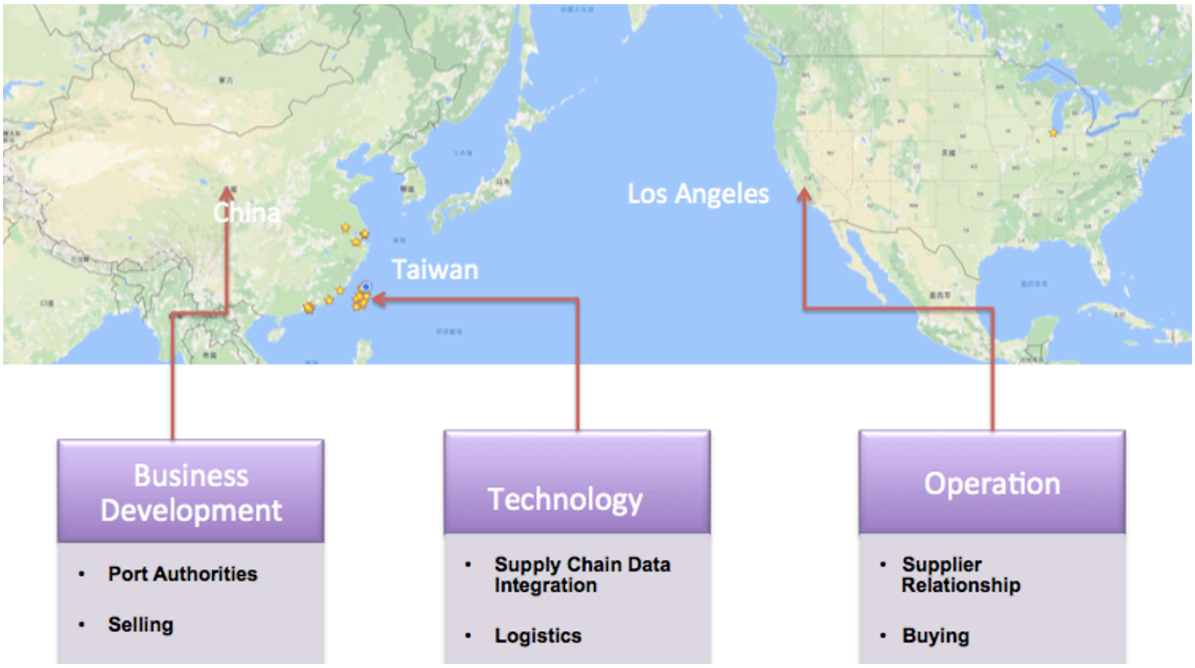
In AC3, I led the participants to think critically about the outcomes of AC1 and AC2. To effectively discuss the new B2B2C plan, I applied a technique of diffusing knowledge

through collaborative reflections among team members through semi-structured group discussions (Simon and Pauchant, 2000).

3.5.4 Internet Data Collection

I used Internet data to overcome the distances between myself and the participants (see Figure 3.2 for the locations of the participants). In AC1, I used social media as my tool to communicate with candidates about the purpose and benefits of the research; I intended to build up the trust of participants using this tool. Many scholars such as Lee (2000) and Peltola and Mäkinen (2014) have agreed that applicable Internet data sources for empirical studies include email surveys, online discussion groups, web-based interviews, and social media. Although I was not able to see the interviewees' reactions the way I would have been able to in face-to-face interviews, this technique has several advantages. The Internet is an unobtrusive tool for collecting data that allows for deeper reflection on topics in addition to saving costs. Social media platforms such as Facebook, Twitter, WeChat, and LinkedIn enable researchers to communicate with much broader populations than conventional methods. Such apps are also seamless ways to resolve language barriers and cultivate mutual trust. Web 2.0 stimulates organisational collaboration and enhances knowledge-sharing, and may also promote organisational learning capacity. In AC2, in addition to my field trips and on-site participation, I used WeChat to communicate with the participants. Researchers have concluded that using social media as a communication tool could improve the efficiency of new project development (Creswell, 2013; Evans et al., 2015; Easterby-Smith et al., 2012; Lee, 2000; Peltola and Mäkinen, 2014).

Figure 3.2 LHG Cross-Border Operation Geographical Spread



3.5.5 Data Analysis

I used thematic coding (Gibbs, 2018) as my primary coding method and axial coding (Easterby-Smith et al., 2012) as my secondary method. In each action cycle, I scanned the data manually to attain a general idea of my data and the repeating themes as part of my critical thinking process. Thematic coding is a popular qualitative data analysis method that allows researchers to extract codes from the repeating words or phrases and identify codes that might be linked by a common theme. It is crucial to perform a systematic search to exhaust each theme or coding category to improve the robustness of the analysed data (Easterby-Smith et al., 2012). Bree and Gallagher (2016) noted that there are two levels of thematic data analysis: descriptive analysis, which entails organising, indexing, arranging, and systematising data semantically, and interpretative analysis, which delves deeper into the themes' underlying and latent meanings and internal relationships.

I collated the emergent codes into themes, thereby establishing a manageable data scheme from the massive amount of raw data, coding commonly appearing words. The significance of the codes was based on the frequencies with which they appeared in the research participants' responses during the study, and I grouped similar codes into common themes for analysis. Braun and Clarke (2006) noted that thematic analysis represents a useful way of identifying, analysing, and reporting patterns from the data, arguing that the patterns are the themes that researchers should analyse.

My three research questions entailed exploring what was preventing the company from adopting a B2B2C system, its action plan for tackling the barriers to adopting a B2B2C system, and the requirements, critical elements and leverage points of the new B2B2C system. For my action research design, it was important for me to identify the actionable themes that are significantly related to the research questions, and the actionable themes that could be considered CSFs (Chang, 2010).

In AC3, I used axial coding (Easterby-Smith et al., 2012) to explore the relationships among the various actionable themes. Braun and Clarke (2006) considered this axial coding as a step in reviewing the themes for finding the thematic relationships connecting various codes. In terms of the method of axial data coding, I favoured Strauss and Corbin's (1990) open-axial-select coding over Charmaz's (2006) liberal and open coding approach, which allows the data to emerge and be linked to the theory. Charmaz's coding method was not suitable because it involves theoretical presumptions, similar to the hypothesising process of statistical testing. I believe the codes in qualitative research should emerge from the data without presumptions or hypotheses.

Another reason I preferred axial coding was its consistency with purposeful sampling. Strauss and Corbin (1990) referred to purposeful sampling as a theoretical action. Using purposeful sampling allowed me to select participants strategically for my research objective.

They suggested beginning with a homogeneous/internal sample and then, after initially developing the theoretical model, analysing it comparatively with a heterogeneous/external sample to reaffirm the settings, both contextual and intervening, under which the theoretical model holds true. I used a conceptual framework drawn from my literature review (Figure 2.3, page 57) as my theoretical model to reflect the final AC3 draft plan.

In each of my three action cycles, the homogeneous sample included internal members of LHG (a board member, and two or three executives) and the heterogeneous sample included external experts. I developed an action plan based on the collected data and compared it with external experts' data to confirm my plan. In my action research design, I created codes from data analysis commencing with initial data collection in AC1. I created action themes relating to the barriers from the second data collection in AC2. In AC3, I analysed the relationships among these action themes. I also reflected these action themes within my PSTH conceptual framework (Figure 2.3, page 57) for critical evaluation.

Barzeley and Jackson (2013) argued that qualitative data coding software (QDCS) enables the use of data stored in computers, and that it is beneficial for qualitative researchers. There are several popular QDCS packages, such as NVivo by QSR International and Atlas.ti, designed for analysing large amounts of qualitative data (Bree and Gallagher, 2016). However, most QDCS packages are expensive. Some academic work, such as that of Bree and Gallagher (2016) and Bree et al. (2014), has relied upon the Microsoft Office suite, including Word and Excel, as cost-effective tools for multilingual qualitative case study data analysis. Because my sample size was relatively small, I chose not to use QDCS for my data analysis. Instead, I opted to use Microsoft Excel. It is cost-efficient qualitative data analysis software that does not have a steep learning curve and allowed me to transcribe and store my data, perform thematic and axial coding, and search for and identify codes quickly and accurately.

To ensure rigorous data analysis and increase the validity and reliability of my findings, I followed Bree and Gallagher (2016) and Braun and Clarke (2006) in using Microsoft Word and Excel to perform thematic coding and analysis. Microsoft Word is a widely used program that is compatible with most of the languages in which I collected data. I first transcribed the data or transferred them to Word files, and then copied and pasted them to Excel worksheets. According to Braun and Clarke (2006), there are six phases for analysing the data: data familiarisation, generating codes, searching for themes, reviewing themes, assigning themes, and producing reports.

The first phase, data familiarisation, involved transcribing the text files from the raw data into Word files; I read and highlighted the files to generate preliminary ideas about the data. In this phase, my plan was to avoid the redundancy of data entry and separate my own narratives by using italics for the participants' data. The next step, generating initial codes, involved migrating the data from Word to Excel and systematically coding the entire dataset. I entered each comment into a separate worksheet cell, and grouped and collated the relevant data into the same code column. Next, searching for themes involved an inductive approach that would allow themes to emerge from the codes. I ensured that the relevant codes were grouped into suitable possible themes, and colour-coded each code and theme in Excel for easy identification. The next step involved reviewing the themes in relation to the Excel coding system and creating a thematic map for analysis. It was important to check themes against the codes and the entire dataset to reveal the themes' underlying meanings and implications. Consequently, defining and naming the themes involved using ongoing analyses to select the best names for themes from similar codes, and refining the names of the themes to improve the analyses. Data collected in Chinese or Taiwanese Mandarin was coded in the original language before being translated and transcribed by me into English. The final step in the data analysis, producing the report, involved reflecting on the findings of my

research questions. I aligned my themes with the conceptual framework of my literature review, generating an academic report of the analysis. In the report, I created an axial coding diagram to compare it with the thematic map. Furthermore, I transcribed the AC1 interview data and the recorded data from AC2 and AC3 from audio files into Word files, later coding the data into Excel worksheets for analysis.

3.5.6 Limitations of the Research Methods

In this purpose-driven action research, I did not aim to create a theory that can be generalised. Rather, I intended to explore a specific practice-based problem faced by LHG. However, I understood there were several limitations of my research methods. First, my research design was based on a single case study, and limited to a particular content and context. Second, there were some underlying challenges associated with applying action research in an organisation, including the researcher's presumptions, and the interventions which could be disruptive and risky. Third, the insider–outsider role duality which could be confusing to the participants. Fourth, the drawback of qualitative data coding and analysis; the interpretation of the data might be subjective and biased. Fifth, the research design adopted a purposeful sampling method; the participants were strategically selected because they were decision-makers and change agents. Sixth, the sample size was small due to the small size of the organisation.

To improve the robustness, triangulation was required to enhance the reliability of the data. To further strengthen my research methods, I designed a pilot study in action cycle 2 to improve the validity and reliability of my action research. The scope and timeframe of the trial run were limited; however, it provided invaluable data for LHG's future development.

3.6 Action Cycle Design Summary

The aim of my action cycles was to investigate the practice-based problem and to further understand the content- and context-related complexities in order to develop a B2B2C framework. I designed these action cycles based on my conceptual framework, theoretical positions, and research questions and methods. I strategised the actions to tackle the content- and context-related barriers. I conducted a pilot to trial-run a B2B2C system. I collected the trial-run data and analysed the results. I formulated a plan to overcome LHG's inaction dilemma. I analysed LHG's current problems, challenges, and capacities in creating a suitable B2B2C framework.

Table 3.1 summarises my proposed action research design, illustrating the three action cycles and the main planned tasks and actions in each of four phases: reflect, plan, act, and observe. Each cell in the table represents a different task based on required activities in the action cycle. The structure of this summary table is based on my RQs. The tasks and actions in the table are divided into four sections, and each will be thoroughly discussed. Each action cycle lasted two months. The participants in the action cycles included six or seven members of the organisation, both internal and external. Each action cycle was designed to link to the next for continuous project development. Overall, my research design strategy was to understand the barriers preventing LHG from adopting a B2B2C system in AC1; to explore actionable themes to tackle these barriers in AC2; and to evaluate these actionable themes and select critical elements to create a system network for LHG's future deployment of its B2B2C system in AC3.

Table 3.1 Action Cycle Design Table

	Action Cycle 1	Action Cycle 2	Action Cycle 3
Objectives	Problematisation: environmental scan and data collection	Action: B2B2C planning	Reflection: propose a B2B2C system
Timeline	Months 1–2	Months 3–4	Months 5–6
Participants	1. PH, a board member 2. CC, a senior executive 3. JY, an executive of operations 4. JW, an executive of finance 5. SX, a manager 6. BZ, an expert/consultant 7. WC, an expert/consultant	1. PH, a board member 2. CC, a senior executive 3. JY, an executive of operations 4. JW, an executive of finance 5.WC, an expert/consultant 6. AC, a SaaS expert 7. WJ, an expert/consultant	1. PH, a board member 2. CC, a senior executive 3. JY, an executive of operations 4. JW, an executive of finance 5. BZ, an expert/consultant 6. AC, a SaaS expert
Reflect	1. Absorb the rules and regulations of cross-border B2B2C system. 2. Explore opportunities for enhancing LHG's cross-border business. 3. Explore available resources to enhance cross-border supply chain performance. 4. Reflect on LHG's current limitations in developing B2B2C supply chain.	1. Communicate with the project team about results of AC1. 2. Identify key themes (UOAs) from AC1. 3. Identify problems observed in AC1.	1. Identify any issues arising from trial-run testing of the new B2B2C network system. 2. Reflect management perspectives on how to measure the performance of the B2B2C supply chain. 3. Review industrial actions with LHG's trial-run results.
Plan	1. Conduct systematic research on literature about cross-border B2B2C systems to develop content of the interview questionnaire. 2. Contact internal and external participants who are employees/consultants/advisors of the LHG team for questionnaire interviews. 3. Create an interview questionnaire that is suitable for the internal and external participants. 4. Design data collection procedures and forms for the questionnaire interviews. 5. Develop data coding and analysis methods to investigate potential problems and obstacles to LHG's development of B2B2C operation.	1. Plan project timeline. 2. Draft B2B2C network system with the project team. 3. Redraft B2B2C network system. Put it to a trial run for 10 days. 4. Ask for opinions from external consultants in B2B2C industry. 5. Present illustration of the B2B2C plan to LHG senior management. 6. Obtain feedback from LHG senior management before fully implementing B2B2C among LHG, suppliers, and customers. 7. Select project leaders and a SaaS provider to help develop B2B2C supply chain. 8. Hire B2B2C consultants and select WMS and ERP software and technologies. Alternatively, communicate with a SaaS provider about possibly setting up a B2B2C system. 9. Appoint project team members.	1. Analyse the data collected through interviews, observations, and discussions with consultants and SaaS operators. 2. Evaluate the CEO's strategic plan and vision. 3. Evaluate B2B2C trial results with project team/management. 4. Evaluate B2B2C consultants, software, and technologies. 5. Plan feedback session on potential effects on operational efficiencies and financial performance. 6. Adjust internal operational tactics and business strategy to meet operational targets.
Act	1. Finalise content of the interview questionnaire, and ensure it meets ethical requirements. 2. Email interview questionnaire to the participants, including funder, board members, senior staff, consultants, and industry experts. 3. Collect data from interview questionnaires. 4. Collect data from academic and industrial articles. 5. Perform data coding to extract initial codes. 5. Conduct thematic coding to find emergent codes related to the work-based problem. 6. Conduct a SWOT analysis based upon the extracted codes. 7. Identify the work-based problem.	1. Collect data from group discussions and make notes on first draft of B2B2C system. 2. Discuss learning notes from SWOT analysis. 3. Determine integrators of B2B2C supply chain integration. 4. Discuss notes from second draft of B2B2C system. 5. Collect data from trial-run test for new B2B2C system. 6. Analyse data from trial-run test with the project team before developing final proposal to deploy B2B2C system.	1. Discuss potential implementation of the new B2B2C system. 2. Collect data from the participants from the post-trial-run meetings. 3. Evaluate potential trial-run impacts on cost and operational efficiency. 4. Collaborate with third parties to develop API linkage to the PaaS of EMP platform. 5. Propose the new B2B2C system.
Observe	1. Analyse data collected from the interview questionnaires. 2. Compare vision and focus of LHG to those of the industry. 3. Explore the starting point to develop LHG US–China B2B2C system.	1. Analyse data gathered from semi-structured discussions during AC2. 2. Refine starting point for AC3.	

The implementation details and results of the three action cycles will be discussed in the next chapter.

Chapter 4 – Findings

4.1 Introduction

This chapter discusses the results of the action cycles. Each action cycle was designed to help the participants explore and work collaboratively. My goal was to acquire the reliable and valid data that could meaningfully answer my research questions. To achieve this goal, I examined the organisational context at the outset, to position the findings within the context of this particular case study. LHG is a California startup engaged in CBEC to China. The company wished to capture the B2B2C opportunity demanded by its EMP customers in China. The content-related complexity preventing LHG from growing its business from B2B to B2B2C included CBEC supply chain collaboration, consumer welfare, trust and traceability, and operational and logistical obstacles. Such transformation required LHG to adopt data technology, automate its operation, integrate its supply chain, and improve its logistical efficiency. Furthermore, LHG's B2B2C development project was especially challenging given that its digital transformation was placed in the context of China. In order to turn LHG's digital threat into a realisable opportunity, drawing from the literature review I developed a PSTH conceptual framework and key theoretical positions (including the multi-sided platforms, integration, outsourcing, indirect relationship, and value-based performance) to strategise my action cycles.

4.2 Action Cycles' Objectives and Expectations

I took on the roles of a leader and a member of the learning group in the action cycles. In AC1, I used an interview questionnaire method and conducted a SWOT analysis to understand the nature of the problem. In AC2, I initiated a B2B2C trial run to extract the data and explore feasible solutions. In AC3, I analysed the data to generate the key themes to act as my critical elements (Chang, 2010) for developing a B2B2C system proposal. In contrast to Chang's (2010) findings about the Taiwanese OEM/ODM industry, ICT adoption was the

CSF for a B2B supply chain. I had discussed more subtle issues beyond just the integration and adoption of technology such as WMS and ERP.

4.2.1 Action Cycle 1 – Problematisation

The objective of action cycle 1 (AC1) was problem-oriented. The duration of AC1 was scheduled to be two months. In the planning stage, I planned my action inquiry for collecting qualitative data from the participants for problematisation. Because the participants' locations were geographically disparate, the preferred inquiry method was interviews through questionnaires sent via email. In the event that I did not receive satisfactory responses from participants in my interviews, I followed up either face-to-face, by telephone, or online. The primary tasks at this stage were to conduct systematic research on cross-border B2B2C systems to develop interview questions that were appropriate for the internal and external participants; to plan the data collection procedures; to hold interviews; and to conduct the data coding and analysis to investigate the barriers to developing a B2B2C operation for LHG.

In the action phase, I emailed the interview questionnaires to the participants; collected the responses; followed up with telephone calls or text messages to clarify and confirm responses, where necessary; conducted thematic coding to find emergent codes related to the work-based problem and compare participants' responses; and created a SWOT analysis chart to identify issues emerging from the collected data.

In the observation phase, I reviewed the AC1 outcomes, specifically analysing the interview responses and comparing LHG's vision and focus against those of its industry, communicating with the senior management about the work-based problem, and exploring the beginning of the next action cycle.

4.2.2 Action Cycle 2 – Trial-Run Action

In action cycle 2 (AC2), my objective was action-oriented. AC2 was planned to last two months. I investigated participants' differing views about the problem and analysed the data to explore the possible actions that could feasibly be adopted. I also compared these actions and examined them further with the literature, in accordance with my belief that the actions needed to be realistic based on the company's resources.

In the reflection phase, I aimed to understand the possible implications of AC1 to plan for the action in AC2. It was crucial to link the first and second action cycles to reflect the continuous evolution of my action research. The activities in this phase included communicating with the B2B2C project team about the AC1 results to create awareness and consensus among the team members; exploring the root causes of the work-based problem observed in AC1; and identifying key themes (UOAs) with the team members from AC1.

In the planning phase, I formulated a plan based on group discussions with the participants. The tasks included planning the B2B2C project timeline, which needed to fit into the thesis timeframe and allow the organisation to deal with the action requirements, and drafting a B2B2C adoption plan based on data gathered from AC2 group meetings and discussions. As the action learning set leader, I coached the team members to collaboratively draft the B2B2C deployment plan; redrafted the plan; ran a trial on a small scale for about ten days to ensure its feasibility without serious risks to the organisation or its personnel (Benzidia, 2013); collected data from the trial run and analysed them for subsequent action; gained approval from the B2B2C industry experts to confirm that the plan met the industry standards and could be implemented by the organisation; presented the plan to senior LHG management; gathered their opinions from meetings and discussions; and gained approval from LHG senior management before implementing the B2B2C system. I knew it was

important for the team members to understand the plan and to desire to collaborate. I selected project leaders, assigned responsibilities, and evaluated the costs of hiring B2B2C consultants and of purchasing WMS and ERP software and technologies. I also communicated with SaaS companies about possibly establishing the B2B2C network. If the internal build-up cost became too high or the learning curve became too steep, LHG could outsource to a third-party SaaS provider. A suitable SaaS platform should have the capacity to automate supply chain transactions with API linkages to the Chinese Customs e-gateway and major EMP platforms. I also worked with LHG's senior management to allocate the leadership of the cross-border B2B2C project team to internal and external members for future implementation.

In the action phase, I developed a suitable B2B2C preliminary plan that integrated the supply chain using the data collected from internal and external participants and performed a trial run to see if it would be workable for LHG before formulating a final draft of the plan. The first task in this phase involved collecting data by conducting and participating in meetings and semi-structured discussions and taking notes on the first draft of the B2B2C system, focusing on SaaS adoption for process automation and supply chain integration. I used audio recording devices or the Voice Memo smartphone application to record the discussions. These recordings were transcribed into Microsoft Word files and translated from Chinese into English where necessary. I also collected data from the notes from the SWOT analysis of AC2; determined UOAs from the data that were actionable themes for examining the feasibility of the B2B2C plan; and discussed the notes from the second draft of the B2B2C plan to ensure that all supply chain members were willing to collaborate with one another. I then conducted a trial run for a period of ten days via a SaaS provider and collected data from the participants about the results of the trial run. Finally, I analysed the results of

the trial run with the project team members before developing a second draft plan for the B2B2C system.

In the observation phase, I analysed the trial-run data and compared them with the existing B2B system in order to understand the level of efficiency achieved from the B2B2C trial run. My primary tasks were to analyse the data gathered from group discussions, meetings, and interviews during this action cycle and to define the starting point for AC3.

4.2.3 Action Cycle 3 – Reflection

In action cycle 3 (AC3), I reflected on the trial run conducted in AC2. AC3 was planned to last for two months. The participants and I examined the knowledge created through the research activities of AC1 and AC2. Overall, I expected to provide comprehensive information by examining whether the plan created in AC2 represented the most effective B2B2C system for LHG to adopt.

In the reflection stage, I evaluated the AC2 second draft plan to assess its feasibility, suitability, and actionability. The related tasks were to identify any new issues arising from the trial run of the new B2B2C network system, such as system bugs, deficiencies, or conflicts; to understand the management expectations for B2B2C supply chain performance; and to review B2B2C industry standards alongside the results of the AC2 trial-run pilot.

In the planning phase, I evaluated participant feedback before presenting a proposal for the management to consider. The related tasks included analysing data collected from the discussions with external consultants and SaaS operators; evaluating the top management's strategy and its alignment with the action plan; evaluating the B2B2C trial-run results with the management and project team; understanding the results and their implications; planning a feedback session on potential effects on operation efficiencies and cost savings; and

adjusting internal operational tactics as well as the business strategy to meet operational targets.

In the action phase, I conducted interviews and semi-structured discussions to collect data and collaborated to develop a workable proposal for the new B2B2C system with the participants. The tasks included discussing with the participants the potential implementation of the new B2B2C system; collecting data from B2B2C post-trial-run meetings; interviewing the senior executive and collecting data from group discussions to ascertain the feasibility of adopting the draft B2B2C plan; evaluating the potential financial performance and efficiencies of the draft B2B2C plan; interviewing the SaaS operators, 3PL providers, and consultants to develop API linkages to the major platforms; and proposing the future deployment plan for the B2B2C network system.

The focus of the observation phase of AC3 was to answer my third research sub-question (RQ3): "What are the critical elements and key leverage points of the new B2B2C system?" The task was to analyse the data collected from the post-trial meetings and discussions on cost savings and enterprise performance achieved.

In AC3, I intended to find factors that could be used to evaluate the feasibility of the action plans resulting from the group decision made in AC2. Based on the conceptual framework in Figure 2.3 (page 57), it was necessary to understand the major themes emerging from my coding process as CSFs to evaluate the feasibility and effectiveness of the action plans. Chang (2010) advocated the use of CSFs to achieve B2B e-supply chain management integration, and noted that ICT adoption is one of the most significant CSFs for Taiwanese OEM and ODM. In contrast, scholars including Zuo et al. (2013) and Shan et al. (2010) examined human influences including the cognitive, behavioural, physiological, and social aspects of e-commerce. Human characteristics such as trust, security, ease of use, care, quality, credibility, and perception, as well as the relationships between buyers and sellers,

are all believed to be key success factors for supply chain collaboration. I planned to identify two types of critical element for my analysis in AC3, one group based on ICT factors (Chang, 2010) and the other on human engineer factors (Zuo et al., 2013).

4.2.4 Action Learning Set

Peddler (2008) and Revans (1991) noted that the method of action learning is to create a learning set which enables the set members to understand the problem and learn through real-time interactions. Raelin (2011) encouraged collaborative leadership through action learning sets. In my case study, I created a small action learning set (Revans, 1991) with my participants for each AC and applied double-loop learning (Argyris, 1994) to facilitate discussions and dialogues with my action group members. The aim was to help the set members establish a sense of ownership that worked for them. According to Holmes (2008), the researcher and expert participants should be set facilitators, and need to avoid personal bias and create an environment whereby members are challenged to develop their skills. In this research, I aimed to act as a facilitator to lead the discussions. Each AC was an action learning set, including participants with different interests. I conducted semi-structured discussions with the participants within each AC to promote action learning. The discussions included on-site group meetings and online chat groups in which participants at different locations could participate.

4.2.5 Expectation from Action Cycle Activities

By executing the activities of my three action cycles, I believed that my action research methodology should be sufficient to address my research sub-questions:

RQ1: What is preventing LHG from adopting a B2B2C system?

RQ2: What are the requirements for LHG to adopt a B2B2C system?

RQ3: What are the critical elements and key leverage points of the new B2B2C system?

I planned to answer these three research sub-questions using three action cycles, each cycle comprising a unique action inquiry. Moreover, through the action cycles, the participants and I could develop a plan for the LHG supply chain network. The goal was to overcome the inability dilemma and develop a feasible and applicable B2B2C plan that could be implemented in the post-thesis stage.

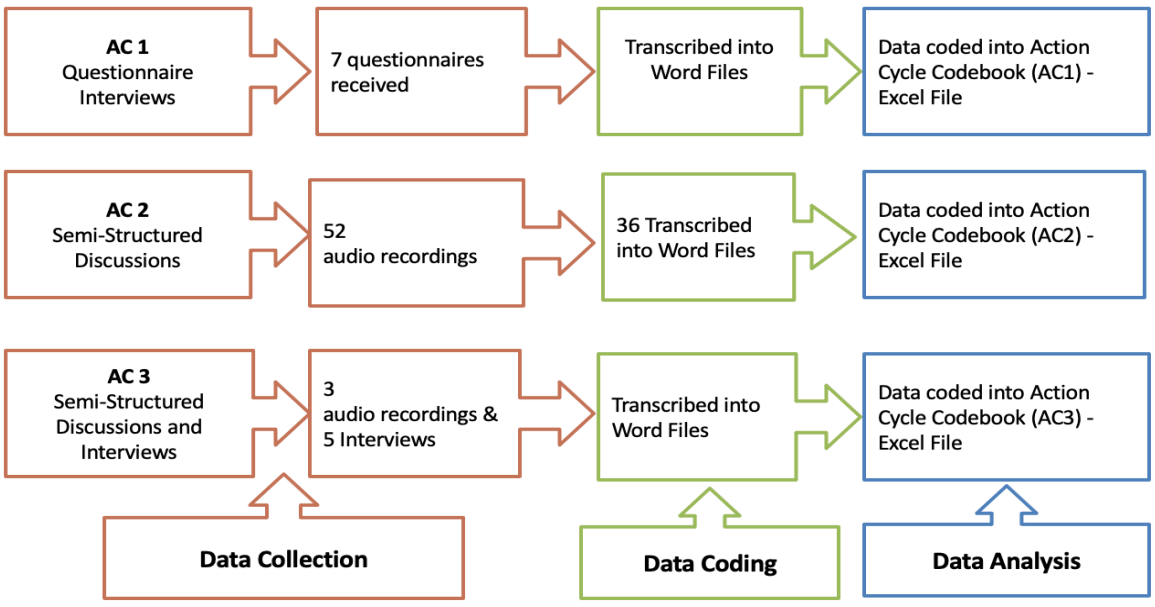
4.3 Data Validity and Reliability

O'Connor and Gibson (2003) noted that research methods should be used to enhance the acquisition of accurate data that reflects the reality; that is, measuring variables or outcomes that were intended to be measured. To improve the validity of my research, I followed O'Connor and Gibson's (2003) guidance. First, I used various methods to triangulate my data collection to improve its rigorousness. Multiple inquiry methods were used to collect data, such as interviews, semi-structured discussions, and field observations, providing different means to collect data for triangulation. Second, I used multiple data sources to improve validity. During my interviews and group discussions, I observed and obtained field notes from multiple participants. I used these field notes to check whether the narratives truly reflected the thoughts and emotions of the participants. In addition to my field notes, I used industry-specific articles, government documents, and academic literature to analyse the data. I examined the participants' statements in the interviews and discussions to ensure their consistency. Third, I compared data from various participants to identify any inconsistencies or discrepancies. Fourth, I checked the participants' expressions and meanings from the data in their original languages to ensure that the content of the data had been accurately translated (O'Connor and Gibson, 2003). I investigated the true meanings of the words, terms, and phrases used during the interviews, discussions, and observations. As a researcher, the

transcription and translation of the original audio recordings must remain true to the original meaning; the English translations of the codes and themes should match the meanings in their original languages. For example, *Yi-Jian-Dai-Fa* (YJDF) and *San-Dan-Dui-Peng* (SDDP) are important Chinese terms in cross-border e-commerce relating to Chinese Customs regulations, that have not yet been formally translated into English.

In AC1, I collected my data using interview questionnaires (Appendix 2); seven questionnaires were completed. In AC2, I made audio recordings of the semi-structured group discussions; 52 audio recordings were collected. In AC3, I made audio recordings of the semi-structured discussions and used interview questionnaires; three audio recordings and five interview questionnaires were collected. These audio recording files were stored on my personal computers; passwords were used to protect the participants' identities. All documents, observation images, and field notes were kept secure in my notebooks and stored in a locked cabinet. Figure 4.1 summarises my data arrangements in the three action cycles.

Figure 4.1 Summary Chart of Action Cycle Data Arrangements



O'Connor and Gibson (2003) stated that it is imperative to analyse data systematically and consistently in order to maintain its validity. I used Braun and Clarke's (2006) six-phase thematic analysis system to maintain the integrity of the data throughout the data analysis processes, which included recording, transcribing, translating, coding, and analysing. I also examined the outliers in the findings to ensure that I did not overlook any valuable data containing important information or even "game-changers." For example, some participants referred to O&O, which denotes online and offline marketing. An O&O operator uses both retail outlets and online platforms to sell its products, a very popular strategy in China. Several participants mentioned this term while describing the trend, but I deliberately ruled it out since it was outside the scope of my research questions. Appendix 3 contains thematic coding sheet samples as per Braun and Clarke's (2006) method.

4.4 Action Cycle 1 – What is Preventing the Company from Adopting a B2B2C System?

4.4.1 Introduction

In AC1, my goal was to problematise LHG's issues and understand the barriers preventing LHG from developing a B2B2C system. I had selected seven participants, and I used an interview questionnaire method to collect data, as discussed in Chapter 3. I had identified the barriers by analysing the interview data through a SWOT analysis. The AC1 data analysis indicated that most of the participants believed B2B2C to be a great business opportunity for LHG, but the data also indicated that they lacked the understanding to develop a B2B2C system. The data collected was based on three categories (technological, operational, and organisational) related to the B2B2C requirements.

4.4.2 Conceptual Framework and Problem Domains

In the AC1 reflection phase, I focused on the literature and industry-specific articles to identify notions that could aid my preunderstanding of the problem. I drew on my PSTH conceptual framework as elaborated in Figure 2.3. I extracted my theoretical problem domains as set out in Table 4.1.

Table 4.1 Problem Domain Summary

Domains	Main Notions	Relevant Literature
Platforms	Multisided Markets, Multisided Platforms, EMP Platforms, E-Commerce, B2B, B2C, B2B2C, PaaS, Alibaba	Wang et al., 2017; Rochet and Tirole, 2006, Evans et al., 2011; Duch-Brown, 2017; Sanchez-Cartas and Leon, 2019; Le and Yan, 2011; Zhao and Li, 2013; García et al., 2002; Clark, 2016; Bhasin, 2017; Hoppner, 2015; Zhao and Guo, 2012
System Integration	Supply Chain Integration, SCM, IOIS, SaaS, SaaP, PaaS, API, Logistics, Transaction Cost, Delivery Time	Chang, 2010; Chang and Graham, 2012; Khatun and Miah, 2016; Mata and Quesada, 2014; Zhao and Li, 2013; Le and Yan, 2011; He et al., 2007; Sehlhorst, 2008; Yu, 2016; Piao and Han, 2010; Wiengartena et al., 2015; Harrington and Srai, 2016; Wang et al., 2020
Technology Adoption	Process Automation, ICT, WMS, ERP, TMS, Web 2.0, EDI, Data Transparency, Cloud Computing, ACP, Supply Chain Effectiveness	García et al., 2002; Chang, 2010; Huynh and Chu, 2016; McCrea, 2017; Trebilcock, 2014; Verwijmeren, 2004; Yu, 2016; Zhu, 2011; Le and Yan, 2011; Liang et al., 2016; Lyu et al., 2014
Human Factors	Trust, Security, Ease of Use, Care, Ethics, Perception, Quality, Traceability, Creditability, Relationship, Digital Credit, Branding, Chinese Context	Agag et al., 2016; Jiang et al., 2016; Shan et al., 2010; Vincent et al., 2017; Zuo et al., 2013; Fink, 2006; Anees-ur-Rehman et al., 2018; Bashee, 2017; Holma, 2014; Lin et al., 2006; Lyu et al., 2014; Schuman and Ho, 2015; Mingione and Leoni, 2020; Mensah et al., 2020; Yu et al., 2019; Wang et al., 2018; Shao and Shi, 2018; Ran, 2018
Value Creation	Supply Chain Collaboration, S-Commerce, C-commerce, Communications, Social Networking, Value Chain, Ecosystem, VBM, CMP, Long-Tail Strategy	Li and Huang, 2014; Liang et al., 2016; Vinum and Skjoldager, 2001; Wilderman, 1999; Chang, 2010; Chang and Graham, 2012; Benzidia, 2013; Yücesan, 2016; Meiszner, 2017; Anderson, 2003; Lyu et al., 2014; Fink, 2006; Gou et al., 2020

These five problem domains formed the theoretical outlook for planning my action research. In the AC1 planning phase, I developed questions based upon my preunderstanding of these domains. I created a questionnaire to interview the participants (Appendix 2). Some of my questions were designed to conduct a SWOT analysis by asking participants about their views on LHG's strengths, weaknesses, opportunities, and threats. In the AC1 action phase, I emailed the questionnaire to all the participants and collected the data from the answers in the questionnaires.

4.4.3 Understanding the Terrain – An Initial SWOT Analysis

The aim of this SWOT analysis was to understand the participants' perceptions of the barriers to the company's pursuit of the B2B2C opportunity. The SWOT analysis was designed to help the participants understand my research objectives and lead them to spell out their own challenges. Using my interview questions, I had collected qualitative data that captured the perspectives of the participants. Despite the participants' differing views, most of them worried about the high risks associated with cross-border B2B trades. Nevertheless, they realised that LHG lacked the knowhow required to develop a B2B2C system. Through the study, I intended to recognise the barriers from the participants' viewpoints. Although they had very different perspectives, I was able to appreciate the differences and categorise the results into strengths (S), weaknesses (W), opportunities (O), and threats (T). The thematic analysis is presented in the following sections.

4.4.3.1 Strengths

When the participants were asked about LHG's strengths, most of them answered that LHG's strength lies in its ability in procuring and sourcing products. Some participants mentioned

that LHG had stable inventories, strong supplier relationships, and good financial resources. Examples of the data collected from participants are listed below:

"Our core strength is the procurement capacity for sourcing the products of the well-known luxury brands." **(PH)**
"We have competitive product-sourcing ability . . . we can purchase directly from the sources . . . we have local presences with both suppliers and customers." **(CC)**
"Strong relationship with current suppliers, good financial resources." **(JY)**
"We provide our clients with versatile brand products and multiple SKUs [Stock Keeping Units], we have stable supplies to meet clients' needs . . . we have sufficient inventory all the time to ensure a steady supply for our clients' seasonal or impromptu needs." **(JW)**

4.4.3.2 Weaknesses

The weaknesses identified from the data included lack of official distributorship and value-added service, problems with internal finance and management controls, and issues with external supplier relationships. Examples of the data collected from participants are listed below:

"There is no direct contact with the brands." **(JY)**
"Because LHG is not an authorised distributor for these brands, this is an unprotected distribution with huge transaction risks." **(BZ)**
"Because we are just moving the overseas vendors' goods into China, it is not a value-added service and it is highly unstable." **(PH)**
"We have to increase our financial capacity to sustain our growth." **(PH)**

"The ups and downs of the B2B cash flow due to the highly concentrated clients." **(JW)**
"Lacked operation management control." **(CC)**
"The after-sales system is ineffective." **(JW)**

4.4.3.3 Opportunities

Participants had two types of responses to questions about LHG's opportunities: some thought LHG would be better off staying in B2B business while others strongly believed that LHG should expand into B2B2C business. Additionally, some participants suggested that LHG should take the opportunity to negotiate with the brands for authorised online distributorships. Examples of the data collected from participants are listed below:

"The ability to attain B2B orders from the major e-retailers of China." **(PH)**
"The anti-counterfeit policies and the increasing demands of Chinese consumers were favourable to LHG's growth." **(JW)**
"Using orders to become authorised agents of the light luxury brands." **(SX)**
"We should leverage the order volume for LHG to obtain the distributorship from the brands." **(BZ)**
"Because current Chinese e-commerce business models are changing, we started funding the business developments in new e-commerce models, such as S2B2C [supplier-to-business-to-consumer] and B2B2C, to position us as a supplier on the e-supply chain." **(CC)**
"Instead of focusing on the existing e-commerce business, we are also seeking for S2B2C through social media portals." **(JY)**

4.4.3.4 Threats

Several threats emerged from the data, mainly about the political and economic risks involved in managing cross-border trades. Another major threat mentioned by all participants was the grey area of online distributorship and authorised relationships with their luxury brand suppliers. Examples of the data collected from the participants are listed below:

"B2B is capital-intense, low-margin and high-transactional-risk." **(BZ)**
"Border protectionism creates an unstable cross-border business environment." **(JW)**
"The biggest threat to us is the instability of the Chinese currency exchange rate." **(CC)**
"Returned merchandise in China is difficult to ship back to the US or to resell in China." **(JY)**
"We are not an authorised distributor in the territory where we are selling. This is a major problem, that we are not protected." **(PH)**
"Ambiguous relationship with the suppliers." **(BZ)**

4.4.4 Action – Problematisation

Following the SWOT questions, I initiated another action to obtain participants' opinions on the B2B2C system requirements (questions 11 to 13) and challenges (questions 14 to 16). Appendix 2 is the interview questionnaire. To simplify the inability dilemma, I divided it into three categories of questions (organisational, operational, and technical), based upon the actionable theme domains and my preunderstanding. Organisational questions are those pertaining to human resources, managerial, and culture-related issues; operational questions

address transactional, logistical, and operational systems; technical questions pertain to technology, software, and hardware.

4.4.4.1 Organisational Issues

Participants were asked "What are the organisational requirements for LHG to meet in order to develop the B2B2C system further?" The answers suggested a mixed view. The senior and finance executives preferred to build a team from within LHG. Conversely, the board member, advisor, and manager preferred outsourcing the system to third parties. LHG had to resolve this outsourcing-versus-internalising dilemma before they could move forward. Examples of data collected from the participants are listed below:

"Appointing designated staff in charge of operating the program on B2B2C system." **(CC)**
"A lead person to coordinate and provide guidance to the B2B2C department." **(JY)**
"Need to build a professional team to run the B2B2C and YJDF[6]." **(JW)**
"LHG already established a Taiwan entity and is seeking the cooperation of 886, which is a well-known e-commerce platform. Collaborating with 886, LHG could gain the instant capability to perform YJDF and B2B2C shipping of the products into Chinese cities." **(PH)**
"The B2B2C system is available now; we only need to select and outsource the logistics operation." **(BZ)**
"Nowadays, the B2B2C system is complete and mature – just need to find a good service provider." **(SX)**

[6] YJDF (in Chinese pronounced Yi Jian Dai Fa, 一件代發) is the term defined by Chinese Customs for the cross-border consumer drop-shipping of items that could qualify for a lower tariff.

My follow-up question asked participants what organisational challenges they could predict for LHG. Through this question I intended to understand the participants' interpretations of their organisational biases. Most of the participants emphasised the need for more staff training. Furthermore, the word "trust" also emerged as a code from the staffing issue. Agag et al.'s (2016) research about a B2B2C supply chain explained that trust could be a major problem in an organisation, and could lead to the failure of a B2B2C supply chain collaboration. As Churchman (1967) pointed out, mistrust in an organisation can be a wicked problem with no easy answer, and it can often generate other problems. Examples of the data collected from the participants are listed below:

"Staff training on use of the ERP and WMS programs, designated staff to operate the B2B2C business, and effective communication between sales and warehouses." **(CC)**
"To assign and trust the personnel in charge; training on the ERP system." **(JY)**
"We lack experienced staff to handle cross-border B2B2C transactions. We need staff training for coping with the changes in the cross-border regulations." **(JW)**

4.4.4.2 Operational Issues

Participants were asked, "What are the operational requirements for LHG to meet in order to develop the B2B2C system further?" Most of the participants acknowledged that the transaction volume was much larger in B2B2C than in B2B trades, making manual operation impossible. LHG would clearly need to have software such as ERP to automate the e-commerce and logistics systems. An SOP would also need to be established for automation. Examples of the data collected from the participants on this topic are listed below:

"Automate the order processing and coordinate our warehouses with logistics companies … the warehouses will pick-and-pack the orders and send them to logistics companies. The tracking information will be uploaded into our ERP system. Accounting will generate daily invoices accordingly." **(CC)**
"An operational procedure and an e-commerce ERP system for better inventory control." **(JY)**
"To establish the YJDF (B2B2C) software/hardware capacity for shipping." **(PH)**
"A suitable SOP to process cross-border trades." **(JW)**

When the question was raised about the operational challenges in developing B2B2C or YJDF, the senior executive believed that the missing link was ERP software to connect the customers' B2C platforms with LHG's warehouses to automate the ordering and delivery processes. The executive of operations indicated the software issues but also felt that communications and leadership were the main challenges in operation. Examples of the data collected from the participants are listed below:

"My goal is to use the ERP system to link with customers so the order can be processed from our warehouses immediately." **(CC)**
"We need better communications between China and US offices. We also need clear instructions from the top." **(JY)**

4.4.4.3 Technical Issues

When asked the question "What are the technical requirements for LHG to meet in order to develop the B2B2C system further?", most of the participants were unsure of the

requirements and how exactly the software system ought to be implemented and incorporated into the management system. However, they all suggested that ERP, WMS, and API would be essential. The board member mentioned the importance of system integration and collaboration. The code "collaborate," as I interpreted it, was not only about using software to integrate the B2B or B2B2C data but also involved human interaction. Rather than outsourcing the technology to a third-party service provider, most of the participants suggested that buying software and internalising the software system into the management system was a very challenging task in which they were inexperienced. Examples of the data collected from the participants are listed below:

"We need e-commerce ERP, WMS, and accounting programs." **(CC)**
"Currently, we are using QuickBooks as the accounting software as well as for inventory control. As of now, it is sufficient for the current business model. However, the e-commerce ERP system should be implemented as early as possible. The purpose is to minimise workloads and provide a real-time stock list to our customers." **(JY)**
"We need to build up an operation and management system such as ERP+WMS with API linkages to the EMP platforms." **(JW)**
"We need a software system such as WMS or ERP to fully integrate and collaborate the functions among different departments of the company." **(PH)**

The next question was "What are the technical challenges LHG is facing to develop the B2B2C system?" Most of the participants understood software such as ERP, WMS and API linkage to be important tools. The executive of operations pointed out that off-the-shelf software packages could be problematic because they tended not to be user-friendly and

could not be adapted to handle cross-border transactions. Examples of the data collected from participants are listed below:

"Lack a powerful software to automate our system." **(PH)**
"To establish API linkage to our customers' systems, so we can generate real-time inventory data feeds to our customers … this will reduce the human labour and error, and create efficiency." **(CC)**
"It is mandatory to develop our own ERP system ... the advantage of using a third-party program is that they are cheap and maintenance-free. However, they are generally not user-friendly ... by having our own ERP system, we can share the real-time inventory, simplify order processing, and reduce errors as well as unnecessary workload." **(JY)**

4.4.5 Action Cycle 1 Codebook

The data collection in the AC1 action phase was followed by the process of manually coding the data into Excel sheets. Subsequently, I examined the data thoroughly for errors and reconfirmed it by cross-referencing it with raw data from the participants. Codes were assigned based on the data frequency and relevance. They were grouped into categories based on their functionalities. The Action Cycle 1 codebook provided a comprehensive guide to the problem's complexity and scope. Table 4.2 shows the coding application used in AC1.

Table 4.2 Action Cycle 1 Codebook			
Research Question	What is preventing the company from adopting a B2B2C supply chain system?		
AC Phases	Sources	Codes	Code Categories
Reflect	Literature	B2B	Operational
		B2C	Operational
		B2B2C	Operational
		Supply Chain Integration	Operational
		WMS	Technological
		ERP	Technological
		API	Technological
		Trust	Organisational
		Platform (PaaS)	Platforms
Plan	Literature	SaaS	Technological
		PaaS	Platforms
		3PL	Logistical
Act	Questionnaire Interview	S2B2C	Operational
		Outsource	Operational
		Cash Flow	Financial
		Margin	Financial
		Finance	Financial
		Supplier Relationship	Products
		Sourcing	Products
		Procurements	Products
		Returns	Logistical
		Tariffs	Logistical
		YJDF	Logistical
		Cross-border	Logistical
		WMS	Technological
		ERP	Technological
		API	Technological
		Team-building	Organisational
		Trust	Organisational
		Communications	Organisational
		Coordination	Organisational
		Leadership	Organisational
Observe	Reflection	Collaboration	Organisational

4.4.6 Action Cycle 1 Summary

In the AC1 observation phase, I summarised the SWOT data, extracted codes, and began exploring their semantic relationships. Some of the codes were consistent with ideas that had emerged from the literature review, such as WMS, ERP, API, trust, integration, and collaboration. The lessons that emerged from the AC1 results indicated that LHG's failure to move forward with B2B2C opportunities in the past was not merely caused by a technology shortfall but also involved human relational and social factors of team-building, collaboration, and integration, as well as financial constraints. Unlike traditional businesses, cross-border protectionism and the fast pace of e-commerce creates unique barriers for a startup to overcome. The combination of financial, technical, and organisational barriers had limited the progress LHG could make towards a B2B2C system. Table 4.3 summarises the SWOT codes and problem domains.

Table 4.3 SWOT Codes and Problem Domains Summary Comparison Chart

Sources	Emergent Codes from the Data	Problem Domains based on the Literature
Strengths	B2B, Procurement, Sourcing, Inventory, Products	B2B
Weaknesses	Management, Control, Automation, Supplier Relationship, Staffing, Trust, Coordination, Leadership, Communications, Margin, Finance, B2B, B2B2C, S2B2C, WMS, ERP, API	Supply Chain Integration, Data Integration, EMP Platforms, Data Flow, Monetary Flow, Logistics Flow, Interface, Exchange, WMS, ERP, API, Cloud Computing, Social Commerce, Web 2.0, Social Networking
Opportunities	B2B2C, Orders, Market Demand	B2B2C
Threats	Trust, Authorisation, Counterfeits, Returns, Cross-border, Transactional Risks, Protectionism, Regulatory	Trust, Security, Ease of Use, Care, Ethics, Perception, Quality, Creditability, Relationship, Collaboration, Communications

4.5 Action Cycle 2 – Understanding Requirements of B2B2C System Adoption

4.5.1 Introduction

In AC2, my main objective was to work with the participants to address their work-based problem. Based on the findings of AC1, I strategically worked with the participants and helped them to understand their barriers and explore the requirements for implementing their B2B2C system. In this action cycle, I used semi-structured group discussions as the method to cultivate learning, initiate changes, and collect data from the participants. A B2B2C trial run was implemented in the action phase, using SaaS to run the cross-border B2B2C supply chain system. Although the scope of this trial run was limited to ensure minimum disruption to LHG's operation, the data collected were valuable for this action research. Subsequently, I performed thematic coding as my analytical action to uncover the actionable themes, which proved to be instrumental for developing the B2B2C system.

4.5.2 Action – The B2B2C Trial Run

In the AC2 reflection phase, I further evaluated the AC1 findings and examined the codebook. I reflected on the AC1 codes to explore my action plan. Although most of the participants preferred to build the B2B2C team and implement the system in-house, this would be high-risk and costly. SaaS adoption seemed to present a low-risk and realistic option.

In the AC2 planning phase, I focused on the codes in the technological, operational, and organisational categories. Although the financial issue was part of the problem, it was not the subject of my action research. I examined the actions that would be possible without putting the company or any individuals at political or financial risk. Based on this rationale, I concluded that a B2B2C trial run was a viable action. I performed the tasks as outlined in my

research design chapter to plan a successful trial run and ensure its rigorousness. The budget for the trial run was set at USD 250,000, which included USD 150,000 for inventory. The project leaders were the finance executive of LHG and the consultant of 886 (SaaS). The B2B2C orders used 886's SaaS infrastructure and the staff utilised 886's offshore warehouse in Taipei Port for cross-border drop-shipping (see Appendix 4). Table 4.4 illustrates the AC2 planned tasks and activities.

Table 4.4 AC2 Planned Tasks and Activities

	Tasks for the Trial Run (As Table 3.1 Action Cycle Summary Table)	Activities to Support the Trial Run Plan
1	Plan the project timeline.	Scheduled to perform in October and November 2018.
2	Draft B2B2C network system with project team.	After discussions and learning, the participants' group agreed that the B2B2C network system should comprise WMS+ERP+APIs.
3	Redraft B2B2C network system. Attempt a 10-day trial run.	Adding external third parties (SaaS+3PL) to the network system: SaaS+WMS+ERP+API+3PL. Each system performed a specific function for B2B2C transactions, but they are linked as a supply chain system.
4	Get opinions from external consultants in B2B2C industry via letter/proposal.	B2B2C PowerPoint proposal received from 886.
5	Present illustration of B2B2C plan to senior management.	The B2B2C plan illustration, as Figure 4.3 (page 115), presented to the board director, senior and finance executives.
6	Obtain feedback from senior management before the trial run of B2B2C among suppliers and customers.	The trial run was approved by the board director, senior and finance executives on the condition that it would not jeopardise LHG's current core business, B2B.
7	Select project leaders and SaaS to help develop B2B2C supply chain.	Since the WMS and ERP were closely related to the accounting data, the finance executive was selected as the project leader. The participants selected 886 as the SaaS provider after reviewing and discussing the B2B2C system proposal with the 886 team.
8	Hire B2B2C consultants and select WMS and ERP software and technologies; alternatively, hire a SaaS provider.	Hired a SaaS provider (886) and used its WMS and ERP software systems. WMS is for supply chain inventory management, pick-and-pack, shipping, and fulfilment functions; 886's main WMS and ERP provider is Red, a major Chinese SaaS system provider. 886 has customised Red's system to meet its own cross-border e-commerce supply chain functions.
9	Appoint the project team leader.	The finance executive was selected as the project leader.

To enhance the credibility of data and the rigorousness of the research methodology, I carefully checked the action list in my research design chapter to ensure that all tasks had been properly executed. Table 4.5 summarises the AC2 planned actions and procedures.

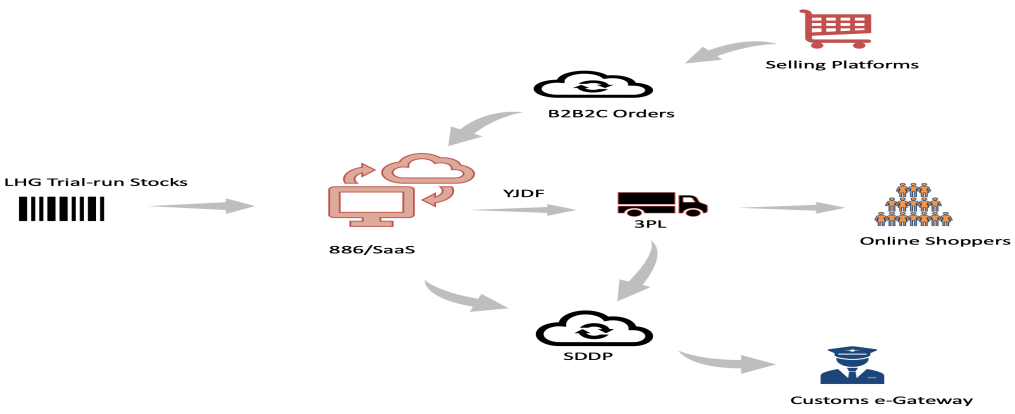
Table 4.5 AC2 Planned Actions and Procedures

	Actions List in Research Design (As Table 3.1 Action Cycle Summary Table)	Procedures
1	Record group discussions and make notes on first draft of B2B2C system.	Successfully used the Voice Memo app to record several B2B2C group discussions.
2	Discuss learning notes from SWOT analysis.	Discussed the SWOT findings with the participants, particularly with the board director, senior and finance executives.
3	Determine integrator of e-commerce supply chain.	Determined a lack of capacity to integrate the supply chain; the participants agreed the B2B2C supply chain integrator should be an external SaaS provider.
4	Discuss notes from second draft of B2B2C system.	LHG's participants and the SaaS (886) consultants discussed the draft proposed (Figure 4.3, page 115) by the consultants.
5	Collect data from trial-run test for new B2B2C system.	Data collection was successful using semi-structured group discussions.
6	Analyse data from the trial-run test with project team before developing the final plan to propose the new B2B2C system.	The trial run data was recorded, transcribed, coded, and analysed.

In the action phase of AC2, I intervened in the group discussion with my preunderstandings to initiate the actions for overcoming their barriers based on my thematic analysis in AC1. Most of the participants realised that it was not feasible for LHG to internalise the technology platform and build its own team; SaaS adoption was a sensible solution. For the trial run, 1300 Coach bags were shipped from LHG's warehouse in Los Angeles to 886's offshore warehouse in Taipei Port. The marketing team created the selling pages and uploaded the product information into their point-of-purchase (POP) stores on the selling platforms. The orders were shipped to online buyers in China using 886's offshore warehouse to perform YJDF drop-shipping, using WMS shipping labels for picking-and-packing, shipping, and tracking the shipment (see Appendix 4). Shipping confirmation notifications were sent to the

online shoppers within 24 hours. The trial run used 886's SaaS software to automate the B2B2C transactions and ship the YJDF orders across the border. LHG used 886's WMS to control the inventory, and its ERP system to update the data. Using API to interface with various platforms and software allowed LHG to clear Customs, perform SDDP, and deliver the goods. Figure 4.2 shows the trial-run flow chart. It indicates how LHG adopted 886's SaaS system to interlink the B2B2C e-commerce, YJDF drop-shipping, and SDDP Customs clearance activities in the trial run. The difference between YJDF and B2B2C is that YJDF is a logistical term defined by the Chinese Customs Authority associated with orders qualifying for the reduced tariff rate, whereas B2B2C is an e-commerce model for small businesses using large selling platforms for marketing their products online. SDDP is a term defined by the Chinese Customs Authority to automate high-volume e-commerce imports. In the trial run, without much capital expenditure or increased staffing, LHG collaborated with 886 to integrate its supply chain successfully and automated its process for delivering B2B2C orders to online shoppers in China. However, LHG had not established a WMS link with 886's in the trial run. The consigned stocks were regarded as an independent SKU in 886's database by scanning the universal product codes (UPCs). The transfer of stocks from LHG to 886 was recognised as a consignment deal in the account books.

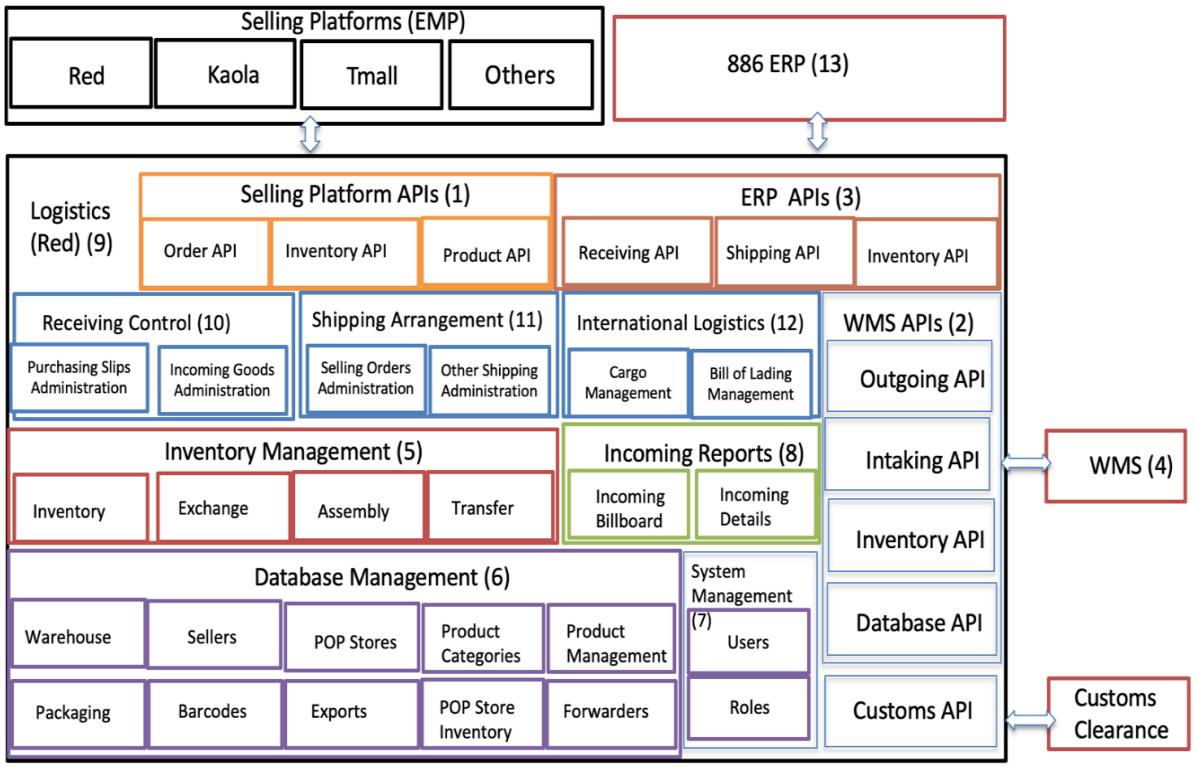
Figure 4.2 The Trial-Run Flowchart



4.5.2.1 Supply Chain Network

The trial run aimed to experiment with performing B2B2C transactions in a limited time period and with limited inventory. The B2B2C orders were shipped from 886's offshore warehouse in Taiwan. From the group discussion, LHG's B2B2C collaboration was based on the existing system of the SaaS provider, as Figure 4.3 illustrates. It had four key system components:

Figure 4.3 The LHG – 886 (SaaS) Collaborated B2B2C System Proposal



1. API

There were three major groups of APIs in 886's SaaS system: EMP APIs (1), WMS APIs (2), and ERP APIs (3). Each API group had specific functional linkages. In the selling platforms group, there were ordering, inventory, and product APIs. In the WMS group, there were outgoing, intake, inventory, database, and Customs APIs. The ERP group included receiving,

shipping, and inventory APIs. Having analysed the chart, I recognised that the inventory APIs were the critical ones because they formed the basis of the e-commerce supply chain. The Customs API represented an almost insurmountable barrier which required a high level of trust and a good relationship with Chinese Customs. It was the critical link to perform SDDP electronic Customs clearance. The selling platforms' APIs were the links to multiple EMP platforms and the key points of access to cross-border online shoppers.

2. WMS (4)

There were four key areas in WMS: inventory management (5), database (6), system management (7), and incoming reports (8). WMS made the inventory visible to the supply chain, which was critical for process automation, allowing the team to collaborate and integrate. Incoming reports could facilitate product management by uploading accurate product information to the selling pages. This greatly reduced the turnaround time of the inventory. WMS also helped the warehouse staff to pack and assemble the outgoing shipments and provided accurate information for logistics and Customs clearance. It enabled LHG to sell to the mass market without the need to handle orders manually. Data management could integrate B2B, B2C, and B2B2C into one database, maximising use of the inventory.

3. Logistics (9)

For logistics in China, 886 used Red as its 3PL. Red had an extensive network in China to deliver high volumes of shipments at discounted rates. The SaaS system used by 886 incorporates Red's logistical software including receiving control (10), shipping arrangement (11), and international logistics (12). The international logistics software automatically generated SDDP slips for e-gateway clearance. This was a critical feature in the cross-border supply chain.

4. ERP (13)

In the trial run, we used 886's ERP for accounting. However, it was not a necessary component of e-commerce SaaS. LHG could use any ERP as long as it could interface with 886's WMS system. Since LHG was a merchant rather than a manufacturer, its ERP did not need to oversee the supply chain; its main purpose was to function as a tool for internal planning. Nonetheless, it was the vision of the senior executive to extend the function of ERP to link with the databases of LHG's downstream suppliers to form a virtual inventory on ERP.

4.5.3 Action – Coding Analysis

In the observation phase of AC2, I manually studied the data collected from the semi-structured group discussions. I went through the data multiple times, using a deductive analysis method to make sense of the large volume of data by creating an AC2 codebook (Table 4.6). In AC2, I further categorised the codes into different business functions including financial, operational, technological, logistical, products, organisational, marketing, and platforms. I examined the relationships and meanings of the data content, using a deductive analysis method to categorise the data into many codes; I then grouped related codes into fifteen significant themes. These were practical and actionable themes that had to be further addressed by the researcher with the participants. Table 4.6 shows the AC2 codebook where the fifteen central themes that emerged were extracted by thematic analysis.

Table 4.6 Action Cycle 2 Codebook				
Research Question	What are the requirements for LHG to adopt a B2B2C system?			
AC Phases	Sources	Codes	Code Categories	Themes
Reflect	AC1 Data	Inventory Control	Financial	Inventory
		Receivables	Financial	
		Payment Terms	Financial	
		Process Automation	Operational	Process Automation
		Asynchronous Flow	Operational	Asynchronous Trade Flow
		Data Flow	Operational	
		Cash Flow	Financial	
		Logistics flow	Logistical	
		Brands	Products	Trust
		Traceability	Products	
		Responsibility	Organisational	
		YJDF	Logistical	YJDF
		SDDP	Logistical	SDDP
		Free-trade Zone	Logistical	Tariff
		Tariffs	Logistical	
		Warehouse	Logistical	
		POP (Point-of-Purchase) Store	Marketing	B2B2C
		BC (B2C)	Logistical	
		CC (C2C)	Logistical	
		B2B2C	Operational	
		Communications	Organisational	
		KOL	Marketing	
		Digital Marketing	Marketing	
ACT	Group Discussion	SaaS (Software-as-a-Service)	Technological	SaaS
		PaaS (Platform-as-a-Service)	Technological	
		886	Technological	
		ERP	Technological	
		Red	Technological	
		WMS	Technological	WMS
		API	Technological	API
		Collaboration	Organisational	Collaboration
		Supply Chain Integration (SCI)	Operational	SCI
		3PL	Logistical	Collaboration
Observe	AC2 Data	Tmall	Platforms	
		NetEase Kaola	Platforms	
		JD	Platforms	
		Returns	Financial	Returns
		After-sales Services	Operational	
		Leadership	Organisational	Trust
		Trust	Organisational	
		Delivery Time	Operational	Cost-efficiency
		Shipping Cost	Operational	

4.5.4 Action Cycle 2 Summary

The trial-run data indicated that LHG's B2B2C delivery time and costs had improved significantly, achieving cost savings of over 50 percent. It usually took more than 15 days for LHG to deliver to customers in China from its Los Angeles warehouse (see field note pictures in Appendix 5), and the cost of shipping was USD 9 per order. In the trial run, a cross-border B2B2C order was delivered from Taiwan to China within five days at a shipping cost of RMB 17 per order, without requiring much investment in infrastructure and personnel. This trial run produced a great saving in cost and improvement in efficiency. These improvements were attributed to the collaboration with 886, which allowed LHG to integrate and automate the B2B2C supply chain via 886's SaaS system and deliver a cross-border order in less than five days with a shipping cost of only RMB 17 (about USD 2.43, RMB:USD exchange rate at 7:1). Further, this collaboration enabled LHG to take advantage of the tariff reductions using SDDP to clear Customs online without cumbersome manual tasks. However, LHG must also take into account the additional costs of paying 886 for their services; an equitable deal structure for long-term collaboration should be discussed and negotiated in good faith.

4.6 Action Cycle 3 – Reflection and New B2B2C System

4.6.1 Introduction

I extracted fifteen actionable themes that were influential to the B2B2C trial run from AC1 and AC2's data analyses. In AC3, I conducted more thematic analyses (Appendix 6 – the Initial Codebook, Appendix 7 – the Code Categorisation Sheet, and Appendix 8 – the Categories/Themes Selection Sheet) to uncover the relationships between these themes, linked them, and determined the most crucial themes that could be the critical elements for

LHG to redraft the new B2B2C system proposal. The five critical elements that emerged from AC3 were process automation, SaaS adoption, supply chain integration, collaboration, and trust. I interviewed the participants who were decision-makers and collected more data to ensure that these critical elements were applicable to their new B2B2C system proposal.

4.6.2 Assessment of the B2B2C Trial Run

In the assessment phase of AC3, I evaluated the pre-trial-run and post-trial-run data to determine if the problem had been solved to any extent. I observed and collected data on the trial run based on the collaboration of LHG and 886. I used the fifteen actionable themes as the reflecting criteria, and used the results to predict future activities. Table 4.7 summarises the trial-run results.

Table 4.7 Summary of the Trial-run Results

	Trial Activities	Pre-Trial	Trial Run	Anticipated Future Activities
1	B2B2C	No adoption	Yes	Management discussion and decision-making
2	SaaS	No adoption	886	System outsourcing and price negotiation
3	WMS	No adoption	1. Multiple locations in the US and Taiwan 2. Using Red's WMS 3. Automated outgoing order 4. Averaging 10 minutes preparation time per B2B2C order	Learning, staff training and adoption
4	API	No adoption	APIs by SaaS linking the platforms and the Chinese Customs Authority	Learning and adoption
5	Collaboration	Low level of collaboration due to lack of information	High level of collaboration due to data transparency	Reflection, literature review and semi-structured discussion/interview
6	Process Automation	More than 15 minutes processing time per order	Less than 1 minute processing time per order	Learning and staff training

Table 4.7 Summary of the Trial-run Results

	Trial Activities	Pre-Trial	Trial Run	Anticipated Future Activities
7	Supply Chain Integration	Low, data and system not integrated	High, data and system integrated	Semi-structured discussion/interview
8	YJDF	Not allowed, no tariff reduction	Allowed, with reduced tariff	Logistics outscoring and cost negotiation
9	SDDP	Not adopted	1–2 minutes per order, electronic Customs clearance	Learning and complying
10	Cost Efficiency	Shipping Cost		Measuring and analysing
		USD 9	RMB 17 (USD 2.43)	
		Delivery Time		
		15 days	5 days	
11	Asynchronous Trade Flow	15- to 20-day gap	3- to 5-day gap	Synchronising
12	Tariffs	36% import duty (20% for leather bags, 30% for non-leather bags) + VAT (16%)	11.2% cross-border e-commerce combination tax	Studying and investigating
13	Inventory	90-day turnaround time	120-day turnaround time	Measuring and analysing
14	Returns	Over 15% (within 30 days)	Less than 5% (within 30 days)	Problematising
15	Trust	Trust was low due to poor collaboration	Trust was higher due to collaboration	Reflection, literature review, and semi-structured discussion/interview

Although the trial-run was of limited scale, the outcomes were very important to the participants. The results showed that the action learning cycles were practical notions which could tackle the complexity of cross-border B2B2C, and that the trial run could be scalable for future development using the same framework. The trial run had shown that the fifteen actionable themes were interdependent elements that could work coherently to develop a B2B2C ecosystem. The trial run was an important pilot study that helped me to validate my theoretical positions such as multi-sided platforms, indirect relationship interpretation,

outsourcing strategy, integration orientation, and value-based enterprise performance. The action learning that emanated from these trial-run results was a crucial experience, and the valuable trial-run data led me to analyse the barriers, triangulate the problem domains, evaluate the positive and negative impacts of B2B2C adoption, gain organisational support, create a B2B2C system proposal, and acquire insightful information for the development of a B2B2C actionable framework.

I followed the tasks and actions planned under my research design in the planning phase of AC3, aiming to use the trial-run experience to further improve and create actionable knowledge for LHG to explore in the future. Table 4.8 shows the results of these tasks.

Table 4.8 AC3 Planned Tasks and Elaboration of Plan

	Planned Tasks in Research Design (As Table 3.1 Action Cycle Table)	Elaboration of Plan
1	Analyse data collected through interviews, observations, and discussion with consultants and SaaS operators.	Analysed the semi-structured discussions, collected data about the themes with the senior executive, board member, finance and operations executives, and an external consultant from SaaS (886).
2	Evaluate the CEO's strategic plan and vision.	Extracted codes/themes from the semi-structured discussion with the senior executive and team about their views on long-term strategy for the B2B2C system.
3	Evaluate B2B2C trial results with project team/management.	From the data collected, evaluated the data with the senior and finance executives on the trial-run results, focusing on the themes of supply chain integration, YJDF, and SDDP.
4	Evaluate B2B2C consultants, software, and technologies.	Evaluated 886's B2B2C SaaS system as Figure 4.3 (page 115) including the themes of SaaS, WMS, ERP, and API.
5	Plan feedback session on potential effects on operational efficiencies and financial performance.	Interviewed the senior and finance executives about their feedback on the trial-run results with 886, such as operational efficiencies and financial performance, particularly on the themes of cost efficiency, tariffs, inventory, and returns.
6	Discuss the tariff rules, regulations, and strategy to meet operational and financial targets.	Discussed the trial-run findings on the B2B2C rules, regulations, and strategy, particularly on the themes of trust, tariffs, SDDP, and B2B2C.

In the action phase of AC3, I took actions to further measure and triangulate my findings to ensure my action research would have the requisite impact and bring about positive changes to the development of LHG. In order to formulate the new proposal, I collected the post-trial-run data from the participants using semi-structured discussions and interviews. Since the finance executive had been selected as the project leader, I focused on interviewing him to extract more post-trial-run data. The finance executive was optimistic about the future of the B2B2C business. He predicted that the B2B2C volume could grow to RMB 400–500 million annually, provided there was enough stock. However, the issue of returns was a major concern, as they would greatly reduce profitability. The investors indicated their concerns about LHG's ability to resell the returned goods in China. The outcomes of these actions are presented in Table 4.9.

Table 4.9 AC3 Planned Actions and Future Effects/Implications

	Planned Actions in Research Design (As Table 3.1 Action Cycle Table)	Future Effects/Implications	Methods	References
1	Discuss potential implementation of the new B2B2C system.	Based upon trial-run results, discussed the feasibility of long-term collaboration with 886 to implement a new B2B2C system; in particular, discussed the themes of SaaS, supply chain integration, and collaboration.	Semi-structured discussion	Table 4.7 & Table 4.11 (pages 120 & 126)
2	Record data from the finance executive's strategy plan and B2B2C post-trial meetings.	Used interviews to triangulate the trial-run results and finance executive's strategic plan for a new B2B2C system.	Interview	Table 5.1 (page 136)
3	Evaluate potential cost savings and operational efficiencies achieved.	Evaluated the potential savings and efficiency achieved based upon the theme of cost efficiency which examined the shipping cost and time. The trial run achieved a reduction in the shipping cost from USD 9 to about USD 2.43 (RMB 17), and a reduction in the delivery time from approximately 15 days to less than 5 days. However, I uncovered that the issue of returns was a major factor affecting the profitability of B2B and B2B2C transactions.	Data analysis	Table 4.7, Figures 5.5 & 5.7 (pages 120, 143 & 147)

Table 4.9 AC3 Planned Actions and Future Effects/Implications

	Planned Actions in Research Design (As Table 3.1 Action Cycle Table)	Future Effects/Implications	Methods	References
4	Collaborate with third parties to develop API linkage to the PaaS of EMP platforms.	This action was achieved using 886's SaaS system. They were mainly platforms' APIs, WMS APIs, ERP APIs and Customs' APIs.	Semi-structured discussion	Figure 4.3 (page 115)
5	Formulate the new B2B2C system proposal.	Proposed a new system based upon the trial-run results, collaborating with 886 as the SaaS to integrate WMS and ERP to automate the operation. Used 886's API linkage to interface with the platforms and Customs, performing SDDP clearance and YJDF drop-shipping. Enhanced the collaboration, integration, and trust among the supply chain members.	Thematic analysis and reflection	Appendices 7, 8 & 9 (pages 200, 201 & 202)

4.6.3 Action – Coding Analysis

The Action Cycle 3 codebook is presented in Table 4.10. It summarises the codes discussed in the third action cycle, after the B2B2C trial run.

Table 4.10 Action Cycle 3 Codebook

Research Question	What are the critical elements and key leverage points of the new B2B2C system?			
AC Phases	Sources	Codes	Code Categories	Themes
Reflect	AC2 Data	Cash Flow	Operational	Returns
		Accounts Payable/Accounts Receivable (AP/AR)	Operational	
		PO Cancelled	Operational	
		Returns	Operational	
		Inventory Control	Operational	Inventory
Plan	AC2 and 3 Data	Collaboration	Organisational	Collaboration
		Deal Structure	Organisational	
		Communications	Organisational	
		Responsibility	Organisational	
		After-sales Service	Operational	Trust

Table 4.10 Action Cycle 3 Codebook				
Research Question	What are the critical elements and key leverage points of the new B2B2C system?			
AC Phases	Sources	Codes	Code Categories	Themes
		Payment Terms	Operational	
		Investors	Operational	
		Distributorship	Product	
		Traceability	Product	
		Leadership	Organisational	
		Trust	Organisational	
Act	AC3 Data	ERP	Technological	Process Automation
		WMS	Technological	WMS
		API	Technological	API
		SCI	Operational	SCI
		SaaS	Technological	SaaS
		Delivery Time	Logistics	Cost Efficiency
		Shipping cost	Logistics	
Observe	AC3 Data			

4.6.4 The B2B2C Potential Adoption from Trial-Run Results

I used the post-trial-run results to generate a potential adoption list for LHG, based on the fifteen actionable themes. This list represents the actionable knowledge I attained from the action research. It is a checklist designed to help overcome the barriers to B2B2C deployment. Table 4.11 shows the potential adoption list from the trial-run results.

Table 4.11 Potential Adoptions from the Trial-run Results

	Themes[7]	Potential Adoptions from Trial-run Results
1	B2B2C	Deploying B2B2C system as the core business model (need to attain board approval and investors' support).
2	SaaS	Proceeding from a trial-run experiment to long-term adoption, including outsourcing or joint venture project.
3	WMS	1. Applying WMS to LHG's entire stock, digitising LHG's warehouse operation. 2. Applying WMS to integrate multiple warehouses' inventory into one digital database.
4	API	Different system APIs, including WMS, SDDP, PaaS, and ERP, would all need to be linked and interfaced in order to perform B2B2C via 886 or internally.
5	Collaboration	1. Designing a mechanism to facilitate the collaboration by applying the technology to provide information for effective communication. 2. A deal structure between LHG and 886 would need to be generated for long-term collaboration. 3. Using Web 2.0 platforms and apps to enhance cross-border communication, including both data and human communication, to increase the level of integration. 4. Group discussion proven to be an effective method in the action cycle.
6	Process Automation	Applying data technology to automate the operation system.
7	Supply Chain Integration	Applying 886's SaaS as the integrator to enhance supply chain effectiveness.
8	YJDF	Outsourcing to SaaS and 3PL operators to deliver YJDF orders.
9	SDDP	Applying API to link the forwarders with the Chinese Customs Authority's e-gateway for clearance.
10	Cost Efficiency	Working with SaaS and 3PL for achieving 50% saving. Working with SaaS and 3PL for achieving 60% improvement in efficiency.
11	Asynchronous Trade Flow	Collaborating with a 3PL to enhance the logistics and reduce the gap of the data, payment, and logistics flows.
12	Tariffs	Further discussion with 886 on the cross-border e-commerce tariff rate for submission at optimal rate.
13	Inventory	1. Enhancing the product mix for B2B and B2B2C to improve inventory turnaround rate. 2. Diversifying the customer base, which would increase the stocking time and inventory carry level but reduce inventory risk.
14	Returns	1. Expanding to 2C mode to diversify the customer base, which would reduce the return rate. 2. Also need to discuss how to enhance the after-sales service for customer retention.
15	Trust	1. From the trial-run data analysis, trust emerged as an important element in supply chain collaboration and integration; further study to effectively enhance the trust in the supply chain is needed (see Appendix 3, Thematic Coding Sheet – Trust, page 196). 2. Enhancing the company's identity as a trustworthy business. 3. Improving the trust among the owner, employees, and investors.

[7] For data samples of these 15 themes, see Appendix 3 –Thematic Coding Sheet Samples.

4.6.5 Action Cycle 3 Summary

This section summarises the results of my thematic coding analysis. I had formulated three steps in my data analysis system. The first step was to identify the sixty-one codes that emerged from the transcripts. The second was to group these codes into eight categories. The third was to perform semantic thematic coding (Braun and Clarke, 2006) and identify fifteen actionable themes.

In AC3, I examined the trial-run data to examine whether the organisational, operational, and technological requirements for B2B2C had been met, and the results were discussed and evaluated by the participants. The trial run was remarkably successful, which was an extremely encouraging sign for LHG's team in terms of deploying its B2B2C system. Using a SaaS provider to overcome the technological challenges represented a good strategy for a small company like LHG. For LHG, implementing a WMS would be a top priority; the senior executive would need to convince the staff to adopt a WMS to interface its database with 886's WMS. Using WMS, ERP, and PaaS' APIs, 886's SaaS would provide LHG with instant data that could be used to interface with the forwarders, the platforms, and Customs to perform SDDP clearance. In the trial run, 886's system successfully automated LHG's e-supply chain and provided B2B2C access to the platforms' consumers. The trial run achieved over 50 percent cost savings and improved efficiency by 60 percent. Surprisingly, technology adoption was less complicated than I had anticipated; however, I recognised that system integration and coherence require significant effort for long-term sustainability. Among the fifteen actionable themes, trust and collaboration emerged as important context-related themes from the trial-run data analysis (see Appendix 3, Thematic Coding Sheet – Trust, page 196). Most of the participants believed in enhancing the company's identity as a trustworthy business and improving the trust among LHG's stakeholders. These findings

resonated with the recent case studies done by Gou et al. (2020) and Mingione and Leoni); both studies recognised that trust could enhance the B2B2C value chain. Mensah et al. (2020) argued that the Chinese culture of 'guanxi' (private relationships) is a critical factor, and that collaborating with local counterparties is key to CBEC in China. In the trial-up collaboration, the participants and I experienced misunderstandings due to conflicts of interest and cultural differences. Trust and information transparency were essential elements for overcoming these contextual barriers, as Benzidia (2013) pointed out. We learned that, in addition to the content-related themes (such as process automation, WMS, ERP, API, SaaS, and SCI), trust and collaboration appeared to be important contextual catalysts in e-supply chain collaboration and system integration. Further study to effectively enhance the trust and collaboration in the supply chain is important for development of an actionable framework. The next step was to conduct latent thematic analysis (O'Connor and Gibson, 2003) to determine the actionable themes that would represent the most critical elements for further analysis and reflection (Chang, 2010).

Chapter 5 – Discussion and Conclusion

5.1 Post-Results Discussion

The trial-run framework generated impressive results, particularly in terms of the fifteen most significant themes, as illustrated in Table 4.7 (page 120). LHG was able to reduce the transaction cost from USD 9 to USD 2.43, improve the delivery time from 15 days to 5 days, lower the tariff from 36% to 11.2%, shrink the trade flow gap from 20 days to 3 days, and decrease the return rate from 15% to 5%. Order processing time reduced from 15 minutes per order to less than 1 minute. Overall, the supply chain efficiency was improved by over 50% in the trial run. Although the trial run was a great learning experience, it was an experiment with limited scale and scope. It was necessary to further examine whether the model implemented in the trial run could be scalable and sustainable, particularly given the digital content and Chinese context. This required me to examine how the framework was applicable for the organisation and how it informed the participants and brought about changes and, most importantly, to identify the critical elements and leverage points that I could suggest for future deployment. It also required me to reflect on and discuss the actionable framework with the participants.

The post-results discussion step was the final opportunity to assess and refine my data analysis. The post-trial-run data was collected, arranged, and entered into an Excel sheet (see Appendix 9). I selected strong and evocative actionable themes related to my research questions. The five critical elements that were selected from this analysis were process automation, SaaS adoption, supply chain integration, collaboration, and trust.

5.2 Thematic Analysis

After naming the themes, the next step was to conduct a thematic analysis to group and unify the relevant codes into themes. I followed Braun and Clarke's (2006) suggestions to conduct the thematic analysis, an analytical process for finding the patterns and themes from my

qualitative data. According to Braun and Clarke, there are two levels of thematic analysis: semantic and latent. Semantic theming involves considering the surface meanings of the codes without probing beyond their explicit meanings and obvious linkages. For example, there were two semantic codes for measuring the B2B2C trial-run supply chain effectiveness in AC2: delivery time and shipping cost. Using the transaction data extracted from the SaaS system, I measured the delivery time and shipping cost – straightforward tasks. However, the order delivery quality could also be measured by latent codes,[8] such as returns and after-sales services, to determine customer satisfaction. For example, Chinese authorities have given YJDF and SDDP very clear definitions. YJDF, literally translated as "an item to be drop-shipped by an agent," signifies an item ordered online that would be delivered across the border to a Chinese customer at a reduced tariff. SDDP, which is literally translated as "three slips in one," relates to a Chinese Customs regulation that cross-border B2B2C transactions require three digital documents (order slip, shipping slip, and tariff payment slip) to clear Customs using the e-gateway.

Based on the semantic meanings, I grouped and narrowed down the 61 codes in my codebook into 15 themes. For example, four platform codes had emerged: Alibaba, JD, NetEase Kaola, and Amazon. Although these platforms are different, they use similar business models. I grouped these codes together into the theme of platforms. Applying a deductive thematic method to reduce the sixty-one codes to a more manageable fifteen themes was important. These 15 actionable themes helped me to understand the requirements for developing a B2B2C system for LHG.

[8] According to the finance executive, during the trial run a total of 1,297 B2B2C orders were delivered within five days, and a transaction volume of about USD 325,000 was completed within a two-month period.

The trial run was highly successful at the semantic level because the automated SaaS system reduced the cross-border B2B2C delivery time from 15 days to under 5 days, while reducing the shipping cost from USD 9 to about USD 3. The latent thematic analysis required me to look beyond what had been said and discern the underlying ideas, concepts, and assumptions. Many scholars have examined the cognitive, behavioural, physiological, and social factors of e-commerce (Agag et al., 2016; Jiang et al., 2016; Shan et al., 2010; Vincent et al., 2017; Zuo et al., 2013). For example, the codes of 3PL, SaaS, and PaaS belonged to different categories, but were all external service providers. I examined how they were linked with B2B2C, SDDP, and YJDF under the theme of process automation. In addition to process automation, these codes were also linked to the theme of supply chain integration. Further, I was able to find the hidden affiliations linking supply chain integration, collaboration, trust, and communications.

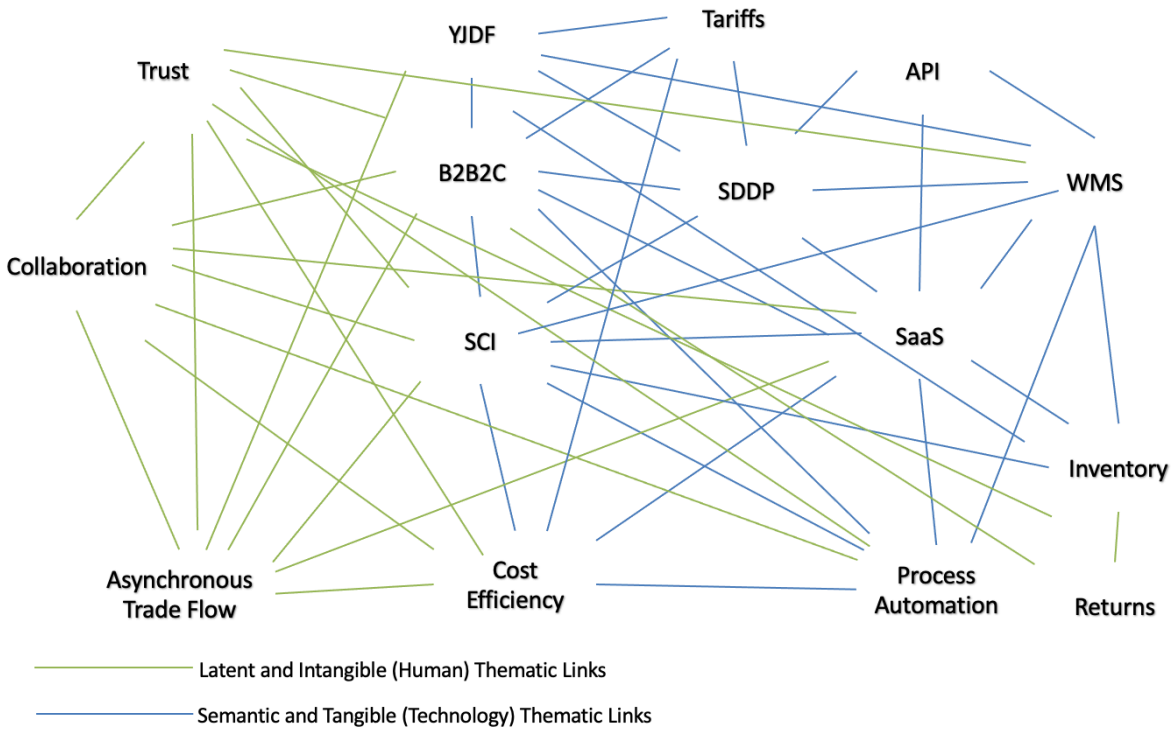
5.3 Axial Coding Analysis

Braun and Clarke (2006) considered this step as reviewing the themes to find the relationships linking various codes. Furthermore, Strauss and Corbin (1990) described axial coding as a way to uncover the relationships among extracted codes. I generated a multi-coloured table to analyse the links between the themes. I cross-examined the themes with the thematic map (Figure 5.1) to determine the themes that could be most significant for completing the project. Figure 5.1 is a thematic map of the combined semantic and latent links of the fifteen overarching themes: inventory, returns, process automation, asynchronous trade flow, supply chain integration (SCI), YJDF, B2B2C, SaaS, WMS, API, SDDP, collaboration, cost efficiency, trust, and tariffs. This thematic map helped me visualise the contextual relationship of these themes for deeper analysis. The blue lines in Figure 5.1

represent the semantic and tangible links of the themes while the green lines represent the latent and intangible links.

Five themes stood out as critical elements with multiple links to other themes, namely: SCI, process automation, SaaS, collaboration, and trust. SCI, process automation, and SaaS were the most tangible technological and operational themes, while collaboration and trust were the most intangible organisational themes. The thematic relationship matrix summarising the linkages between the actionable themes is shown in Appendix 9. The numbers of linkages of the key themes (colour-coded in the table) are also indicated in the Appendix 9 matrix.

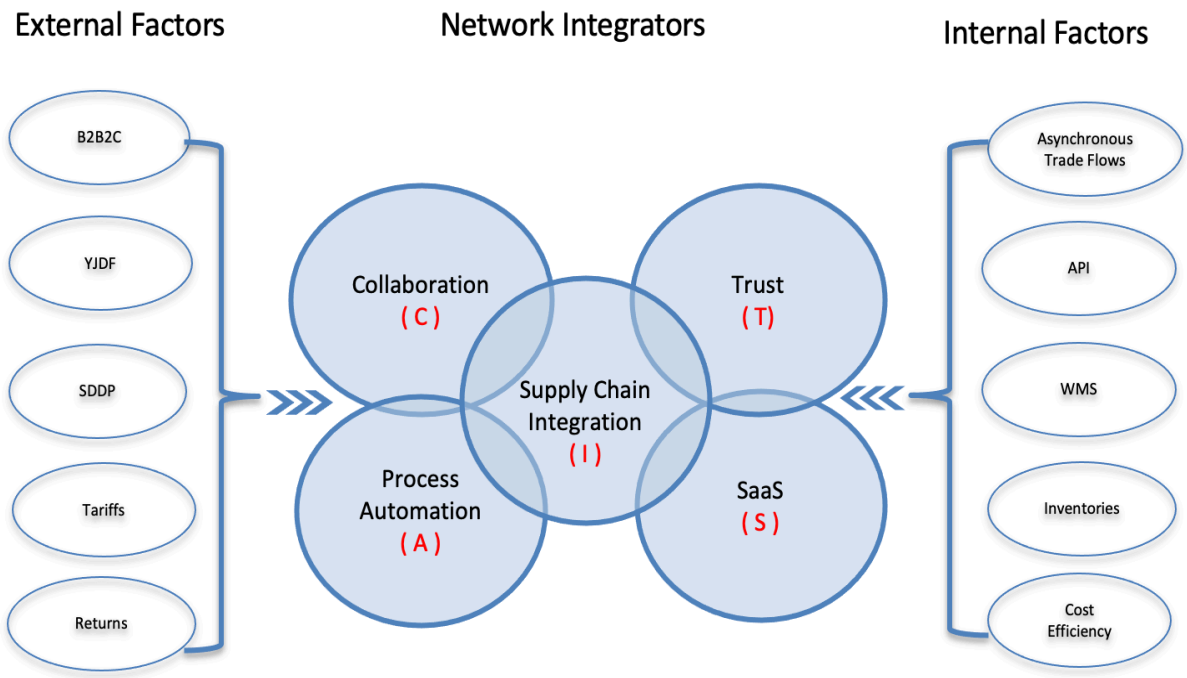
Figure 5.1 The Thematic Map



5.4 B2B2C Model Derived from Results

The final step of my data analysis was evaluating the themes I had reviewed during the previous phase and selecting the overarching actionable themes to effectively answer my research questions. I bore in mind that the actionable themes I selected, while not only reflecting the theories of the conceptual framework, should also be attributable to actionable knowledge that could generate effective propositions that LHG could consider deploying in a future B2B2C system. I applied deductive thematic analysis to select from the fifteen actionable themes the five critical elements that could serve as the fundamental devices to improve LHG's ability to develop its B2B2C system. The critical elements identified were process automation (A), SaaS adoption (S), supply chain integration (I), collaboration (C), and trust (T). I evaluated the thematic relationships of these elements, and the resulting proposed LHG B2B2C model is shown in Figure 5.2.

Figure 5.2 Proposed B2B2C Supply Chain Model



This proposed B2B2C supply chain model was an outcome of collaborative learning from the trial-run results. The trial-run performance data (Table 4.7) proved that the LHG–886 (SaaS) collaborated B2B2C system proposal (Figure 4.3) could effectively tackle the practice-based problem. This model takes a broad approach to encompass the content- and context-related elements, including the fifteen themes extracted from the trial run. There are three sets of actionable themes in the model. The first set comprises the external factors, including B2B2C, YJDF, SDDP, tariffs, and returns. The second set includes the internal factors of asynchronous trade flow, API, WMS, inventories, and cost efficiency. The third set contains the network integrators including process automation, SaaS adoption, supply chain integration, trust, and collaboration. The internal factors are content-oriented whilst the external factors are context-related. There are two types of network integrators: the technological factors including process automation and SaaS adoption, and the human factors that deal with cultural and relationship issues including integration, trust, and collaboration. Although the impressive trial-run data achieved the task of digital transformation and significantly lowered the CBEC transaction cost and delivery time, I proposed that, in this post-results model, all fifteen themes must work coherently to formulate a value chain for LHG's long-tail development. This proposed B2B2C supply chain model was an important takeaway from the trial-run results that allowed me to amplify the B2B2C framework requirements for future improvement. It led me to create an actionable framework that simplified the complex requirements associated with the content and context, and thus, to develop an integrated B2B2C supply chain network to elevate LHG's short-term trial-run learning to a long-tail pursuit.

5.5 The Positive and Negative Impacts of the Trial-Run Results

The trial-run results generated positive impacts for LHG by improving cost efficiency and reducing tariffs. I also examined the negative impacts of the trial-run results to understand the disadvantages of the proposed B2B2C model, primarily based on data from the post-trial-run interview with the finance executive who was the trial-run project leader. I created a table analysing and comparing the impacts on the eight categories according to the code categorisation presented in Appendix 7, namely financial, operational, technological, products, logistical, organisational, platforms, and marketing. Table 5.1 summarises the positive and negative impacts of the trial run.

Table 5.1 Analysis of Positive and Negative Impacts of the Post-trial Issues

Issues	Positive Impacts (Advantages)	Negative Impacts (Disadvantages)
Financial	1. Less upfront investment by working with SaaS. 2. Shorter payment term for B2B2C (8–30 days) compared to B2B (average 45 days). 3. Saving in tariffs. 4. Higher gross margins (10–15% higher than B2B).	1. More inventory required for the B2B2C business model. 2. More investment required from the investors. 3. Requires purchasing of stocks before receiving the purchase order. 4. Longer inventory carry: average 120 days for B2B2C, compared to 90 days for B2B. 5. Warehouse receipts or delivery notes from the platforms were harder to attain for receivables.
Operational	1. Automation of the order fulfilment process reduces human error. 2. High volume transaction capacity created to handle B2B2C orders. 3. Order processing time greatly reduced. 4. System of the business for future growth. 5. More efficiently run supply chain and reduced gap of trade flow.	1. Current LHG employees were unfamiliar with the software such as WMS – it will require more staff training. 2. The key operation system was outsourced to outsiders – dependence on third-party SaaS could be problematic. 3. Lack of organic development for internal growth. 4. Integration with SaaS created overleveraging of operation capacity without increasing LHG's own core competences.
Technological	1. Created a data chain and API linkages to integrate the supply chain system. 2. Created a value chain with more added value to the supply chain. 3. Information transparency available to supply chain members. 4. Automated the decision-making process. 5. SaaS was effective for B2B2C supply chain integration.	1. Required LHG to keep up with data technology such as WMS, ERP, and API. 2. Required LHG to share its information with outsiders. 3. Cloud computing lacks data privacy. 4. Decentralised the decision-making process. 5. Dependence on data, lack of human touch. 6. Integration with SaaS created overleveraging of operation capacity without increasing LHG's own key innovations.

Table 5.1 Analysis of Positive and Negative Impacts of the Post-trial Issues		
Issues	**Positive Impacts (Advantages)**	**Negative Impacts (Disadvantages)**
Organisational	1. Outsourced the B2B2C system to SaaS with quick setup time and little allowance for learning curve. 2. Did not require LHG to increase headcounts for operation. 3. Collaboration with external supply chain parties.	1. Outsourcing to SaaS will hinder LHG's acquisition of first-hand B2B2C knowledge. 2. Less opportunity for teambuilding within LHG, compared to internalising the system. 3. Lack of trust with outsiders in the e-supply chain.
Logistical	1. Worked with experienced SaaS and 3PL to perform YJDF and SDDP. 2. Shipping cost and delivery time were significantly reduced. 3. Cost efficiency was improved more than 50 percent. 4. Multiple locations of warehouses can be used to take advantage of the tariff reduction. 5. Narrowed the asynchronous trade flow gap by shortening the delivery time.	1. Given multiple warehouses, using WMS to manage the inventory was problematic for LHG to handle without experience. 2. B2B2C consumers demand much faster delivery than B2B corporate buyers. 5. Due to the consumer type of low-value high-volume transactions, the warehouse receipts and delivery notes were harder to attain.
Products	1. During the trial run the return rate greatly reduced, from about 10% to 5%. 2. More product communication was uploaded to the selling pages. 3. LHG sold stocks they already had in their warehouses. 4. Better volume forecast used data technology for prediction.	1. B2B2C required more SKUs and product information to fulfil the selling page features. 2. There were territorial conflicts with brands' authorised agents in China. 3. B2B2C required LHG to handle the customer and after-sales services.
Platforms	1. Meeting platforms' demands for carrying more SKUs and inventory. 2. Establishing API links with the platforms to perform B2B2C tasks. 3. Ability to expand LHG's business volume via platforms' selling systems.	1. Required LHG to keep up with all the promotions/selling events demanded by the platforms. 2. Required LHG to increase inventory and SKUs to meet platforms' demand.
Marketing	1. Widens the market reach from B2B to B2B2C. 2. Ability to reach mass consumers in China. 3. Cross-border market penetration.	1. More responsibility for generating its own Web traffic to attract visitors to the selling pages. 2. More responsibility for unloading its own inventory. 3. Higher marketing budget was required for campaigning.

To effectively implement a B2B2C system, it was useful to set out my recommendations for improvements emanating from the trial-run findings (see Table 4.7, page 120, and Table 5.1, page 136). The recommendations are based on the learning from the trial-run results in terms of fifteen actionable themes, but a step further to understand the implications of these data

can be taken by reflecting them back to the theoretical positions, as discussed in the literature review. Table 5.2 summarises the B2B2C system deployment recommendations.

Table 5.2 B2B2C System Deployment Recommendations

	Requirements	Recommendations
1	B2B2C	LHG must understand the complexities of digital content and the Chinese context, as an imperative step to overcome its practice-based problem.
2	SaaS	SaaS outsourcing is the lower-risk strategy to develop a B2B2C system. Only SaaS providers such as 886, with a track record in CBEC to China, are suitable to perform in the Chinese context.
3	WMS	WMS, not ERP, is the critical entry step to engage with SaaS or PaaS for building up an e-supply chain. This task must be internalised by LHG's staff.
4	API	LHG must use SaaS's APIs to integrate the supply chain data. Interlinking LHG's WMS with SaaS's 3PL to upload the product and order information is a crucial step for digitisation.
5	Collaboration	LHG must bear in mind the indirect relationships and Chinese context. The relationships are dynamic webs without hierarchic structures, and LHG must understand the unique cultural context of China. Trust and knowledge-sharing are key for multi-stakeholder supply chain collaboration.
6	Process Automation	Automation is a basic task required to capture the B2B2C opportunity. However, the learning curve is remarkably high. It is recommended that LHG should not self-build the team, but rather should utilise available third parties' services to implement ERP, WMS, and API technology to automate orders.
7	Supply Chain Integration	SCI is a complex task. Identifying a few key supply chain integrators that are manageable is crucial for B2B2C. LHG must consider both technological and human elements.
8	YJDF	It is not feasible for LHG to perform YJDF using the CC postal articles method from its US warehouse. Outsourcing to SaaS and 3PL with offshore warehouses in the free-trade zones is recommended.
9	SDDP	Trust and automation are required for submission of the three digital slips. It is not practical for a startup to perform these tasks. LHG should utilise the existing trust and the system that cross-border SaaS and 3PL have established with Chinese Customs to perform e-gateway clearance.
10	Cost Efficiency	LHG should work with a CBEC SaaS operator to automate order processing to lower B2B2C orders' transaction costs. LHG should work with a CBEC 3PL provider to reduce delivery time of B2B2C orders.

Table 5.2 B2B2C System Deployment Recommendations		
Requirements		**Recommendations**
11	Asynchronous Trade Flow	Asynchrony in the supply chain creates inefficiency and mistrust. LHG should collaborate with SaaS and 3PL operators to improve its cross-border logistics and reduce the gap of the data, payment, and logistics flows to achieve the goals of 'just-in-time, just-in-place and just-in-sequence' efficiency.
12	Tariffs	Chinese tariff rules on CBEC items are extremely complicated and constantly changing. The ability of a B2B2C firm to lower tariffs represents a major competitive edge. LHG must study the CBEC tariff rules before buying any SKUs and carefully select offshore warehouses as the entry ports, to submit orders at optimal rates.
13	Inventory	Although the B2B2C inventory level and turnaround time is higher, it is important to implement WMS to enhance the product mix for B2B and B2B2C to shorten the delivery time and speed up the turnaround rate. The visibility of the inventory data is critical to the customers and suppliers to achieve just-in-time inventory. Reducing the inventory stockpiled in LHG's warehouse and tracing the movements of the inventory can drastically reduce the cash flow risk.
14	Returns	To reduce return rate, LHG should internalise its efforts in CRM by enhancing trust, traceability, and branding. LHG should also develop a strategy, perhaps working with return logistics specialists who understand the tariff rules in China, to overcome the intricate return logistics in CBEC orders.
15	Trust	Although trust is an intangible element in the supply chain, LHG should not neglect its importance, particularly in the Chinese context. It is the key to SCI and collaboration. Data transparency and responsibility-sharing are critical elements to enhance the trust in complex indirect B2B2C relationships.

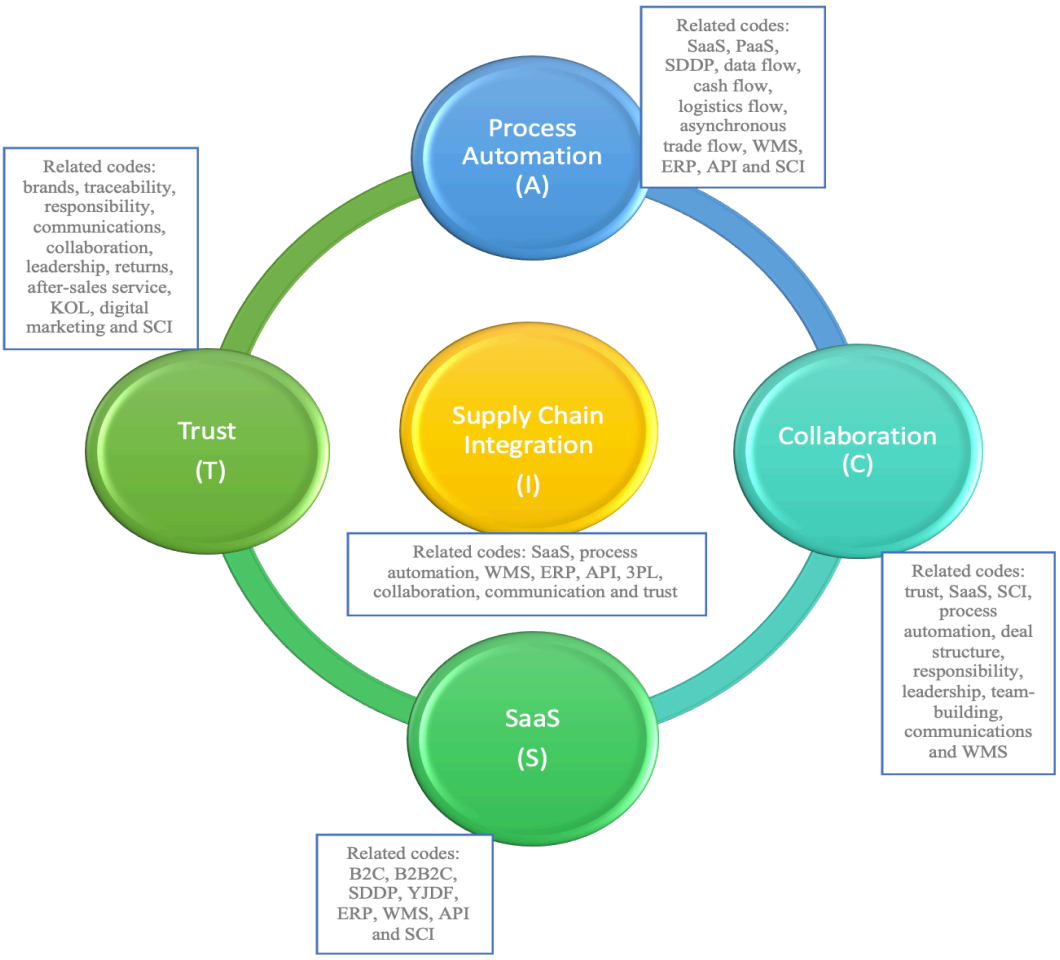
5.6 Outcomes by Actionable Themes

Braun and Clarke (2006) recommended that researchers should further analyse themes to understand the underlying meanings, scopes, and stories and produce actionable knowledge. I examined my research findings with the literature and discussed the research results with the participants in order to identify the most valuable themes.

Following Aziz and Ahmad's (2010) suggestion to find a proposed network for e-business supply chain integration, I selected ASICT, five themes, as the critical elements. I followed the structure of my literature review by dividing these five elements into two categories – mechanical and organic integrators – to examine the findings. The mechanical

integrators were process automation and SaaS adoption, and the organic integrators were trust and collaboration. Supply chain integration (SCI), a hybrid of mechanical and organic elements, was at the core, intertwined with the other four critical elements. Figure 5.3 illustrates the ASICT B2B2C system integrators network. I will go on to discuss each of the five ASICT key themes I concluded from my results.

Figure 5.3 The ASICT B2B2C e-Supply Chain Integrators Network



5.6.1 Process Automation

Process automation is a technical solution using software and hardware to digitise e-commerce transactions, which could improve the speed and capacity of LHG's B2B2C business. From the data analyses, I understood that process automation was an essential tool for LHG. In e-commerce, data exchange, including orders, payments, and logistical arrangements, must all take place swiftly. There is no room for human manoeuvres in the B2B2C process. The participants learned about process automation and the requirements for automating LHG's operations from the AC2 trial. After examining its relationship with other themes, process automation was found to be a key mechanical integrator with implications for other themes including ERP, WMS, SaaS, PaaS, 3PL, platforms, API, YJDF, and SDDP.

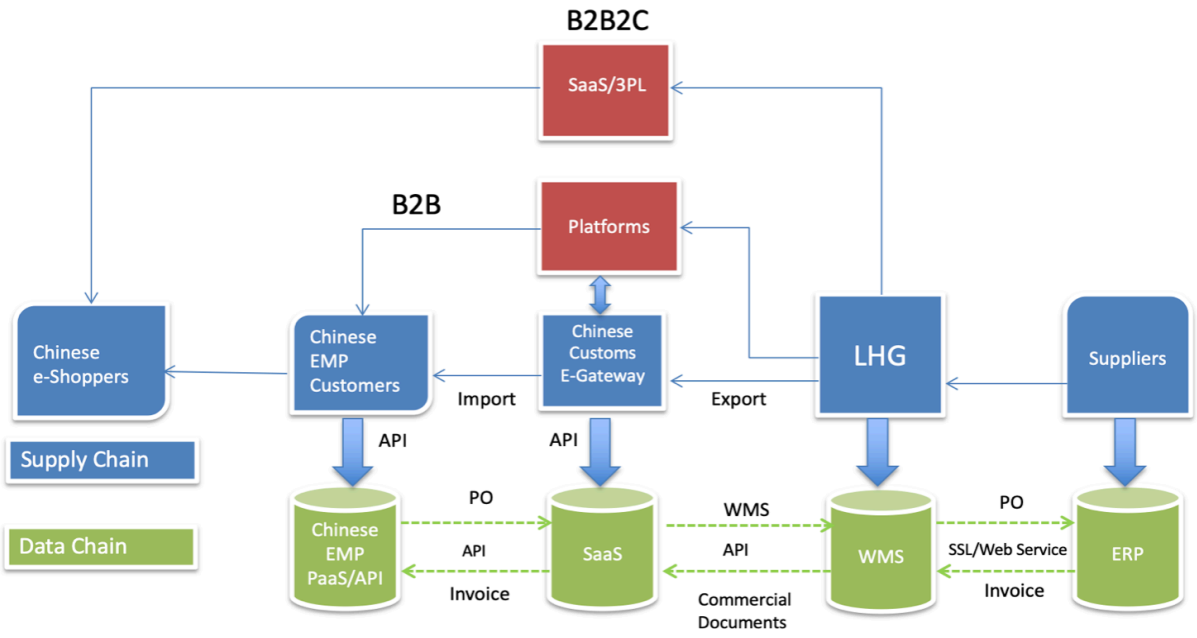
In the trial run, LHG adopted WMS with limited stocks to automate its inventory control and warehouse operation. Once LHG's stock information had been uploaded into a database, it became visible to the platforms' customers via the SaaS. The SaaS could upload stock data to the platforms and link it with the e-gateway to process YJDF and SDDP of B2B2C orders. The post-trial-run data analysis indicated that the most cost-efficient step for LHG to automate its operation would be adopting a WMS and digitising its inventory. The senior executive, in the AC3 discussion, stated that:

> *"From the trial run, I learned that it is possible for us to automate our system. We can quickly scan our entire inventory into a WMS's database, and utilise 886's SaaS system to automate the B2B2C transactions online including SDDP and YJDF. This is mission-critical for us and the investors – we have to do it."* **(CC)**

McCrea (2017) noted that WMS could provide DT to transform a warehouse into a proactive supply chain. Without inventory data, it would not be possible for LHG to collaborate with

SaaS to enable its B2B2C system. A limited stock and its associated data were used in the trial run. For an effective B2B2C system, it is important for LHG to digitise its warehouse operation with a WMS and train its warehouse and accounting staff to use the chosen WMS and ERP software. During AC3 I had discussions with the participants and external DT consultants to propose a data chain network (Figure 5.4) to automate LHG's B2B2C process. The proposed network will use DT such as WMS, SSL,[9] ERP, and API to merge the supply chain data into a data chain. Zhang et al. (2012) noted that Internet technology can create a value chain by facilitating collaboration among the members and adding value to the products or services. The thematic analysis suggested that the related codes/themes of process automation included SaaS, PaaS, SDDP, data flow, cash flow, logistical flow, asynchronous trade flow, WMS, ERP, API, and SCI.

Figure 5.4 The Proposed Data Chain Network of the B2B2C System



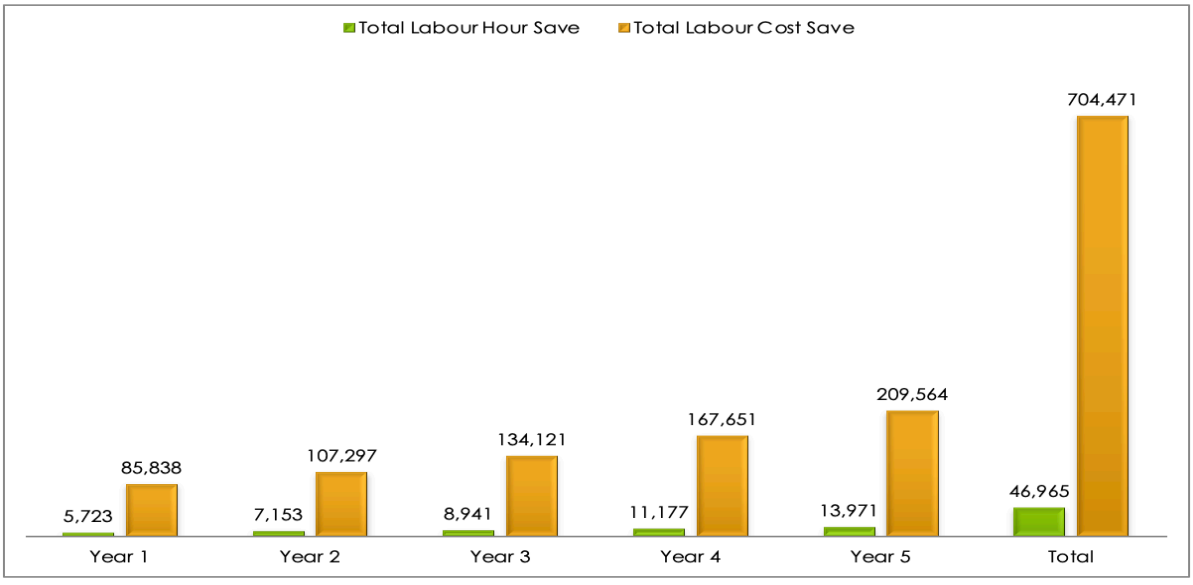
[9] SSL stands for secure sockets layer, which is a protocol for establishing authenticated and encrypted links between network computers.

The trial-run results suggested that process automation could reduce the average order processing time from 15 minutes to 1 minute. To explore the impact on enterprise performance, based on the assumptions listed in Table 5.1, I forecasted that LHG's first year B2B2C order number will be 24,525[10] with an annual growth rate of 25 percent. The total labour saved over five years will be 46,965 hours and the cost savings will be approximately USD 704,471. Thus, process automation will positively impact on LHG's operational and financial performance. Figure 5.5 illustrates the five-year labour cost savings forecast of process automation.

Figure 5.5 The Labour Cost Saving Analysis of Process Automation

Assumptions		
Manual Process Time per Order	15	Minutes
Automated Process Time per Order	1	Mintues
Labour Cost per Hour (Minimum Wage Per California)	15	USD
1st Year B2B2C Order Number Estimates	24525	
Annual Growth Rate	25%	

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Total Labour Hour Save	5,723	7,153	8,941	11,177	13,971	46,965
Total Labour Cost Save	85,838	107,297	134,121	167,651	209,564	704,471



[10] This figure is based on the consultant WC's forecast that LHG's first year revenue would be RMB 98.1 million, factoring that B2B and B2B2C sales would be an equal split, and the average price per order would be RMB 2,000, and RMB:USD exchange rate would be at 7:1.

5.6.2 Software-as-a-Service (SaaS) Adoption

The trial-run results suggested that outsourcing to third parties, such as SaaS and 3PL, would be a viable option to tackle the barriers of process automation and supply chain integration at LHG. The literature review indicated that without proper resources, LHG would have to consider outsourcing its technical platform to a SaaS provider, as Zhao and Li (2013) suggested. Using SaaS would help LHG to understand the complexity and reduce the cost of developing the B2B2C network. Mata and Quesada (2014) noted that a small seller can outsource its software management to SaaS or PaaS to reduce capital expenditure and control risk. Bhasin (2017) noted that an advantage of Alibaba is its multi-system which uses cloud computing to deliver SaaS to its B2B2C sellers. To avoid the enormous setup cost and steep learning curve of the B2B2C system, I suggested that LHG outsource its B2B2C operation to a SaaS provider, a strategy to which the participants agreed during the planning phase of AC2. The SaaS provider, 886, was recommended by a consultant, whose company had been successfully using 886 as its SaaS provider for China for the previous year. In AC3's group discussion, the participants had strongly agreed that adopting SaaS would be the best alternative to swiftly developing LHG's software system. In the trial run, 886 was able to upload LHG's inventory data to selling platforms such as Alibaba and JD as well as process its YJDF and SDDP to clear Chinese Customs. LHG could link all the necessary data in the supply chain using SaaS's APIs. In AC2, through group discussions, the senior executive and the other participants agreed to a trial run because it would not interrupt current operations, and the risk would be controllable through a WMS system. The senior executive, in an AC3 discussion, stated that to build a sustainable B2B2C system:

> *"LHG would also need to secure a cooperation with a suitable cross-border B2B2C SaaS to assist us in running the technical platforms and software."* **(CC)**

"If we build our own team, we will have to hire more staff which will increase overheads, and management becomes more complicated. But if we outsource it, we could primarily focus on the procurement and supply chain services." **(CC)**

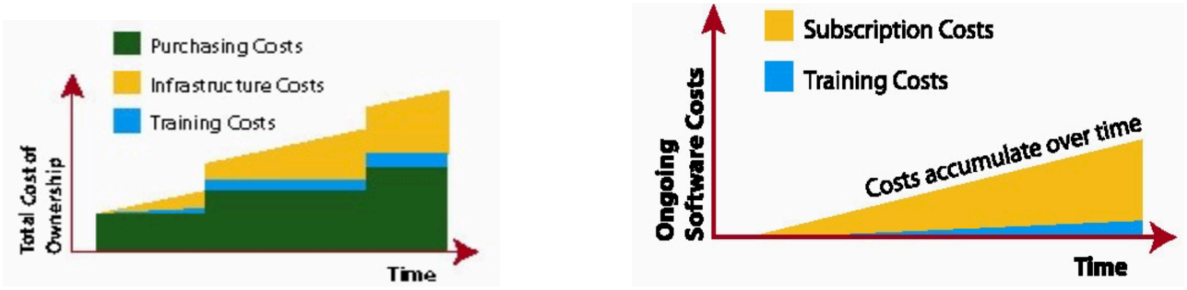
Furthermore, most of the B2C selling platforms, such as Alibaba and JD, already had PaaS. LHG was able to test the platform services via the SaaS system as shown in Figure 4.3 (page 115). However, the cost of LHG adopting 886's SaaS services was also discussed – 886 needs to be fairly compensated, as the SaaS consultant had elaborated.

"We spent eighteen months working with Red to build up our B2B2C platform that is linked to all the major B2C platforms in Asia. Now we have a powerful SaaS system that means we can sell more products, we are looking for clients who have a lot of products or buying power, but need a SaaS system to penetrate the B2B2C markets." **(AC)**
"We can definitely collaborate, meaning that not just 886 but, in the future, LHG as a whole can provide more services. For example, we can provide services for branding, starting from new store application submissions, product launches, marketing, orders, logistics, financial flow, we can handle all that ... but we can also divide these up and collaborate with you guys ... we just have to treat this part as modularised services ... of course these all must be paid, but the main point is that we've already come up with so many integrated solutions, so what solutions do you need? What is your budget? We can offer you an appropriate suggestion." **(AC)**

The modularised service fees used by 886 and mentioned by AC represented a critical requirement for LHG's SaaS adoption after the free trial. Since the SaaS service is a pay-by-usage software solution without upfront software purchasing and infrastructure cost, the cost

of using SaaS is much lower over time compared to ownership of SaaP, as illustrated in Figure 5.6 (Sehlhorst, 2008).

Figure 5.6 Cost Comparison– SaaP Versus SaaS Models



Figures by Sehlhorst (2008)

In the post-trial-run meetings, LHG's investors agreed to inject NT 9.765 million (about USD 325,500) into 886 for setting up a joint venture arrangement (JVA) to service cross-border e-commerce in Taiwan. Under this JVA, 886 agreed to charge LHG one percent (excluding any marketing expenses) of the B2B2C transaction volume. Analysing the JVA's cost–benefit, 886's B2B2C solution will save 6.9 percent (19.1% – 11.2% – 1% = 6.9%) of the tariff cost. The tariff comparison chart is shown in Table 5.3.

Table 5.3 Tariff Comparison Chart (2019)

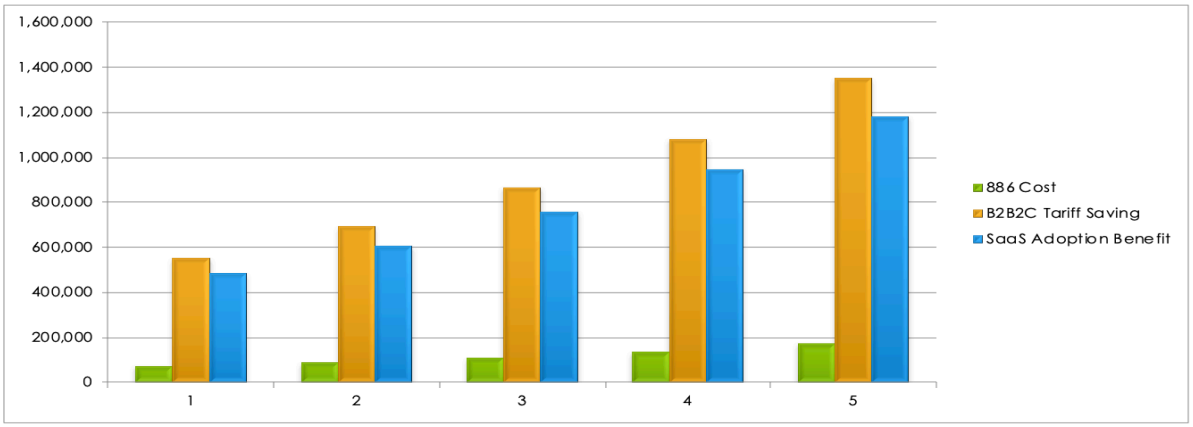
	B2B (BB)	B2C (BC)	B2B2C	CC
Import Duty	6%	0%	0%	0%
VAT	13.1%	0%	0%	0%
Cross-border E-Commerce Combination Tax	0%	11.2%	11.2%	20%
Total	19.1%	11.2%	11.2%	20%

This will represent a remarkable cost reduction, projecting that LHG's B2B2C volume is USD 6 million in the first year and grows at 25 percent annually. The total five-year SaaS adoption benefit is estimated to be USD 3.97 million. Figure 5.7 illustrates the cost–benefit analysis (CBA) of the five-year estimate.

Figure 5.7 Cost Benefit Analysis (CBA) of SaaS Adoption (5-Year Estimates)

Assumption	
First Year Volume	*RMB 98.1M
B2B/B2B2C Split	50/50
Annual Growth	25%
SaaS Fee	1%
Tariff Saving	7.9%

Year	1	2	3	4	5	Total
B2B2C Annual Sales	7,007,143	8,758,929	10,948,661	13,685,826	17,107,282	57,507,840
886 Cost	70,071	87,589	109,487	136,858	171,073	575,078
B2B2C Tariff Saving	553,564	691,955	864,944	1,081,180	1,351,475	4,543,119
SaaS Adoption Benefit	483,493	604,366	755,458	944,322	1,180,402	3,968,041



Remark:
* The number is based upon the forecast created LHG's business consultant – WC.

Thematic analysis demonstrated that the related codes of SaaS included B2C, B2B2C, SDDP, YJDF, ERP, WMS, API, and SCI, as illustrated in Figure 5.3.

5.6.3 Supply Chain Integration (SCI)

Many scholars noted that SCI is the key to synchronising the data, payment, and product flows (Chang, 2010; Chang and Graham, 2012; Khatun and Miah, 2016). Chang (2010) suggested using software to align asynchronous trade flow. Khatun and Miah (2016) and

Chang and Graham (2012) noted that integrating B2B and B2C data was a critical mission in an e-commerce supply chain.

In AC1, I learned that data integration of a B2B2C system was a very complex process involving a steep learning curve and investment, which would also require LHG to integrate its B2B supply chain data with the platforms' systems to reach mass consumers, as García et al. (2002) suggested. The collected data indicated a missing link between LHG's B2B and B2C database systems. Several participants from LHG were overwhelmed by the task of integrating the data chain. The board member as well as some of the other participants had concerns about transforming LHG from a low-risk B2B to a high-risk B2B2C business model.

"We need to provide B2B2C services to Alibaba and JD, but we do not have the capacity or financial resources to do it." **(CC)**
"We need to carry a lot more inventory if we become a B2B2C supplier to Alibaba or JD. What if we utilise our current inventory at our warehouse?" **(JY)**

I encouraged the executives at LHG to work with the consultant to quickly engage 886, a B2B2C SaaS provider in Taiwan, for a trial run. In the trial run, LHG used a WMS suggested by the SaaS to digitise its inventory and created a database that was linked to the SaaS WMS using an API. Subsequently, LHG was capable of integrating its data with the B2B2C electronic supply chain. Such actions required the support of internal and external members as well as collaboration with upstream and downstream supply chain parties. The trial-run result was positive. Most of the participants agreed to proceed with the supply chain integration project in AC3. The board member felt that:

"We need to integrate the data as soon as possible, so our inventory can become visible and useful, and the turnaround time can be reduced. I will arrange the necessary capital with the investors for the B2B2C capital requirement, but I want to see the supply chain integration plan before the B2B2C system goes live." **(PH)**

The thematic analysis indicated that the related codes/themes of SCI included SaaS, process automation, WMS, ERP, API, 3PL, collaboration, communication, and trust, as shown in Figure 5.3.

5.6.4 Collaboration

Guo et al. (2013) argued that a SaaS supply chain is different from the traditional one due to the collaborative relationship between its customers, software vendors, and the SaaS itself. Gartner Group (2004) and Chang (2010) also noted that collaboration is a critical factor for an e-commerce supply chain. From a practitioner's perspective, IT is proprietary information technology, whereas DT is about sharing information and partaking responsibility (Ma, 2016). The data analysis illustrated that the participants' views differed. I observed that the senior executive could not effectively explain his ideas and strategies to the other members.

"I was always very confused about what he wanted me to do. His mind was constantly changing and moving, often without a structure or plan." **(JY)**

Furthermore, the consultants and investors were unsure about how to help LHG. Meanwhile, LHG's clients such as Alibaba and JD were demanding that LHG expand its capacity from B2B to B2B2C, including logistics and fulfilment services. Although the investors were willing to support the B2B2C expansion, LHG's management was not comfortable growing

its business due to their lack of experience collaborating with outsiders. Chang and Graham (2012) noted that B2B supply chain collaboration requires the company to manage the relationship between the logistics system and the data network. Similarly, B2B2C also requires social elements such as cooperation, communication, and trust.

Chang (2010) and Wilderman (1999) noted that an organisation could develop a collaborative culture for transforming its e-supply chain into a c-commerce value chain. For example, collaboration between LHG and the SaaS provider was a critical element for the senior executive to overcome LHG's reluctance to expand from B2B to B2B2C. This process required LHG and the SaaS to work closely and use data transparency. This would require a collaborative mechanism between LHG and 886, as the SaaS consultant stated in AC3.

In studying the data patterns, another theme closely related to collaboration that emerged was communications. Beyond the surface expression of the words, there were latent meanings and different interpretations among the participants. For example, the former LHG manager and the consultant of SaaS expressed that:

"I often received mixed instructions from the CEO and the other executives about how to collaborate with my clients on the B2B2C business." **(BZ)**
"For our long-term collaboration, I suggested that a fair deal structure must be in place to define our collaborating scopes, responsibilities, and compensations." **(AC)**

One takeaway from the literature review was that communication among the supply chain was critical for teambuilding, storytelling, and sense-making. It was important for me to communicate my three action agendas. I also learned that human communications would be essential before data integration. In the supply chain, the members must communicate effectively before, during, and after transactions. The AC3 post-trial-run data indicated that

the new B2B2C proposal should include efficient communication tools such as social media apps and Web 2.0 portals that can stimulate knowledge-sharing and increase group learning capacity for organisational development (He et al., 2007; Peltola and Mäkinen, 2014). The related codes/themes of collaboration from the thematic analysis included trust, SaaS, process automation, WMS, deal structure, responsibility, leadership, team-building, communications, and SCI, as shown in Figure 5.3.

5.6.5 Trust

While reviewing the themes, I noticed that trust and related codes were often mentioned by the participants. For example, an external participant, an expert on SaaS, stated that:

> *"Trust between the client and SaaS needs to be established before the outsourcing decision is made."* **(AC)**

Reflecting on the literature review, Agag et al. (2016) noted that trust and perception are critical elements in online transactions. They also argued that mutual trust must exist for e-commerce shoppers to willingly pay without a laborious human interaction. Aziz and Ahmad (2010) argued that trust in an e-supply chain is often broken due to the infringement of intellectual property caused by an electronic exchange without proper authorisation. Their study of Malaysia's B2B2C supply chain showed that lack of trust was the most significant cause of project failure. Furthermore, if this trust is absent, consumers will not purchase anything online, particularly on cross-border sites. Zuo et al. (2013) and Shan et al. (2010) noted that feelings of trust, creditability, and security between buyers and sellers are critical for supply chain collaboration. Shoppers prefer to buy from trustworthy sites, and suppliers prefer to sell on trustworthy sites, because doing so ensures that they will be paid. Agag et al. (2016) noted that buyer perception of seller ethics (BPSE) is the most critical value. Such

trust and perceptions need to be extended to the entire supply chain to create value. I agree with Anees-ur-Rehman et al. (2018) that internal effort would be critical for LHG to establish trust with its customers and that employees must be trained in LHG's culture and values to properly conduct their tasks. Such trust-building does affect the financial performance of small companies. From the thematic analysis, the related codes/themes of trust included brands, traceability, responsibility, communications, collaboration, leadership, returns, after-sales service, KOL, digital marketing, and SCI, as shown in Figure 5.3.

5.7 Critical Elements of the New B2B2C System Integrators Network

To ensure that the new B2B2C system integrators network represented actionable knowledge for LHG, I used Figure 5.3 to initiate a discussion with the participants to help them understand the implications of the ASICT network. Subsequently, I used an open-ended questionnaire to conduct post-trial-run interviews with the participants to evaluate their acceptance of, and adaptability to, the ASICT network. I emailed the interview questionnaire to the AC3 participants including a board member, a senior executive, a finance executive, an operations executive, and the consultants – the company's main decision-makers. I based the interview questionnaire on the research question of "what are the critical elements and key leverage points of the new B2B2C system?" The post-trial-run interview questionnaire is show in Appendix 10. To identify the impact of my action research and the adoptability of my ASICT network, I created Table 5.4 to summarise the participants' key feedback on the ASICT network.

From the participants' feedback, I observed that my proposal was an applicable business strategy as the new network added to the knowledge acquired from the action cycles. It was also considered to be useful knowledge by the senior management. I also

observed that they were no longer overwhelmed by their barriers in dealing with complicated issues such as SDDP and YJDF.

Table 5.4 ASICT Network Feedback Summary	
Question 1	In what way has the ASICT B2B2C system integrators network addressed your concerns about B2B2C trial-run issues?
Board Member	*"The ASICT network made me realise the trial-run issues were not simply about a technology linkage with 886, but also that we would have to value integration and trust; without them, the system will not be able to function as a team … without information transparency, I will have a hard time to explain to our investors for more funding."* **(PH)**
Senior Executive	*"The ASICT network is a very simple model for us to examine the complexity of B2B2C, and it allows me to focus on a few key areas to improve ourselves and enhance our collaboration skills with 886 for our future growth … I gain more confidence to build the team for deploying our B2B2C system."* **(CC)**
Finance Executive	*"ASICT represents major challenges to our B2B2C system's integration. They are the essential elements, which we overlooked in the trial run. I agree that ASICT are all important components that will impact our bottom line and profitability."* **(JW)**
Operations Executive	*"I worry about the sustainability of the trial run system. The ASICT network is very helpful to structure our B2B2C operation system – the five themes cover the crucial operational tasks in the trial run. It helps us to break down the complexity of the B2B2C system, and provides a lens into which my staff and I can focus for our deployment."* **(JY)**
SaaS Consultant	*"My concerns are about the coherence and lack of trust of the supply chain integration. This network provides a practical way for us to improve the results from the trial run and enhance our system integration."* **(AC)**
Question 2	In what way do you believe the ASICT network can resolve the trial-run issues?
Board Member	*"I think your ASICT network makes sense, it points out a workable mechanism for us to increase our supply chain integration ... so we don't have to spend our limited financial resources on unnecessary human resources, software, and hardware investments."* **(PH)**
Senior Executive	*"This network provides me with a simple way to communicate with my employees, particularly the warehouse and operational staff, and it is also helpful for me to train my employees on the key areas with practical skill sets."* **(CC)**
Finance Executive	*"The network will lessen our risk, improving our knowledge in cloud computing and data technology, so we can keep up with our partners to make B2B2C transactions automatically to further reduce human errors."* **(JW)**

Table 5.4 ASICT Network Feedback Summary	
Operations Executive	*"Not just to depend on 886's know-how on B2B2C supply chain, the ASICT network can help us to identify the tangible and intangible issues in our trial run; it helps us to reflect upon the integration and collaboration issues resulting from the technology adoption."* **(JY)**
SaaS Consultant	*"The trial run was just an experiment for LHG to explore the B2B2C operation. LHG management needs a framework to understand the fundamentals of its own B2B2C system."* **(AC)**
Question 3	In what way would you deploy a B2B2C system based upon what you have learned from the proposed ASICT network?
Board Member	*"We can deploy our B2B2C system by linking up with 886's system, under a reasonable business agreement to enhance our long-term collaboration, perhaps a joint venture."* **(PH)**
Senior Executive	*"I believe integration is the key for us to start. With an integrated supply chain, we can use the same inventory for running both B2B and B2B2C businesses."* **(CC)**
Finance Executive	*"Our first step should be implementing the WMS and ERP systems, with 886's support, to ensure our finance and inventory is under control before going full-scale."* **(JW)**
Operations Executive	*"Using the ASICT network, we can examine 886's SaaS system to lower our deployment risk, and create a long-term cooperation plan."* **(JY)**
SaaS Consultant	*"Automation and trust are the cornerstones to supply chain integration, improve LHG's B2B2C trial-run system. SaaS is an effective solution for a small company like LHG, and the collaboration with SaaS and other supply chain members should be further improved before the deployment."* **(AC)**
Question 4	What other important factors should be added to the ASICT network?
Board Member	*"I think staff training is missing. You cannot effectively collaborate with others without properly trained staff."* **(PH)** *"Investors are not familiar with e-commerce business; they would like to see financial data generated through our own ERP system on a perpetual basis … we can research the blockchain technology to build up trust in the supply chain and money chain ... perhaps this will increase our corporate value and increase financial support from our investors."* **(PH)**
Senior Executive	*"Product management is also critical. Without the proper product, there will be no sales happening, regardless of 2B or 2C."* **(CC)** *"We also need to learn to utilise the platforms' marketing tools for our 2C marketing, since 886 is not familiar with our particular product lines. Their expertise is in cosmetics products."* **(CC)**
Finance Executive	*"Evaluation … we must be able to track, monitor, and evaluate the system's efficiency constantly. We need to evaluate our shipping cost, delivery time, and SaaS performance."* **(JW)** *"The after-sales services would need to be improved, since we cannot depend on the platforms' and SaaS's systems on consumer returns."* **(JW)**
Operations Executive	*"I believe team-building and employee training are also important factors. We should invest some funds into these areas to improve our own capacity for future demands."* **(JY)**
SaaS Consultant	*"Value chain idea should be explored for LHG to be able to enhance its efficiency and create more value through the supply chain's automation, integration, and collaboration."* **(AC)**

The outcome of this process indicates that the participants were positive about the notion of the ASICT network for three main reasons: first, the participants agreed that the ASICT network simplifies the technological complexity of the B2B2C system with five critical elements. Second, the participants agreed that ASICT has both tangible and intangible integrators for collaborative teambuilding. Third, the participants agreed that the ASICT network can efficiently improve LHG's B2B2C system capacity by adopting 886's SaaS to automate and integrate the supply chain, lowering the risk and promoting trust for LHG and 886 teams to collaborate towards a common goal.

To summarise, the ASICT B2B2C system integrators network represents the core knowledge acquired from this action research. The five critical elements were applicable to evaluating the trial-run data and generating a new proposal. I mapped them with my conceptual framework for their roles and implications and concluded that the ASICT system integrators network and the PSTH conceptual framework fit reasonably. These five ASICT themes were strongly and dynamically related to each other. LHG's B2B2C system required process automation to increase its efficiency in delivery time and quality. Such a complex process required both human collaboration and data integration among the supply chain members. LHG's data integration could be achieved by adopting 886's SaaS system. Successful integration would require LHG to collaborate closely with 886. Furthermore, trust emerged as a key integrator for B2B2C supply chain integration. All of the ASICT themes were critical elements that represented the findings of the action cycles.

5.8 Leverage Points Beyond Technological Complexity

This ASICT network provided a practical framework for LHG to deal with the complexity of the platforms. However, the e-business model of integrating the marketing, technology, warehouse, and logistical functionalities could be considered less valuable due to the

potential for overleveraging the functions without a key innovation and core competency (Zhang et al., 2012). Such overleveraging issues may prevent small companies from cultivating supply chain trust in cross-border e-commerce (Bashee, 2017) and subsequently from reducing transaction costs (Wang et al., 2017). To prevent LHG from falling into the trap of overleveraging, technology adoption can only be considered as the entry requirement of the platforms. It is important for an e-business to understand whether the most important UOA is technology, group dynamics, or both (Yin, 2009). As a small company without a core technology innovation, LHG can quickly collaborate with the SaaS platform through outsourcing. Nonetheless, the two organic integrators, collaboration and trust, are internal factors that can only be improved through organisational efforts.

5.8.1 Collaboration as a Key Leverage Point

LHG's management realised that collaboration is a key leverage point from the ASICT network. Here are some comments from the participants on the subject.

"To avoid having to depend only on 886's know-how on B2B2C supply chain, the ASICT network can help us to identify the tangible and intangible issues in our trial run. It helps us to reflect upon the integration and collaboration issues resulting from the technology adoption." **(JY)**
"The ASICT network is a very simple model for us to examine the complexity of B2B2C, and it allows me to focus on a few key areas to improve ourselves and enhance our collaboration skills with 886 for our future growth." **(CC)**
"We can deploy our B2B2C system by linking up with 886's system, under a reasonable business agreement to enhance our long-term collaboration, perhaps a joint venture." **(PH)**

In this case study, collaboration implies the teamwork between the internal and external members of the LHG supply chain system, including LHG, SaaS, 3PL, the Chinese Customs Authority, and the platforms. Collaboration requires intra- and inter-organisational cooperation and also requires trust, communication, leadership, and structure to create synergy. Mistrust and conflict might occur in the collaborative supply chain. Thus, information transparency is essential. Collective intelligence drives e-commerce by allowing different companies to play their parts (Mata and Quesada, 2014).

5.8.2 Trust as a Key Leverage Point

Based on the participants' feedback, LHG's management also recognised that trust, an organic integrator, is a key leverage point from the ASICT network. Here are some comments from the participants.

"My concerns are about the coherence and lack of trust in the supply chain integration. This network provides a practical way for us to improve the results from the trial run and enhance our system integration." **(AC)**
"Investors are not familiar with e-commerce business; they would like to see financial data generated through our own ERP system on a perpetual basis … we can research the blockchain technology to build up trust in the supply chain and money chain ... perhaps this will increase our corporate value and increase financial support from our investors." **(PH)**

A higher level of trust in the supply chain can lower the inventory, making the exchanges more cost-efficient (Lin et al., 2006). Bashee (2017) noted that trust and commitment are critical elements for lowering costs. Nonetheless, improving trust and

commitment has not been explored, and it will be difficult for small companies to establish these important elements in cross-border trade. The SaaS consultant participant (AC) stated that "trust between LHG and the 886 team would need to be established before the B2B2C system can go live." In Agag et al.'s (2016) recent study, trust played a major role in the B2B2C supply chain, and most small companies failed to implement a B2B2C system because of mistrust. Thaw et al. (2009) noted that consumers' trust is positively correlated with the trustworthiness of the e-commerce platforms. Kuttainen (2005) noted that trust is a critical element in empowering transactions between unfamiliar buyers and sellers in the virtual space. Trust incorporates the satisfaction, commitment, and intention of the supply chain members to form business relationships. Therefore, trust is a key leverage point for supply chain integration and collaboration.

I identified collaboration and trust as key leverage points from the participants' feedback and literature triangulation. Not only can they be used to improve supply chain integration and reduce transaction costs, they can also incorporate other important human factors such as team-building, staff training, evaluation, and after-sales services, suggested by the participants, for long-term strategic growth. Thus, LHG can direct its focus toward these key leverage points to adapt and develop this new strength using automation, SaaS, and SCI to enhance information-sharing and data transparency.

5.9 Conclusion

My research objective was to help LHG develop a cross-border B2B2C system plan that can improve its enterprise performance. To achieve this goal, it is essential for me to answer the three research sub-questions based on the action research results.

5.9.1 Answers to the Three Research Sub-questions

I conducted three action cycles in this research, each of which used action inquiry to address a research sub-question (RQ). Based upon the data analysis of these action cycles, I summarised the answers to the research sub-questions as follows.

RQ1: What is preventing LHG from adopting a B2B2C system?

Based on AC1's SWOT and data analyses, there were technological, operational, and organisational obstacles preventing LHG from developing its cross-border B2B2C system. The complexity of the EMP platforms created inability of LHG to develop its B2B2C system. Sixty-one codes were extracted from the ACs' data as the obstacles (listed in Appendix 6). Lacking suitable knowledge to understand these obstacles was the main problem preventing LHG from adopting a B2B2C system.

RQ2: What are the requirements for LHG to adopt a B2B2C system?

Based on AC2's B2B2C trial-run data analyses, fifteen themes emerged as the main requirements for LHG to adopt a B2B2C system: inventory, returns, asynchronous trade flow, process automation, API, SDDP, YJDF, WMS, B2B2C, SaaS, tariffs, trust, collaboration, cost efficiency, and supply chain integration. These are actionable themes for overcoming the obstacles to developing a B2B2C system.

RQ3: What are the critical elements and key leverage points of the new B2B2C system?

From AC3 data analyses, among the fifteen actionable themes I concluded that the five critical elements are process automation (A), SaaS (S), supply chain integration (I), collaboration (C), and trust (T). These five critical elements were formulated into an

actionable framework as the ASICT B2B2C e-supply chain integrator network. Among them, trust and collaboration are the two key leverage points for LHG to cope with the EMP platforms.

5.9.2 Summary

To analyse my data, I adopted a six-phase thematic analysis method to code, categorise, unitise, and recognise the relationships among codes and themes; I developed axial positions to make sense of the data, identified the patterns, and reached conclusions. From the sixty-one codes that had been extracted, I used deductive thematic analysis to select fifteen actionable themes. I used an axial coding method to examine the overarching relationships between them and came up with the five critical elements (ASICT): process automation, SaaS, SCI, collaboration, and trust. I further examined these five integrators and selected trust and collaboration as the two key leverage points that a small company can use to enhance its B2B2C system. The deductive thematic analysis process is represented in Appendix 11's illustration of the 61–15–5–2 deductive coding pathway.

The primary goal of this study was to overcome LHG's inability dilemma for feasible deployment with minimised disruption and risk. The trial-run experiment was a valuable learning-by-doing exercise that allowed the participants and me to think more critically before implementation. My action research results corresponded with my literature review to show that the supply chain is a value chain, which could be transformed by incorporating new thinking and technology (Yücesan, 2016). From the data analysis, I generated actionable knowledge for LHG's practice from the actionable themes. LHG must consider both data integration and human collaboration.

In terms of my main research question of "how can LHG develop a framework for adopting a B2B2C system between the US, China and Taiwan, to realise its cross-border e-

commerce opportunities?" there were some takeaways. ASICT integrators are five critical elements for effective B2B2C planning. They can enhance the coherence of LHG's supply chain and increase its efficiency. Enterprise performance is achieved not only through cost reduction but also through organisational learning and empowering the management to map operational performance with the financial outcome. Value is not simply measured by profitability or technology adoption but also by understanding the commonly shared value of stakeholders to develop a multi-user ecosystem (Yücesan, 2016). I concluded that building trust and collaborative learning were the most cost-effective leverage points in a fast-paced multisided platform environment to tackle complex B2B2C system development for LHG's long-term success.

Chapter 6 – Reflections

6.1 Learning from Three Aspects

My reflection on this research has three aspects. First, the personal lessons learned by navigating the action research, focusing on what I had learned from the participants, actions, and literature. Second, the collective learning of the organisation, focusing on the insightful findings from the action cycles that answered my research questions. Third, the actionable knowledge gained from this study that could be considered as my contribution to practice as well as to knowledge. These assessments are a part of my learning journey to becoming a qualitative researcher. I analysed my transformation from where I now stand as an action researcher, and the impacts on my ontological, epistemological, and methodological beliefs. My reflection also includes a self-evaluation which offers a realistic assessment of my capacity and ability to conduct an insider case study. Furthermore, the reflection has helped me to understand my development of theoretical assumptions and my approach to the qualitative methodology. This is an assessment of my own path to becoming a scholarly practitioner. Going through the action cycles with the participants deepened my learning and allowed me to better understand the research design of action research. I experienced a "learning-to-learn", or "meta-learning", process (Coghlan and Brannick, 2014), through my research design, environments, actions, and tasks during the action research. This "inquiry – action – reflection" journey (Greenwood and Levin, 2007) helped me appreciate the essence of being a qualitative researcher – interpreting beyond the quantitative data. The integrative approach of three aspects of first-, second-, and third-person inquiries (Coghlan and Brannick, 2014) deepened my thoughts and allowed me to examine my learning as an individual, a member of my organisation, and an academic scholar–practitioner.

6.2 Learning from the Literature Review

I studied the existing literature to find ideas that would bridge the gaps between academic theory and business practice. Unable to find suitable empirical studies examining the ways small businesses cope with complex cross-border e-commerce platforms, as Wang et al. (2017) also pointed out, I attempted to explore this topic through my research questions. One major academic idea that I developed from different scholarly articles was the platforms–systems–technology–human (PSTH) conceptual framework, which I used as my roadmap (Figure 2.3, page 57) to guide the learning of myself and the participants. Through this framework, I learned to examine the problem from the perspectives of various scholars. Using ideas from literature helped me systematically investigate the barriers, requirements, critical elements, and key leverage points of LHG's new B2B2C system. I triangulated my research findings of fifteen actionable themes with the literature to examine whether any of my results had produced useful knowledge for LHG. Most of the papers I found were quantitative studies focusing on transaction cost and supply chain performance. I learned that B2B2C systems are complex, and that not only are SaaS adoption and integration essential requirements, human factors are also important for creating value within the supply chain. I learned that the value creation of an e-supply chain does not occur only through cost reduction; it also includes the ability to learn as a team and allow the management to map the operation performances with financial outcomes (Yücesan, 2016). To enhance my education on the future of cross-border B2B2C e-commerce, I could have explored the value chain and ecosystem theories in greater detail. I learned that cross border e-commerce is a rapidly changing industry due to the advancement of technology and changes in the global supply chain. There may be recently published articles that I overlooked when this thesis was written. It is essential for me to keep up with the new literature.

6.3 Learning from the Research Design

My assessment of the research design focused on examining what I had learned about action research methodology. My learning can be attributed to a combination of the participants' and my thoughts while going through the reflection and observation tasks of the action cycles, because my action research design was participatory action research. I often used the second-person voice to balance my insider/outsider role duality. These assessments enhanced my education by influencing my selection of research strategies, plans, and data collection methods. The interactions with the participants deepened my education, allowing me to better understand the research methodology.

I realised that there had been a paradigmatic war occurring within myself before this research (Burrell and Morgan, 1979). I wondered whether my qualitative methodology and research design were objective. I worried about the impacts of my interventions as an insider researcher. Choosing between a quantitative and a qualitative approach was difficult. I had contemplated using a mixed method, utilising grounded theory to generate theoretical assumptions for future hypothesis testing (Easterby-Smith et al., 2012). Nonetheless, after I created my action cycles summary table (Table 1.1) in my thesis proposal, I realised that it would be more meaningful to use the action inquiry to collect and analyse qualitative data. This methodology allowed me to collect data from participants at various points in time to observe the changes that had occurred. It was a valuable way to observe organisational change. This would not have been possible without the support of the CEO, who accepted me as a team member. However, I often found myself trapped in the researcher/practitioner role duality. I had to work hard to renegotiate my role, to tactically gain the trust of the participants. I learned that appreciative inquiry (Bushe, 2012) engages the participants and promotes them to overcome their natural tendency to silence and resistance. In hindsight, it was also clear that my compliance with the UoL's ethics policy on anonymity was

instrumental in gaining the participants' consent and in their permitting me to participate in organisational actions.

6.4 Learning from Action Cycle 1

I learned from Peddler (2008) and Revans (1991) that the method of action learning is to create a learning set which enables the set members to understand the problem and learn through real-time interactions. The aim is to help the set members establish a sense of ownership that works for them. The set facilitator needs to create an environment whereby members are challenged to develop their skills (Holmes, 2008). In this research, in which each action cycle was an action learning set with participants of different concerns, I learned to act as a facilitator without personal bias.

Most of my reflection on AC1 was personal, using first-person inquiry for critical thinking (Coghlan and Brannick, 2014). I was intrigued by what I had learned from the AC1 SWOT analysis, but I wondered how my interviews had helped the participants to understand what was preventing LHG from adopting a B2B2C system. Later, the sixty-one diverse barrier codes enabled me to see that LHG's inability to realise its B2B2C opportunities was complex, due not only to technology adoption barriers but also to many other wide-ranging factors. Most participants were overwhelmed by this complexity since LHG was a very small company with limited experience. Would LHG be better off staying in the B2B business? How could we break out of the status quo? Would participants work together to move forward with planned actions? To manage the project, I learned to focus on integrating LHG's supply chain as the preliminary mission. In order to minimise the risk, I consulted the literature and learned that SaaS adoption (Wang et al., 2011) could effectively integrate and automate the supply chain, which would provide us with the actionable knowledge to

progress into the next action cycle. To summarise, AC1 provided a valuable lesson on combining literature and qualitative data to problematise a complex organisational issue.

6.5 Learning from Action Cycle 2

My reflection on AC2 mostly focused on the group learning experience. Questions reflected from the second-person perspective included: how could we effectively develop a B2B2C system? How could we internalise or outsource the B2B2C operation? What had we learned from the trial-run data? In AC2, I learned to implement thematic analysis to generate fifteen actionable themes from the sixty-one codes. The processes involved in decoding the data represented a major learning experience for me. I reviewed the raw data many times, gradually becoming familiar with its meaning. Each time I analysed the qualitative data, I gained more insight from the participants. Over the course of the data analysis, I was able to make sense of my methodology and literature review, and adjust the next action cycle's tasks accordingly. The fifteen actionable themes I generated represented major barriers as well as action learning opportunities. I triangulated these action themes with the literature to develop a theoretical foundation for my action cycle design and rallied the participants to test the possibility of adopting SaaS. This trial run significantly saved costs, as well as improving efficiency. This was attributed to the collaboration with 886. Nonetheless, the coherence of the B2B2C supply chain was still being questioned. I thought critically about whether we could effectively improve supply chain integration and collaboration. The performance in the trial run illustrated the results of our learning-by-doing as a team. It was imperative for me to understand what the results meant to us, so I asked this question: What are the results and impacts of the trial run? Both negative and positive impacts had emerged from the findings, some requiring further assessment. It was critical to determine whether it would be feasible for LHG to implement the trial-run experiment in the future. There were still doubts and

fears, but the participants seemed less overwhelmed than they had been. This trial-run experiment was critical and led us to further action learning in AC3.

6.6 Learning from Action Cycle 3

In my assessment of AC3, I examined the post-trial-run data to understand whether the participants understood the organisational, operational, and technological requirements of B2B2C which would allow us to learn how to effectively realise the opportunity. I also examined other possibly overlooked factors and surprises that may have emerged from the research findings. I discussed the ASICT network with the participants to enhance the action learning, worked with the participants to assess what we had learned from the trial run, and refined the B2B2C proposal for future deployment. Although the technical and logistical aspects of B2B2C could be outsourced to SaaS, the integration of the supply chain would require high levels of trust, collaboration, and commitment. Fink (2006) argued that it is not practical to develop matrices to integrate value and mechanism and suggested that researchers should construct different generic theoretical models to interpret the values of companies. I wondered if my ASICT network could generate some wider applications.

Surprisingly, we learned that SaaS adoption was less complicated than we expected, but trust and collaboration were critical elements linked to many intangible barriers. This led us to recognise the extent to which these critical elements should be emphasised as the key leverage points for LHG's long-term growth.

6.7 Learning from People

In this DBA thesis journey, many people assisted me. Foremost among them were the students and faculty members of UoL. Their comments and suggestions enabled me to think critically as a means for making improved strategic decisions. From their valuable critiques of my work, I learned to think analytically and expand my perspective with different

viewpoints. For example, Dr. Yusuf Nulla, my primary thesis supervisor, helped me to structure the action cycle so that it could serve as the core for my research. Through the entire process he challenged me to find ways to improve the rigorousness and validity of my research. Dr. Jim Stewart, my second thesis supervisor, influenced me to reframe my literature review by recognising the normal business and technological factors. He inspired me to create a conceptual framework that could serve as the theoretical model for my study. Dr. Andreas Meiszner taught me how to phrase the research problem and questions as well as how to use the table of contents as a tool to ensure the consistency of my thesis. He also introduced me to the multisided platform theory and helped me find the leverage points in my thematic analysis. From my viva examiners, Dr. Akbar and Dr. Harrington, I learned how to delineate the problem from the content and context perspectives, explain the theoretical debates and positions, elaborate on the learning emanating from the trial-run results, and restructure my thesis. Their inputs strengthened my thesis presentation.

I was also of course influenced by the participants of my project. For example, AC, the SaaS consultant from 886, taught me how to implement a cross-border B2B2C system in the trial run. It was crucial for me to learn from an industry expert about the technological and operational issues such as SCI, SaaS adoption, SDDP, YJDF, API, and WMS. Another participant who exerted a strong influence was JW, an LHG finance executive, who provided valuable information about the trial-run results. Through my interviews and discussions with him, I was able to learn how to measure LHG's B2B2C supply chain performance.

My thesis journey featured other valuable influencers, such as Dr. Caroline Ramsey, who advised me on how to use appreciative inquiry to overcome the resistance of the participants. She also advised me to follow Marshall's (2016) "living life as inquiry" philosophy to understand my bias and create actionable knowledge as an insider researcher. In addition, Dr. Nii Amoo suggested ways to apply Coghlan and Brannick's (2014) three-

person perspectives for critical reflection. Critiques from and discussions with my fellow DBA students also helped me to improve the methodology and narratives of my thesis. These were among the valuable lessons I learned from these scholars, participants, and peers. They enriched my understanding of action research, helped me to avoid my bias, and enabled me to make critical decisions to complete my thesis.

6.8 Conclusion

My learning experiences occurred simultaneously. First, the principal action cycle of reflect, plan, act, and observe. Second, the action cycle intended to uncover hidden unknowns that were absorbed within a learning cycle (Zuber-Skerritt and Perry, 2002). One of the lessons the participants and I learned during the action research was that trust-building among the supply chain members to collaborate and leverage technology could lead to low-cost results that are efficient. My finding of the five critical elements of the ASICT network provoked a new way of thinking for LHG and me. ASICT represents the actionable knowledge to understand our barriers and develop B2B2C in the complex cross-border e-commerce area. I believe I had successfully investigated my research questions by finding the requirements, critical elements, and key leverage points to realise LHG's cross-border B2B2C opportunities. The complexity of the platforms could now be understood and effectively managed by LHG, while identifying the best way to ensure future growth.

To summarise, this research has been an enlightening journey, transforming me from a positivist into an interpretivist. As I progressed through this action research, I began to think critically about the transition in my methodological beliefs. I learned that the intricacy of human activities exists in a realm beyond data. I learned to consider the complexity of intangible factors and contextual relationships to provide insights. More importantly, as I

made my way through this thesis journey, I learned my responsibilities as an action researcher to myself, my organisation, and the world.

6.9 Limitations

With this DBA thesis, I did not aim to create a rigorous theory that can be generalised. Rather, I intended to explore a specific problem faced by one company. I identified several limitations in my research. First, my research design was based on action cycle activities, and my methodology followed the action research framework for a single case study. Therefore, my research findings have not led to a general theory. Second, the interventions of action cycles can be biased and subjective; the collected data was contextual and conditional, so it cannot be generalised for other research. Additionally, some data was collected in Chinese and Taiwanese. Thus, some native linguistic meanings may have been lost in translation. Third, some data was collected textually and thus did not contain audio and visual elements (such as tone of voice, facial expressions, or gestures) for further behavioural analysis. Fourth, the research design adopted the purposeful sampling method, the sample size was small, and the participants were strategically selected. Hence, the findings may only apply to LHG specifically. Fifth, the data collected from external participants may be too narrow and subjective to reflect the wider views of industry experts. Sixth, the scope and timeframe of the trial run were limited, so the trial-run results could be biased. Seventh, the coverage of this research was limited to cross-border e-commerce in China. Thus, the findings may not be applicable to other countries.

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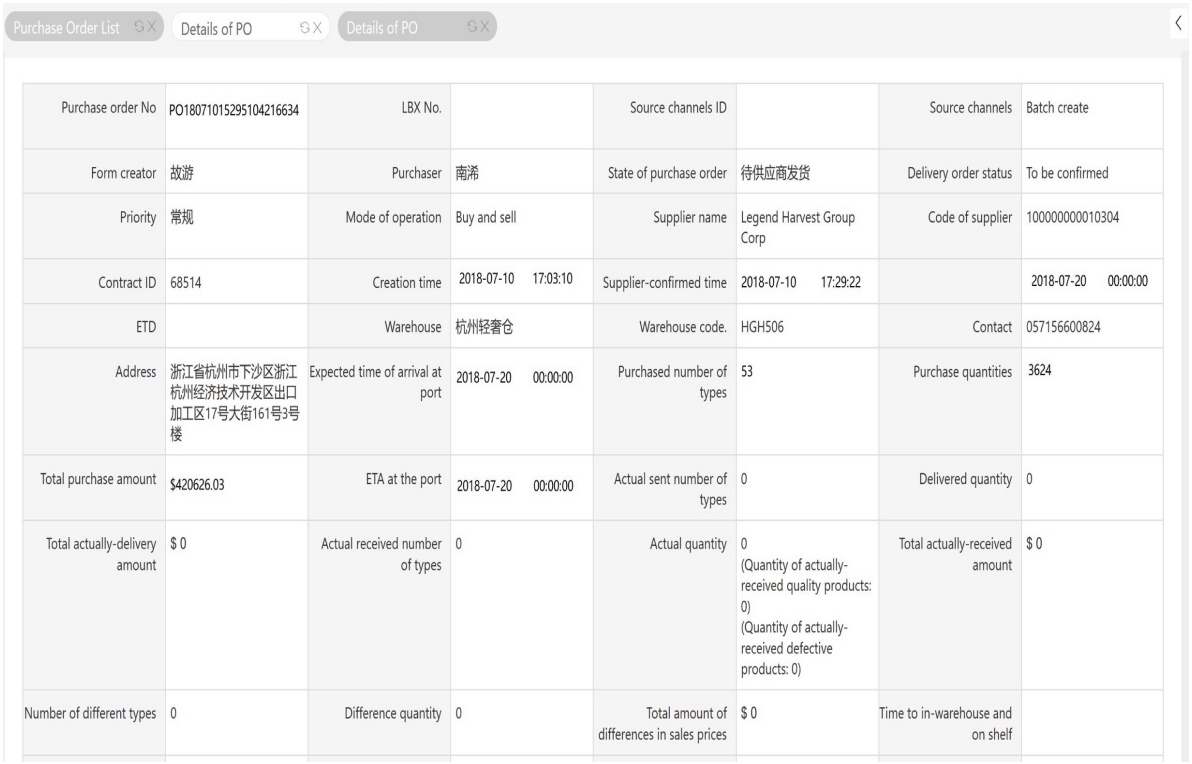
Appendices

Appendix 1

A Sample of Alibaba's Electronic Purchase Order to LHG



Purchase Order List | Details of PO | Details of PO

Purchase order No	PO18071015295104216634	LBX No.		Source channels ID		Source channels	Batch create
Form creator	故游	Purchaser	南希	State of purchase order	待供应商发货	Delivery order status	To be confirmed
Priority	常规	Mode of operation	Buy and sell	Supplier name	Legend Harvest Group Corp	Code of supplier	100000000010304
Contract ID	68514	Creation time	2018-07-10 17:03:10	Supplier-confirmed time	2018-07-10 17:29:22		2018-07-20 00:00:00
ETD		Warehouse	杭州轻奢仓	Warehouse code.	HGH506	Contact	057156600824
Address	浙江省杭州市下沙区浙江杭州经济技术开发区出口加工区17号大街161号3号楼	Expected time of arrival at port	2018-07-20 00:00:00	Purchased number of types	53	Purchase quantities	3624
Total purchase amount	$420626.03	ETA at the port	2018-07-20 00:00:00	Actual sent number of types	0	Delivered quantity	0
Total actually-delivery amount	$ 0	Actual received number of types	0	Actual quantity	0 (Quantity of actually-received quality products: 0) (Quantity of actually-received defective products: 0)	Total actually-received amount	$ 0
Number of different types	0	Difference quantity	0	Total amount of differences in sales prices	$ 0	Time to in-warehouse and on shelf	

Appendix 2

Action Cycle 1 Interview Questionnaire

Student Researcher:

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Thesis Supervisor:

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Thesis Title:

Development of a Cross-Border Business to Business to Consumer (B2B2C) Supply Chain to Enhance Corporate Performance: A Case Study of Legend Harvest Group (LHG).

Study Duration: One to two months

Date of Meeting:

Type of Interview (Individual or Group Meeting):

Individual

Participant Name(s):

Interview Protocol:
The interview is conducted based on the requirement of the Action Cycle Unit 1, to understand the current logistical system of the Legend Harvest Group and to gain information

from internal experts, such as management and operational personnel, regarding the possible best practices to develop a B2B2C system.

Interview Questions:

1. What is your name, gender, and education?

2. What is your title and responsibility at LHG?

3. How long have you been working for LHG, and for how long have you held your current position?

4. What is your experience and background pertaining to e-commerce and supply chain management?

5. In your opinion, what is the core B2B business model of LHG?

6. Are you familiar with SWOT analysis?
(If the participant's answer is "No", the researcher will explain SWOT analysis to the participant in detail; if the participant's answer is "Yes", continue to question 7).

7. Based on your observations, what are the strengths found in LHG's B2B business?

8. Based on your experience, what are the weaknesses found in LHG's B2B business?

9. What are the opportunities that are offered from being a part of LHG's B2B business?

10. What are examples of threats faced by LHG in B2B business?

11. What are the organisational requirements for LHG to meet, in order to develop the B2B2C (一件代发) system further?

12. What are the operational requirements for LHG to meet, in order to develop the B2B2C (一件代发) system further?

13. What are the technical requirements for LHG to meet, in order to develop the B2B2C (一件代发) system further?

14. What are the organisational challenges LHG will need to overcome in order to develop the B2B2C (一件代发) system further?

15. What are the operational challenges that LHG will need to overcome in order to develop the B2B2C (一件代发) system further?

16. What are the technical challenges that LHG is facing to develop the B2B2C (一件代发) system?

Appendix 3

Thematic Coding Sheet Samples

Theme	Data Samples	Associated Codes
Supply Chain Integration (SCI)	*"Our system is linked to the platform's ordering system, as well as the Customs clearance systems of China and Taiwan. Further, our system is also linked to my WMS, so I am able to handle tasks such as warehousing, packaging, shipping, verification, returns/exchanges, customer service. Marketing is a whole other complicated thing … we also have to handle cash/payment issues. Thus, 886 isn't merely a SaaS provider, it's a supply chain system."* (AC) *"I believe that our core business should be focusing on the supply chain services that we provide. Out of finance, logistic and product services, I think the supply chain will be the biggest winner in the future."* (AC) *"That's to say that if we could successfully provide supply chain services, our suppliers would be willing to do consignment deals with us, which would enhance our capacity to perform procurement tasks."* (CC) *"The drawback about building up our own B2B2C team would be that our operational overheads would definitely increase; also, staffing and human resource management would be troublesome. After all, we should only focus on sourcing and procurement, right? Our focus should be on providing supply chain services."* (CC) *"You want this part, then come up with a method, but how do you do it? To be honest what we have to do is really simple. We want to make a supply chain."* (WJ) *"We want to create the integration/organisation of a supply chain. We are making a supply chain."* (CC) *"Well, as long as the backend of the operation system is linked to our warehouse, then it should be fine. The core is still the system backend, meaning our warehouse should be linked to the database of our customers; we should focus our efforts on system integration."* (CC)	SaaS Process Automation WMS ERP API 3PL Collaboration Communication Trust

Theme	Data Samples	Associated Codes
YJDF	*"In order to save on import duties, we must decide which ports and routes have more advantages for entering China. Therefore, e-commerce merchants all have several warehouses."* (CC) *"Anything over RMB 2,000 does not qualify for the cross-border tariff rate; it is applicable if you enter via Hong Kong, but not others."* (CC) *"We've discovered a 3PL in Hong Kong who was able to do YJDF drop-shipping … they could do both CC and BC and clear Customs with SDDP electronically. Its SDDP submission was automated, but there was room to improve."* (JW) *"In the free-trade zone, you can do B2C, but you have to have a cross-border e-commerce licence. You can't do B2B2C or B2B … only with YJDF, we can do B2B as well as B2B2C."* (CC)	B2C B2B2C SDDP Customs Tariffs Logistics Flow 3PL

Theme	Data Samples	Associated Codes
SaaS	*"In essence, companies like Grasp or Wangdian, they're all SaaS developed by large Chinese software companies, they're basically ERP for e-commerce … Grasp's SaaS may be different from 886's; 886 might have its own specifications."* (CC) *"I think it's because we are unable to create a system for ourselves, that's why we have to use SaaS that others have created. As far as I know, because I did look into SaaS in China, I think they are already doing it, some systems are even superior to the one that 886 is using. Crossing borders is really quite difficult."* (JW) *"It doesn't mean anything to have Grasp's SaaS, none of us knows how to integrate it. Nonetheless, 886 is integrating it. They are using it, for quite a while now, right? As we discussed yesterday, the true value of 886's SaaS isn't the system, but the fact that they have a group of talents … I think, in terms of cross-border SaaS, currently 886 is the only real user."* (CC) *"It will cost us a lot to establish API links with the platforms. That's a big undertaking. We can't use the States' SaaS, we can only use the Chinese SaaS … and operating our system on the cloud, the SaaS' data security is probably better than our own computers – ours might get hacked."* (CC)	PaaS ERP WMS API SCI Process Automation Collaboration

Theme	Data Samples	Associated Codes
Collaboration	*"We can immediately help LHG to do B2C, and ship out from Taiwan."* (AC) *"LHG can handle 2B from our side, and then 886 can do 2C on your side."* (PH) *"We collaborated with 886 to make up for each other's weaknesses; both companies* [886 and LHG] *could complement one another."* (JW) *"Everyone's in the same boat, once we get the details down … a structure must be in place … it means we need to come up with a structured process. We all need to slowly adjust … making the adjustments is the most important thing, right? But after making adjustments … there are more adjustments that need to be made."* (WJ) *"Set the rules first, then we'll take it one step at a time, putting in one thing at a time."* (CC) *"We can definitely collaborate, meaning that not just 886 but, in the future, LHG Taiwan as a whole can provide more services. For example, we can provide services for branding, starting from new store application submissions, product launches, marketing, orders, logistics, financial flow, we can handle all that ... but we can also divide these up and collaborate with you guys … we just have to treat this part as modularised services … of course these all must be paid, but the main point is that we've already come up with so many integrated solutions, so what solutions do you need? What is your budget? We can offer you an appropriate suggestion."* (AC) *"If we build our own team, we will have to hire more staff which will increase overheads, and management becomes more complicated. But if we outsource it, we could primarily focus on the procurement and supply chain services."* (CC)	Trust SaaS SCI Process Automation Deal Structure Responsibility Leadership Team-building Communications

Theme	Data Samples	Associated Codes
Asynchronous Trade Flow	*"In B2B2C transactions, there is an asynchronous problem because the orders are shipped from the small B to consumers directly. In cross-border logistic terms, it is called YJDF by Chinese Customs. However, payment from consumers is made to the platforms first. We need to use data technology to resolve the asynchronous issues."* (AC) *"JD prefers not to buy stocks, but they are willing to divert sales leads to those who are willing to stock up strategically to generate sales orders. It is a consignment arrangement in B2B2C. JD is using its data flow in exchange for the products. Thus, JD doesn't have to worry about the cash flow for carrying the inventory itself. Value flow, information flow, financial flow and product flow are completely separated."* (JW)	Data flow Cash flow Logistics Flow Process Automation SCI Trust

Theme	Data Examples	Associated Codes
Cost Efficiency	*"The warehouse fees in Hong Kong cost a lot more; in fact, the warehouse fees in Hong Kong are even higher than the fees in the States. In comparison, it's a lot cheaper in Taiwan. Whether you ship it from Taiwan or from Hong Kong, the amount of time it takes is about the same, approximately four to five days … from the States, it takes about five to seven days."* (CC) *"But Hong Kong is faster though, faster than the States. From the States it might take about fifteen days to arrive, from HK maybe only a week, there is a difference … and for you from Taipei, now that 886 is even faster, they ship it from Taipei, the consumer in China will get it in four days. The delivery time is also an advantage."* (JW) *"Tmall has certain requirements, there's a stipulated timeframe … they'll have ratings, our products must be shipped out within seventy-two hours."* (CC) *"The business that we're doing, it's all about speed … it's very fast. Compared to a traditional transaction, the time required for you to verify an order is way too long."* (PH) *"Do you know how much it costs 886 to ship from Taiwan? To China it's only RMB 17… yeah, their domestic logistics uses RED systems, they were given a discounted rate."* (PH) *"Right! The rate* [RMB 17] *is applied to our orders shipped by air … to any consumer's door in the first-tier cites in China."* (AC) *"886's RMB 17, the tax isn't included … If we shipped from Hong Kong, it will be HKD 60, HKD 70 including the tariffs. It takes about USD 9 for us to ship from the States to China. If you convert that to HKD, it's about the same."* (JW) *"Currently the average value per order of 886 is low … so proportionally, their shipping cost is high … but our order value is high, which means proportionally our logistics cost per order ratio is lower."* (CC) *"If the cost ratio for the logistics is lower, the gross profit for B2C will be higher … but why is our B2C net margin even lower? That's because our shipping costs are higher, and there's also the issue of returns, that's high too."* (JW) *"Our products that were coined as light luxury, we need to have at least forty percent margin ... but our 2B only accounts for twenty-five percent, not even thirty percent."* (JW)	Delivery Time Shipping Cost 3PL SDDP YJDF Returns Tariffs SaaS Process Automation SCI

Theme	Data Samples	Associated Codes
Returns	*"A main problem of B2B is that we have to accept all returns from the platforms. This is such a big issue for our B2B cross-border trades."* (JW) *"Because we were not an authorised distributor, the authorised agent in China had protested to have us taken out of Tmall. The entire DW [Daniel Wellington] watch stocks were returned by Tmall; that is a huge risk of cross-border B2B trades."* (JW) *"We must improve the after-sales process, to lower the amount of returns."* (JW) *"The platforms may have prepared a lot of stock for their 618 sales, but when they could not sell their stock, they simply returned the stock back to the suppliers."* (CC) *"Because it is a grey area, it is difficult to revert the B2B2C cross-border logistics from China back to the free-trade zones."* (JW)	Inventory PO Cancelled Margin After-sales Service Free-trade Zone Products Trust

Theme	Data Samples	Associated Codes
Inventory	*"I went to Tmall, and then the several buyers told me that they are looking forward to increasing SKU by threefold, and that they still got to reduce their inventory."* (CC) *"When we had so much stock in our inventory, we could use parts of that to do B2B2C, or just open our own store, not to clear inventory. We've always been looking to do B2C, but we never found anyone that's doing B2C that is a good fit with us."* (CC) *"The clients only gave us a very optimistic prediction, and required us to prepare the stocks without a PO."* (CC) *"I was worried that our investors might stop supporting us in financing our B2B stocks. Their understanding of B2B financing required us receiving a solid PO from the platforms before we could start buying anything."* (PH) *"If we are going to do B2B2C, then three turns annually on the inventory would probably be the longest, since we need to carry the inventory for the platforms. For B2B though, we can manage four turns."* (JW) *"Our suppliers could give us their ERP link to access their inventory. But we need to expand our sales channels and order volumes to gain access."* (CC)	Receivables Products Payment Terms WMS ERP Warehouse

Theme	Data Samples	Associated Codes
B2B2C	*"Collins* [the investor] *only wants us to do B2B, so we should just stay put, don't cross the line."* (PH) *"By working with 886, we shipped some goods to Taiwan, then 886 could ship B2B orders directly to China, or we could also do B2C and YJDF, basically B2B2C."* (CC) *"Using 886's system to process our products, theoretically, we can complete our B2B2C system."* (JW) *"Those who are doing 2B want to do 2C, those who are doing 2C want to do 2B."* (PH) *"It can disperse the risk. For B2B, we only have one client, but if I have B2B2C then our client base can be expanded … so if LHG doesn't do 2C, we will gradually be eliminated … B2B2C is something that LHG must get involved in."* (JW) *"To JD it's B2B, or I should say that on our end it is B2B, we do the stock up for them … selling the products through JD would be B2C … but we're handling all the operations … so in terms of B2B2C, there are a variety of methods."* (JW)	POP Store YJDF SDDP B2C B2B B2B2C JD Tmall WMS SCI Inventory

Theme	Data Samples	Associated Codes
WMS	*"In terms of warehouse management, on a small scale I am sure we can handle it ourselves, but when you have reached large scale, you'll need to find companies such as Leaf – they are pros at WMS systems."* (CC) *"In any case, there must be people within the company that are familiar with it and are adept at using it. But now the warehouses in the States … even until this point … they're still not used to it … they're still using Excel and QuickBooks to do that."* (CC) *"The warehouse and the client's database need to be integrated. Our warehouse isn't only located in Taiwan; we have warehouses in Hong Kong, and also in the States, and perhaps we'll have other warehouses later on. Although we can have warehouses everywhere, eventually we still need to use the WMS system to integrate them into one database."* (CC) *"We were using WMS as the basis to develop different types of APIs; all platforms have open APIs."* (AC) *"The difference between WMS and ERP is that ERP is mainly for accounting purposes – it updates our inventory management system including the front-end operations such as warehouse storage and sales order management. All platform customers' systems are interconnected with my ERP system. WMS is only for the part after I receive the purchase orders, the command that the system here initiates, and then WMS continues to break down the command for the inventory … so in terms of logistics we call that an operating system, and then we apply all platforms onto this system."* (AC)	Inventory Returns Free-trade Zone SDDP YJDF ERP API SCI Process Automation B2B2C

Theme	Data Examples	Associated Codes
API	*"The 'Wuliu 100' are the top one hundred logistics companies that have already established API linkage to the platforms. Functions like data exchange and tracking can all go through API."* (CC) *"The platform provided us with the interface for the API, then we updated the tracking information in real time."* (CC) *"The ERP system we used for the operation at the backend … they're connected to the platform directly using the API. All the action we took was the purchasing of an off-shelf ERP software system."* (CC) *"Although there are APIs for everything, if you are connecting them one by one … if you lack the know-how and expertise … it's going to be quite a daunting task, it'll be a mess … This system was custom-made for us by Red … so now we are introducing what is called a logistics system … then we'll be using a lot of APIs, including API for purchase orders, API for inventory, API for products, including invoicing management, receiving management, shipping management, inventory management, and then my ERP will have a lot more, receiving API, shipping API, inventory API, including warehousing API (storage and removal), inventory API, master file API, Customs API."* (CC) *"At 886, we use WMS as the basis to develop a variety of APIs."* (AC)	API SaaS PaaS WMS Inventory SCI Process Automation

Theme	Data Samples	Associated Codes
SDDP	*"Our clients send their orders to us via API, our system sends the tariff slips and shipping slips to the electronic gateway and matches the order slips submitted by Red, who submit the order slips. These three slips need to be matched, and such a Customs clearance system is essentially called the SDDP. It's fully automated, it can't be done manually."* (AC) *"Currently there is no 3PL offering SDDP service in the States, but it is possible. For our luxury bag orders, they are cheaper to send CC than BC (YJDF)."* (JW)	SDDP YJDF 3PL Logistics Flow Tariffs API Process Automation SaaS B2C B2B2C

Theme	Data Examples	Associated Codes
Tariffs	*"The Cross-border E-commerce Combination Tariff … includes a new e-commerce regulation that will be in effect from January 1st, 2019 … anything below RMB 2,000 will be duty-free, anything over RMB 2,000 will be taxed."* (AC) *"Only the items listed on the Customs' whitelist can be imported and taxed according to different rates."* (AC) *"A mask costs less than RMB 15, and will be tariffed at 11.2 percent. Why 11.2 percent? It's a combination of three taxes: VAT (seventeen percent), import duty and luxury tax, then take a seventy percent discount … however, if the value of the mask is higher than RMB 15, then the tariff will be 25.5 percent, because they consider it to be a 'luxury item'."* (AC) *"For all the products we intend to sell on cross-border sites, we will submit all the data to Customs; Customs predetermine the tariff rate accordingly. This will speed up the clearance process using the SDDP system via API to automate the process. It will grant us a green clearance status."* (AC) *"Also, they have a thing called C2C post … if the goods' value is less than RMB 50, it'll be duty free. Personally, I think that after the implementation of the new e-commerce regulation, the legality of it, it's a question mark."* (AC) *"CC may not create saving always. If a lipstick is sold for RMB 250, we will pay 25.5 percent combination tax if we were to go BC, which is 47.5 percent of our cost price. But if we were to go with CC Post, that cost of good goods sold would be even higher at 78.5 percent. It's tricky that for the same products, you can go with BC or CC, but the results are very different."* (AC) *"Hong Kong tariff is a little bit different; their rate of random inspection is very low … it means that every cross-border seller should have several warehouses, including in Hong Kong, because of the tariff differences."* (CC)	Customs B2C B2B2C SDDP YJDF Warehouse Shipping Cost

Theme	**Data Samples**	**Associated Codes**
Trust	*"If consumers get our shipments earlier, their shopping experiences will be greatly enhanced. It's an issue of trust."* (JW) *"In any case, transparency is the best strategy … almost all merchants are hiding something here and there … essentially, selling on the Internet is all about trust, that is, we'll have no counterfeits or knock-offs."* (PH) *"I didn't tell him* [Leo, a Tianjin SaaS] *upfront, because I wanted to test him, I wanted to see what he does, how trustworthy he is, right?"* (JW) *"Because, look, in China there's SDDP, which is a very comprehensive system. If I were to add blockchain technology into the supply chain system … it will become even more trustworthy."* (AC) *"Chinese Customs will judge you depending on how much they trust you … it means that the documents that you submitted, do they trust them?"* (CC) *"The platform buyers trust us … since we only supplied them authentic products … how much does Tmall trust you … that's the trust of the supply chain."* (PH)	Brands Traceability Responsibility Communications Collaboration Leadership Returns After-sales Service KOL Digital Marketing SCI

Theme	Data Samples	**Associated Codes**
Process Automation	*"We can provide modularized services, which include system interface. Actually, system interface is the key … aside from our internal ERP and pick-and-pack systems, we have to provide external links to platforms' ordering systems. We need to connect to Chinese Customs … we interfaced our inventory data and warehouse management including packaging, shipping, verification, returns/exchanges, customer service. We have done all of them."* (AC) *"WMS can be modularized. It incorporates multiple warehouse operations such as receiving, packing, ordering and shipping. When WMS received an order, it performed sequential commands while integrating and organizing the transactional data. This information fed to our ERP and updated our ledgers, and automatically consolidated our accounting book."* (AC) *"ERP system will be connected to the platform via the API … we're just purchasing off-the-shelf software. Thus, the sales order tracking-related information was updated in real time."* (CC)	SaaS PaaS SDDP Data Flow Cash Flow Logistics Flow Collaboration Cost Efficiency Asynchronous Trade Flow B2B2C WMS ERP API SCI

Appendix 4

Field Note Pictures: LHG/SaaS (886) Cross-border B2B2C Warehouse (WMS) Operation in Taipei Port

Appendix 5

Field Notes: LHG Los Angeles Office/Warehouse Pictures

Appendix 6

The Initial Codebook – 61 Codes

Item	AC Extracted	Codes	Item	AC Extracted	Codes
1	1, 2, 3	Inventory Control	**32**	1	Teambuilding
2	1, 2	Payment Terms	**33**	1, 2	Platforms
3	1	Finance	**34**	1	PaaS
4	1, 3	Investors	**35**	1, 2, 3	WMS
5	1, 2, 3	Receivables	**36**	1, 2, 3	ERP
6	3	PO Cancelled	**37**	2	886
7	1, 2, 3	Returns	**38**	1, 2, 3	API
8	2, 3	After-Sales Service	**39**	1, 2, 3	Collaboration
9	1	Margin	**40**	1	Coordination
10	2	Process Automation	**41**	3	Deal Structure
11	2	Asynchronous Flow	**42**	2, 3	Leadership
12	2	Data Flow	**43**	1, 2, 3	Trust
13	2	Cash Flow	**44**	1, 2, 3	Responsibility
14	2	Logistics Flow	**45**	1, 2, 3	Communication
15	1	Sourcing	**46**	2, 3	Delivery Time
16	1	Supplier Relationship	**47**	2, 3	Shipping Cost
17	1, 2, 3	Supply Chain Integration (SCI)	**48**	2	SDDP
18	2	YJDF	**49**	2	Free-trade Zones
19	1	B2B	**50**	1	Customs
20	1	B2C	**51**	2	3PL (Third Party Logistics)
21	2	BC	**52**	1, 2	Tariffs
22	2	CC	**53**	1, 2	Warehouse
23	1	B2B2C	**54**	2	Digital Marketing
24	1	S2B2C	**55**	2	KOL
25	1	Cross-border	**56**	2	Red
26	2	Brands	**57**	2	POP Store
27	1	Procurements	**58**	1, 2	Tmall
28	3	Distributorship	**59**	1, 2	NetEase Kaola
29	2, 3	Traceability	**60**	1, 2	JD
30	1, 2, 3	SaaS	**61**	1, 2	Amazon
31	1, 2	Outsourcing			

Appendix 7

The Code Categorisation Sheet – 8 Code Categories

Items	Codes	Categories	Items	Codes	Categories
1	Inventory Control	Financial	**35**	Delivery Time	Logistical
2	Payment Terms		**36**	Shipping Cost	
3	Finance		**37**	SDDP	
4	Investors		**38**	Logistics Flow	
5	Receivables		**39**	Free-trade Zones	
6	Margin		**40**	Customs	
7	Cash Flow		**41**	3PL	
8	B2B	Operational	**42**	Tariffs	
9	B2C		**43**	Warehouse	
10	BC		**44**	YJDF	
11	CC		**45**	Collaboration	Organisational
12	B2B2C		**46**	Coordination	
13	S2B2C		**47**	Deal Structure	
14	Cross-border		**48**	Leadership	
15	Supply Chain Integration (SCI)		**49**	Trust	
16	Sourcing		**50**	Responsibility	
17	Outsourcing		**51**	Communication	
18	After-sales Services		**52**	Teambuilding	
19	PaaS		**53**	Platforms	Platforms
20	WMS	Technological	**54**	Tmall	
21	ERP		**55**	NetEase Kaola	
22	886		**56**	JD	
23	SaaS		**57**	Amazon	
24	API		**58**	Digital Marketing	Marketing
25	Process Automation		**59**	KOL	
26	Asynchronous Trade Flow		**60**	Red	
27	Data Flow		**61**	POP Store	
28	Supplier Relationship	Products			
29	Brands				
30	Procurements				
31	Distributorship				
32	PO Cancelled				
33	Traceability				
34	Returns				

Appendix 8

The Categories/Themes Selection Sheet

Item	Categories	Themes
1	**Financial**	Inventory, Returns
2	**Operational**	Process Automation, Asynchronous Trade Flow, Supply Chain Integration, YJDF, B2B2C
3	**Products**	NA
4	**Technological**	SaaS, WMS, API
5	**Organisational**	Collaboration, Trust
6	**Logistical**	Cost Efficiency, SDDP, Tariffs
7	**Marketing**	NA
8	**Platforms**	NA

Appendix 9

The Thematic Relationship Table

	Themes	Related Codes/Themes		Themes	Related Codes/Themes		Themes	Related Codes/Themes
1	Inventory	Receivables Payment Terms WMS ERP Free-trade Zone Warehouse Returns SCI	6	YJDF	B2C B2B2C SDDP Asynchronous Trade Flow Inventory WMS Customs Tariffs 3PL Logistics flow	11	Collaboration (8 Links)	Trust SaaS SCI B2B2C Process Automation Asynchronous Trade Flow Deal Structure Responsibility Leadership Teambuilding Communications
2	Supply Chain Integration (SCI) (11 Links)	SaaS PaaS Process Automation WMS ERP API 3PL B2B2C Inventory Platforms Cost Efficiency Supplier Relationship Collaboration Asynchronous Trade Flow Communications Trust	7	B2B2C	POP Store Asynchronous Trade Flow Tariffs Trust YJDF SDDP SaaS B2C B2B JD Tmall WMS Collaboration Process Automation SCI Inventory	12	Trust (6 Links)	Brands Traceability Responsibility Communications Leadership Collaboration B2B2C Asynchronous Trade Flow Returns After-sales Services KOL Digital Marketing SCI
3	Process Automation (10 Links)	SaaS PaaS SDDP Data Flow Cash Flow Logistics Flow Collaboration Cost Efficiency Asynchronous Trade Flow B2B2C WMS ERP API SCI	8	SaaS (9 Links)	PaaS Asynchronous Trade Flow SDDP ERP WMS Inventory API SCI Process Automation Collaboration	13	Supply Chain Effectiveness (Cost Efficiency)	Delivery Time Shipping Cost 3PL SDDP YJDF Returns Tariffs Collaboration Asynchronous Trade Flow SaaS Process Automation SCI
4	Asynchronous Trade Flow	Data Flow Logistics flow Cash Flow Cost Efficiency Collaboration YJDF B2B2C Process Automation SCI Trust	9	WMS	Inventory Returns Free-trade Zone SDDP YJDF ERP API SaaS SCI Process Automation B2B B2B2C	14	SDDP	YJDF SaaS WMS 3PL Logistics flow Tariffs API Process Automation
5	Returns	Inventory PO Cancelled Margin Free-trade Zone After-sales Services B2B2C Trust	10	API	SaaS PaaS SDDP WMS Inventory Red SCI Process Automation	15	Tariffs	Customs B2C BC CC B2B2C SDDP YJDF Warehouse Cost Efficiency

Appendix 10

The ASICT Network Assessment Interview Questionnaire

Student Researcher:

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Thesis Supervisor:

Dr. Yursuf Nulla, University of Liverpool

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Thesis Title:

Development of a Cross-Border Business to Business to Consumer (B2B2C) Supply Chain to Enhance Corporate Performance: A Case Study of Legend Harvest Group (LHG).

Study Duration: One to two months

Date of Meeting:

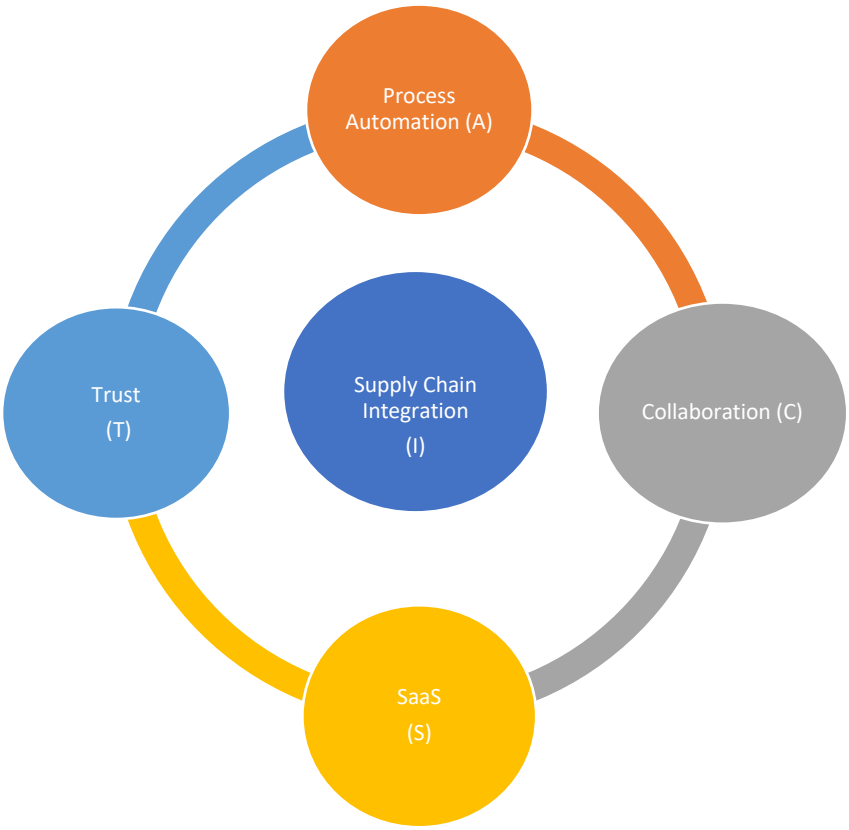
Type of Interview (Individual or Group Meeting):

Individual

Participant Name(s):

Interview Protocol:

This interview is to discuss your understanding of the researcher's recommendation of an ASICT framework based upon LHG's trial-run results. This is a framework for you to evaluate whether it is useful to apply for you to improve the trial-run system for future B2B2C system deployment. Below is the insulation of the ASICT B2B2C e-supply chain integrators network. The five integrators are process automation (A), SaaS (S), supply chain integration (I), collaboration (C), and trust (T).



	Themes	Definitions
1	Process Automation	The notion of process automation was about LHG automating its transactions using software and data technology. While B2B transactions could be processed manually, it is not possible to process B2B2C transactions manually due to the tremendous volume of transactions and the time requirements. It is imperative that LHG establish an operation system that can process the data automatically.
2	SaaS	SaaS stands for 'Software-as-a-Service', a term for a company providing software solutions to its clients, mostly via cloud computing. The clients do not need to pay for the software packages or licensing fees (in contrast to SaaP, Software-as-a-Product), but rather pay service fees based upon their usages or requirements.

	Themes	Definitions
		SaaS providers such as 886 can provide a turnkey or modularised solution in e-commerce such as B2B2C, or other software, to assist their clients in accessing selling platforms and completing transactions without heavy investments and increases in overheads.
3	Supply Chain Integration	In the trial run, supply chain integration (SCI) mainly involved LHG, as a B2B2C supplier, integrating its data upstream into Chinese Customs' and the platforms' systems, and downstream with the SaaS provider and forwarders. The core of this supply chain integration is to use software such as WMS, ERP and API to integrate the data. However, the integration also requires human collaboration between supply chain members.
4	Collaboration	In this study, collaboration referred to the collaboration among the internal and external members of the LHG supply chain system including LHG, SaaS, 3PL, Chinese Customs and platforms such as Alibaba and JD. It requires intra- and inter-organisational cooperation. It also demands trust, communication, leadership and deal structure for members to collaborate and create synergy.
5	Trust	We found trust played a major role in the B2B2C supply chain, and that most small companies' B2B2C programs failed due to lack of trust. We explored the roles of interpersonal, interorganisational and institutional trust, and noted that trust is an ingredient in enabling virtual transactions between unfamiliar buyers and sellers online. Trust comprises the satisfaction, commitment and intention for the supply chain members to form business relationships. Therefore, trust is a key theme for supply chain integration and collaboration.

Interview Questions:

1. What is your name, age and gender?

2. What is your title and responsibility at LHG?

3. Do you understand the ASICT B2B2C e-supply chain integrators network, as figure illustrated in the interview protocol? Have you discussed with the researcher to clarify your understanding of the framework?

4. In what way has the ASICT B2B2C e-supply chain network addressed your concerns about B2B2C trial-run issues?

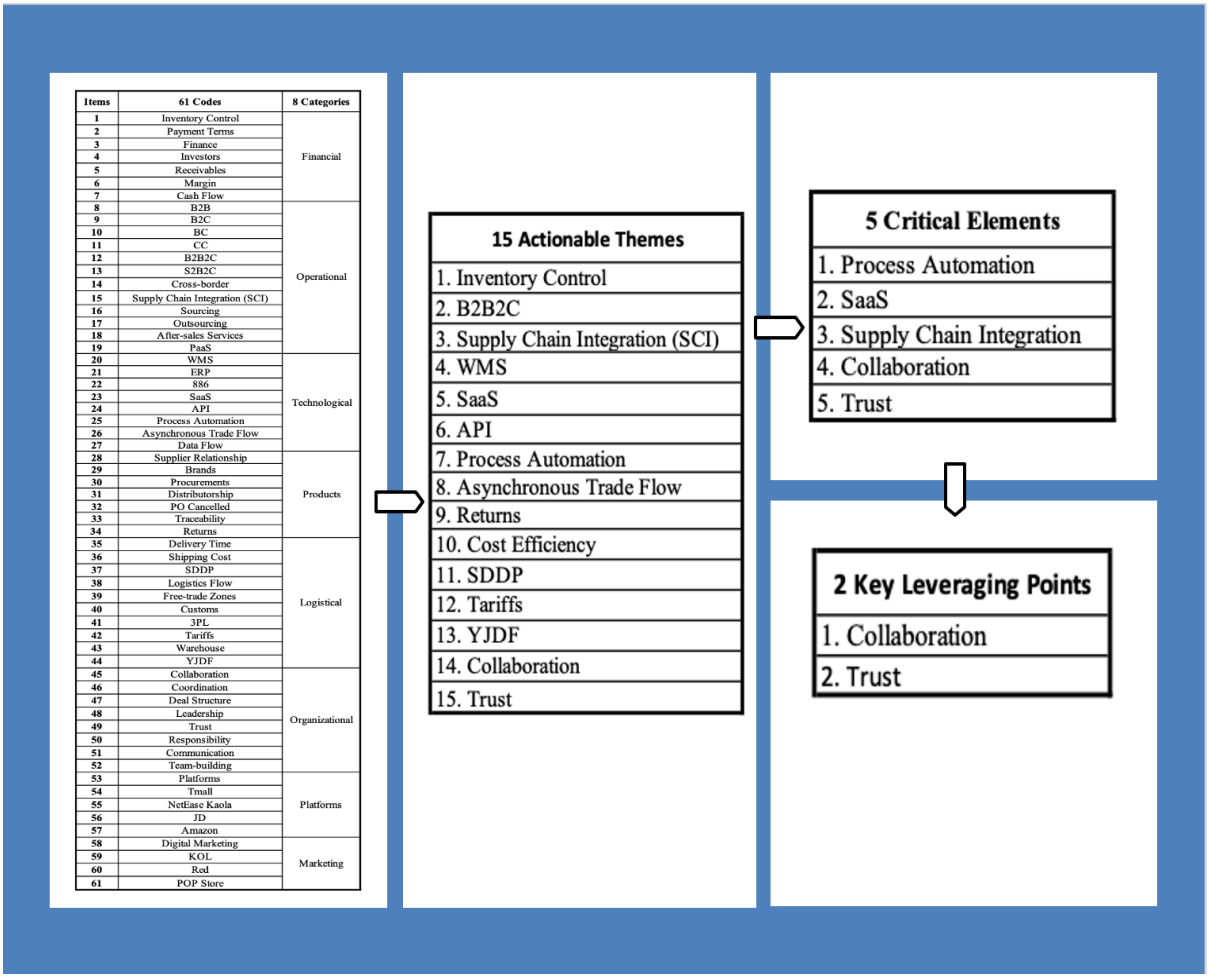
5. In what way do you believe the ASICT network can resolve the trial-run issues?

6. In what way would you deploy a B2B2C system based upon what you have learned from the proposed ASICT network?

7. What other important factors should be added to the ASICT network?

Appendix 11

The 61–15–5–2 Deductive Coding Pathway



Appendix 12

List of Abbreviations

2C: To Consumer

3PL: Third-Party Logistics

AC: Action Cycle

AC1: Action Cycle One

AC2: Action Cycle Two

AC3: Action Cycle Three

ACP: Artificial Societies, Computational Experiments, and Parallel Systems

AHP: Analytical Hierarchy Process

AI: Artificial Intelligence

AJAX: Asynchronous JavaScript and XML

AP: Accounts Payable

API: Application Programming Interface

AR: Accounts Receivable

ASICT: Represents Process Automation (A), SaaS (S), Supply Chain Integration (I), Collaboration (C) and Trust (T)

ASP: Application Service Provider

ASP: Active Server Page

AWS: Amazon Web Services

BAT: Baidu, Alibaba, and Tencent

B2B: Business-to-Business

B2B2C: Business-to-Business-to-Consumer

B2C: Business-to-Consumer

BDM: Buying Decision-Making

Big B: Big Business

BPSE: Buyer Perception of Seller Ethics

C2C: Consumer-to-Consumer

CBA: Cost–Benefit Analysis

CBEC: Cross-Border E-Commerce

C-Commerce: Collaborative Commerce

CMP: Corporate Management Performance

ConOps: Concept of Operations

CQR: Credible Quality Requirement

CRM: Customer Relationship Management

CSF: Critical Success Factor

DBM: Digital Business Model

DSS: Decision Support System

DT: Data Technology

E-Business: Electronic Business

E-Commerce: Electronic Commerce

EDI: Electronic Data Interchange

E-Gateway: Electronic Gateway

EI: Enterprise Integration

EMP: Electronic Market Place

EP: Electronic Procurement

ERP: Enterprise Resource Planning

E-SCM: Electronic Supply Chain Management

FinTech: Financial Technology

FTZ: Free-Trade Zone

GMV: Gross Merchandise Volume

HFE: Human Factors Engineering

HTML: Hypertext Markup Language

ICT: Information and Communications Technology

IME: Inventory Management Engine

IOIS: Inter-Organisation Information System

ISV: Independent Software Vendor

IT: Information Technology

ITM: Information Technology Management

JD: Jingdong (Chinese EMP company)

JVA: Joint Venture Arrangement

KOL: Key Opinion Leader

LHG: Legend Harvest Group

MIS: Management Information System

MLP-NN: Multilayer Perceptron Neural Network

O&O: Online and Offline Marketing

ODM: Original Design Manufacturing

OEM: Original Equipment Manufacturing

P2B: Public-to-Business

P2P: People-to-People

PaaS: Platform-as-a-Service

PAR: Participatory Action Research

PO: Purchase Order

POA: Purchase Order Acknowledgement

POP Store: Point-of-Purchase Store

PSTH: Platform–System–Technology–Human (a conceptual framework developed during this research)

QDCS: Qualitative Data Coding Software

QFD: Quality Function Deployment

RQ: Research Question

RSS: Really Simple Syndication

S2B2C: Supplier-to-Business-to-Consumer

SaaP: Software-as-a-Product

SaaS: Software-as-a-Service

SCE: Supply Chain Engine

SCI: Supply Chain Integration

SCM: Supply Chain Management

S-Commerce: Social Commerce

SCP: Supply Chain Planning

SDDP: San Dan Dui Peng (三單對碰), Chinese Customs term for electronic gateway for Customs clearance

SEM: Structure Equation Method

SKU: Stock-Keeping Unit

Small B: Small Business

SME: Small and Mid-Size Enterprise

SNS: Social Network Service

SOP: Standard Operating Procedure

SQL: Structured Query Language

SSL: Secure Sockets Layer

SWOT: Strengths, Weaknesses, Opportunities and Threats

TMS: Transportation Management Software

TOP: Taobao Open Platform

U-Commerce: Ubiquitous Commerce

UOA: Unit of Analysis

UoL: University of Liverpool

UPC: Universal Product Code

VAT: Value Added Tax

VBM: Value-Based Management

VRM: Visitor Relationship Management

WCS: Warehouse Control System

WES: Warehouse Execution System

WiD: Web in Dew

WMS: Warehouse Management Software

XML: Extensible Markup Language

YJDF: Yi Jian Dai Fa (一件代發), Chinese Customs term for electronic gateway's Customs clearance