

**Factors Affecting Trust
in Business-to-Business Relationships
in the Context of
Subcontracting and Offshoring**

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By

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Abstract

Outsourcing (delegating a part of a core contract to another contractor) and offshoring (subcontracting to another unit within the same company) has become common in business. Companies utilise outsourcing to respond to fast-changing business practices and environments both effectively and efficiently. In this doctoral thesis, a new term, ‘sub-outsourcing partner’ (SOP), refers to a large company's subcontractors and offshore units. Likewise, another new term, ‘sub-outsourcing (SO), refers to subcontracting and offshoring. Suppliers utilising outsourcing face a serious issue; the relationship quality (RQ) with their customers can be influenced by the performance of SOPs. There is a large body of research on relationship marketing, but an exhaustive survey of the literature shows that research has to date focused on dyadic rather than triadic relationships. This research aims to extend the relationship marketing model for the suppliers in the sub-outsourcing context by identifying some unique antecedents of trust, as well as re-examining the impact of the established antecedents from the dyadic relationship literature.

The followings are the two key preliminary research questions:

Research Question One (RQ1): Are the antecedents that have been found to affect a customer's trust toward its supplier still important in the sub-outsourcing context?

Research Question Two (RQ2): Are there new antecedents specific to the sub-outsourcing context that can affect a customer's trust in the supplier?

A conceptual model is first developed to form a framework to help answer the above questions, from which several possible antecedents are identified. The conceptual model is based not only on the B2B literature (which is somewhat mute concerning the SO context, as will be noted later) but also on the author's and others' anecdotal industry experience.

The primary study reported here is a Qualitative Comparative Analysis (QCA) study based on case studies. The data is collected from customers, suppliers, and SOPs, mainly in Korea and Australasia, by interview, then transcribed, quantified and calibrated for QCA analysis. After the analysis is performed, a simple regression analysis uses the same data and provides convergent validity for the richer, primary QCA study.

The research is expected to make a theoretical contribution by extending the traditional relationship marketing model to the increasingly prevalent sub-outsourcing context. It is also expected to contribute to business practices by providing a more formal and firmer guideline than has been hitherto available for suppliers in selecting and managing SOPs, thereby assisting them in managing their relationships with the customers better.

The research tested different cultures (Eastern vs Western) and project types (IT and non-IT) to help future studies replicate this doctoral study.

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which, to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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Ethics approval from the Auckland University of Technology Ethics Committee (AUTEC) was granted for data collection on 20 September 2020 with application number 20/61.

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Chapter 1. Introduction

1.1 Chapter Introduction

This chapter introduces the thesis. Firstly, it explained the essential keywords used in the thesis title. Second, the background of the research is provided. The aims and objectives, boundary conditions and audience, significance and research questions, justification for the research, the methodology utilised, and the thesis outline follows.

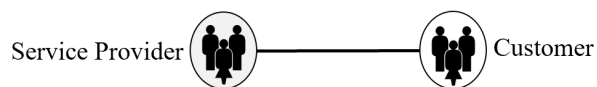
1.2 Terminology in the Thesis Title

This thesis concerns business-to-business (B2B) relationship marketing in an outsourcing services context. It finds the antecedents of trust as a relationship quality outcome, especially when any third party, such as a subcontractor or offshore unit, is involved.

Figure 1.1

Terminology in the Thesis Title - Trust and Relationships

Factors Affecting **Trust** in Business-to-business **Relationships**
in the Context of **Subcontracting** and **Offshoring**

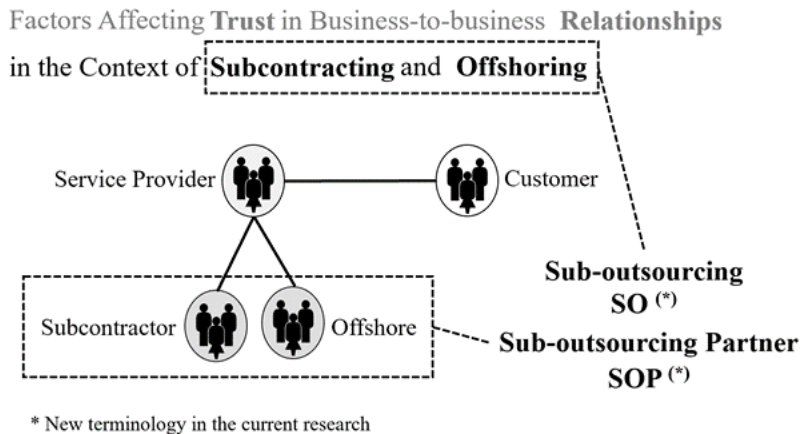


Consequently, the first part of the title, 'Factors affecting trust in B2B relationships', declares that the thesis research is about B2B relationship marketing. Because the business discussed in the research is services, the party who receives services is the 'customer,' and the party who provides the service is the 'service provider.' Some literature uses 'client', but 'customer' is used in this thesis because it is the most frequently used term. Although much literature uses the term 'supplier,' the word 'service provider' is chosen because of the research focus on services. The dependent variable for the research is the customer's trust in the service provider. The study will define and test the antecedents of trust.

In addition, the second part of the title, 'in the context of subcontracting and offshoring,' indicates that the thesis uses a triadic context in which the third party is a subcontractor or offshoring unit in a service outsourcing situation. Outsourcing (delegating a part of a core contact to another contractor) and offshoring (subcontracting to another department within the same company) has become common in business. Companies utilise outsourcing to respond to fast-changing business practices and environments effectively and efficiently or to use a resource (intellectual or physical) that the service provider does not have available.

Figure 1.2

Terminology in Thesis Title - Subcontracting, Offshoring and Sub-outsourcing



This doctoral thesis uses a new term, 'sub-outsourcing partner (SOP)', referring to a large company's subcontractors and offshore units. Likewise, another new word, 'sub-outsourcing (SO)', refers to subcontracting and offshoring.

1.3 Research Background

This research seeks new factors that affect a customer's trust toward the service provider in B2B relationships within the context of SO. Outsourcing services have become more prevalent as a strategic, sometimes tactical means to reduce operational costs and transform organisational capabilities in fast-changing business environments. However, there are many cases in which service providers lose customers' trust in them in a business relationship because of the unsatisfactory performance of SOPs. In the Boeing flight disasters of 2018 and 2019, 356 people died, and the root cause of the accident was debated hotly (Robison, 2019). The most discussed issue was that Boeing's quality had become poorer because of unskilled and low-cost engineers from the software development service provider subcontracted by Boeing. According to the online news site Stuff, on 8 July 2019 (Baker, 2019), Saudi Airlines dropped its contract with Boeing, which lost business worth 9 billion NZD. Further, Airbus then claimed to be first in global market share.

A relationship can be developed not only among individuals but also between organisations. Researchers in marketing have long been interested in B2B relationships, i.e., relationships between marketing organisations. Much research has investigated relationship quality in a B2B setting; this work is discussed in the next chapter.

1.4 Aim and Objectives

The thesis aims to extend the relationship marketing model of dyadic relationships to triadic relationships by investigating how service providers can manage and strengthen the relationship quality with their customers in the context of SO.

The objectives of this thesis are to propose factors that extend the traditional dyadic RM model in a triadic SO context. The thesis also empirically tests the hypotheses derived from the model developed from qualitative and quantitative data, using QCA and regression analysis. The research first collects the qualitative data from interviews and then transforms the qualitative data into quantitative data. The research tests the data first with QCA and then statistical regression analysis for validation purposes.

1.5 Boundary Conditions and Audience

This research limits the project type considered to services rather than product sales because the long-term relationship and communication among customers, service providers, and SOPs happen more often in services projects rather than product selling. In other words, a boundary condition is imposed; project type will be restricted to the services industry, where sub-outsourcing is prevalent.

The thesis primarily targets academic researchers interested in RQ in triadic relationships. In contrast, the audience in the industrial world is mainly the service provider companies working with SOPs which wish to optimise their trust relationships with their customers. In practice, the audience may also include the customers selecting the service providers and the SOPs collaborating with the service providers and the customers.

1.6 Research Questions

This research seeks to answer the following preliminary questions:

Research Question One (RQ1): Which of the antecedents that have been shown to affect a customer's trust toward its service provider are also important in the sub-outsourcing context?

Research Question Two (RQ2): Are there any new antecedents specific to the sub-outsourcing context that affect a customer's trust toward the service provider?

1.7 Significance

One of the primary research interests in the relevant literature is understanding how service providers can develop and manage long-term relationships with their customers. Researchers

have identified a variety of factors that influence relationship quality (Ashnai et al., 2016; Brown et al., 2019; Casidy & Nyadzayo, 2019; Dowell et al., 2015; Franklin, 2020; Franklin & Marshall, 2019; Heirati et al., 2019; Koponen et al., 2019; Massey et al., 2019; Morgan & Hunt, 1994; Riana et al., 2019). Trust is one of the most important determinants of a good relationship (Morgan & Hunt, 1994; Franklin & Marshall, 2019; Parasuraman, Berry & Zeithaml, 1991). A good relationship is achieved only if the service provider first gains trust. A customer receives the goods or services and hopefully learns to trust the supplier – a service provider provides excellent service to customers and receives their trust in return.

Notably, a B2B relationship can be formed by just two firms (a "dyadic relationship"), three firms ("triadic relationship") or even more organisations in a network. Nevertheless, the existing research primarily focuses on the relationship between just two firms, such as a goods/service supplier (a manufacturing firm or a simple delivery firm) and its customer or client (an organisational buyer). That is, despite extensive research, the accumulated findings in the literature are primarily confined to the dyadic relationship context, particularly between two firms in marketing channels such as a manufacturer/retailer dyad (Ashnai et al., 2016; Brown et al., 2019; Casidy & Nyadzayo, 2019; Dowell et al., 2015; Franklin, 2020; Franklin & Marshall, 2019; Heirati et al., 2019; Koponen et al., 2019; Massey et al., 2019; Morgan & Hunt, 1994; Riana et al., 2019).

However, a more realistic picture of B2B relationships is far more complicated, where three or more firms interact, and relationships form among them (Egan, 2011; Gummeson, 2008; Holma, 2013; van der Valk & van Iwaarden, 2011; Vedel et al., 2016). Therefore, it is theoretically timely and practically essential to investigate relationship quality factors in triadic business contexts.

One good example of a triadic relationship context is business outsourcing, which refers to transferring activities managed within a firm to third-party providers within the country or offshore. There are several advantages of outsourcing a business to a service provider, including cost-saving and perhaps embracing skills or resources not present within the outsourcing company. The customer already has the budget for the outsourcing services because the work is within the scope of the overall service the customer seeks from the outsourcing service provider company. In other words, the salesperson of the service provider company must win the competition for the business opportunity in the usual manner. However, gaining customer trust is critical to winning the competition against the competitors.

Globalisation and technological advances have led to sub-outsourcing proliferating in the business world. A service provider engages with a customer with a formal contract. When the service provider outsources a part of its services to another firm, this third party is called a

subcontractor. The service provider usually outsources the service from another company but sometimes from another business unit within the same firm. The latter case has no legal contract but only a 'document of understanding.' The outsourced business unit within the same company is a different team often located in another country. Thus, depending on the location of the outsourced party, the label of either 'on-shoring' or 'offshoring' is used. The present research considers both subcontracting and offshoring synonymously. It labels both situations as 'sub-outsourcing' and subcontractor and offshore partner as 'sub-outsourcing partner' (SOP).

In short, a body of research has identified various factors that determine B2B relationship quality. However, most of this research has focused on dyadic relationships. Relatively limited research has considered more complex B2B relationships, such as triadic. More specifically, despite extensive research on trust in dyadic relationships (Zatta et al., 2019), little attention is given to trust in the more complex, triadic relationships. Almost no research has considered a triadic relationship with SOP as a third party (customer-service provider-SOP relationship), a growth form of B2B relationships. Thus, the present research aims to extend the relationship marketing model from dyadic to three-party relationships by investigating how service providers can manage and strengthen the RQ with their customers in the context of SO. Specifically, the research will propose factors that extend the traditional dyadic RM model in the sub-outsourcing triadic context and empirically test the hypotheses derived from the model with qualitative data from interviews and quantitative data from the transformed data from the interviews via QCA and regression analysis.

In summary, the theoretical significance of the research is to extend the typical dyadic relationship marketing model to include SOP, extend knowledge of triadic RM models, and further explore the effect of firm size and culture as potential moderators. The practical significance is to provide a formal guide to service providers to maintain and strengthen the existing relationships with the client and select and manage SOPs. Thus, the academic audience is researchers interested in relationship quality in triadic relationships. In contrast, the business audience is companies working with SOPs who want to optimise their trust in customer relationships.

1.8 Method

The primary research method used is QCA. The input data for the QCA is provided by interviews, and the results of the QCA analysis are confirmed through conducting a simple linear regression analysis. Thus, this thesis uses three methods. Firstly, a qualitative method, thematic analysis, derives themes from the interview data. The conceptual framework initially developed during the literature review is revised based on the articles found during this analysis.

Secondly, a mixed method, the Qualitative Comparative Analysis (QCA) method, is used. The themes found from the thematic analysis are used as antecedents. Specifically, the data is analysed using Fuzzy Set Qualitative Comparative Analysis (fsQCA) method.

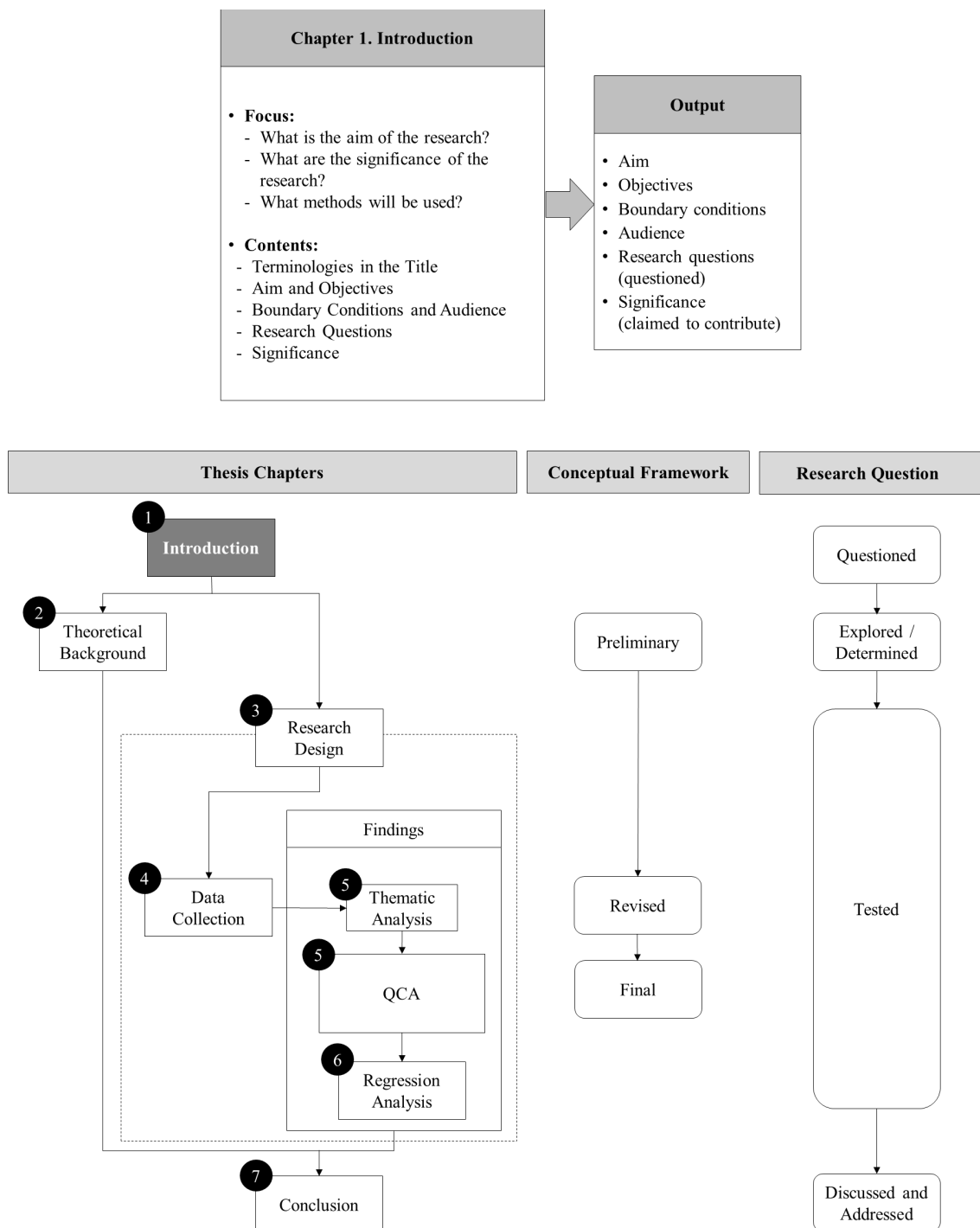
Lastly, a quantitative method, regression analysis, is used for convergent validity purposes. The data transformed from text to numeric values during fsQCA is used in this analysis phase. As discussed later, regression analysis will provide the detail expected using QCA, as the sample size is constrained. However, it will likely offer convergent results to give the primary QCA analysis confidence.

1.9 Thesis Structure

This thesis consists of seven chapters, as shown in Figure 1.3. The figure indicates how the research questions and the conceptual framework evolved throughout the thesis.

Figure 1.3

Thesis Structure



The current chapter, Chapter 1, introduces the thesis by providing an overview of the research as shown in by delivering what will be presented in the thesis and why the research is essential.

Chapter 2 provides the theoretical background through a literature review. The conceptual framework initially developed based on the literature review is introduced. This version of the conceptual framework is called the 'Preliminary Conceptual Framework.' This version of the conceptual framework will be revised and called 'Revised Conceptual Framework' after thematically analysing the interview data in Chapter 6.

Chapter 3 covers the research design, explaining the methodology, methods, and tools used and why they were chosen. Chapter 4 covers how the data is collected. Then the data analysis, using three different methods, is described in Chapters 5 and 6.

Chapter 5 contains the primary research conducted using the QCA method, specifically fsQCA, using the open-source tool fsQCA. The beginning of Chapter 5 describes the findings from the thematic analysis conducted to support fsQCA, while Chapter 6 describes the regression analysis. In addition to QCA, a mixed method, the regression analysis method is performed for convergent validity purposes.

Chapter 7 discusses the findings from the three analyses, comparing them to the conceptual framework initially developed in Chapter 2 and revised in Chapter 5. Chapter 7 also concludes the research by restating the theoretical and practical contributions, discussing the limitations of the current research and the consequent directions for future research.

1.10 Chapter Conclusion

This chapter introduced the thesis. A theoretical background, including a literature review and a preliminary conceptual framework, follows in the next chapter. The research questions posed in this chapter are explored further and determined based on the literature review in Chapter 2. As a process of developing the preliminary version of the conceptual framework, the chapter conceptualise and define trust as the outcome, antecedents of trust, and moderators.

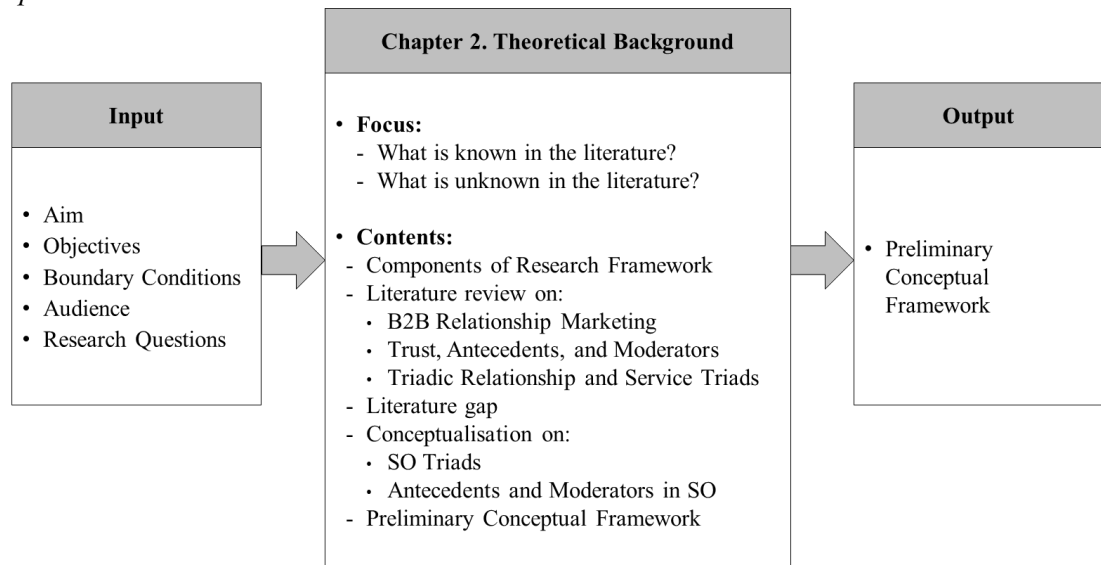
Chapter 2. Theoretical Background

2.1 Chapter Introduction

This chapter provides the theoretical background of the research, including the literature review, literature gap, and the preliminary version of the conceptual framework to be used throughout the research. *Figure 2.1* shows where Chapter 2 sits within the thesis.

Figure 2.1

Chapter 2 in the Thesis Structure



Based on the aim and the objectives stated in Chapter 1, Chapter 2 builds a theoretical background before the conceptual framework is tested and revised through empirical studies. After reviewing the literature on business-to-business relationships, relationship quality, trust, antecedents of trust, and triadic relationships, the researcher identifies the literature gap to justify the significance of the research. This chapter introduces the preliminary version of the conceptual framework, developed based on the literature review and conceptualisation. The preliminary conceptual framework will be revised and finalised during the thematic analysis in Chapter 5. The revised conceptual framework will be tested using QCA in Chapter 5 and regression analysis for convergent validity purposes in Chapter 6.

2.2 Components of the Conceptual Framework

Before reviewing the literature, the components of the conceptual framework are identified to illustrate the appropriate subject areas to seek in the existing literature and to address the elements required for developing the conceptual framework. The components include the context, outcome, antecedents, and moderators.

The first component to consider is the context. The thesis delimits the context in SO, as explained in Chapter 1, and SO means a B2B relationship, a triadic relationship involving SOPs. To reach the point to conceptualise the SO context for the research, the researcher seeks the context already studied in the existing literature, namely, B2B relationship marketing, triadic relationship, and service triads. Then, based on the insights gained, the SO concept is refined. In other words, what we know in the literature are B2B relationship marketing, triadic relationship marketing, and service triads, while what we do not know yet is the SO.

The second component to consider is the outcome of the research. This chapter explains why 'trust' is chosen as the outcome of the conceptual framework by introducing the history of how trust became a mainstream discussion target in B2B relationship marketing.

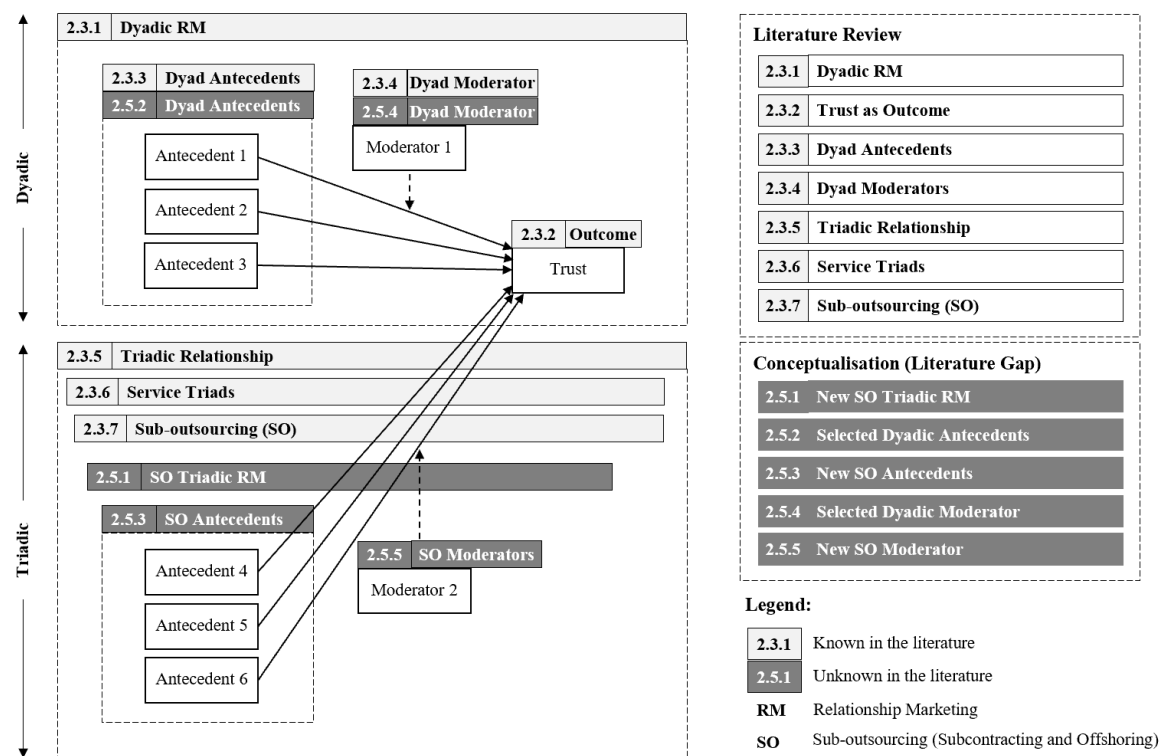
The third component is the antecedents of trust. The thesis thoroughly reviewed the antecedents of trust in various B2B relationship marketing research. The researcher chooses the initial set of antecedents of trust from the past research and justifies the selection before empirical testing through thematic analysis, qualitative comparative analysis, and regression analysis. Moreover, the researcher conceptualises new antecedents through the conceptualisation process.

The fourth component is the moderators. The researcher investigates several moderators of the antecedents and trust from the literature in this chapter. This set of modifiers will be modified and finalised after the thematic analysis described in Chapter 4.

Figure 2.2 shows that the researcher organized the sections to include what is known in the literature and what is unknown (i.e., literature gap to fill with the current research).

Figure 2.2

Sections in This Chapter



The box labelled '2.3.1' shows the dyadic B2B relationship quality dimension. The lower box describes the triadic relationship quality dimension for B2B and others. Within the triadic relationship dimension, the researcher first reviews the triadic relationship and service triads and then conceptualises the unknown subject in the literature, sub-outsourcing (SO), and triadic relationship. The researcher selects the anticipated SO antecedents based on her knowledge and insights from the existing literature and work experiences. The author worked mainly as an account manager at IBM Korea, responsible for long-term projects with local, global, and international customers in the IT services industry. After conducting interviews and analysing the interview texts thematically, the antecedent set will be refined and revised.

The construct-related sections of Chapter 2 consist of the literature review, the literature weakness, and the conceptualisation sections. First, the literature review explains all the relevant constructs (outcome, antecedents, and moderators). Second, the literature weakness points out the paucity in the existing literature, which the current research can strengthen. Lastly, the conceptualisation section describes the selected constructs and why the researcher chose these constructs.

2.3 Literature Review

The literature review section is organised into six sub-sections. First, as the first part of the thesis title, ‘Factors Affecting Trust in Business-to-business relationships in the Context of Subcontracting and Offshoring’ suggests, two major streams of research on B2B relationship marketing are introduced. In addition, the researcher explains which stream the researcher chooses and why the researcher chooses the stream for the thesis. Second, the author reviews the literature on trust as the outcome of the research framework. Third, the researcher explores the antecedents of trust in B2B relationship marketing and, fourth, reviews trust’s moderators in the B2B relationship marketing literature.

Fifth, another dimension within the relationship, triadic relationships (including multiple relationships), is defined and investigated in the literature. Sixth and last, the researcher focuses on the second part of the thesis title, ‘in the Context of Subcontracting and Offshoring.’ The researcher uses the section title as ‘SO’, defined in Chapter 1. Because there is minimal research on SO in B2B relationship marketing, insights are sought on SO outside the relationship marketing literature, such as MIS, operations management, B2B joint-ventures and alliances.

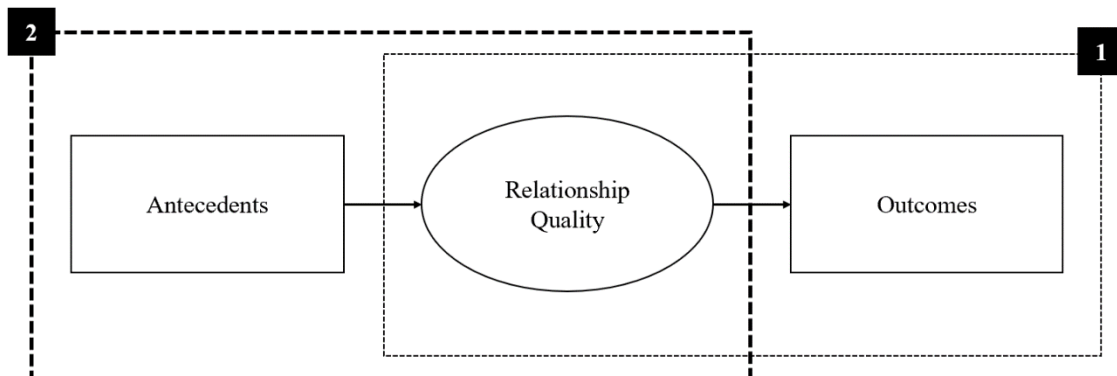
2.3.1 Review of the literature concerning dyadic relationship marketing

The overall concern in the literature is to identify the antecedents that determine the relationship quality among firms, which can ultimately affect the customer’s financial performance.

However, there are two largely independent research streams (Figure 2.3).

Figure 2.3

Two Streams of RM Research Framework



One stream concerns whether relationship quality affects business outcomes such as revenue and profits. This approach, depicted on the right side of *Figure 2.3* (the outlined box, numbered 1), is typically taken by researchers in Management Information Systems (MIS). In this case, the relationship quality is a causal antecedent that affects financial performance. The other research stream, which is more dominant in B2B relationship marketing literature, treats

relationship quality as an outcome. As shown on the left side of Figure 2.3 in a dotted-line box, numbered 2, this research stream has identified various antecedents of relationship quality and some mediators and moderators of the effect of antecedents on relationship quality.

MIS researchers have extensively investigated the factors that determine Information Technology Outsourcing (ITO) decisions (i.e., whether to outsource IT or not) and ITO outcomes (the final outcomes of ITO, such as cost reduction, revenue increase, overall satisfaction, and project renewal because of ITO). As a result, a wide range of variables that can affect the success of ITO has been identified (Lacity et al., 2010). Specifically, the outcome of ITO is significantly influenced by firms' capabilities (Beulen et al., 2011; Feeny & Willcocks, 1998, p. 279), firms' characteristics such as size, industry, and culture (Koh et al., 2004; Oh et al., 2006), transaction attributes such as transaction uncertainty and asset specificity (Barthelemy, 2001; Poppo & Zenger, 2002), contractual governance such as control mechanisms and contract types and details (Choudhury & Sabherwal, 2003; Gopal et al., 2003), and decision characteristics such as top management commitment (Baldwin et al., 2001). Of note, within the context of the current thesis, relationship quality factors are also found to affect ITO outcomes (Gopal & Koka, 2012). For example, trust between the customer and the outsourcing firm is essential for ITO business success (Han et al., 2008). In sharp contrast to the findings above, however, this research stream has rarely been concerned with the antecedents of trust, determining the customer's perceived trust toward its outsourcing firm (Lacity et al., 2017; Swar et al., 2012).

On the other hand, researchers in B2B marketing have long been interested in identifying the antecedents of relationship quality (Brown et al., 2019; Casidy & Nyadzayo, 2019; Dowell et al., 2015; Franklin & Marshall, 2019; Heirati et al., 2019; Koponen et al., 2019; Massey et al., 2019; Morgan & Hunt, 1994; Riana et al., 2019). The published literature documents various factors that determine relationship quality, including benevolence, cooperation, integration, values, competence and communication (Brown et al., 2019; Casidy & Nyadzayo, 2019; Dowell et al., 2015; Franklin & Marshall, 2019; Koponen et al., 2019; Kurnia Endah et al., 2019; Massey et al., 2019; Morgan & Hunt, 1994; Riana et al., 2019).

The research presented here falls into this research stream. The following section introduces the various dimensions of relationship quality in the existing literature chosen for the current research and justifies why a particular relationship quality dimension is selected for further study.

2.3.2 Trust as an Outcome

Mesic et al. (2018) reviewed dimensions of relational quality established in the existing literature, as shown in Table 2.1.

Table 2.1

The Dimensions of Relationship Quality (RQ) in the Literature (Mesic et al., 2018)

Dimensions of RQ	References
Trust , satisfaction, and commitment	Henning-Thurau et al. (2002); Lages et al. (2005); Zander and Beske (2014)
Trust , satisfaction, coordination, power, and conflict	Naudé and Buttle (2000)
Trust , commitment	Morgan and Hunt (1994)
Trust , communication, commitment, cooperation, interdependence, atmosphere and adaptation	Fynes* et al. (2005)
Trust , commitment, adaptation, communication, and collaboration	Mohaghar and Ghasemi (2011); Razavi et al. (2016)
Trust , economic satisfaction, social satisfaction, dependency, non-coercive power, coercive power, reputation, and conflict	Molnar et al. (2010)
Power, conflict, and satisfaction	Lee (2001)
Trust , conflict, and reputation	Gellynck et al. (2011)
Trust , commitment, information sharing, coercive and non-coercive power, dependency, and conflict	Odongo et al. (2016)

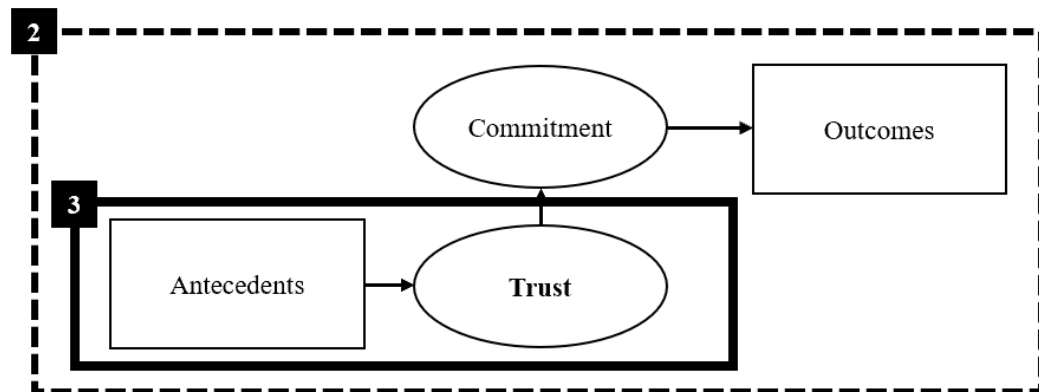
Trust, as a dimension of relationship quality, stands out due to the frequency of usage in the existing literature. Commitment is excluded as an outcome because it results from trust, according to Morgan and Hunt (1994). Thus, although it is arguable that commitment is as important a construct as trust and is worthy of being a dependent variable in this research, but as it is a prime mediator between trust and relationship quality it would serve little purpose. Furthermore, power is used here as a moderator of trust rather than the outcome variable.

This choice of focusing on trust as a critical relationship quality construct is well supported (Ashnai et al., 2016; Brown et al., 2019; Crosby et al., 1990; Franklin & Marshall, 2019; Moorman et al., 1993; Parasuraman et al., 1991). In the research, the customers' trust is treated as the dependent variable, while the antecedents of trust as independent variables.

Although there are some discrepancies in the definition and positioning of trust in relationship quality, many studies on trust in B2B relationship marketing have been based on the pioneering paper introducing the Commitment-Trust Theory (Morgan & Hunt, 1994), shown in Figure 2.4 (Ashnai et al., 2016; Brown et al., 2019; Crosby et al., 1990; Franklin & Marshall, 2019; Moorman et al., 1993; Parasuraman et al., 1991).

Figure 2.4

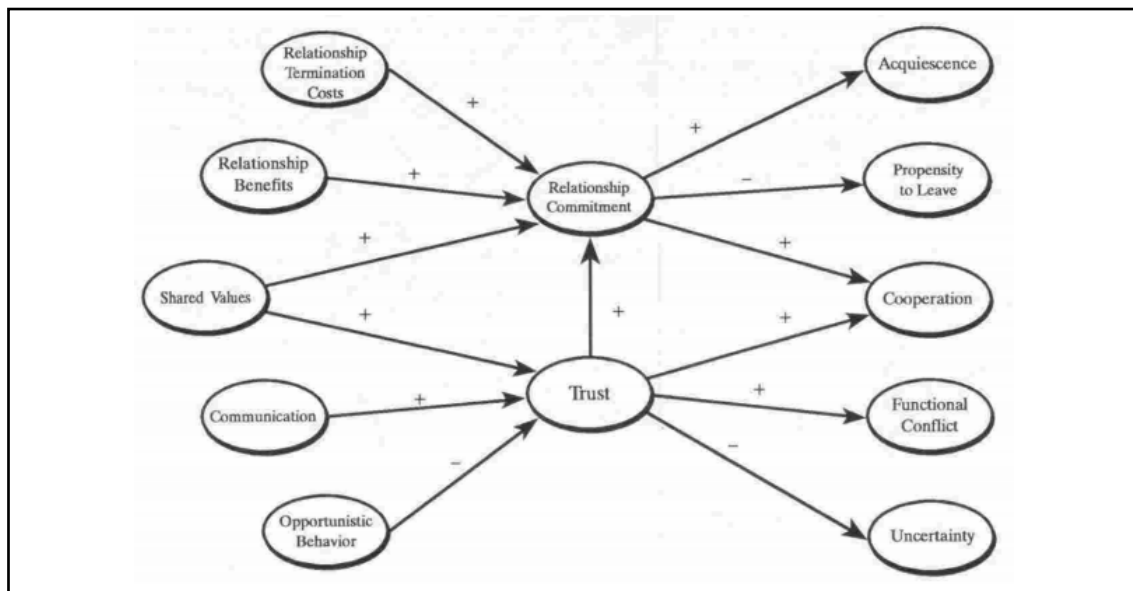
RM Research Framework in the Current Thesis (Derived from the KMV Model)



The research here also follows the trust definition presented in the paper by Morgan and Hunt (1994), in which they developed the Commitment-Trust Theory and the so-called 'key mediating variable (KMV)' relationship marketing model. The KMV model posits that trust and commitment mediate the effects of five antecedents (i.e., relationship termination costs, relationship benefits, shared values, communication, and opportunistic behaviour) on relationship quality outcomes (i.e., acquiescence, propensity to leave, cooperation, functional conflict, and uncertainty) as shown in *Figure 2.5*.

Figure 2.5

The KMV Model of Relationship Marketing (Morgan & Hunt, 1994)



According to the model, relational variables can only enhance and maintain business relationships by increasing customer trust. Therefore, trust is critical, and service providers should strive to attain a high trust status in the eyes of their customers.

In their KMV model, trust is a mediator of relationship quality rather than an outcome. However, its role as a mediator leads directly to commitment and relationship quality. In other words, once the service providers gain customers' trust in themselves, they can advance to acquire the customers' commitment which, in turn, leads to more robust relationship quality.

Some preliminary work to categorise different dimensions of trust, such as cognitive or calculus trust, affective trust, or identification-based trust, has been proposed (Dowell et al., 2015; Erdem & Ozen, 2003; Johnson & Grayson, 2005). Akrouf and Diallo (2017) test a multi-stage trust model with three forms of trust: calculative, cognitive, and affective.

Furthermore, published research seeks trust at various levels and different perspectives such as institutional-based trust, swift or initial trust, deterrence trust, competence-based or calculus-based trust, knowledge-based trust, process-based trust, goodwill trust or benevolence trust, strong form trust or hard-core trust, identity-based trust, and relational or affective trust (Franklin & Marshall, 2019). In this research, the trust level is measured as one variable instead of multiple separate variables such as cognitive and affective – the research will merely tag either affective- or cognitive dominance for each antecedent selected in the conceptual model. The general thesis aims to aid service providers in becoming aware of the trust antecedents in which they are currently strong and highlight those needed to strengthen or acquire customer trust, which is critical to sustaining a long-term relationship and continued contract renewal. Tagging the antecedents as cognitive, affective, or both will thus help service providers to optimise their operational activities.

2.3.3 Trust Antecedents in Relational Dyads

The focus of the research reported here is to follow on and extend much prior research concerning the various antecedents that result in different levels of trust. Historically, the terminology has been confused, but more terminological uniformity emerged after Morgan and Hunt (1994) introduced the influential Commitment-Trust Theory – the most cited relationship marketing paper.

Consequently, this review treats the existing literature as two separate sets; before Morgan and Hunt (1994) and after. Table 2.2 includes antecedents and references in the existing literature published before 1994. The list of antecedents is sorted by descending order of the publication year and the authors' names.

Table 2.2

Dyad Antecedents of Trust in the Literature before Morgan and Hunt (1994)

Antecedents	References
Expertise, motivation to lie	Hovland et al. (1953)
Benevolence	Strickland (1958)
Ability , intention to produce	Deutsch (1960)
Benevolence	Solomon (1960)
Expertness , reliability as information source, intentions, dynamism, personal attraction, reputation	Giffin (1967)
Competence , motives	Kee and Knox (1970)
Openness , ownership of feelings, experimentation with new behaviour, group norms	Farris et al. (1973)
Ability and behaviour are relevant to the individual's needs and desires	Jones et al. (1975)
Judgment or competence , group goals	Rosen and Jerdee (1977)
Dependence on trustee, altruism	Frost et al. (1978)
Openness , previous outcomes	Gabarro (1978)
Trustworthy intentions, ability	Cook and Wall (1980)
Benevolence , honesty	Larzelere and Huston (1980)
Competence , integrity	Lieberman (1981)
Reliability	Johnson-George and Swap (1982)
Openness/congruity , shared values , autonomy/feedback	Hart et al. (1986)
Credible threat of punishment, Credibility of promises	Dasgupta (1988)
Ability , intention, trustee's claims about how (they) will behave	Good (1988)
Availability, competence , consistency, discreetness, fairness, integrity , loyalty, openness , promise fulfilment receptivity	Butler and Jadhav (1991)
Moral integrity , goodwill	Ring and van de Ven (1992)
Competence , openness , caring, reliability,	Mishra (1993)
Ability , value congruence	Sitkin and Roth (1993)

Antecedents appearing most frequently appear in boldface. These include competence (ability), benevolence, integrity (moral integrity), openness, and shared values.

After Morgan and Hunt (1994) introduced the Commitment-Trust Theory, several variables were identified as essential antecedents of trust, including benevolence, cooperation, integration, values, competence and communication (Brown et al., 2019; Casidy & Nyadzayo, 2019; Dowell et al., 2015; Franklin & Marshall, 2019; Koponen et al., 2019; Kurnia Endah et al., 2019; Massey et al., 2019; Morgan & Hunt, 1994; Riana et al., 2019).

Notably, Brown et al. (2019) conducted a meta-analytic study across various marketing contexts (e.g., sales and marketing channels). Their primary focus is on the causality between trust and commitment, but the meta-analytic study also provides a valuable base template to examine the

antecedents of trust in the existing literature. Brown's research team searched influential journals and constructively re-examined the antecedents of trust using the Morgan and Hunt 1994 data. Table 2.3 shows the list of antecedents introduced by Brown et al. (2019), who use the Commitment-Trust Theory as a base. This research adds the antecedents found in recent literature to the table while adding Brown's citation in the 'References' column if Brown used the antecedent in his research. Franklin and Marshall (2019) identified the most salient antecedents of trust in contemporary trust literature and categorised them as cognitive or affective. Franklin's categorisation and other recent research literature further modify the list (Barnard et al., 2008; Dov, 2001; Paluri & Mishal, 2020).

Table 2.3

Dyad Antecedents of Trust (Brown et al., 2019; Franklin & Marshall, 2019)

Antecedent and Definition	Modal Dominance	References
Competence: "the buyer's perception of the supplier's technological and commercial competence"	Cognitive	Crosby et al. (1990); Johnson and Grayson (2005); Wittmann et al. (2009)
Dependence: "the need to maintain a relationship with another party in order to achieve one's goals" (Scheer et al., 2015, p. 695)	Cognitive	Kumar et al. (1995); Palmatier et al. (2006); Van Bruggen et al. (2005)
Relational duration: "length of time that the relationship between the exchange partners has existed" (Palmatier et al., 2006, p. 138)	Cognitive	Anderson and Weitz (1989); Brown et al. (2019); Palmatier et al. (2006)
Communication: the sharing of meaningful and timely information within the relationship (Morgan & Hunt, 1994)	Cognitive and Affective (Dov, 2001)	Doney et al. (2007); Franklin and Marshall (2019); Morgan and Hunt (1994); Palmatier et al. (2007); Palmatier et al. (2006); Yilmaz and Hunt (2001)
Opportunistic behaviour: "the essence of opportunistic behaviour is the deceit-oriented violation of implicit or explicit promises about one's appropriate or required role behaviour ..." (John, 1984, p. 279)	Cognitive and Affective (Barnard et al., 2008)	Brown et al. (2019); Morgan and Hunt (1994); Palmatier et al. (2007); Yilmaz and Hunt (2001)
A.k.a., Integrity: "the perception that the trustee adheres to a set of principles that the trustor finds acceptable" (Mayer & Gavin, 2005)		Moorman et al. (1993); Morgan and Hunt (1994); (Schoorman, 2007)
A.k.a., Ethics		
Relationship Benefits: "receipt of superior benefits from the partnership relative to that received from other options" (Morgan & Hunt, 1994, pp. 24-25)	Cognitive and Affective	Brown et al. (2019); Geyskens et al. (1998); Moore and Cunningham (1999); Palmatier et al. (2006)

Antecedent and Definition	Modal Dominance	References
Satisfaction: "an overall post-purchase evaluation of the final customer solution" "... an affective response of individual channel members toward salient aspects of the channel organization" (Schul et al., 1985, p. 13)	Cognitive and Affective	Brown and Woods (2016); Caceres and Paparoidamis (2007); Ganesan et al. (2010); Garbarino and Johnson (1999); Geyskens et al. (1998); Wagner et al. (2010)
Benevolence: "the extent to which a party believes that the benevolent party has intentions and motives beneficial to the party." (Ganesan, 1994)	Affective	Franklin and Marshall (2019); McKnight et al. (2002); Schoorman (2007)
Co-creation: "the active participation, interaction, and collaboration of the buyer and seller and other actors in the making exchange to develop a deeper understanding of the customer problem-solving context. The joint problem solving generates a customer solution or are configured customer solution"	Affective	Ballantyne and Varey (2008); Franklin and Marshall (2019); Gupta et al. (2018); Kurnia Endah et al. (2019); Lundkvist and Yakhlef (2004); Macdonald et al. (2016)
Shared Values: "... the extent to which partners have beliefs in common about what behaviors, goals, and policies are important or unimportant, appropriate or inappropriate, and right or wrong" (Morgan & Hunt, 1994, p. 25)	Affective	Anderson and Weitz (1989); Brown and Woods (2016); Morgan and Hunt (1994); Nicholson et al. (2001); Sarkar et al. (2001); Smith and Barclay (1997); Yilmaz and Hunt (2001)

In this list, the author has assigned each antecedent to an antecedent type, affective or cognitive, based on existing literature (Barnard et al., 2008; da Silva Terres et al., 2015; Lewis & Weigert, 1985; Morrow Jr et al., 2004; Paluri & Mishal, 2020). Consistent with Lewis and Weigert (1985), many researchers believe that service providers can build their customers' trust through a pattern of careful, rational thinking (cognitive-based factors), combined with the delivery of their feelings, instincts and intuition (affect-based factors) (da Silva Terres et al., 2015; Morrow Jr et al., 2004). The reason to tag the antecedents as cognitive and affective is to distinguish them according to the extent of the service providers' efforts toward their customers. For example, a service provider must put much effort into a long-term plan to acquire the cognitive antecedent, competence. Contrarily, a service provider can set up a strategy to focus on its customer's affective antecedent, benevolence, in a comparatively short-term plan.

The conceptualisation section below revisits the aforementioned dyadic antecedents and selects and justifies the dyadic antecedents for further research. Another conceptualisation section selects antecedents appropriate to a triadic relational setting.

2.3.4 Moderators of the Causal Antecedents of Trust

Researchers have used trust as the outcome or mediator in their studies on business-to-business relationship marketing for decades (Morgan & Hunt, 1994; Palmatier et al., 2006). The existing literature has considered several potential moderators for the effect of antecedent variables on trust and relationship quality.

Table 2.4 lists the significant moderators on trust or other relational quality variables examined in the past literature. Samaha et al. (2014) developed a conceptual framework that includes moderator groups and moderators. The moderator groups he used were 'Cultural' moderators and 'Study- and Industry-Level' moderators. The current research adopts Samaha's groupings and adds other moderator groups suggested in other literature, as shown in Table 2.4.

Table 2.4

Moderators on Trust and Relational Quality in the Existing Literature

Moderator Group	Moderator	Reference
Culture	Individualism-collectivism	Hohenberg and Homburg (2016); Samaha et al. (2014)
	Power distance	Dash et al. (2006); Delbufalo (2012); Hohenberg and Homburg (2016); Samaha et al. (2014); Terawatanavong and Quazi (2006); Usunier et al. (2009)
	Uncertainty avoidance	Hohenberg and Homburg (2016); Samaha et al. (2014)
	Masculinity-femininity	Samaha et al. (2014)
Study- and Industry-Level	Cultural distance	Gu et al. (2019)
	Individual vs firm	Samaha et al. (2014)
	Product vs service	Samaha et al. (2014)
	Competitive intensity	Samaha et al. (2014)
Organisational Level	Environmental turbulence	Samaha et al. (2014)
	Contract complexity	
	Firm size	Gu et al. (2019); Hohenberg and Homburg (2016); Paparoidamis (2016); Restuccia and Legoux (2019); Zhang et al. (2018)
Dyadic	Product category involvement	De Wulf (2001)
	Consumer relationship proneness	De Wulf (2001)
	Long-term orientation (Duration)	Casidy and Nyadzayo (2019); Hohenberg and Homburg (2016)
	Alliance size	De Wulf (2001)
	Client involvement	Chaudhry et al. (2018)

Cultural difference has received much attention as a moderator in business-to-business relationships. The impact of firm size and cultural background have also been identified as particularly relevant (Dekker et al., 2019; Gu et al., 2019; Hohenberg & Homburg, 2016; Restuccia & Legoux, 2019; Zhang et al., 2018). Dash et al. (2006), Delbufalo (2012), Terawatanavong and Quazi (2006), and Usunier et al. (2009) examined the moderating effect of power distance in a business-to-business relationship.

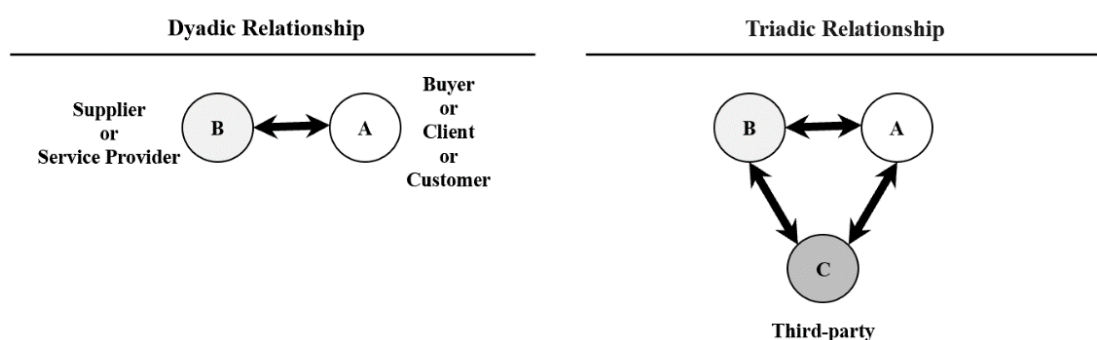
The Conceptualisation section below revisits the moderators listed above to select the appropriate moderators for the current research to develop the preliminary conceptual model.

2.3.5 Triadic relationships in the literature

Prior research has mainly focused on dyadic relationships between service providers (or suppliers) and customers (or buyers or clients), yet triadic relationships (Figure 2.6) are increasingly important in various industries.

Figure 2.6

Dyadic Relationship vs Triadic Relationship



2.3.5.1 Triadic Relationship Overview

Triadic relationships can exist in many different forms. As the triads and triadic research became prevalent, Vedel (2016) has categorised several fields in inter-organisational phenomena; supply chain management (McFarland et al., 2008; Wu & Choi, 2005), service purchasing (Raassens et al., 2014), business-to-business relationships (Dubois & Fredriksson, 2008; Wu & Choi, 2005; Wu et al., 2010). Note that triadic relationships are a possible stepping-stone to better understanding broader network relationships.

2.3.5.2 Triadic Relationship in Supply Chain Management

Because several supply chain management researchers published articles in the context of triadic relationships, this section elaborates on themes and findings of research published in this discipline. Since supply chain management encompasses coordination and collaboration with

channel partners, suppliers, intermediaries, third-party service providers and customers, optimising relationships is a critical success factor in the supply chain management business (Choi & Wu, 2009; Ellram & Murfield, 2019; Karatzas et. al., 2016). Although there is scarce research on trust as a precursor to relationship quality (Choi & Wu, 2009; Ellram & Murfield, 2019; Karatzas et. al., 2016), there is still value in reviewing and examining the supply chain management findings in order to understand triadic business relationships better.

Davies et al. (2007) consider the issues from the third-party logistics provider's (3PL's) viewpoint ('subcontractor' viewpoint). Supply chain researchers explore how the 3PL market is shifting and evolving from product selling to product plus service selling (referred to as 'servitizing'). They also examined what 3PL providers need to do to enhance business effectiveness.

Natti et al. (2014) examine an intermediary's facilitator role linking supplier and customer as a middleman (supplier-intermediary-customer). Ellram and Murfield (2019) use a systematic literature review to claim the importance of 'relationship' in the triadic business context. They explicitly suggest that we consider the buyer-supplier relationship part of a triad or network.

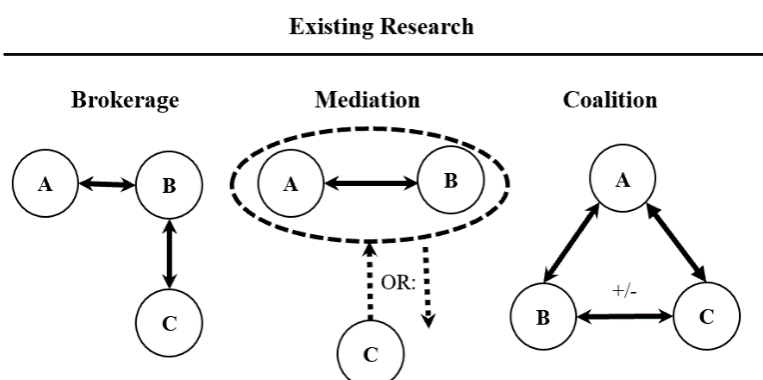
In summary, there is a significant direction in supply chain management research to consider relationship quality as an essential outcome. However, there is a weakness in the supply chain literature regarding the antecedents of trust.

2.3.6 Service Relationship Triads

Within the service industry, ever since the concept called 'service triads' was introduced (van der Valk & van Iwaarden, 2011), attempts have been made to use the ideas in different fields (Hartmann & Herb, 2014; Sengupta et al., 2018; Wynstra et al., 2015).

Siltaloppi and Vargo (2017) introduced three primary forms of triadic relationships, as shown in Figure 2.7.

Figure 2.7



The first form is ‘brokerage.’ (Siltaloppi & Vargo). This construct is conceptualised in a literal, traditional way as a broker who sits between seller and buyer. It is different from an SOP in the triadic relationship because there is a relationship between the SOP and the customer. The second form is ‘mediation.’ In mediation, there is a direct relationship between A and B and between C and B, but C mediates between A and B. For instance, an auditor can impact a bank (customer) and a service provider responsible for corporate software development. Alternatively, modified software through collaboration between customer and service provider can affect how an auditor party performs an audit. The third form of the triadic relationship is ‘coalition.’ This relationship is formed as a consortium in which A, B, and C have roughly equal weight in a relationship. For example, A is a bank responsible for providing business knowledge, B is an application management party, and C is an infrastructure (cloud) management party. Consequently, they cannot perform the business required without participating.

A third party can partially perform the manufacturer's provision of servitised offerings to the customer contracted to take responsibility for the service delivery. Then, a service triad is formed (manufacturer-customer with the third firm and service provider).

Li and Choi (2009) and van der Valk and van Iwaarden (2011) show that the service provider's performance can affect the client's loyalty to the manufacturer. Studies show that suppliers can effectively deal with agency problems with their outsourcing partners (Bhattacharya & Singh, 2019; Fong & Tosi Jr, 2007; Handley & Gray, 2013). In other words, suppliers choose an optimal contract form (outcome-based vs behaviour-based contract) between the two firms. Agency problems are addressed in Agency Theory, which addresses the relationships between two separate entities where one entity (principal) asks another entity (agent) to manage its assets and make decisions in return for compensation. This separation of ownership and control of assets creates agency problems in organisations. Droge et al. (2012) and Guo and Ng (2011) show that the close relationship between the supplier (B) and service provider (C) can affect C's service delivery performance to the end client (A).

2.3.7 Sub-outsourcing (SO)

As defined in Chapter 1, SO includes subcontracting and offshoring. This section reviews the subcontracting and offshoring subjects, regardless of whether the researchers discussed them in the context of a triadic relationship or not.

Day (1956) defines subcontracting as "the procurement of an item or service which is normally capable of economic production in the prime contractor's own facilities and which requires the prime contractor to make specifications available to the supplier" (Kamien & Li, 1990). The term 'prime contractor' is the equivalent of 'service provider' in this thesis, and the word 'supplier' means the same as 'subcontractor.'

Although there has been a considerable amount of literature on subcontracting (Balboni et al., 2013; Balboni et al., 2014; Guers et al., 2014; Kamien & Li, 1990), most focus on operational aspects. Despite a few researchers examining the relation quality of projects using subcontractors (Swar et al., 2012), as suggested earlier in the chapter, the relationship quality literature focuses on dyadic rather than triadic relationships.

Sako (2005) defines offshoring as "the migration of productive economic activity and the associated employment from a home country – normally a developed nation such as the United States – to other parts of the world, especially low-wage countries such as India and China" (p. 5). The offshoring concept was born to create many obvious cost and production advantages, mainly for large projects, and subsequently, a significant literature has developed.

Subcontracting and offshoring overlap in concept. While subcontracting happens when the two parties involved are two separate legal entities, a service project can practice offshoring whether or not the offshoring team belong to the same company as the service provider. In other words, some subcontractors can also be an offshore team if the offshore team resides away from the home country. However, the current research uses the concept of subcontractors and offshore teams in the same way: they are less cohesive than a group of team members within the service provider firm. Hence, this work combines the two terminologies into a new vocabulary, sub-outsourcing (SO).

2.4 Strengths and Weaknesses in the Literature

2.4.1 Strengths of the Literature

Since the ground-breaking research by Moorman et al. (1993) and Morgan and Hunt (1994) introduced trust as the outcome of B2B relationship marketing, research on the antecedents of outcomes in dyadic relationship marketing has explored and refined the topic over the subsequent years. Although the scope of antecedents often overlaps, and there is some variation between authors and contexts, the factors affecting trust in B2B relationships in dyadic relationships are well established.

2.4.2 Paucity in the Literature

Despite several evolutions of the research on antecedents of trust in B2B relationship marketing and triadic relationships in other disciplines (Choi & Wu 2009; Davies et. al., 2007; Ellram & Murfield, 2019; Natti et. al., 2014), there is scarce study on these subjects in the context of SO. Since SO is a widely used strategy for long-term B2B relationship marketing to increase the quality of the services and reduce service costs, it is meaningful to seek answers to the knowledge gap about what affects the customers' trust toward service providers using SOPs.

Although several researchers from different research fields (e.g., SCM and B2B marketing) have dealt with the triadic business relationship, the primary focus has been five-fold. First, the researchers analysed the pros and cons of hiring a third party for outsourcing (i.e., adding C). Second, they evaluated how the relationship between the service provider (B) and SOP (C) can affect C's performance. Next, they investigated how a firm using outsourcing should manage the outsourcing partner (B-C relationship). Fourthly, they focused on how the third party (C) can do their business better (from the C's viewpoint). Finally, they focused on the firms' strategic choice for outsourcing: when and how firms should decide whether to use a subcontractor.

However, none of the reported research uncovered by this review is concerned with how the service provider should manage the relationship quality with the customer within a triadic relationship once they have hired a third party (A-B relationship, in the context of having a third party (C)). This is the focus of the current research. In particular, the researcher wishes to determine how a service provider should manage the relationship quality (trust) with their customers when they have a sub-outsourcing partner (when C is SOP).

Notably, the researcher examines the issue within the context of sub-outsourcing. As will be elaborated upon in the next section, the literature in the marketing research stream is restricted to the dyadic relationship context (i.e., relationships between two firms only). Thus, the current research brings the sub-outsourcing context to the B2B relationship marketing literature, a new perspective.

2.5 Conceptualisation

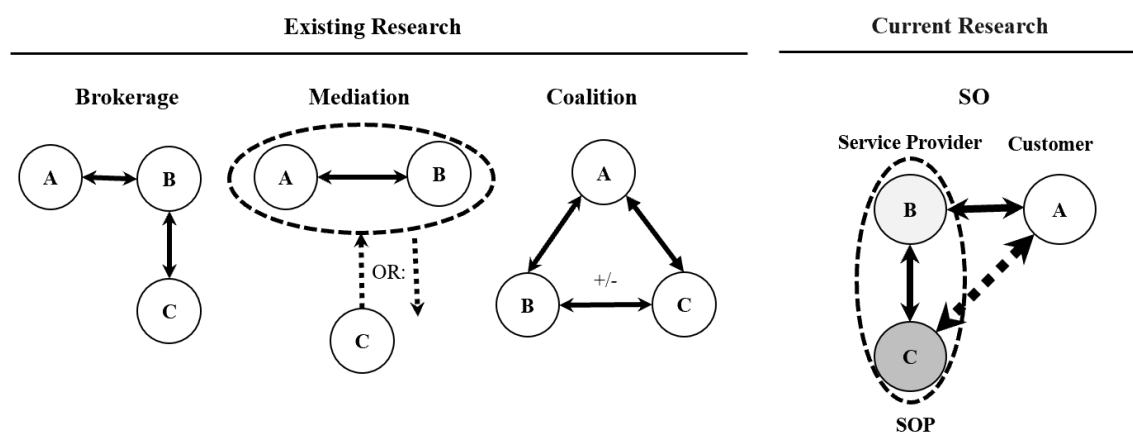
Based on the literature review and the gaps identified, SO triadic and SO-specific antecedents will initially be conceptualised by the existing knowledge and by considering the researcher's 29 years of working experience within triadic relationships in the services industry.

2.5.1 An SO Triadic Relationship Marketing Model

A B2B relationship (between a service provider and a customer) with an SOP involved is a different, unique form of triadic relationship thus far unreported in the marketing literature. In sub-outsourcing, a formal contract exists between the customer (A) and the service provider (B), but not between the customer (A) and SOP (C). Also, SOP has a service level agreement (SLA) with the service provider only, with the customer having no formal control over the SOP. Because these two contracts are asymmetric, the SOP is necessarily confronted with two principals, buyer and customer (Van der Valk, 2011). Therefore, a service provider may need to design SOP-customer interactions (Niranjan & Metri, 2008). Figure 2.8 depicts the differences between the triads in the triadic analytical framework (Siltaloppi & Vargo, 2017) and the SO triads discussed in this research.

Figure 2.8

Triads Analytical Framework (Siltaloppi & Vargo, 2017) vs SO Triads Framework



The sub-outsourcing triad provides a unique context in which the trust between the service provider and the customer develops and changes. Specifically, while the service provider (B) has a service-level agreement with SOP (C), in most cases, C delivers a service directly to the customer (A). In doing so, A and C can naturally contact and communicate directly. Further, A's communications with C may occur more often than communications with B and even sometimes happen without the presence of B. This unique relational aspect could cause the customer to become unhappy about the services received and ultimately lose trust in the service provider. In addition, even if A would have been more satisfied with B without an SOP, A may not explicitly complain about the service performance by SOP because A probably pays less for the contract with B when the SOP is involved.

In summary, SO triads bring significance to the research world for three reasons. Firstly, SOPs introduce a new form of a triad. SOP has an SLA with the service provider yet delivers services

directly to the customer. SOP is thus confronted with two principals, buyer and customer (van der Valk & van Iwaarden, 2011), and the customer has no control over the SOP (unidirectional). Secondly, business service triads and SO triads have become ubiquitous. Lastly, there is a strong need in the literature and the business world to appropriately design SOP-customer interactions (Niranjan & Metri, 2008) or control outsourced service production.

As in the Boeing case, Boeing was unhappy when the service provider outsourced a significant part of its services to an SOP with mostly junior engineers with low cost and low skills (Baker, 2019; Robison, 2019; Sadiq et al., 2020; Travis, 2019). Boeing was patient until severe problems occurred. In retrospect, it is clear that Boeing was patient (and profit-hungry) for too long, such that Boeing travellers and workers died, and significant market share was lost.

2.5.2 Antecedents in Dyadic relationships

Based on the literature review of the dyadic antecedents of trust in relational dyads described in Section 2.3.3, cognitive- and affective-dominant antecedents exist. The list of antecedents from Table 2.3 is divided into two tables (Table 2.5 and Table 2.6) to explain which dyadic antecedents are selected and grouped and why they are selected.

Table 2.5

Selected Dyadic Antecedents

Modal dominance	Antecedent	Justification of selection
Cognitive	Competence	Frequently used in the literature
Cognitive	Communication	Frequently used in the literature
Affective	Benevolence	Frequently used in the literature
Affective	Integrity	Frequently used in the literature

Table 2.6

Unselected Dyadic Antecedents

Modal dominance	Antecedent	Justification for omission
Cognitive	Ability	Interchangeable with competence
Cognitive	Dependence	Not frequently used in the literature
Cognitive	Opportunistic behaviour	Not frequently used in the literature
Cognitive and Affective	Relational Duration	Not applicable for the current research because the relational duration is fixed as long-term
Cognitive and Affective	Relationship Benefits	Not frequently used in the literature

Modal dominance	Antecedent	Justification for omission
Cognitive and Affective	Satisfaction	Not appropriate since it is not an antecedent that a service provider can manage but a result of previous services
Affective	Co-creation	Becoming popular in the recent literature but not essential to gaining trust
Affective	Shared values	Not frequently used and overlaps with co-creation

As a result, four dyad antecedents (competence, communication, benevolence, and integrity) are selected – two cognitive and two affective antecedents. Among the first set of antecedents in Table 2.2, before Morgan introduced the Commitment-Trust Theory in 1994, competence (ability), communication, benevolence, integrity (moral integrity), openness, and shared values were the most popular ones in the literature. Among the cognitive antecedents, competence and communication are selected. Competence and ability are combined because their definitions are very coherent but overlapping. Competence and ability are similar in meaning, but competence is used more frequently in recent research and is thus utilised here. The researcher omitted dependence, opportunistic behaviour, relational duration, relationship benefits, and shared values since their literature is sparse and seems to be of relatively low impact. Although many researchers have paid attention to satisfaction as trust's antecedent, the current research unselects it because satisfaction is a factor that results from past performance and personal factors. This research focuses on the antecedents that service providers can best control and manage.

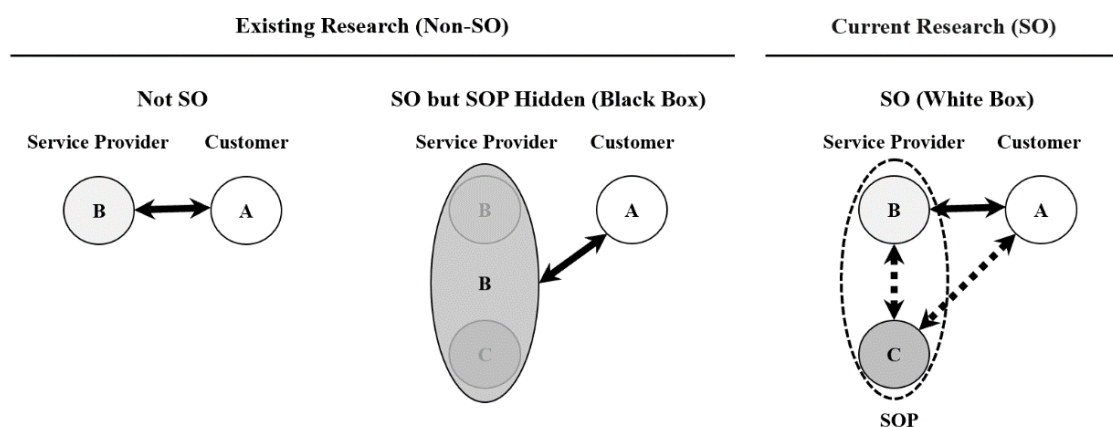
Two factors seem to be particularly important among the affective antecedents identified in the literature. First, benevolence is universally acknowledged as critical. Benevolence is shown when a relational partner does more than the minimum requirements agreed through the contract (Casidy & Nyadzayo, 2019). Even if a party is required to offer support based on the contract agreement, sometimes a little more is called for, demonstrating that the company is caring for its relational partner over and above contractual obligations – with the relational partner's interests at heart. Second, integrity is widely considered the crucial antecedent affecting customers' trust. Although Morgan and Hunt (1994) used a negative antecedent terminology as opportunistic behaviour, recent literature uses the positive antecedent as integrity (Barnard et al., 2008; Franklin & Marshall, 2019; Mayer et al., 1995; McKnight et al., 2002; Schoorman, 2007).

2.5.3 SO Antecedents

This section focuses on the antecedents involving the SOPs in the performing team. Section 2.5.1 explained the new relationship among A, B, and C. Figure 2.9 shows additional interactions among A, B, and C in the current research.

Figure 2.9

Comparison between SO and Non-SO



The relationships in the middle and right-most diagrams in Figure 2.9 are dyadic and triadic, respectively. The difference is whether C is hidden in the black box or transparent in the white box. C's transparency in the relationship adds an interaction between B and C, one between C and A, and one among A, B, and C. In other words, considering the nature of SO triadic relationships may lead to an additional, unique set of antecedents of trust. Several variables may be potentially important as antecedents in this context. Thus, the final selection of variables for this research is based on the implications of prior research in several domains, including social psychology and health care, plus the managerial relevance of the variables (i.e., whether they are directly experienced and perceived by the customer in the triad).

First, research on triadic relationships among family members (Brown & Woods, 2016) and doctor-patient-care provider triads (Stringer et al., 2019) suggest that triad members' communication is an essential variable in maintaining and improving their relationships. Further, communication activities by the service provider and the SOP can be directly experienced and perceived by the customer. Based on this, three communication-related factors are considered potential unique antecedents: communication between SOP and customer; communication between SOP and service provider; and communication between all three members. In particular, the three-way communication among all triad members can occur virtually via phone calls, web conferences, e-mail and physically when all three parties meet

simultaneously or individually. The current research examines the significance of each communication path but expresses communication as one antecedent: “triadic communication.”

Second, an SOP’s competence is a critical antecedent that affects customer trust. In a dyadic relationship, the competence of B and C is considered one antecedent. However, this research separates the competence of C from that of B. Lastly, B’s control over C is another antecedent to measure in the research. The customer signs off the contract with the service provider and is keen to see how the service provider manages and controls the SOP.

Three guides are driving these specific SO antecedents’ selection. First, the researcher conducted a preliminary research discussion with SO experts in the field. Second, the researcher reviewed literature in marketing and other fields such as sociology and health management. Third, the author has a depth of professional experience to draw after 30 years of work experience at IBM Korea. The author managed outsourcing projects for Korean customers and customers from various countries, including Great Britain, Canada, France, Sweden, Switzerland and the USA.

In summary, a set of antecedents unique to the SO context (triadic communication, SOP competence, and service provider's control over SOP) is drawn from both literature and the researcher's work experience sources.

2.5.4 Moderators

As subcontracting and offshoring become prevalent, several studies have found that the contract complexity, power balance, and culture (Kim et al., 2019; S. B. Zhang et al., 2020) moderate relationship quality. The power of culture in determining behaviour has been clearly demonstrated in the literature. Hsu, Woodside and Marshall (2013) and Woodside, Hsu and Marshall (2011), for example, showed that the behaviour of tourists from the East (Japan) and the West (US) can be better explained/predicted by using cultural variables than by using distance from destination and GDP differences.

The researcher will examine the moderating effects of culture by differentiating customers' base countries for Eastern and Western countries. Business relationships are predicated on shared values and strong communication, thus it follows that the antecedents of trust in a business relationship will probably vary in different cultural situations. For instance, it would seem probable that in an Eastern context that the formation of trust in a more harmonious, collective, eastern context, might depend more on benevolence whereas a more individualistic Western relationship situation might call for more stress on competence.

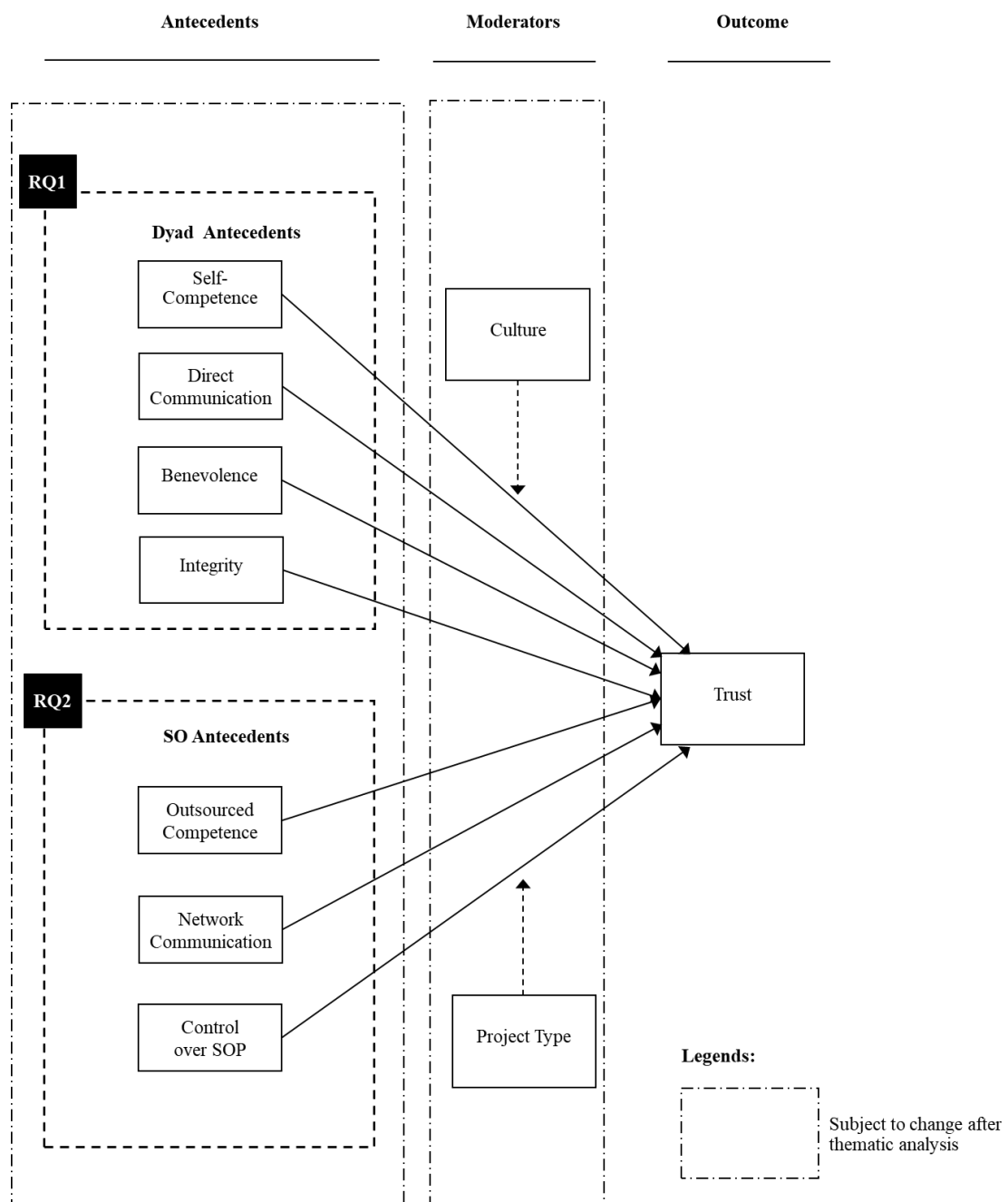
Similarly, it also seems reasonable to assume that more complex technical projects will require different trust antecedents than simple, low-technology projects. This research will also test if the outcome is moderated depending on whether the project is technically complicated or not. The research will tag whether the project is IT-based to test the moderation effect.

2.6 Preliminary Conceptual Framework

In this research phase, the researcher develops the following preliminary conceptual framework (Figure 2.10) as a draft based on the literature review and logic.

Figure 2.10

Preliminary Conceptual Framework



As the research matures through interviews and analysing of the findings, this draft version will be revised to reflect real-world situations and better represent current reality.

2.7 Derived Research Questions

Research is drawn from the discussion and illustrated in the preliminary model. More formally:

RQ1 Which antecedents that have been shown to affect a customer's trust toward its service provider are also important in the sub-outsourcing context?

RQ2 Are any new variables specific to the sub-outsourcing context affecting a customer's trust toward the service provider?

The researcher will explore possible moderators while these research questions are tested and analysed. Specifically, culture (Western vs Eastern) and technical complexity (IT services vs non-IT services) will be examined based on the existing research.

2.8 Chapter Conclusion

This chapter reviewed what is known and what is unknown in the literature. It also identified the knowledge gap that the researcher seeks to address. The next chapter is the first of the chapters that will empirically test the preliminary conceptual framework. Chapter 3 will describe the research methodology, method, and tools used and why.

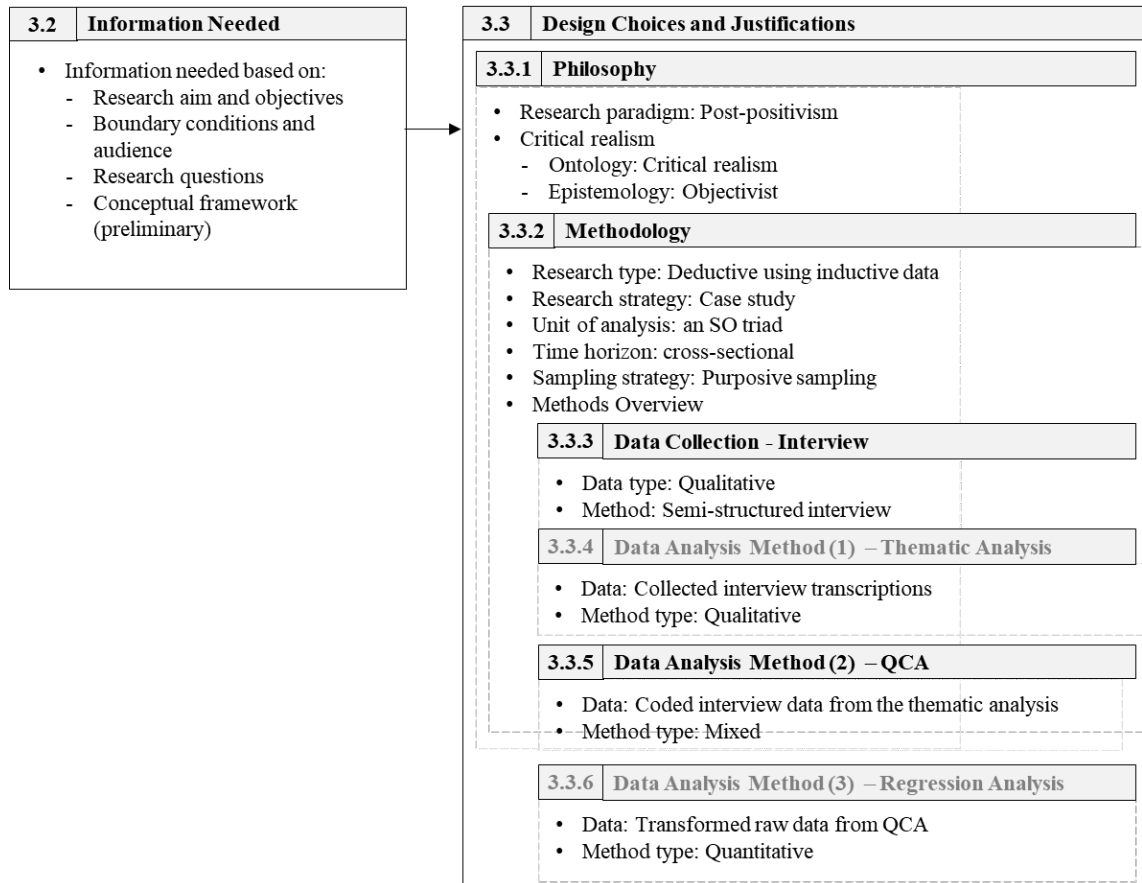
Chapter 3. Research Design

3.1 Chapter Introduction

This chapter describes the research design, as shown in Figure 3.1.

Figure 3.1

Sections in This Chapter



As shown in Figure 3.1, the body of this chapter presents the research design in three sections. First, the chapter revisits the research topics, aims, objectives, boundary conditions, and audience and defines the research's unit and analysis perspectives. The section provides a foundation for the design choices made in the research. Second, it highlights the research's philosophical underpinnings and outlines the specific research design choices made in the research. This section aims to explain how and why the research is designed. Lastly, it summarises the evaluation, justifications and limitations for each design choice made in the research. The chapter discusses mitigation of the necessary research limitations and how the research still provides value.

Since the research adopts a mixture of qualitative thematic analysis, mixed QCA, and regression analysis, this chapter uses generally understood methodology terms such as antecedents, variables, and moderators, except for the QCA sections, where the more appropriate terminology is introduced and used.

3.2 Research Information Needed

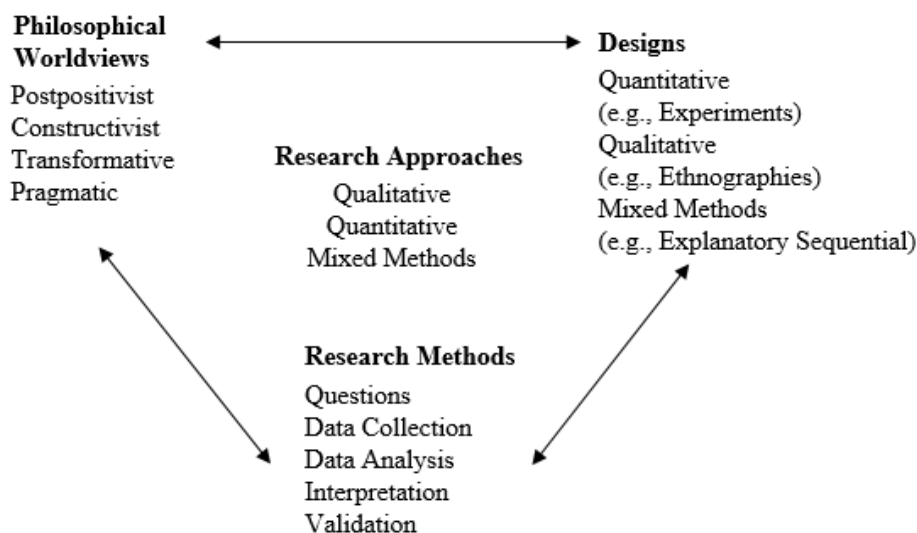
This section revisits the research topics such as aims, objectives, questions, and the preliminary conceptual framework to establish precisely what the research is trying to achieve. Then, it defines the unit and perspectives of the analysis before listing all the design choices made in the research.

3.3 Design Choices and Justifications

Given the research topics and the information needed, this section lists all the research's design choices, from research philosophy to the methods. Each section describes the design choice and justifies why the research made the design choice. Creswell (2018) introduces a framework for research, illustrating the interconnection of worldviews, design and research methods, as shown in Figure 3.2.

Figure 3.2

A Research Framework – The Interconnection of Worldviews, Design and Method



Source, (Creswell, 2018, p. 24)

Different authors use research-related terminology differently; this research uses ‘philosophy’ or ‘paradigm’ for ‘philosophical worldviews,’ methodology’ for ‘research approaches’ and ‘methods’ for ‘research methods.’

3.3.1 Research Philosophy

This section presents the researcher's choice of the research paradigm and justifies the choice based on the information needed in the research. Figure 3.3 shows the overview of the philosophical choices, including the methodology as a case study.

Figure 3.3

Philosophical Choices

	Positivism →	Post-positivism	Interpretivism	Critical theory
Ontology What is reality?	• Naive realism	• Critical realism	• Reality realism	• Historical realism
Epistemology How do you know something?	• Objectivist • Findings true	• Objectivist • Findings probably true	• Subjectivist • Created findings	• Subjectivist • Value-mediated findings
Methodologies How do you go about finding it out?	• Quantitative →	• Quantitative • Case study • Grounded theory • Ethnography	• Phenomenology • Grounded theory • Ethnography	• Discourse analysis
Inquiry aim	• Predict and control	• Predict and control	• Understand and interpret	• Critique and transform
Voice	• "Disinterested scientist"	• "Disinterested scientist"	• "Passionate participant"	• Intellectual revolutionary"

Source: Guba and Lincoln (1994)

The selections in thick boxes are relevant to this research. The two items with the arrows are the selected research paradigm and the methodology, respectively.

3.3.1.1 Justification for the Research Philosophy

The researcher believes the post-positivism paradigm best mirrors her personal belief about reality. In contrast to positivism, which seeks true findings, post-positivism findings probably align with reality. The research uses a case study base on qualitative and transformed quantitative data to predict and develop the preliminary conceptual framework based on real-world actors' input.

3.3.2 Methodology

This research adopts a mixed methods approach involving collecting qualitative and quantitative data, integrating the two forms of data, and using distinct designs that may involve the uses of QCA as part of a mixed method study (Creswell, 2018). Among the four research designs that Creswell (2018) introduces, this research chooses an exploratory sequential design in which a qualitative analysis precedes a quantitative analysis. Specifically, a thematic analysis of the qualitative interview data is followed by data transformation to numeric values analysed using

fsQCA. The following sections discuss and justify each of the methodological design choices made in the research.

3.3.2.1 Research Approach

This research adopts an exploratory sequential mixed methods design. Relational factors that affect the customers' trust in the SO context are complex and difficult to capture using exclusively quantitative data. Therefore, it is appropriate to use qualitative, case study-based data. Although the researcher developed the preliminary version of the conceptual framework after applying the knowledge from literature review and working experiences, the research seeks inductive and deductive relational factors in the new SO context.

This researcher chose the exploratory sequential mixed methods design among the three core mixed methods designs that Creswell (2018) identified – a convergent design, the exploratory sequential design and the exploratory sequential design. In an exploratory sequential design, a researcher could collect qualitative data and then use its findings to inform quantitative data collection and analysis. The first set of case study data provides qualitative data, subsequently transformed into numerical data and then re-analysed quantitatively. The design choices of data collection and analysis methods will be described in the sections below.

3.3.2.2 Research Strategy

The research adopts a case study-based research strategy. Since the research seeks new relational factors or to confirm the selected variables in the preliminary conceptual framework, the researcher needs to collect the information needed qualitatively. A case study provides the best fit for an in-depth understanding of a case compared to other qualitative approaches such as narrative research, phenomenology, grounded theory, and ethnography (Creswell & Poth, 2018).

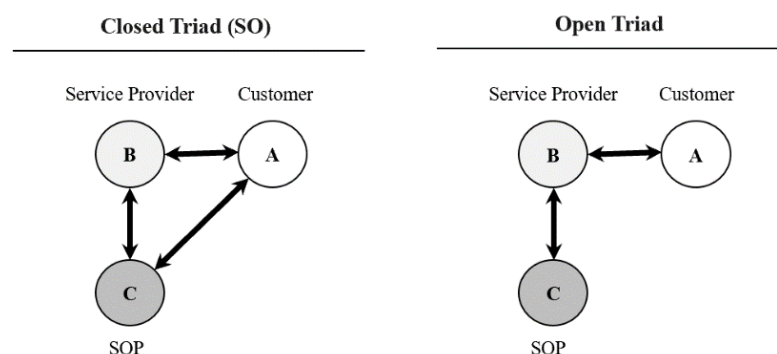
3.3.2.3 Unit of Analysis and Observation

The units of analysis in this research are provided by a set of case studies, each containing a description of the business environment of the relational triad and, more importantly, the opinions of the constellation of three actors (a customer, a service provider, and an SOP) regarding factors leading to trust in their triadic relationship. Chapter 2 has already introduced the various types of triads in the existing literature. The SO triad conceptualised in this research

is a closed, not open, triad. This means that the SOPs must communicate directly with the customers, as shown in Figure 3.4.

Figure 3.4

Closed Triad and Open Triad



The observation units are the actors within a business-to-business relational triad: a customer, service provider, or SOP. Although the participant is an individual, the actor represents the company rather than themselves as an individual. Thus, a customer does not provide an individual point of view; even though a comprehensive case study is performed and a player in the case study may be a service provider or an SOP, the observer requested their opinion of the customer's perspective.

3.3.2.4 Time Horizon

There are two options for the time horizon in a methodology – cross-sectional and longitudinal (Creswell, 2018). Researchers need to select whether the data for the study is to be collected at one point in time (i.e., cross-sectional) or multiple points over some time (i.e., longitudinal).

The current research is interested in customer's trust at one point in time, but only after sufficient interactions have occurred among the three actors of the relational triad for some time. Therefore, the time horizon appropriate for this research is cross-sectional.

3.3.2.5 Sampling Strategy

As explained in section 3.1, the research tests the relationship quality for a specific situation – a closed SO triad in which the service delivery period is at least ten months. Ten months was determined in the light of the researcher's 30 years' industry experience and through consultation with the pre-test cases described later, in section 4.7. As such relationships are relatively hard to find and investigate, this objective strongly suggests a careful but non-probability sampling strategy, a purposive strategy. The research adopts a snowball sampling technique to identify the appropriate participants.

Because it is essential to verify the specific requirements of the closed SO triad, whose relationship has lasted at least ten months, the researcher chose to interview the minimum number required for QCA using the selected conditions. The minimum required number of interviews only applies when saturation has been attained.

3.3.2.6 Methods Overview

Figure 3.2 summarises the methods of the exploratory sequential mixed methods research design used in the research. The research adopts a case study using QCA as a mixed method. Before analysing the data using QCA, the research conducted a case study by collecting qualitative data through semi-structured interviews from which the thematic analysis extracted themes. The QCA uses these themes as conditions. The research team consists of the author herself and another (paid) member who transformed the data into quantitative QCA raw data, followed by the author's QCA analysis. Finally, the researcher conducted the quantitative regression analysis using the same numeric data transformed during the QCA method. This auxiliary analysis is performed to offer a somewhat crude measure of convergent validity.

The COVID-19 epidemic occurred during the research journey and has impacted the method. The first influence concerns the sampling source countries. Before COVID-19, the researcher planned to conduct face-to-face interviews mainly in New Zealand and Korea as representatives for Western and Eastern countries. However, the researcher adjusted the interview plan in two aspects because of COVID-19. First, the interview method was expanded from solely face-to-face to include virtual meetings, and another (enabled by the addition of video meetings) is to extend the sampling frame from only two countries, New Zealand and Korea, to any available country which can offer a good representation of either Western or Eastern culture. These changes, documented in Chapter 4, are positive because the sampling source countries became broader than the original plan.

The figures below describe the data collection method and the three analysis methods used in the research process. Figure 3.5 shows the overview of methods for the research process.

Hence the researcher chose QCA, which deals with complex, often non-linear, relationship situations, where possible conditions are quantified to allow fuzzy-set analysis, although some conditions (discussed later) lend themselves only to dyadic, (crisp) quantification.

The researcher selected a semi-structured interview as the data collection method. A more rigid structure may bias responses to only those the researcher considers necessary, whilst an open-ended format may not uncover data about essential conditions. A strength of QCA is that qualitative data (obtained from the interviews) and quantitative data (obtained from the quantification and calibration of relevant sections of the interviews) inform the analysis.

The purpose of thematic analysis is to extract the antecedents from the interview data. From the themes selected in the thematic analysis, QCA transforms the influences of each antecedent from the qualitative text data into numeric data.

Lastly, the regression analysis is intended to offer confidence and convergent validity. Regression analysis is not as robust as QCA in this context, as regression analysis is linear and the sample size is inadequate for sophisticated statistical analysis. Nevertheless, even if the results are not precisely the same, the statistical analysis results will offer convergent validity to the primary QCA analysis.

3.3.3 Data Collection Method: Semi-Structured Interviews

This section covers the design of the data collection method. Because this step required a logical population categorisation and gathering of a large sample, a separate chapter (Chapter 4) covers the data collection details. This chapter covers only the basic design of the data collection method.

3.3.3.1 Data Collection Phase One: Ethics Approval

Although Figure 3.5 does not include the ethical approval activity, it is essential to ensure that any data collection activities do not have any ethical issues. Based on the AUT standard ethical approval process, the researcher demonstrated to the AUT Ethics Committee the plan and design showing this to be the case. Chapter 4 will cover the details of these activities.

3.3.3.2 Data Collection Phase Two: Sample Characteristics and Recruiting

The research designed this phase to select the participants that best represent the research population of interest, all the SO triads whose project period is longer than ten months, in which sufficient events can occur to build and maintain customers' trust. The sampling method

provided interviewees who varied greatly in personal and firm characteristics. Interviewees varied widely in industries, countries, and firm sizes.

Recruiting was conducted in several phases until sufficient data was collected. The researcher uploaded a document describing the desired sample projects on a LinkedIn posting during the first phase. In the second phase, the researcher requested the university's business and communication support organisation to introduce the researcher to a set of potential companies to recruit. The researcher's department has a list of representatives of major companies who have previously participated in collaboration events and emails requesting volunteers to participate in the interviews.

Next, the researcher and the supervision team contacted their business contacts to seek interview participants. Lastly, the researcher used a snowball sampling technique to ask the interview participants to introduce new interview participants (Bleich & Pekkanen, 2013; Dusek et al., 2015). Chapter 4 explains the detailed description of the recruiting and sampling activities performed in the research.

3.3.3.3 Data Collection Phase Three: Interview

The researcher was the only interviewer for all interviews, both for consistency purposes and to enable an appropriate familiarity with the data. However, the researcher first developed interview guidelines with steps and questions, and both the ethical approval team and the supervisors reviewed and confirmed the quality of the interview questions.

The researcher conducted face-to-face interviews whenever possible. In online interviews, the researcher utilised the video conferences as much as possible to maximise the effectiveness and efficiency of the interviews. Video conferences enable rapport building and reading body language better than audio conferences. For example, the researcher can build rapport better in video and audio conferences.

The researcher could recruit many Korean interviewees because of her career and personal network in Korea, and in these, the researcher used the Korean language if the person felt more comfortable speaking Korean.

3.3.3.4 Data Collection Phase Four: Transcription

Korean and English interviews were transcribed in the original text and uploaded to NVivo for coding. The researcher decided not to translate Korean into English because NVivo can handle Korean texts, and the original interview context can be preserved during thematic analysis.

3.3.3.5 Tools Used for the Data Collection Method

The researchers used LinkedIn posts, face-to-face meetings, phone calls, video conferences, and emails to introduce the interview background and required sample characteristics in the recruiting phase. The researcher selected Microsoft Teams, Zoom, Kakao Video talk, Kakao Voicetalk, and phones for online interviews depending on the interviewees' preferences. Whenever possible, the tool that enables the interviewers and interviewees to see each other was used. The interviewer recorded the interviews with an audio recorder upon interviewees' consent, and then the audio files were transcribed into text.

3.3.4 Data Analysis Method (1): Thematic Analysis

Thematic analysis in the research aims to identify, analyse, and report patterns (themes) within the case interview data collected (Braun & Clarke, 2006). This method will confirm (or not) the antecedents and outcome suggested in my preliminary conceptual framework as a base and then identify new conditions, or modify the existing antecedents, that the researcher will use in QCA.

3.3.4.1 Data Preparation for the Thematic Analysis

The researcher uploaded the transcribed interview data into the NVivo software, which allows the use of both English and Korean text. The bilingual researcher coded the interview data, but all the codes and themes were in English for consistency, and the researcher created a dictionary mapping English and Korean terms for the reviewers and the QCA coder.

3.3.5 Data Analysis Method (2): QCA

As a case-oriented method in comparative configurational methods, QCA differs from qualitative methods such as grounded theory and inferential statistical methods such as regression. QCA is the best fit if an analytic orientation is case-oriented rather than variable oriented, and when the researcher wants to handle the data types as numeric or non-numeric, commonly transformed (Kahwati & Kane, 2018).

The researcher chose case-oriented analysis because the researcher wanted to observe the detailed case studies of various SO triads. However, the researcher wanted to represent the impacts of factors in quantitative data type. Consequently, QCA was the most appropriate choice for the case-oriented analytic orientation and the numeric data type transformed from the non-numeric data type.

Kahwati and Kane (2018) describe the strengths and weaknesses of qualitative and quantitative methods. The first strength is preserving cases as holistic units throughout the analysis. Secondly, QCA is a robust method for identifying a causally complex relationship, perfect for the SO triads. Lastly, it provides transparency of analytic decisions.

Among crisp set QCA (csQCA), fuzzy set QCA (fsQCA), and multi-value QCA (mvQCA), this research applied fsQCA. The fuzzy set analysis is a proper choice because the variable range of the conditions and outcome is continuous. In other words, having more delicate graduation in the dataset is significant, and each variable can be assigned a value along with a continuous range. On the contrary, csQCA allows variables to be only binary categories of either present (1) or absent (0), and mvQCA accommodates categorical data with a small number of discrete options (Grofman & Schneider, 2009; Jordan et al., 2011; Kahwati & Kane, 2018).

The initial data format is a raw matrix in Excel, whose rows show the identifiers of the cases interviewed and the columns the names of the outcome and the conditions. In this case, the conditions are the selected themes defined in the thematic analysis. The research followed the phases suggested by Kahwati and Kane (2018). This research also adopted and modified the existing calibration guidelines. The following sections elaborate on the details.

3.3.5.1 QCA Phase One: Defining Outcome and Selecting Cases and Condition Sets

As QCA is an approach to addressing research questions and an analytic technique (Schneider & Wagemann, 2012), QCA requires a careful selection of cases, conditions, and outcomes to support the analytic technique (Kahwati & Kane, 2018). The current research selected trust as the only outcome from the beginning of the research journey. The author carefully calculated the required number of cases for QCA (Ragin, 2017; Ragin & Amoroso, 2011; Thiem, 2014; Thiem & Dusa, 2013).

The research has trust as the outcome of the conceptual framework; therefore, it reuses the earlier definition of trust. This phase reviews the concept of trust defined in the thematic analysis and refers to it in coding.

During the thematic analysis, the researcher set aside some cases lacking the required characteristics of the closed SO triads. Accordingly, the QCA process starts with forty-six valid cases. The antecedents defined in the thematic analysis became the causal conditions in QCA, while the modifiers became the contextual conditions.

3.3.5.2 QCA Phase Two: Transform Qualitative Data into Quantitative Raw Data

Before conducting QCA, the researcher transformed the interviews and thematic analysis data, a critical but sometimes tricky operation (Russo & Confente, 2019). After Forkmann et al. (2017) and Tóth et al. (2017) introduced the fundamental concepts of transforming the qualitative data into quantitative data utilising the General Membership Evaluation Templates, Warsen et al. (2019) and De Block and Vis (2019) presented robust examples of it in practice. The latter authors presented helpful considerations for transforming qualitative data into quantitative data.

They suggest, in particular, that QCA researchers should be explicit about establishing thresholds for inclusion and exclusion of data into a set and determining the degree of set membership. Moreover, QCA researchers should pay close attention to the zeros in their quantitative transformed data. They recommend that QCA researchers explicitly delineate their choices (to the extent that this is possible given issues of, e.g., confidentiality) to increase a study's transparency and comprehensiveness, hence its replicability. These recommendations have been closely followed here.

The researcher adopted and evolved the coding guidelines and the General Membership Evaluation Template (GMET) introduced by Tóth et al. (2017). This research adopted the structure of the Membership Evaluation Template but modified it based on the characteristics of the current research. While Tóth et al. (2017) use six conditions for twenty-six cases, the current research consists of at least eight causal conditions (the number of conditions may vary after QCA thematic analysis) for forty-six valid cases. Table 3.1

Table 3.1 shows one example of the Membership Evaluation Template for one condition, Self-Competence.

Table 3.1

Membership Evaluation Template for a Condition for The Current Research

Construct	Self- Competence (Dyadic Antecedent)		
Definition	The customer's perception of the service provider's technological and commercial competence. This dimension includes the service provider's market knowledge, ability to provide proper advice, assist the buyer in planning purchases, and provide effective sales promotion and quick responsiveness to requests.		
Scale	1 ~ 5 or blank		
	Score	Description	Quotes
	1	Very weak – B is not competent at all.	“They had a very low level of knowledge and skills in our industry, our company’s situations, and required resources and processes.”; “프로젝트 관련 필요한 지식과 스킬이 많이 부족했어요.”
	2	Somewhat weak – B is not very competent in ability, knowledge, and their resource and processes.	“They were somewhat lacking the required knowledge and skills for our project.”; “프로젝트에 필요한 지식과 기술이 좀 모자라서 진행이 원활치 않았습니다.”
	3	So so - B is neither competent nor incompetent in ability, knowledge, and their resource and processes.	“Their levels of knowledge and skills were neither superb nor low.”; “그들은 지식과 기술이 아주 좋지도 나쁘지도 않았습니다.”
	4	Somewhat strong - B is somewhat competent in ability, knowledge, resource, and processes.	“They were quite competent in ability, knowledge, and their resources and processes.”; communication was fairly strong in speed and clarity.”; “그들은 어느 정도의 지식과 기술을 갖추고 있었어요.”

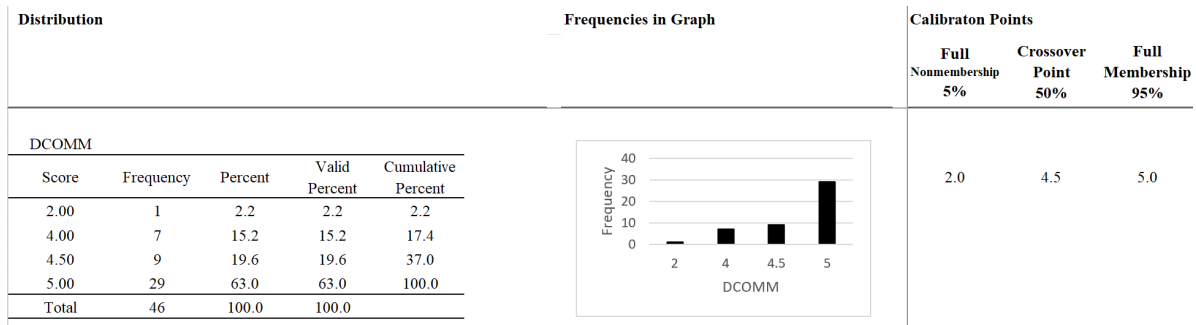
Construct	Self- Competence (Dyadic Antecedent)	
	5	Very strong - B is very competent in ability, knowledge, and their resource and processes. “They were very much competent in the related product, industry, and our company.” “They could facilitate their resources and processes well for the best performance.”; “프로젝트에 필요한 지식과 경험이 뛰어나서 믿고 맡길 수 있었어요.”
	Blank	Not mentioned or not applicable
Sub-dimension	Description	
Ability and Utility	Demonstrating the ability to fix the problem and restore the product or service to specification; Producing a high-quality product at, or above, specification.	
Knowledge and Negotiation	Industry knowledge, product knowledge, customer knowledge, and ability to negotiate positive outcomes with upstream suppliers.	
Resource and Processes	Aligning current resources, investing in personal and organisational resources to fix a problem, and initiating new corrective processes to minimise repeat product or service failure.	

For investigator validation purposes, the author and one supervisor separately used the template to assign membership scores to conditions based on four representatives and qualitative interviews without prior discussion or collaboration. The ability to confirm findings across the two coders significantly enhances the credibility of the findings. Investigator convergent validity is particularly significant for handling bias in gathering, reporting, and analysing the research data.

3.3.5.3 QCA Phase Three: Calibrating Sets into Numeric Set Membership Values (SMVs)

Researchers can use either the direct or indirect calibration method (Duşa, 2017; Ragin, 2008; Rihoux & Ragin, 2008; Russo & Confente, 2019; Schneider & Wagemann, 2012). This research uses the direct method of calibration, in which the researcher established three calibration points for the data based on external knowledge, standards, or theory. Figure 3.6 shows one example of how a direct calibration method is applied.

Figure 3.6

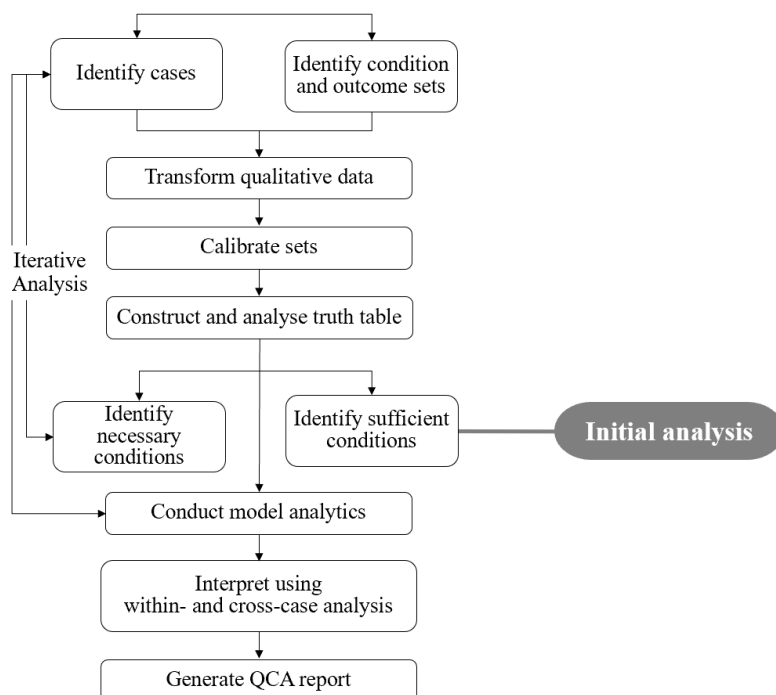
Calibration Rule Example - Dyadic Communication Condition

The first table shows the frequency of each score, and the second graph shows it visually. Based on this numeric data, the researcher's external knowledge of the interviews and industry, and the theoretical background, the researcher established three calibration points. The first point is the data value at which one considers a case entirely out of the set. The second point is the data value representing the crossover point. The third point is the data value at which one considers a case entirely in the set. The software then calculates scores from 0 to 1 using a logarithmic function.

3.3.5.4 QCA Phase Four: Analysing the Data – Initial Analysis using Truth Table

This phase initiates the analytic process, as shown in Figure 3.7.

Figure 3.7

Guiding Heuristic: Initial Analysis (Kahwati & Kane, 2018)

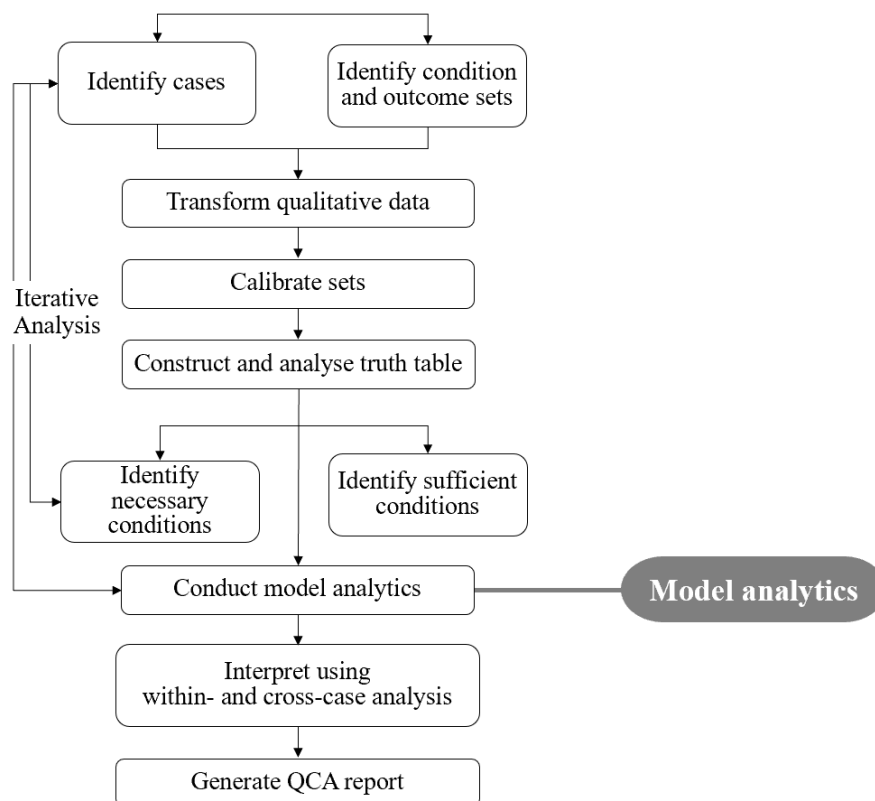
The research transformed a data matrix of set membership value (SMV) into a truth table in this phase. If there were contradictory truth table rows, the researcher chose one versus the others employing standard strategies. The researcher revisited the data to manage such data and closely inspected the truth table for potential issues. After analysing the necessary conditions and combinations, the researcher conducted a truth table preliminary sufficiency analysis

3.3.5.5 QCA Phase Five: Analysing the Data – Model Analytics

The initial analysis phase resulted in a solution describing the set relationships between the included conditions and the outcome of interest. In this phase, the research focused on analytic steps that occur after one generates the initial solution. These processes collectively are referred to as model analytics. Figure 3.8 shows this process visually.

Figure 3.8

Model Analytics and Iterative Analysis in QCA (Kahwati & Kane, 2018)



Model analytics are not unique to QCA, but many methods include numeric parameters or statistical tests to allow researchers to check the “fit” of the derived model and verify or modify the conclusions derived from the model by evaluating consistency and coverage (Kahwati & Kane, 2018). This phase evaluated the assumptions made in the logical minimization process. Furthermore, the researcher defined and identified model ambiguity. Finally, the researcher assessed the robustness of the QCA solution. Robustness assessment involves checking whether

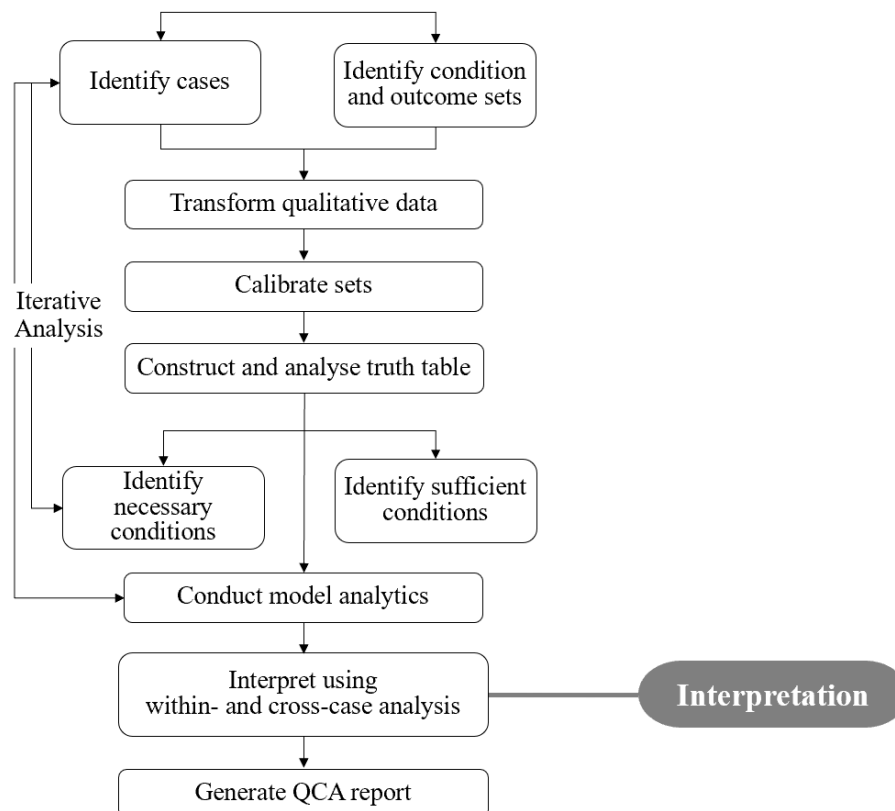
findings substantively change in response to small changes in analysis inputs. Schneider and Wagemann (2012) suggest testing the robustness by checking if the differences in consistency and coverage are not significant enough to merit a substantively different interpretation and by testing if solutions produced by the original analysis and the sensitivity analysis are in a subset relationship to each other. Kahwati and Kane (2018) introduced the robustness tests, including adding or excluding cases, changing calibration points or functions, and changing the consistency threshold. As shown in Figure 3.8, this process occurs iteratively until a satisfactory solution is reached.

3.3.5.6 QCA Phase Six: Interpreting the Results – Within- and Cross-Case Analysis

This phase aims to enhance interpretation through post-solution exploration using within- and cross-case analysis. Kahwati and Kane (2018) define this as an ‘interpretation’ process, as shown in Figure 3.9.

Figure 3.9

Guiding Heuristic for Interpretation (Kahwati & Kane, 2018)



3.3.5.7 QCA Phase Seven: Producing the Report

QCA report should include the methodological elements and study limitations. The methodological elements consist of a case, condition, and outcome selections, software including version number, consistency thresholds, management of logical remainders, solution selected for interpretation, and robustness checks. Chapter 5 provides the actual QCA report.

3.3.5.8 Tools Used for the QCA Method

QCA was performed using free software, downloaded from www.socsci.uci.edu, fsQCA version 3.0. FsQCA software was developed by Charles Ragin, who founded the QCA method. The research team chose the software to run the sufficiency analyses as it is freely available for download online at <http://www.fsqca.com> and a user manual (Ragin et al., 2006). The software

is handy for analysis purposes because it automates calibration, truth table generation, and checking the contradictions.

3.3.6 Data Analysis Method (3): Regression Analysis

Although QCA is the primary method to explore the relationship between various conditions and the outcome condition, trust, the researcher decided to run a regression analysis for convergent validity purposes. Many suggestions in the social science research literature comparing QCA with regression analysis is a good practice (Grofman & Schneider, 2009; Ho et al., 2016; Schneider & Grofman, 2006; Seawright, 2005)

While the analytic foundations of the two methods differ (regression analysis is a statistical method focusing on correlation and regression, and QCA is a set-theoretic method), this phase will use the findings from QCA and verify if regression analysis produces similar results.

There is no transformation performed for regression analysis. The data collected through the semi-structured interviews, transcribed, thematically analysed and transformed for use in QCA was also used for the regression analysis.

For convergent validity purposes, this linear analysis method aims to check if the significant findings from QCA produce similar results using SPSS. Because of the small sample size (a significant disadvantage of using regression analysis versus QCA), the regression analysis was restricted to the three theoretically most critical antecedents in QCA (self-competence, SOP competence, and triadic communication). Chapter 6, Regression Analysis, describes this approach and findings in detail.

3.3.6.1 Regression Analysis Phase One: Input Dependent and Independent Variables in SPSS

The coded raw data already used for QCA is uploaded into SPSS to define trust as the dependent variable, causal conditions as independent variables, and contextual conditions as the moderators.

3.3.6.2 Regression Analysis Phase Two: Running and Producing the Report

The researcher performed a regression analysis in SPSS. It first checked the main effect of each independent variable.

3.3.6.3 Regression Analysis Phase Three: Comparing the Results with QCA Results

For convergent validity purposes, the researcher compared the SPSS results to check if the necessary conditions from QCA have the main effect in regression analysis. The researcher also tested the interactions among the three major antecedents.

3.4 Chapter Conclusion

This chapter has presented the design of the research. First, the chapter considers what information the researcher seeks – research aims, objectives, boundary conditions, audience, research questions, and the preliminary conceptual framework. The chapter then explained the design choices made in the research and their justification. These choices include research philosophy, methodology, data collection, and data analysis methods. The following chapter presents a description of the data collection, which took the form of semi-structured interviews.

Chapter 4. Data Collection

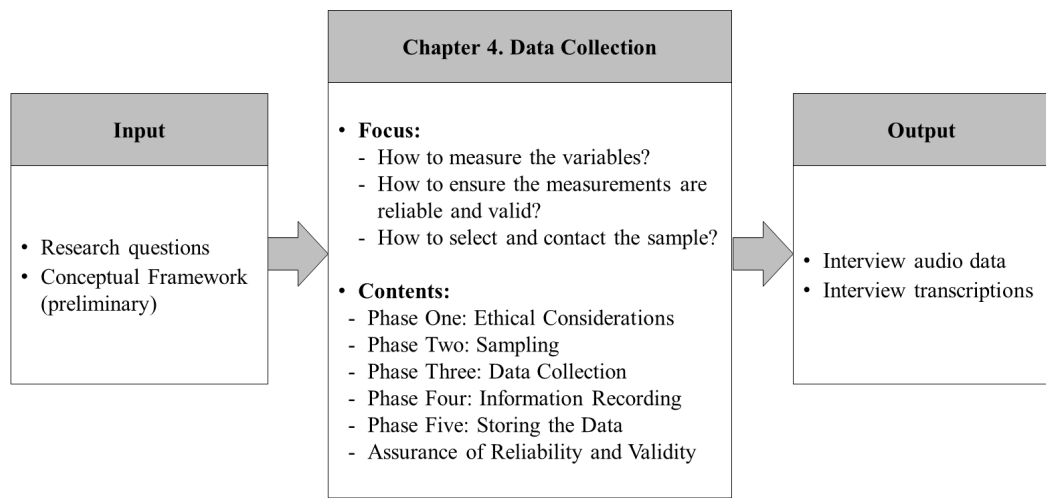
4.1 Chapter Introduction

This chapter describes how the researcher collected the data and the results. As explained in Chapter 3, the researcher chose a semi-structured interview as the data collection method.

Figure 4.1 shows where Chapter 4 sits in the thesis structure.

Figure 4.1

Chapter 4 in Thesis Structure



Based on the research questions and the preliminary conceptual framework developed in Chapter 2, the data collection focuses on selecting and contacting the sample participants, measuring the variables through interviews, and ensuring the measurements are reliable and valid. As the arrow from the ‘Data Collection’ box indicates, the research will use data collected at this stage for thematic analysis, QCA, and regression analysis. In other words, the data set collected in this research stage is essential because there is only one data source for all three analyses. The researcher uses the preliminary conceptual framework to test the research questions during data collection.

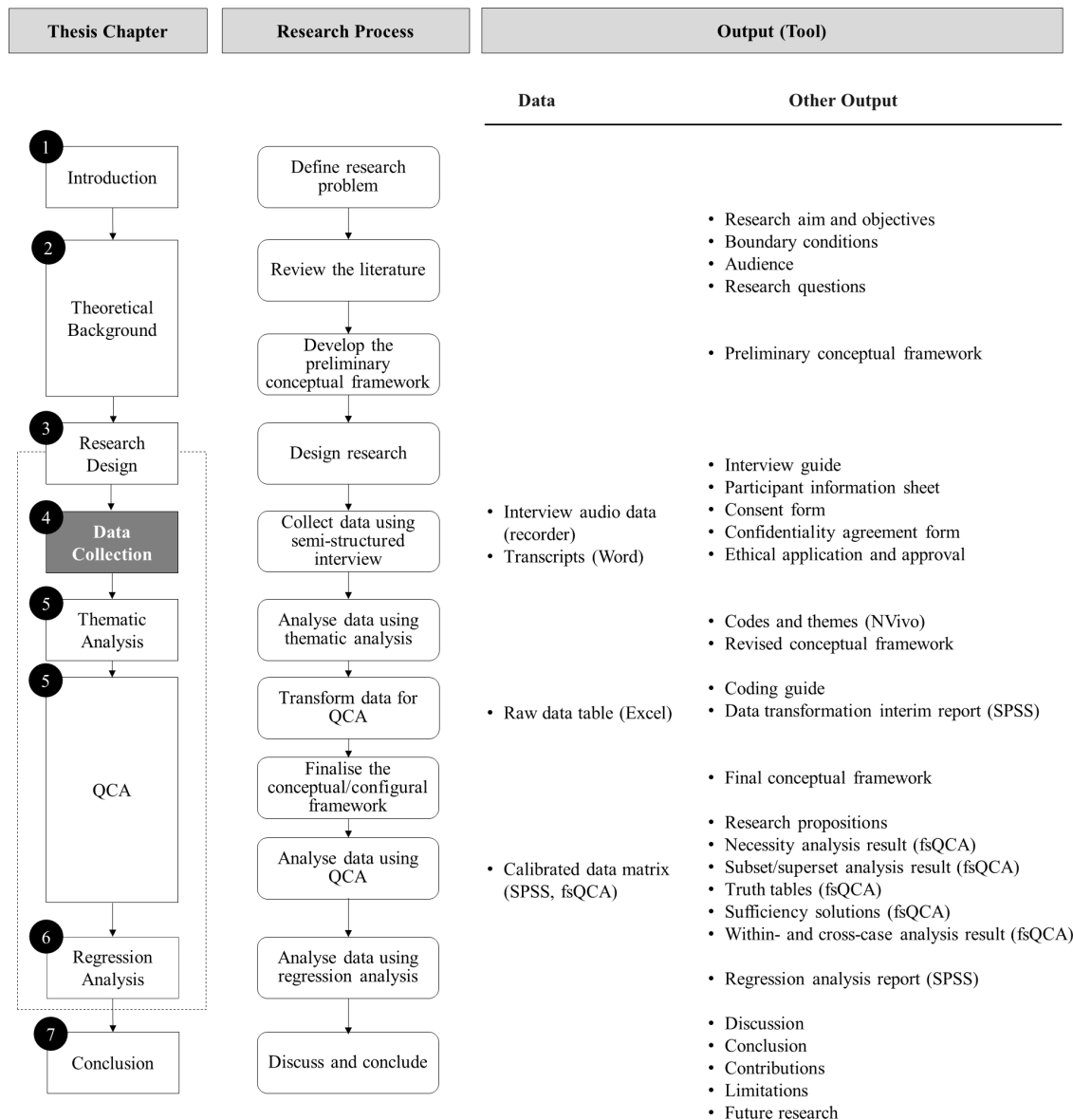
This chapter starts with an overview of data collection, describing the phases of the process. Then the following sections describe the data collection phases, including ethical considerations management, sampling and recruiting, operationalising interview procedures, conducting interviews, and recording interviews.

4.2 Data Collection Overview

Data collection aims to gain an in-depth understanding of perceptions or opinions on a topic. Figure 4.2 shows where the data collection sits in the research process.

Figure 4.2

Data Collection in Research Process



The researcher collected data to gain an in-depth understanding of perceptions or opinions on a topic. Therefore, the researcher asked participants open-ended questions in individual interviews. Data collection in this thesis consists of seven phases; managing the ethical considerations, sampling, recruiting, operationalising the interview procedures, conducting the interviews, and recording interviews.

The most critical input for data collection is the set of research questions and the preliminary conceptual framework developed in Chapter 2. The researcher determined the characteristics of the population and sample based on the research questions. Moreover, the researcher produced

the interview questions in the interview guide based on the research questions. Accordingly, the research aim, boundary conditions, and audience mentioned in Chapter 1 are significant inputs for data collection because they influenced the research questions.

Figure 4.2 also shows the outputs of data collection in two different categories, data and other works. The original format of the interview data is an audio file format in the recorder. Then the data are transcribed and saved in text in MS Word format. Other outputs of data collection include the ethical application and its approval evidence. The ethical application consists of an interview guide, participant information sheets, consent forms, and confidential agreement forms. Because the researcher conducted interviews in both English and Korean, all the relevant documents are in both languages.

4.3 Data Collection Phase One: Managing Ethical Considerations

Before recruiting and collecting data for a university research project, it is crucial to plan how to manage the ethical considerations, which a dedicated review board must approve. In this research, the review board is the Auckland University Technology Ethical Committee (AUTEC). Appendix A.1 shows the evidence of ethical approval. The researcher and supervision team discussed and prepared how to manage the ethical considerations and mitigate the risks of handling data gathered described in the following sections (Creswell & Poth, 2018). The ethical considerations include locating the site and individual, gaining access and developing rapport, sampling purposefully, recording information, and storing data securely.

The researcher ensured that locating sites and individuals for interviews did not raise power issues with researchers. Accordingly, the researcher planned to conduct the interviews at specific locations where the interviewees were not surrounded by people who could make interviewees uncomfortable sharing the case or their opinions freely.

The researcher ensured that the site required local approvals for access and rapport procedures. Especially when conducting interviews with several participants who work for financial firms in Korea, the interviewer had to change the meeting tools. Because site security is strict about showing their work environment visually for personal use, the interviewer used voice conference (the Voice Call function of the KakaoTalk app).

Permissions must be sought from a human subjects review board (AUTEC), at least in New Zealand, where the researcher resides. As part of the review process application, examples of materials that the researcher used are included. Before conducting the interviews, the interviewer provides an overview of the study and the participants' rights through the participant information sheets (Appendix A.2). The participants can withdraw from the study at any time, and the interviewer explains that the research protects the confidentiality of the respondents.

Each interview could start only after the participants sign off the consent form (Appendix A.3), which AUTECH reviewed and approved.

The participants needed to know why they were invited to participate in the study. The participant information sheet also includes the purpose of the research so that the participants can review them before signing off the consent form. The interviewer explained to the participants how the researcher recorded the interview data and would store the data before the participants signed the consent form.

4.4 Data Collection Phase Two: Sampling

The researcher developed a systematic sampling plan to obtain data. First, the author defined a population group and then a specific sample group of participants with whom the researcher interacts to collect data. Second, the researcher determines the sample size and decides which sampling strategy to use.

First, the research population is all the customers, service providers, or SOPs who are, or were, involved in a project in a closed SO triad. A 'closed' SO triad means the customers and SOPs directly communicate. The interview overview (Appendix A.6) used for recruiting and conducting interviews shows the details. It clarifies the kind of projects and job roles the researcher sought. Industries of customers and service providers can vary, and the relationship period with the customers should be at least ten months. The sample should contain a balanced mixture of culture (Western vs Eastern) and project types among the respondents to allow testing of the moderating effects. In addition, the researcher tried to balance the firm size, gender of the interviewees, and languages used for interviews to mitigate any biased results. This balancing process calls for a trade-off between sample size and ensuring sufficient variation between respondents to make the analysis meaningful.

Second, the researcher determined the sample size. Because the QCA method suggests a minimum number of cases depending on the number of conditions (Fiss, 2011; Marx, 2006; Marx & Dusa, 2011), the researcher selected the minimum number of interviews accordingly. Since the preliminary conceptual framework consists of seven factors, the researcher set a minimum threshold of eight or nine to prepare for one or two conditions added during thematic analysis and data transformation. The minimum number of cases that QCA requires for eight or nine conditions ranges from 35 to 45.

Lastly, the researcher applied a mixture of purposive and snowballing sampling as a sampling strategy. Purposive sampling, one of the most common sampling strategies, groups participants based on the criteria relevant to a particular research question (Mack, 2005). The researcher selected respondents using the specific characteristics defined above. After completing an

interview, the interviewer asked the participant if they could recommend a further appropriate candidate to participate, thus applying the snowball, or chain referral, sampling strategy. Since interviewees understood the required respondent characteristics thoroughly through the interview process, it was relatively simple for them to introduce appropriate acquaintances.

4.5 Data Collection Phase Three: Recruiting

The selected sampling strategy and sample size influenced the recruitment strategy. A recruitment strategy refers to a project-specific plan for identifying and assigning people to participate in a research study. The plan should specify criteria for screening potential participants, the number of people recruited, the location, and the approach used.

The researcher used three types of strategies to recruit participants. The first type of recruitment for purposive sampling was social media. The researcher posted to seek interview candidates on LinkedIn (Appendix A.6). Because the researcher had connections with more than 700 professional individuals, this recruitment strategy appeared plausible and compelling.

The second type of recruitment for purposive sampling was a recruiting agent or organisation. The research team first requested New Zealand Marketing Organisation, which professionally seeks paid participants. However, there were no results from this source. The researcher also contacted the gatekeeper of AUT's external engagement and partnership team. The gatekeeper provided 716 contacts with senior management positions in various industries and had previously participated in AUT partnership events. The researcher filtered the candidates to 117 individuals by considering their job roles and avoiding too many candidates from the same firm. Then the gatekeeper sent participation invitation emails to 117 candidates, of which only 17 volunteered. After the researcher contacted these candidates to validate their cases, 13 were selected.

The third type of recruitment for purposive sampling was personal and professional connections. Some actively participated in the interviews, while others introduced one or many voluntary participants who fit the respondent criteria. In addition, there were eight participants identified through snowballing. As a result, the researcher personally conducted 58 interviews in total.

4.6 Data Collection Phase Four: Operationalising Interview Procedures

It is essential to write a detailed manual to operationalise data collection procedures for the research, even if only a single interviewer is involved, both for authentication and replication purposes. Operationalisation means turning abstract conceptual ideas into measurable forms.

When planning to collect data, the researcher needs to lay out specific step-by-step instructions so that the researcher collects data in a consistent way.

Semi-structured interviews were selected. Thus, a set of indicative, open-ended questions was designed and tested, shown in Appendix A.5.

4.7 Data Collection Phase Five: Conducting Interviews

Among 58 cases interviewed, 21 were conducted face-to-face and 37 using videoconferencing. However, twelve cases were later deemed invalid for the research because the closed SO triads did not exist in those cases (the interviewees did not fully understand the stated respondent criteria). Six invalid interviews did not have valid SOPs; the other six had SOPs, yet the customers and SOPs do not communicate directly (closed, not open triads). The final number of cases worthy of further analysis in the sample is 46.

Before conducting interviews, the researcher pre-tested the interview guide and other interview procedures with two separate interviewees who are not included in the sample. Both interviewees fitted the sample criteria and represented the moderating conditions. Through the pre-tests, the researcher verified and modified the indicative questions, speed and tone of questioning, and interview duration. Before conducting the interviews with each participant, the researcher conducted short preparation meetings whenever possible to check their availability, timing, research knowledge, job role, SO triads and ethical considerations.

To keep the interview process consistent and to ensure deep familiarity with the base data, the researcher was the only interviewer for the research. Interviews typically took 30 to 40 minutes, but the interviewer shortened the time if the interviewee was extremely busy. The researcher sent the interview overview (Appendix A.6), participant information sheet (Appendix A.2) and consent form (Appendix A.3) before the meeting for the participant to review. Some participants sent the signed consent form before the meeting, but if they did not, the interviewer described the participant information sheet and acquired verbal consent during the interviews. Although recording the interviews are described in the participant information sheet, the interviewer double-checked and received verbal consent to record the interview.

The interviewer gathered information about the interviewees, their company, and the projects they considered to discuss using the indicative questions. Sometimes, the interviewer explained the SO triads in detail and helped the interviewees pick the best exemplar cases for the interviews. The interviewer tried to ask open-ended questions. Nevertheless, the interviewer asked and verified if the interviewees mentioned something that needed verification.

At the end of the interview, the interviewer thanked the interviewees for their participation and asked them if they wanted to receive the research output with anonymous participant

information. Immediately after the interview, the interviewer reviewed each audio record and written memo. If there was any missing information, the interviewer contacted the interviewees again for further information.

4.8 Data Collection Phase Six: Recording Interviews

The interviewer used an audio recorder to record the interviews. If the interview was conducted via video conferencing, the interviewer recorded using a video conferencing tool as a backup in case of a malfunction of the audio recorder. The following figures show how the interviewee managed the interview log. Figure 4.3 shows how the researcher recorded the personal profile of the interviewees.

Figure 4.3

Interview List - Personal Profile Headers

Schedule		Interview Log		Interviewee Profile						
No (Interview)	Nvivo File Name - Prefix	Date (YYYY-MM-DD)	A/B/C	Interviewee Name	Interviewee Company (Current)	Gender	Role Category	Interviewee Role	Interviewee Team	
1	1E001_B	2020-11-23	B			Female	Both	Fin Portfolio Mgr		
2	1E002_B	2020-12-14	B			Male	Both	Commercial Manager		
3	1E003_B	2020-12-24	B			Male	Exec	Head of Biz Dev - NZ Exports		
4	1E004_B	2021-01-04	B			Male	Oper	Technical Director in Geotechnical En		
5	1E005_B	2021-01-05	B			Male	Oper	Project Manager		
6	1E006_B	2021-01-07	B			Male	Oper	Project Manager		
7	1E007_B	2021-01-08	B			Male	Oper	Project Manager		
8	1E008_B	2021-01-26	B			Male	Both	Project Executive		
9	1E009_B	2021-02-04	B			Male	Exec	NZ Strategic Account Director in Bank		
10	1E010_B	2021-02-05	B			Male	Exec	Managing Director		

Note. Interview names, belonging companies, and teams are hidden for confidentiality purposes.

Figure 4.4 shows how the researcher recorded each interview case's company and project profile.

Figure 4.4

Interview List - Company and Project Profile Headers

Schedule		Company Country					Project Profile			
No (Interview)	A's Base Country (HQ)	B's Base Country (HQ)	C's Base Country (HQ)	Global? - A	Global? - B	Global? - C	>=50% by C?	Continuous ?	Project Duration	IT project?

Company A/B/C								
A Name	B Name	C Name	Industry - A	Industry - B	Industry - C	Global? - A	Global? - B	Global? - C

Size - A	Size - B	Size - C	Number - B	Number - C	AC F2F?

If the interviewer had the information before the interviews, the interviewer filled in these fields before conducting interviews and verified it during the interviews. Otherwise, the researcher filled the fields immediately after the interviews.

Figure 4.5 shows how the interviewer recorded the antecedents and outcomes mentioned during the interviews.

Figure 4.5
Interview List – Constructs Headers

Outcome & Antecedents									
Trust S = Very Strong	B Competence	AB Communication	AB Benevolence	AB Co-creation	AB Integrity	C Competence	ABC Communication	BC Control	
AB Co-creation	AB Integrity	AB Ethics	AB Reputation	ABC Centrality	Other Factors				

The list of constructs comes from the preliminary conceptual framework, and the interviewer added more constructs as the interviewer identified new antecedents during the interviews.

After trimming the irrelevant interview data, the researcher sent the audio files to professional paid transcription organisations to transcribe the audio data to text data. Before performing the transcription, each organisation signed the confidentiality agreement form (Appendix A.4). The transcriptions were in MS Word and saved in the research team’s cloud (Dropbox).

Figure 4.6 and Figure 4.7 show the resulted list of data collection, including the personal, company, and project profiles.

Figure 4.6

Interview List by Personal Profile

Schedule			Interviewee Profile			
No (Interview)	Case Type	Date (YYYY-MM-DD)	A/B/C	Gender	Role Category	Interviewee Role
1	1	2020-11-23	B	Female	Both	Fin Portfolio Mgr
2	1	2020-12-14	B	Male	Both	Commercial Manager
3	1	2020-12-24	B	Male	Exec	Head of Biz Dev - NZ Exports
4	1	2021-01-04	B	Male	Oper	Technical Director in Geotechnical Eng
5	1	2021-01-05	B	Male	Oper	Project Manager
6	1	2021-01-07	B	Male	Oper	Project Manager
7	1	2021-01-08	B	Male	Oper	Project Manager
8	1	2021-01-26	B	Male	Both	Project Exeutive
9	1	2021-02-04	B	Male	Exec	NZ Strategic Account Director in Bank
10	1	2021-02-05	B	Male	Exec	Managing Director
11	1	2021-02-09	B	Male	Exec	CEO
12	1	2021-02-09	A	Female	Both	Chief Product Officer
13	1	2021-02-09	B	Male	Oper	Customer Success Manager
14	1	2021-02-11	B	Male	Exec	Managing Director
15	1	2021-02-15	B	Male	Exec	Managing Director
16	1	2021-02-19	B	Male	Exec	Managing Director
17	1	2021-02-19	B	Male	Oper	Project Manager
18	1	2021-02-20	B	Male	Both	Chief Investment Officer
19	1	2021-02-20	C	Male	Both	Chief Investment Officer
20	1	2021-02-20	A	Female	Oper	Group Reservation Agent
21	1	2021-02-22	B	Male	Exec	Chief Creative Director
22	1	2021-02-23	B	Male	Both	Group General Manager
23	1	2021-02-25	B	Female	Exec	Chief Commercial Manager
24	1	2021-03-01	B	Male	Exec	CEO
25	1	2021-03-01	C	Male	Exec	CEO
26	1	2021-03-03	A	Male	Both	Owner/Chef > Lecturer
27	1	2021-03-04	A	Male	Both	Group Director - Estates Operations
28	1	2021-03-05	B	Female	Exec	National Lead
29	1	2021-03-06	C	Male	Oper	Server Team Focal
30	1	2021-03-09	B	Male	Exec	Managing Director
31	1	2020-10-14	A	Male	Exec	Procurement & Operations
32	1	2020-10-14	A	Male	Both	IT Team Leader
33	1	2020-10-15	A	Male	Exec	IT Team Leader
34	1	2020-10-20	C	Male	Both	CEO & Project Manager
35	1	2020-10-21	B	Male	Oper	IT Team Leader
36	1	2020-10-22	A	Male	Oper	IT Team Leader
37	1	2020-10-22	B	Male	Exec	Project Executive
38	1	2020-10-23	A	Male	Oper	IT Team Leader
39	1	2020-11-25	A	Male	Both	CIO
40	1	2020-11-26	B	Male	Both	Project Manager
41	1	2020-12-02	A	Female	Oper	Team Leader
42	1	2020-12-02	A	Female	Oper	Team Leader
43	1	2020-12-02	A	Male	Oper	Team Leader
44	1	2020-12-02	A	Female	Exec	Team Manager
45	1	2021-01-29	B	Male	Both	Country Representative
46	1	2021-04-30	A	Female	Both	Chief Data Officer (CDO)
47	2	2021-01-30	A	Female	Both	Sr VP - Marketing & Marketing Commu
48	2	2021-02-23	B	Male	Exec	Executive Director
49	2	2021-03-01	C	Female	Both	Co-Founder & CEO
50	2	2021-03-02	A	Male	Exec	Customer Value Manager
51	2	2021-03-05	B	Female	Oper	Project Manager
52	2	2021-06-15	A	Male	Both	CIO
53	3	2021-02-03	A	Male	Both	Director of Public Experience
54	3	2021-02-23	B	Male	Oper	Banqueting Coordinator
55	3	2021-02-26	B	Male	Oper	In Room Dining Manager
56	3	2020-12-01	A	Male	Oper	Team Leader
57	3	2020-12-01	A	Male	Oper	Team Leader
58	3	2020-12-29	A	Male	Oper	Data Scientist

Figure 4.7

Interview List by Company and Project Profile

Case Type	Case Seq	A Country	A Culture - Eastern - Western	A Globalization (Global vs Local)	B Globalization (Global vs Local)	A Firm Size - L=Large - SM=Small/Medium	B Firm Size	C Firm Size	Project Type (IT vs Non-IT Services)
1	1	US	Western	Local	Local	SM	SM	L	Non-IT
1	2	US	Western	Global	Global	L	L	L	Non-IT
1	3	FJ	Western	Global	Global	SM	L	L	Non-IT
1	4	AU	Western	Local	Local	L	SM	SM	IT
1	5	AU	Western	Global	Global	SM	L	L	IT
1	6	AU	Western	Global	Global	L	L	L	IT
1	7	US	Western	Global	Global	L	L	L	Non-IT
1	8	NZ	Western	Global	Global	L	L	SM	IT
1	9	NZ	Western	Global	Global	L	L	L	Non-IT
1	10	US	Western	Global	Local	L	SM	SM	Non-IT
1	11	NZ	Western	Local	Local	L	SM	SM	Non-IT
1	12	NZ	Western	Global	Global	L	SM	SM	Non-IT
1	13	HK	Eastern	Local	Local	SM	SM	SM	Non-IT
1	14	NZ	Western	Local	Local	L	L	SM	Non-IT
1	15	NZ	Western	Local	Local	L	SM	SM	Non-IT
1	16	NZ	Western	Local	Local	SM	SM	SM	Non-IT
1	17	NZ	Western	Local	Local	SM	L	SM	Non-IT
1	18	US	Western	Local	Local	SM	SM	SM	Non-IT
1	19	US	Western	Local	Local	SM	SM	SM	Non-IT
1	20	NZ	Western	Local	Local	L	SM	SM	Non-IT
1	21	NZ	Western	Local	Local	L	SM	SM	Non-IT
1	22	TR	Western	Global	Global	L	SM	SM	Non-IT
1	23	NZ	Western	Global	Global	SM	SM	SM	Non-IT
1	24	NZ	Western	Local	Local	SM	SM	SM	Non-IT
1	25	NZ	Western	Local	Local	SM	SM	SM	Non-IT
1	26	NZ	Western	Local	Local	SM	L	SM	Non-IT
1	27	GB	Western	Local	Local	L	SM	SM	Non-IT
1	28	NZ	Western	Global	Global	SM	L	SM	Non-IT
1	29	KR	Eastern	Global	Global	L	L	L	IT
1	30	NZ	Western	Local	Global	L	L	L	IT
1	31	KR	Eastern	Local	Global	L	L	L	IT
1	32	KR	Eastern	Local	Global	L	L	L	IT
1	33	KR	Eastern	Local	Global	L	L	L	IT
1	34	KR	Eastern	Local	Global	L	L	SM	IT
1	35	KR	Eastern	Local	Global	L	L	L	IT
1	36	KR	Eastern	Local	Global	L	L	L	IT
1	37	KR	Eastern	Global	Global	L	L	L	IT
1	38	KR	Eastern	Local	Global	L	L	L	IT
1	39	KR	Eastern	Local	Global	L	L	L	IT
1	40	KR	Eastern	Global	Global	L	L	SM	IT
1	41	KR	Eastern	Local	Global	SM	L	SM	Non-IT
1	42	KR	Eastern	Local	Global	SM	L	SM	Non-IT
1	43	KR	Eastern	Global	Global	L	L	SM	Non-IT
1	44	KR	Eastern	Local	Global	SM	L	SM	Non-IT
1	45	DE	Western	Global	Global	SM	L	L	Non-IT
1	46	KR	Eastern	Local	Local	L	L	L	IT
2	1	HK	Eastern	Local	Local	L	L	SM	Non-IT
2	2	UK	Western	Global	Global	L	SM	SM	IT
2	3	UK	Western	Global	Global	L	SM	SM	IT
2	4	UK	Western	Local	Global	L	SM	SM	IT
2	5	UK	Western	Global	Global	L	SM	SM	IT
2	6	US	Western	Local	Local	L	SM	SM	IT
3	1	NZ	Western	Local	Local	SM	SM	N/A	Non-IT
3	2	NZ	Western	Local	Local	L	SM	N/A	Non-IT
3	3	NZ	Western	Local	Local	L	SM	N/A	Non-IT
3	4	KR	Eastern	Local	Global	SM	SM	N/A	Non-IT
3	5	KR	Eastern	Local	Global	SM	SM	N/A	Non-IT
3	6	NZ	Western	Local	Global	L	L	N/A	IT

After completing the data collection, the researcher used three sources to transcribe the data. One source was a professional transcription organisation with several transcribers engaged in English audio data. Another source was an individual transcription professional who also transcribed English audio data. Lastly, a bilingual research assistant fluent in Korean and English transcribed the audio files in Korean. The research team decided not to translate interview data in Korea because NVivo can handle Korean data and because the researcher can avoid losing the interview content by retaining the original context.

4.9 Validity and Reliability of Data Collection Method

Because this research applied purposive sampling, the interviewees are verified professionals with enough experience and adequate job roles in proper projects. The interviewer was cautious about asking open-ended semi-structured questions without giving explicit variable names. However, if the interviewee described their projects with vague statements, the interviewer asked and confirmed if their descriptions of their relationships among the three parties in triads were clear. This approach helps assure the data's validity and method in data collection.

Operationalising the interview procedures through using an interview protocol and using the same interviewer helps ensure the reliability of the data. Moreover, the researcher or other researchers can also use it to replicate the study in the future.

4.10 Chapter Conclusion

This chapter focuses on data collection, including sampling and recruiting. The Chapter first presents the data collection overview, including the process's input and output. Then the author described how the research planned and managed the ethical considerations and how the researcher performed each phase of the data collection procedures. The author also assured the validity of the data collection process. Using the transcription data produced in this stage, the researcher analyses the data using thematic analysis and QCA, as presented in Chapter 5.

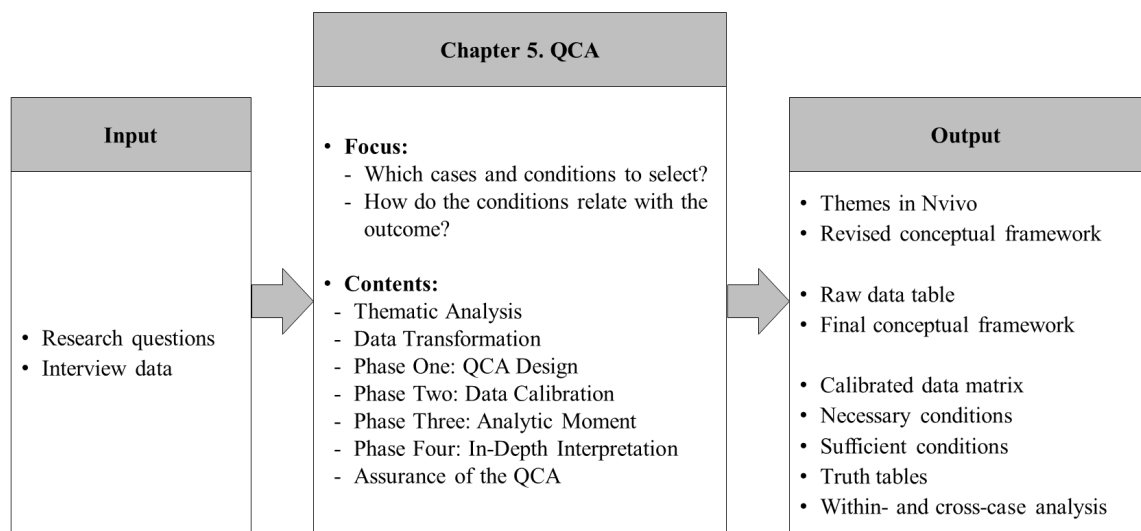
Chapter 5. Findings of the QCA

5.1 Chapter Introduction

This chapter shows and explains the findings of the QCA analysis. Figure 5.1 shows how the thesis chapters map the research process and output. The researcher describes the QCA results, starting with how the QCA analysis is approached, including developing the research propositions in QCA terms, based on the research questions formulated in Chapter 2. This chapter also includes the thematic analysis results, which sets the starting point for QCA.

Figure 5.1

Chapter 5 in Thesis Structure



The author then describes the calibration, analysis (analytic moment), and in-depth interpretation of typical and deviant cases. After a summary of the QCA outputs, validity and reliability aspects are addressed.

This chapter concerns QCA analysis; therefore, the appropriate QCA terminology is used. Thus, ‘condition’ and ‘outcome’ are used rather than the statistical terms ‘independent’ and ‘dependent variable.’ Again, variables and moderators are now called causal and contextual conditions. Moreover, this chapter uses a Venn diagram to visualise the set relationships among conditions and the outcome, rather than the conceptual framework, which assumes independence among the variables. Venn diagrams are appropriate for visualising the set relationships between these conditions and appearing throughout the QCA context. Two-dimensional Venn diagrams are applicable for csQCA only rather than fsQCA. However, the author uses the diagram at the beginning of the chapter to help the readers understand the relationships between outcome, dyadic and triadic causal conditions, and contextual conditions. As Schneider and Wagemann (2012) suggest, the author also avoids using the term “equation”

because set relations are asymmetric (unless two sets perfectly overlap). Accordingly, the author uses the symbols \rightarrow (for sufficiency) or \leftarrow (for necessity) rather than the “=” sign.

The QCA methodological design is generally explained in Chapter 3; this chapter includes some design details not covered earlier. Since the chapter focuses on explaining what was done and found in the QCA analysis rather than explaining what QCA is, the author assumes that readers are familiar with QCA. However, steps to reach the findings are still included, and citations are provided if appropriate to help other researchers replicate this research approach.

The conceptual model evolved throughout the research, and the researcher developed the final version during the QCA stage. The researcher first created the preliminary version right after the literature review and conceptualisation described in Chapter 2. At this stage, the researcher selected four dyadic RQ factors, three triadic factors, and two moderators. Then the researcher modified the conceptual framework by adding ‘dyadic co-creation’ and ‘network centrality.’

The researcher also modified the name for ‘triadic control’ to ‘triadic cohesion’ after discovering that the relationships between the service providers and the SOPs are mutual rather than unidirectional. The researcher called the conceptual model a revised conceptual framework at this stage. In the following data transformation section, the researcher again removed dyadic co-creation and network centrality after verifying that there are not enough cases in which these two constructs apply. The researcher also removed firm size and globalisation after verifying that these contextual conditions do not significantly impact. Finally, the researcher transformed the conceptual framework usually used for statistical methods into the ‘configural’ model illustrated in the Venn diagram fit for QCA.

5.2 Thematic Analysis Overview

The researcher started the data analysis process using the thematic analysis method. After deriving themes from the interview data, the researcher used the themes as the variables in the conceptual framework and proceeded with QCA after transforming the qualitative data into quantitative data. This section describes the findings of the thematic analysis, following the procedure introduced by Braun and Clarke (2006).

The researcher started the analysis process by analysing the transcribed qualitative interview data thematically. The analysis aims to extract the variables to refine the conceptual framework and subsequently provide a framework for QCA analysis; After independent judges have coded the themes, they become causal and contextual conditions. Likewise, the themes will become the independent variables and moderators in the validating regression analysis described in Chapter 6. After completing the thematic analysis, the researcher refined the conceptual framework based on the derived themes in an iterative process.

The researcher uploaded the interview transcripts in MS Word in the NVivo system and colour coded by categorising the interview excerpts in the codes and themes created during the analysis. The researcher analysed the data both deductively and inductively. Deductive, as some themes map to the constructs in the conceptual framework developed in Chapter 2. However, the analysis is also significantly inductive in that the researcher interviewed and reviewed the interviews with an open mind to find new conditions, or change a condition's name, to ensure that the data, rather than only preconceived theory, drive the findings.

A theme encapsulates something important about the data relevant to the research question and represents a patterned response or meaning within the data set. What counts as a pattern or theme is an important question to address in terms of coding. In this research, the thematic analysis aims to refine the set of variables to be analysed using QCA. The researcher analysed and extracted the variables in the thematic analysis stage to update the conceptual framework developed during the literature review and theoretical framework development stage. The identified themes inform the selection of the conditions for analysis by QCA.

The interview transcripts are in MS Word, created in the data collection stage, uploaded, and colour coded in the NVivo system. In addition, the identifications of cases, causal conditions, and contextual conditions are in Excel format in row and column headings.

Thematic analysis is followed by data transformation, translating the transcribed qualitative interview data into quantitative raw data. Selected judges performed the data transformation according to the coding rules developed. After reviewing the coded data, the researcher finalized the conceptual framework after deleting some variables with too much data missing.

The author reviewed the transcripts of the interviews very carefully, even though they were checked and corrected in the data collection stage. Because the interview transcript files were uploaded to NVivo at this stage, it was essential to cleanse the data before transferring them into the NVivo system (Hanafizadeh & Harati Nik, 2020). The researcher reviewed the research questions as a reminder of the research aims and then filtered the interview transcripts according to the appropriate cases.

5.3 Thematic Analysis Phases

The researcher followed the six phases of thematic analysis introduced by Braun and Clarke (2006). The six phases are (1) familiarising with the data, (2) generating the initial codes, (3) searching for the themes, (4) reviewing themes, (5) defining and naming themes, and (6) generating the report.

First, the researcher familiarised herself with the data by actively reading the interview data repeatedly, searching for meanings and patterns. The researcher read through the entire data set multiple times even though the researcher conducted all the interviews. The researcher decided to analyse all cases through a cross-case analysis instead of analysing each transcript independently (Byrne, 2001).

Second, The researcher generated the initial codes based on the meanings and patterns derived from the interview text data. Deductively, the researcher created two folders under themes – ‘initial variables’ and ‘revised variables.’ Inductively, the researcher created an initial set of codes. Under the ‘initial variables’ folder, the researcher created nodes for each variable in the preliminary conceptual framework, shown in Figure 2.10 in Chapter 2. The outcome variable is trust. The researcher categorised the RQ factors into two groups – dyad antecedents and SO antecedents. The variables in the dyad antecedent group are self-competence, direct communication, benevolence, and integrity, and the variables in the SO antecedent group are outsourced competence, network communication, and control over SOP. Lastly, the contextual conditions are culture and project type. Table 5.1 shows the initial codes deductively derived based on the literature review.

Table 5.1

Initial Codes – Theory-Driven Code Definitions for Trust in SO Triads

Code	Definitions	Reference
Trust	“A willingness to rely on an exchange partner in whom one has confidence.”	Blois (1999, p. 198); Moorman et al. (1993)
Self-competence	The customer's perception of the service provider's technological and commercial competence. This dimension includes the service provider's market knowledge, ability to provide proper advice, and ability to assist the customer in planning solutions.	Crosby et al. (1990); Johnson and Grayson (2005); Wittmann et al. (2009)
Direct communication	Service providers share meaningful and timely information within the relationship with the customer.	Doney et al. (2007); Franklin and Marshall (2019); Morgan and Hunt (1994); Palmatier et al. (2007); Palmatier et al. (2006); Yilmaz and Hunt (2001)
Benevolence	The extent to which a trustee is believed to want to do good to the trustor, aside from profit motives.	Franklin and Marshall (2019); McKnight et al. (2002); Schoorman (2007)
Integrity	The perception that the trustee adheres to a set of principles that the trustor finds acceptable.	Moorman et al. (1993); Morgan and Hunt (1994); Schoorman (2007)

Outsourced competence	The customer's perception of the service provider's technological and commercial competence. This dimension includes the service provider's market knowledge, ability to provide proper advice, and ability to assist the customer in planning solutions.	Bergstra et al. (2011); Kotabe et al. (2008)
Network communication	The sharing of meaningful and timely information among customers, service providers, and SOPs.	Holma (2009); Hada et al. (2014); Herfort et al. (2021)
Control over SOP	Service providers' ability to select the appropriate SOPs and control SOPs behave in the same manner as the service provider to the customer.	Carnovale et al. (2019); Hatani and McGaughey (2013)

Third, the researcher searched for additional themes or changed the existing themes to elaborate the meanings in the interview data. The researcher updated the other folder, 'revised variable', by changing, adding, and removing the themes during the thematic analysis. Table 5.2 shows the newly added antecedents during the thematic analysis.

Table 5.2

Initial Codes – Added Antecedents during Thematic Analysis

Code	Definitions	Reference
Co-creation	The customer's perception of the service provider's technological and commercial competence. This dimension includes the service provider's market knowledge, ability to provide proper advice, and ability to assist the customer in planning solutions.	Ballantyne and Varey (2008); Franklin and Marshall (2019); Gupta et al. (2018); Kurnia Endah et al. (2019); Lundkvist and Yakhlef (2004); Macdonald et al. (2016)
Network centrality	Service provider's ability to behave on behalf of the customer to control the customer, SOPs and other service providers.	Madanaguli et al. (2021); Y. Zhang et al. (2020)

Co-creation and network centrality affect trust in B2B relationships in some cases. Although the number of cases containing these factors is few, the researcher decided to add them to further analysis to elaborate on how they influence the B2B relationships in the SO context. Table 5.3 shows the moderators added through the thematic analysis.

Table 5.3

Initial Codes – Added Moderators during Thematic Analysis

Code	Definitions	Reference
Firm size	Whether the customer firm is a large enterprise or a small and medium firm.	Gu et al. (2019); Hohenberg and Homburg (2016); Paparoidamis (2016); Restuccia and Legoux (2019); Zhang et al. (2018)
Globalisation	Whether the customer firm is a global firm or a local firm.	Davis (2015); Kraemer et al. (2005); Roy and Sivakumar (2010)

The researcher decided to examine the influences of these moderators. If enough cases contain these moderators in data transformation, the research will decide to include them in the conceptual framework.

Fourth, the researcher reviewed the themes both individually and holistically. The researcher compared the codes within the same and different themes.

Table 5.4

Themes, Sub-themes, and Codes for SO Triads

Theme	Sub-theme
Self-competence (Competence)	Ability and Utility Knowledge and Negotiation Resource and Processes
Dyadic communication (Direct communication)	Content Quality Timeliness Frequency
Dyadic benevolence (Benevolence)	Authenticity Extra-curricular
Dyadic integrity (Integrity)	Honesty Ethics Consistency Procedural Fairness
SOP competence (Triadic competence)	Ability and Utility Knowledge and Negotiation Resource and Processes
Triadic communication (ABC communication)	BC communication AC communication ABC communication
Triadic cohesion (Control over SOP)	ABC communication
Network centrality (Centrality)	Understanding the roles of all parties Acting on Behalf of Customer Guidance to Customer

Fifth, the researcher defined the themes as the focus of this study. The researcher considered better names to represent the concepts, organised the themes to distinguish dyadic and triadic antecedents, and examined if the themes represent the complete set of RQ factors for trust. The researcher had numerous meetings with the research team during the thematic analysis to review and refine the list of themes and the conceptual framework. The author carefully chose the most concise and accurate theme or variable names to articulate the antecedents and moderators in the SO content. Table 5.5 lists the final set of themes as the analysis output.

Table 5.5

Themes from Thematic Analysis

Theme Category	Theme	Definition
Outcome	Trust	A willingness to rely on an exchange partner in whom one has confidence. The customer's perception of the service provider's technology. A willingness to rely on an exchange partner in whom one has confidence in a relationship (Blois, 1999, p. 198; Schurr & Ozanne, 1985).
	Self-Competence	The customer's perception of the service provider's technological and commercial competence. This dimension includes the service provider's market knowledge, ability to provide proper advice, assist the buyer in planning purchases, and provide effective sales promotion and quick responsiveness to requests.
Antecedent	Dyadic Communication	The sharing of meaningful and timely information within the relationship
	Dyadic Benevolence	The extent to which a trustee is believed to want to do good to the trustor, aside from profit motive.
	Dyadic Co-creation	The active participation, interactions, dialogue and collaboration of the buyer and seller and other marketing actors in the marketing exchange develop a deeper understanding of the customer problem-solving context.
	Dyadic Integrity	The perception that the trustee adheres to a set of principles that the trustor finds acceptable.
	SOP Competence	The customer's perception of the SOP's technological and commercial competence. This dimension includes the SOP's market knowledge, ability to provide proper advice, assist the buyer in planning purchases, and provide effective sales promotion and quick responsiveness to requests.
	Triadic Communication	The sharing of meaningful and timely information within the relationship.
	Triadic Cohesion	Service providers' ability to select the appropriate SOPs and control SOPs behave in the same manner as the service provider to the customer.
	Network Centrality	Service providers' ability to behave on behalf of the customer to control the customer, SOPs, and even other service providers.
Moderators	Culture	Whether the customer is based in an Eastern country or a Western country.
	Globalization	Whether the customer firm is a global firm or a local firm.
	Firm Size	Whether the customer firm is a large enterprise or a small and medium firm.
	Project Type	Whether the project is IT-related or non-IT-related.

Lastly, the research produced a report with the final set of themes (i.e., trust as an outcome, RQ factors, and moderators/contextual conditions). The researcher mapped the RQ factors to causal conditions and the moderators to contextual conditions in QCA.

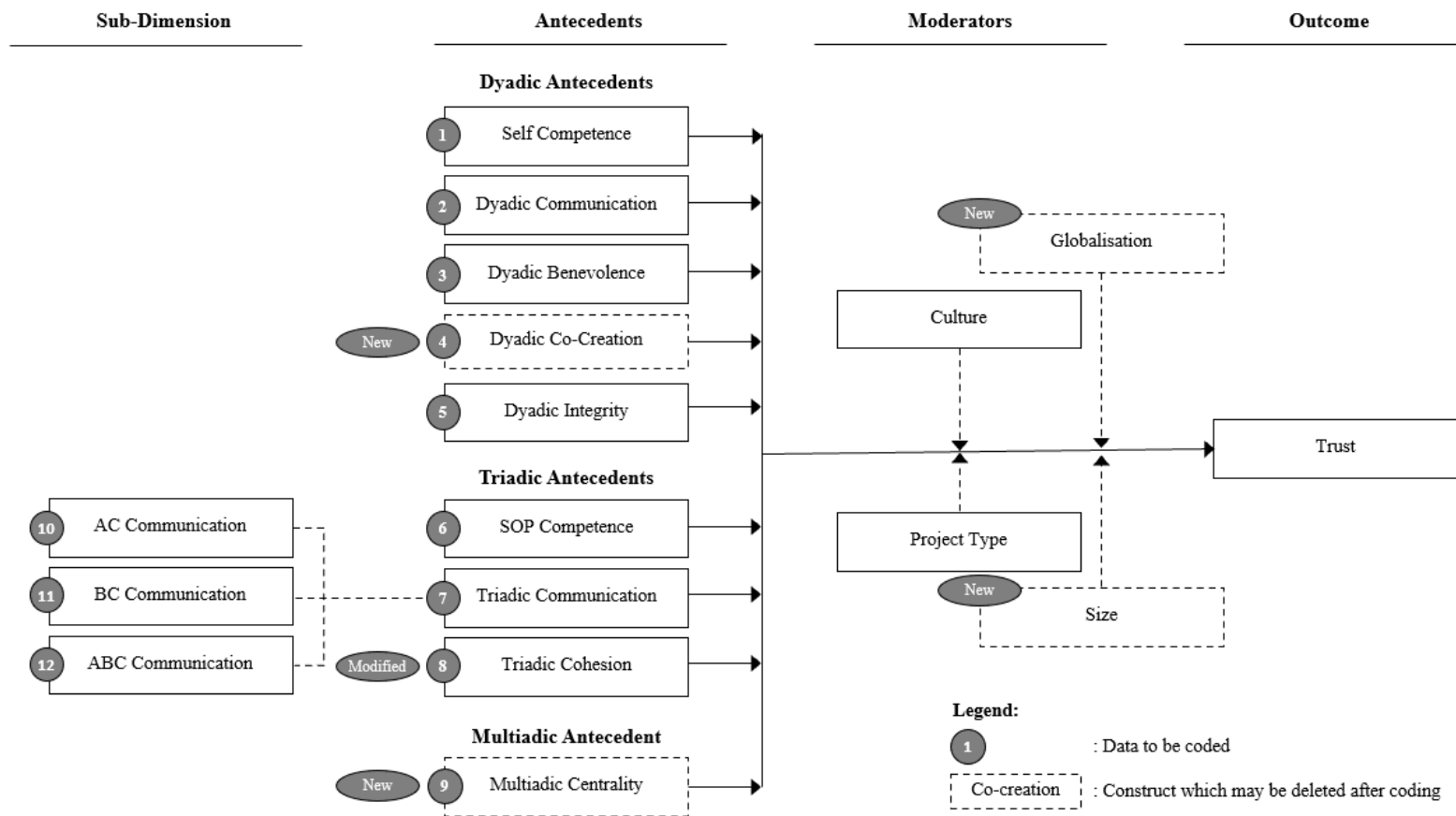
All the dyadic variables identified in Chapter 2 were confirmed as valid and valuable, and in addition, the researcher found one more dyadic variable, co-creation. Although the pertinent cases are few, the researcher decided to include this variable for data transformation (raw data coding) to allow elaboration. The inspection did not identify any more variables among triadic variables, although “triadic control” did not seem an appropriate expression of the relationship between the service providers and SOPs in the investigated triads. Thus, after inspecting the cases, the researcher chose to name the condition: “cohesion.” This term emphasises collaboration, two-way communication and trusting and supporting each other rather than one party controlling the other.

5.4 Revised Conceptual Framework

The thematic analysis produced three significant types of outputs. The primary output describes the themes, providing outcome, causal, and contextual conditions. Furthermore, the thematic analysis produces a set of selected interview segments and quotes filtered as exemplar quotes. These excerpts helped the researcher gain insights from the interviews and promoted efficiency by reusing them in the data transformation and QCA in-depth interpretation phases. Lastly, the researcher included a folder called ‘profiles,’ consisting of the case and person (interviewee) profiles. This information helped to derive the contextual condition and provided in-depth case knowledge once outliers and cases of interest were identified in the QCA dialogue between theoretical considerations and case data.

Figure 5.2 presents the revised version of the conceptual framework. After the data transformation phase, the researcher changed this conceptual framework based on the coding results.

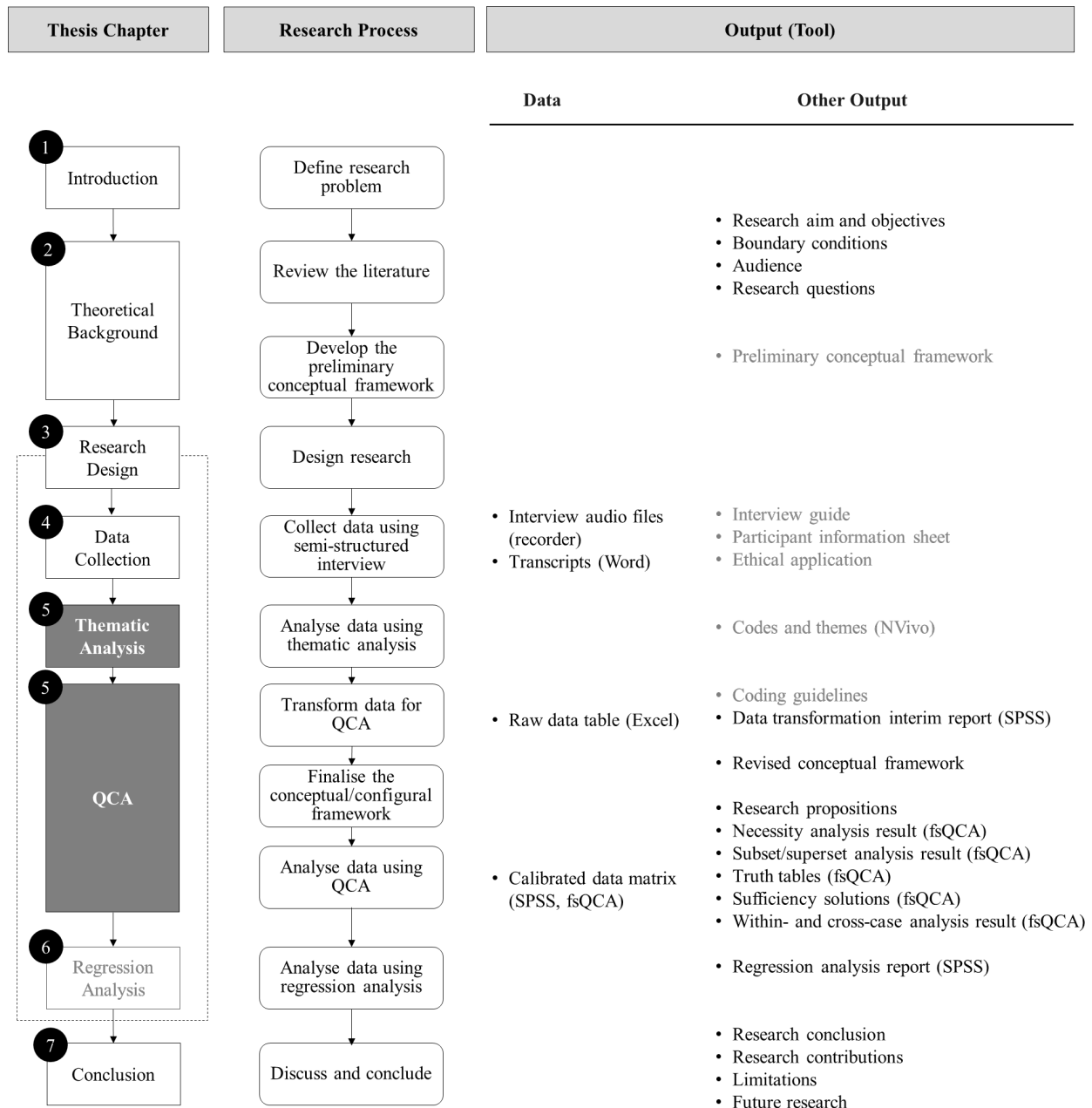
Figure 5.2

Revised Conceptual Framework

5.5 QCA Overview

Figure 5.3 shows how the researcher organised the sections to follow the research process and points out how the data is changed and what outputs are produced. The second phase, after text analysis, calibrates the raw data into set membership values (SMVs). Thirdly, the research performed the analytic moment addressing the research questions and propositions using the analyses of necessity and sufficiency (Oana et al., 2021; Ragin, 2008; Rihoux & Lobe, 2009; Schneider & Wagemann, 2012). Using QCA, the researcher conducted the analyses through the necessary condition analysis, subset/superset analysis and the truth table algorithm functions. Finally, an in-depth interpretative review of the cases that fall in the solutions is conducted. The researcher reviewed both typical and deviant cases; an essential part of the interpretation, and a significant advantage to using interview case studies rather than survey source data, is to deep dive into the deviant cases and find out what caused the cases to be deviant. This interpretation activity helps provide some modest generalisation of the solutions and determine if there are any worthy topics for future research.

Figure 5.3

QCA in Research Process

Note: The texts in grey color represent 'secondary' process or deliverables.

The following section describes the second preliminary preparation phase of the QCA analysis; data transformation from qualitative to quantitative data. Data preparation involves selecting the cases, checking or logging the data in, checking the data for accuracy, entering the data into the computer, transforming the data, and developing and documenting a database structure that integrates the various measures (Trochim & Donnelly, 2001). Although the research process has already performed part of this task during thematic analysis, the researcher paid particular attention to ensuring that all the data was ready for data enumeration.

5.6 Data Transformation

This research adopts an exploratory sequential design (Kahwati & Kane, 2018). Transforming the data happens in two steps. First, the researcher and her hired assistant coded the interview transcripts and then calibrated the numeric values on a five-point scale in the fsQCA software. Table 5.6 describes the choice of measurement scales, values, and the measurement subject for the outcome and the conditions.

Table 5.6

Measurement Scale, Values and Subjects of the Constructs

Construct Name	Measurement Scale	Measurement Values	Measurement Subject
Trust	Interval	1, 2, 3, 4, 5	Interviewees/Judges
Self-competence	Interval	1, 2, 3, 4, 5	Judges
Dyadic communication	Interval	1, 2, 3, 4, 5	Judges
Dyadic benevolence	Interval	1, 2, 3, 4, 5	Judges
Dyadic integrity	Interval	1, 2, 3, 4, 5	Judges
SOP competence	Interval	1, 2, 3, 4, 5	Judges
Triadic communication	Interval	1, 2, 3, 4, 5	Judges
Triadic cohesion	Interval	1, 2, 3, 4, 5	Judges
Culture	Nominal	1=Eastern, 0=Western	Interviewees
Project type	Nominal	1=IT, 0=Non-IT	Interviewees

The outcome (trust) and all causal conditions are measured on a five-point scale, while the contextual conditions use a nominal scale. The valid values for each construct are shown in the table above.

The researcher decided to measure trust as objectively as possible. Therefore, as well as making a judgement from the text, the interviewer also asked interviewees to provide a numeric score for the measurement of trust in their situation instead of coding only from the qualitative interview data.

During the interviews, the interviewer explained what trust means in the research context and what each of the numeric scores of the five-point scale means and asked the interviewees to provide a numeric value as the measure of trust in the relevant case.

5.6.1 Judgement Training

As explained in Chapter 3, reliability is assured through a triangulation process. Among the triangulation types described by Denzin (1978), namely data triangulation, investigator triangulation, theoretical triangulation, methodological triangulation, and environmental triangulation, this section shows an example of investigator triangulation through judgement training and coding in parallel.

Two judges were selected. One is the author herself, a PhD student with twenty-nine years of B2B experience, mainly as an account manager. Being fluent in English and Korean, the researcher understands the interview transcripts in those languages without difficulty. Another judge is a university student who assisted the research project as a research assistant and is bilingual in English and Korean. The judge has no business experience; however, the judge understands the basic knowledge of the B2B world and is trained by the researcher. The third element of triangulation is provided by the confirmatory overview of the candidate's supervision team.

The researcher developed a coding guideline to define the construct variables and instruct how to code, assigning a numeric score for each case for each condition (Appendix B.1.1). The author also provided the interview transcripts without any colour codes from the thematic analysis and an Excel file that looked like Figure 5.4. In addition, the researcher held a meeting with the second judge with all the tools mentioned above to explain the SO triads, definitions and coding guidelines face-to-face.

Figure 5.4

The First Four Cases Coded by Two Judges

Type	Seq	Nvivo File Name Prefix	Interviewee First Name and Company Initial	Coding Scheme Development	Outcome	Causal Condition			Causal Condition			Causal Condition		
					Trust	Dyadic Competence			Dyadic Communication			Dyadic Benevolence		
						1	2	Avg	1	2	Avg	1	2	Avg
1	1	1E001_B	Cecilia_C	Trial 1	5	4	5	4.50	4	5	4.50	4	5	4.50
1	2	1E002_B	Brad_F	Trial 2	5	4	4	4.00	4	4	4.00	4	4	4.00
1	34	1K004_C	SDK_D	Trial 2	4	5	5	5.00	5	5	5.00	5	5	5.00
1	39	1K009_A	HJP_P	Trial 2	5	5	5	5.00	5	5	5.00	4	2	3.00

The researcher selected one case to code separately by each judge to test the reliability and coding guidelines. During the coding activity, the judges minimised communication as much as

possible to strengthen the reliability. This first case selected is marked as ‘Trial 1’ under the ‘Coding Scheme Development’ column.

Then the two judges gathered to ask questions or discuss to improve their understanding of the interview context and coding guides. The researcher refined the coding guidelines based on the questions and discussion shared in the meeting. Then researcher selected another three cases to code using the refined coding guidelines.

As explained in the previous section, the numeric values for trust outcome are the researcher’s final decisions based on the given by the interviewees during the interviews. The next column shows the coding results of a causal condition, self-competence. The column labelled one is filled by the first judge, and another labelled as the second judge fills two.

The selection of the four cases was followed by considerations of reasonable distribution of variety in cases, including the transcript's language, project role of the interviewees, the industries of the customer, service provider, and SOP in the project, as shown in Table 5.7.

Table 5.7

Profile of the Selected Four Cases

Case	Language	Project Role	A Industry	B Industry	C Industry
Case 1	English	Operations Manager	Food Products	Financials	Financials
Case 2	English	Business Executive	Healthcare	Healthcare	Healthcare
Case 3	Korean	Both	Financials	IT Services	IT Services
Case 4	Korean	Operations Manager	Food Retailing	IT Services	IT Services

Note. A indicates a customer; B indicates a service provider; C indicates an SOP.

The researcher also considered the variety of the gender of the interviewees, the culture, firm industry, firm size, and globalisation of the customer company. As shown in the table, the distribution of the transcript language is various – two in English and two in Korean. There is a good distribution in the interviewees’ project roles as operations manager and business executive (see Figure 4.6). The industries of the customers, service providers and SOPs have a variety of food products, health care, financials, and IT services. Moreover, the four cases also have a variety of other aspects. One of the four interviewees was female, and the remaining three were males. Regarding the party in the triad, one of the four interviewees was a customer, two were service providers, and the remaining one was an SOP. The four cases represent 46 cases with varieties in the sample.

5.6.2 Reliability Test

After two judges completed the raw data coding, the reliability test was conducted using SPSS, as shown in Table 5.8.

Table 5.8

Reliability Test for the Four Cases

Judge		Trial 1		Trial 2	
		Judge 1	Judge 2	Judge 1	Judge 2
Judge 1	Pearson Correlation	1	.135	1	.345
	Sig. (2-tailed)		.339		.062
	N	57	52	30	30
Judge 2	Pearson Correlation	.135	1	.345	1
	Sig. (2-tailed)	.339		.062	
	N	52	52	30	31

Judge 1 and Judge 2 columns under Trial 1 show the first trial results for one case. After this coding, the two judges held a meeting to review the meanings of the constructs and updated the coding guidelines where required. After the discussion and re-training, two judges coded for the subsequent 3 cases. During coding, the judges coded separately, minimising any discussion. Figure 5.4 shows the data coding result for the first four cases, and Figure 5.5 shows the raw data coding for all the cases.

Figure 5.5

Raw Data Coding Result for the First Four Cases

Case Type	Case Seq	Nvivo File Name Prefix	Interviewee Profile ID	Coding Scheme Development Phase	Outcome	Causal Cond 1 - Dyadic			Causal Cond 2 - Dyadic			Causal Cond 3 - Dyadic			Causal Cond 4 - Dyadic			Causal Cond 5 - Dyadic			Causal Cond 6 - Triadic			Causal Cond 7 - Triadic			Causal Cond 8 - Triadic		
					Trust	Dyadic Competence			Dyadic Communication			Dyadic Benevolence			Dyadic Co-Creation			Dyadic Integrity			Triadic Competence			Triadic Communication			Triadic Control		
						1	2	Avg	1	2	Avg	1	2	Avg	1	2	Avg	1	2	Avg	1	2	Avg	1	2	Avg	1	2	Avg
1	1	1E001_B	Cecilia_C	Trial 1	5	4	5	4.50	4	5	4.50	4	5	4.50	3	4	3.50	5	5	5.00	2	2	2.00	4	4	4.00	4	5	4.50
1	2	1E002_B	Brad_F	Trial 2	5	4	4	4.00	4	4	4.00	4	4	4.00	4	3	3.50	3	3	3.00	4	5	4.50	5	5	5.00	5	5	5.00
1	34	1K004_C	SDK_D	Trial 2	4	5	5	5.00	5	5	5.00	5	5	5.00	5	5	5.00	3	3	3.00	5	5	5.00	5	4	4.50	4	5	4.50
1	39	1K009_A	HUP_P	Trial 2	5	5	5	5.00	5	5	5.00	4	2	3.00	5	5	5.00	3	3	3.00	5	5	5.00	4	5	4.50	5	5	5.00

After the discussion and re-training, two judges coded for the remaining cases. During coding, the judges coded separately, minimising any discussion.

Figure 5.6

Raw Data Coding Result for All Cases

					Outcome	Causal Cond 1 - Dyadic			Causal Cond 2 - Dyadic			Causal Cond 3 - Dyadic			Causal Cond 4 - Dyadic			Causal Cond 5 - Dyadic			Causal Cond 6 - Triadic			Causal Cond 7 - Triadic			Causal Cond 8 - Triadic			Contextual Cond 1	Contextual Cond 2	Contextual Cond 3	Contextual Cond 4	Reference and Other Potential Contextual Conditions																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Case Type	Case Seq	Nvivo File Name Prefix	Interviewee Profile ID	Coding Scheme Development Phase	Trust	Dyadic Competence			Dyadic Communication			Dyadic Benevolence			Dyadic Co-Creation			Dyadic Integrity			Triadic Competence			Triadic Communication			Triadic Control			A Culture 1=Eastern 0=Western	A Globalization 1=Global 0=Local	A Firm Size 1=Large 0=Small/Medium	A Project Type 1=IT 0=Non-IT	A Country	A Culture - Eastern - Western	A Globalization (Global vs Local)	B Globalization (Global vs Local)	A Firm Size - L=Large - SM=Small/Medium	B Firm Size	C Firm Size	Project Type (IT vs Non-IT Services)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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5.6.3 Data Transformation Results

After two judges completed all the cases, the researcher conducted the reliability test again and presented it to the three supervisory third-party research experts. The experts are fluent in QCA and have extensive experience in the B2B world. As the result of coding, judges' reliability test, and expert feedback and review, the researcher removed 'co-creation' and 'centrality' from the condition list because there were not enough case data which contained these conditions. The researcher also removed 'firm size' and 'globalization' as the contextual condition because these conditions did not have much impact in differentiating the cases.

After two judges filled in the codes, the research expert team reviewed the interim report again and confirmed that the data was ready to calibrate. Table 5.9 presents the result of data coding. The numeric value for each cell is the average number of the scores given by two judges. The variable name naming convention is explained in the QCA section. In this raw data table, the prefix 'R' is added to indicate that these data are raw data, which the researcher needs to calibrate during QCA. Figure 5.6 shows the final version of the raw data table as a result of data transformation.

Table 5.9

Raw Data Table after Data Transformation

Case	RT	RDP	RDM	RDB	RDI	RTP	RTM	RTH	RXC	RXP
1	5	4.5	4.5	4.5	5	2	4	4.5	0	0
2	5	4	4	4	3	4.5	5	5	0	0
3	5	5	5	5	5	4.5	5	5	0	0
4	5	5	5	4.5	5	4	4.5	5	0	1
5	5	5	5	4	4	4.5	4.5	5	0	1
6	4	4	5	5	4.5	3	4	5	0	1
7	5	5	5	4.5	4	4	4	5	0	0
8	3	4	4.5	4.5	3	3	3.5	3.5	0	1
9	5	5	5	5	5	5	5	5	0	1
10	5	5	5	5	3	4.5	4.5	5	0	0
11	5	5	5	5	5	5	4.5	5	0	0
12	3	4	5	5	4.5	4	4	4	0	0
13	4	5	5	4	5	4	4	5	0	0
14	5	5	5	4	5	4	4	5	0	0
15	4	4	5	4.5	3	3	4	4	0	0
16	4	5	5	4	3	4	4	5	0	0
17	4	5	5	5	3	5	5	4.5	0	0
18	5	5	5	4	5	4	5	4	0	0
19	5	4.5	5	5	5	5	5	3.5	0	0
20	5	5	4	3.5	3	3	4	3	0	0
21	1	3	2	2	3	2	3	1	0	0
22	5	5	4.5	5	5	5	5	4.5	0	0
23	5	5	4	3.5	4.5	5	5	5	0	0
24	4	5	5	5	5	4	4	5	0	0
25	4	4.5	5	3.5	5	5	4	4	0	0
26	3	4	4	2.5	3	3	3	3	0	0
27	5	5	5	4.5	5	5	5	5	0	0
28	4	4	5	3.5	3	4	4	5	0	0
29	4	4	4	4.5	4	4	4	4	1	1
30	4	5	4	3	3	4	5	5	0	1
31	4	5	4.5	3	3	3	4	5	1	1
32	5	5	4.5	5	3	5	5	5	1	1
33	3	4	4.5	4	3	3	3	3	1	1
34	4	5	5	5	3	5	4.5	4.5	1	1
35	4	4	5	4	3	4	4	4	1	1
36	4	4	4	2.5	3	3	4	4	1	1
37	5	5	5	4	3	5	4	4	1	1
38	5	5	5	5	3	5	5	5	1	1
39	5	5	5	3	3	5	4.5	5	1	1
40	4	5	4.5	5	3	4	5	5	1	1
41	4	5	4.5	5	3	3	4	4	1	0
42	5	5	5	5	3	5	5	5	1	0
43	5	5	5	5	3	5	5	5	1	0
44	5	5	5	5	3	5	5	5	1	0
45	4	4	5	5	5	4.5	3.5	4	0	0
46	4	4	4.5	5	2	3	4	4	1	1

5.7 Final Conceptual Framework after Data Transformation

Figure 5.7 shows what was modified and removed during the data transformation, and Figure 5.8 show the final conceptual framework resulting from the data transformation.

Figure 5.7
Modification of Conceptual Framework during Data Transformation

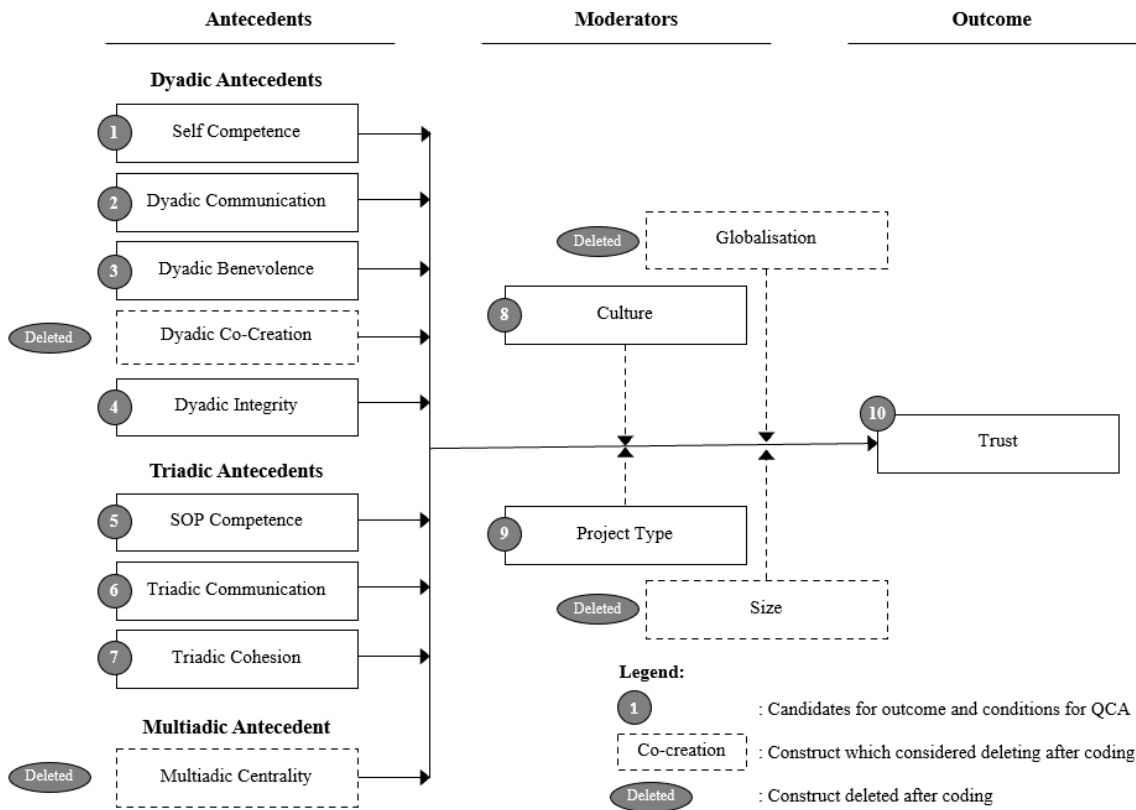
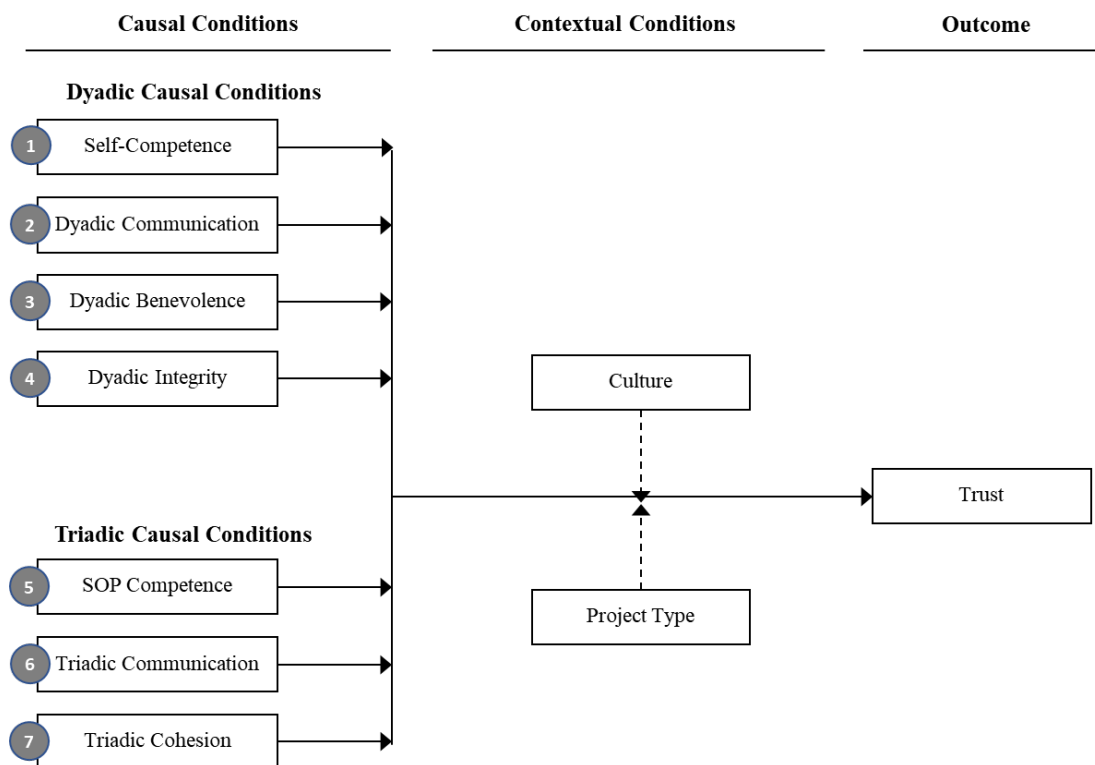


Figure 5.8

Final Conceptual Framework after Data Transformation

5.8 QCA Phase One: QCA Design

The QCA-specific research design involves defining the outcome of interest, developing the propositions, and selecting the conditions and cases. Most decisions for the QCA design come from thematic analysis and data transformation.

Before the analysis, the researcher set up the data structure and the data itself (DeMeur, 2009; Rihoux & Lobe, 2009). The researcher first selected the appropriate cases for the study, outcome, and conditions to set up the data structure. Next, the researcher needed to prepare the data. Preparing the data occurred in two steps. First, the research team coded the interview transcripts to numeric values in 5-point scores. Then finally, the data was calibrated for QCA analysis.

5.8.1 Case Selection

The researcher used a simple numeric value for each case number rather than a company or individual's name (i.e., case 1, case 2, and case 3) to secure the confidentiality of the interviewees' profiles. The researcher checked that the case details match the Interview List presented in Chapter 4. As previously identified, there are three types of cases: Type 1, 2, and 3.

Only the 46 cases in Type 1 are valid for final analysis because each represents a closed triad where the SOPs and customers communicate. The researcher deselected the six Type 2 cases where SOPs and customers do not speak to each other and the other six Type 3 cases where there is no SOP.

5.8.2 Outcome and Condition Selection

From the list of resulting themes discovered in the thematic analysis, the researcher reviewed and identified those relevant (and adequately represented in the cases) and mapped them to causal, contextual and outcome conditions. The conceptual framework presented in Chapter 5 categorised the causal conditions into two groups, dyadic and triadic. Figure 5.9. shows how the variables in the statistical methods are mapped to the conditions and the outcome in QCA, and Table 5.10 lists the selected outcome and conditions with their fsQCA notations.

5.9

-theoretical Analysis

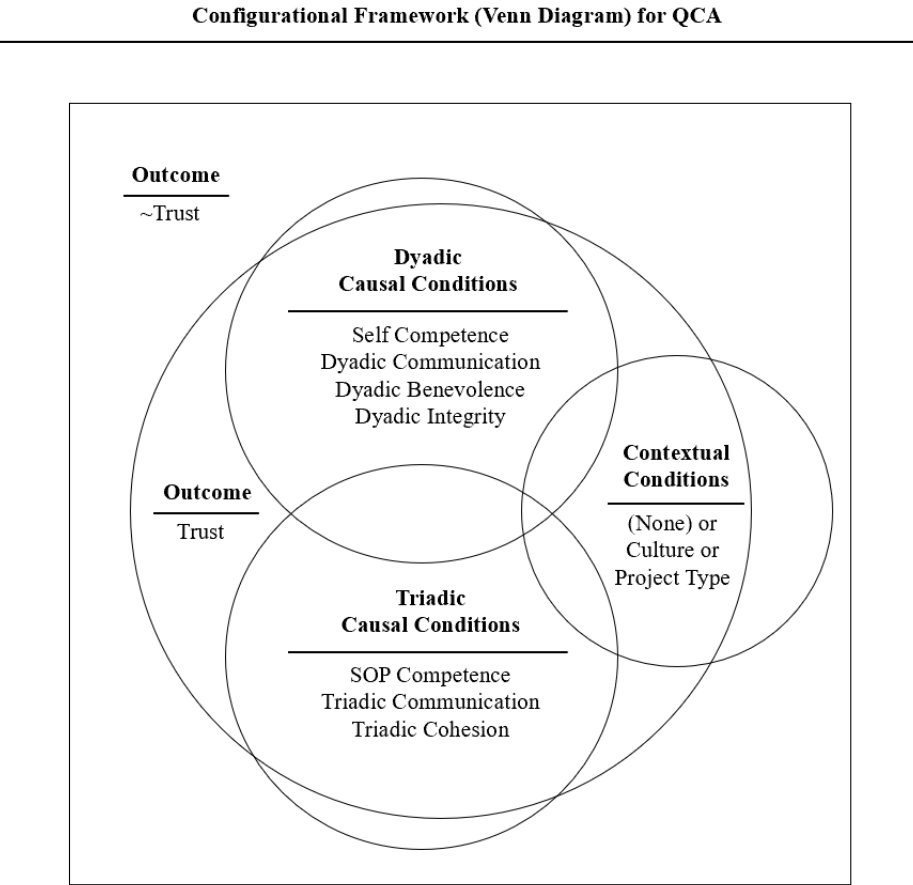
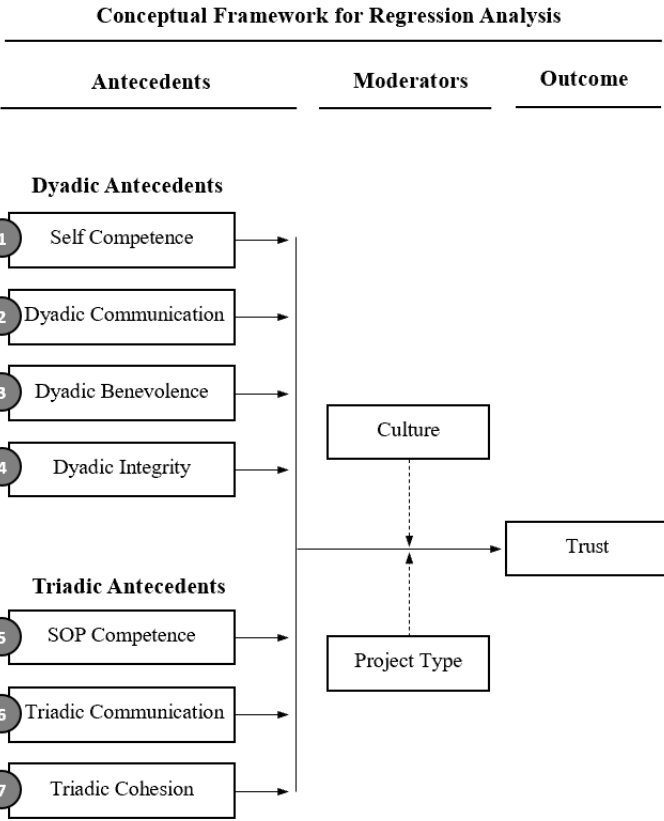


Table 5.10

Selected Conditions and Outcome

Construct Type	Construct Group	Construct Name	fsQCA Notation
Outcome		Trust	T
Causal Conditions	Dyadic	Self-Competence	DP
		Dyadic Communication	DM
		Dyadic Benevolence	DB
		Dyadic Integrity	DI
	Triadic	SOP Competence	TP
		Triadic Communication	TM
		Triadic Cohesion	TH
Contextual Conditions		Culture	XC
		Project Type	XP

Notes:

- The fsQCA notations used the characters in boldface.
- If appropriate, the researcher uses the fsQCA notations throughout the thesis rather than the construct name.

The outcome selection, trust, was already determined from the beginning of the research. The researcher then selected the causal and contextual conditions based on the theme list derived from the thematic analysis. Since the QCA process first assigns numeric values to conditions during the data transformation and then calibrates for QCA, fsQCA software will capture these numbers as the raw and calibrated data. In fsQCA, the notation column shows the codes for the calibrated data.

5.8.3 Research Propositions Development

As QCA is a case-oriented method in the family of configurational comparative methods, QCA can be used to address configurational research propositions in the following form (Kahwati & Kane, 2018; Rihoux & Lobe, 2009; Scarpi et al., 2021).

Which combinations of conditions are found among cases that demonstrate outcome?

The researcher applied the three fundamental QCA assumptions before developing the propositions based on the set-theoretical aspect of QCA, which focuses on untangling causally complex patterns in terms of equifinality, conjunctural causation, and asymmetry. The assumptions rephrased in the research context are listed in the following paragraphs.

The first assumption is that no single best configuration of customers' perceptions of the relationship quality conditions leads to high trust, but there exist multiple, equally effective configurations (equifinal solutions expressed in logical OR) of both dyadic and triadic causal

factors (Franklin & Marshall, 2019; Ragin, 2000). The second assumption is that a single causal condition may be present or absent within configurations leading to high trust (conjunctural causation, expressed in logical AND), depending on how it combines with other causal conditions. The third assumption is that a condition for the presence of trust does not imply the absence of the condition for the absence of trust (causal symmetry).

These assumptions suggest that the researcher's dialogue between cases (evidence) and relevant theories or ideas is iterative (Berg-Schlosser et al., 2009; Ragin, 1987). This iterative process happens inductively through seeking new evidence to develop theory and deductively through seeking to expand existing theory with new empirical evidence (Gerrits & Verweij, 2013).

The researcher formulated research propositions to identify combinations of explanatory factors found among cases with a specified outcome, and results from a QCA analysis are expressed as solutions. For each research question identified in Chapter Two, the researcher developed propositions in the configurational form according to the QCA concept of set theory. As the researcher numbered the research questions as RQ1, RQ2, and RQ3, the exact numbers are used to identify the propositions. In other words, the researcher numbered the propositions under RQ1 as P1.1 and P1.2 and the propositions under RQ2 as P2.1 and P2.2. The propositions for RQ1 (regarding dyadic causal conditions), RQ2 (regarding triadic causal conditions), and RQ3 (contextual conditions) are as follows:

RQ1 Which of the antecedents that have been shown to affect a customer's trust toward its service provider are also important in the SO context?

P1.1 A combination of dyadic causal conditions (self-competence, dyadic communication, dyadic benevolence, and dyadic integrity) demonstrates high trust in the SO context.

$$DP \bullet DM \bullet DB \bullet DI \leq T \text{ (and } \sim DP \bullet \sim DM \bullet \sim DB \bullet \sim DI \leq T)$$

RQ2 Are there any new antecedents unique to the SO context that affect a customer's trust toward the service provider?

P2.1 A combinations of triadic causal conditions (SOP competence, triadic communication and triadic cohesion) demonstrate high trust in the SO context.

$$TP \bullet TM \bullet TH \leq T \text{ (and } \sim TP \bullet \sim TM \bullet \sim TH \leq T)$$

P2.2 The addition of the triadic causal conditions (SOP competence, triadic communication, and triadic cohesion) to the dyadic causal conditions

(self-competence, dyadic communication, dyadic benevolence, and dyadic integrity) creates a superior predictive model of trust.

$$DP \cdot DM \cdot DB \cdot DI \leq T$$

vs

$$DP \cdot DM \cdot DB \cdot DI \cdot TP \leq T \text{ (and } DP \cdot DM \cdot DB \cdot DI \cdot \sim TP \leq T),$$

$$DP \cdot DM \cdot DB \cdot DI \cdot TM \leq T \text{ (and } DP \cdot DM \cdot DB \cdot DI \cdot \sim TM \leq T),$$

$$DP \cdot DM \cdot DB \cdot DI \cdot TH \leq T \text{ (and } DP \cdot DM \cdot DB \cdot DI \cdot \sim TH \leq T), \text{ and}$$

$$DP \cdot DM \cdot DB \cdot DI \cdot TP \cdot TM \cdot TH \leq T$$

$$\text{(and } DP \cdot DM \cdot DB \cdot DI \cdot \sim TP \cdot \sim TM \cdot \sim TH \leq T)$$

- P2.3 Single triadic causal conditions (SOP competence, triadic communication and triadic cohesion) can contribute positively or negatively to high trust depending on the presence or absence of other ingredients.

$$(A \text{ combination of } DP, DM, DB, DI, TP, TM, \text{ and } TH) \leq T$$

- RQ3 Are there any contextual conditions in a recipe affecting different combinations of conditions featuring high trust?

- P3.1 A different combination of conditions features sufficient for high trust in eastern versus western culture.

$$(A \text{ combination of } DP, DM, DB, DI, TP, TM, TH, XC) \leq T$$

- P3.2 A different combination of conditions features sufficient for high trust in IT versus non-IT project types.

$$(A \text{ combination of } DP, DM, DB, DI, TP, TM, TH, XP) \leq T$$

Because QCA can be either inductive or deductive (Gerrits & Verweij, 2013), the researcher takes the rather unusual approach of using subset and truth table analysis – there is precedence for this in recent literature (Franklin & Marshall, 2019). The research uses the subset analysis function to test propositions P1.1, P2.1, and P2.2, whilst necessary condition analysis and truth table algorithm functions are utilised to test propositions P1.2, P2.3, P3.1, and P3.2.

5.9 QCA Phase Two: Calibration

Researchers can use either direct or indirect calibration methods (Duşa, 2017; Ragin, 2008; Rihoux & Ragin, 2008; Schneider & Wagemann, 2012). This research uses both. The research

uses a direct method of calibration, in which the researcher establishes three calibration points for the data based on external knowledge, standards, or theory and subjectively assesses the resulting scales to confirm them.

5.9.1 Concept Definition and Measurement

The following describes the complex logic based on external knowledge, theoretical background, empirical data, and descriptive statistics for the outcome and conditions. Reviewing the concepts of each construct (outcome and conditions) defined firstly during conceptualisation (Chapter 2) and then thematic analysis (this chapter), the researcher proceeded to measure them. Firstly, the frequency distribution and the constructs' means and distribution among the cases were examined. Figure 5.11, Figure 5.12, and Figure 5.13 present the frequency distributions of the outcome condition (trust), dyadic causal conditions and triadic causal conditions, respectively. All the conditions have the average values from the judges' coding on a 5-point scale, while the outcome (trust) has the 5-point scale value given by the interviewees during the interviews. Figure 5.11, Figure 5.12 and Figure 5.13 describe the choice of measurement scales, values, and the measurement subject for the outcome and the conditions.

Figure 5.10

*Frequency Distribution of the Outcome, Trust*Trust

Score	Frequency	Percent	Valid Percent	Cumulative Percent
1.00	1	2.2	2.2	2.2
3.00	4	8.7	8.7	10.9
4.00	18	39.1	39.1	50.0
5.00	23	50.0	50.0	100.0
Total	46	100.0	100.0	

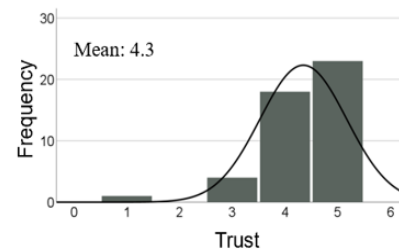
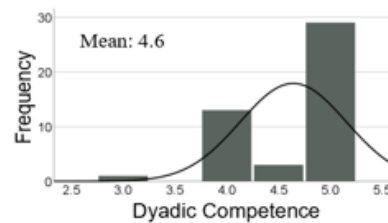


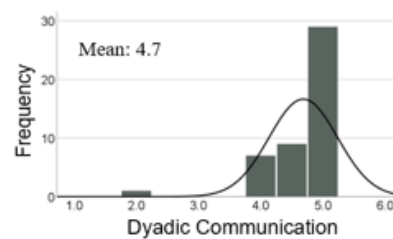
Figure 5.11

*Frequency Distribution of the Dyadic Causal Conditions*Self Competence

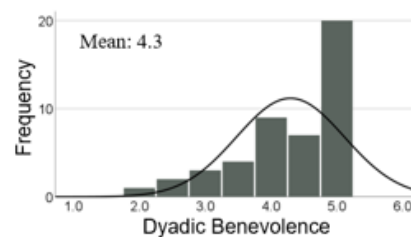
Score	Frequency	Percent	Valid Percent	Cumulative Percent
3.00	1	2.2	2.2	2.2
4.00	13	28.3	28.3	30.4
4.50	3	6.5	6.5	37.0
5.00	29	63.0	63.0	100.0
Total	46	100.0	100.0	

Dyadic Communication

Score	Frequency	Percent	Valid Percent	Cumulative Percent
2.00	1	2.2	2.2	2.2
4.00	7	15.2	15.2	17.4
4.50	9	19.6	19.6	37.0
5.00	29	63.0	63.0	100.0
Total	46	100.0	100.0	

Dyadic Benevolence

Score	Frequency	Percent	Valid Percent	Cumulative Percent
2.00	1	2.2	2.2	2.2
2.50	2	4.3	4.3	6.5
3.00	3	6.5	6.5	13.0
3.50	4	8.7	8.7	21.7
4.00	9	19.6	19.6	41.3
4.50	7	15.2	15.2	56.5
5.00	20	43.5	43.5	100.0
Total	46	100.0	100.0	

Dyadic Integrity

Score	Frequency	Percent	Valid Percent	Cumulative Percent
2.00	1	2.2	2.2	2.2
3.00	25	54.3	54.3	56.5
4.00	3	6.5	6.5	63.0
4.50	3	6.5	6.5	69.6
5.00	14	30.4	30.4	100.0
Total	46	100.0	100.0	

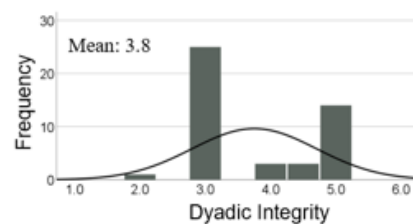
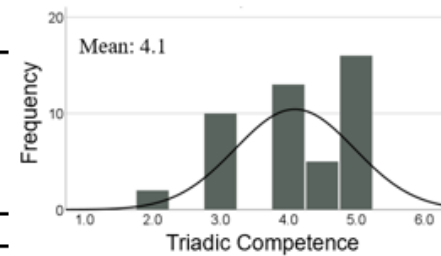


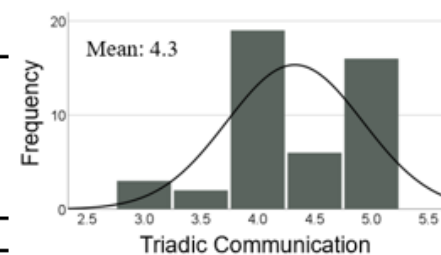
Figure 5.12

*Frequency Distribution of Triadic Causal Conditions**SOP Competence*

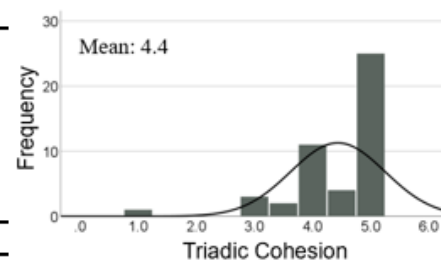
Score	Frequency	Percent	Valid Percent	Cumulative Percent
2.00	2	4.3	4.3	4.3
3.00	10	19.6	19.6	23.9
4.00	13	28.3	28.3	52.2
4.50	5	10.9	10.9	63.0
5.00	16	37.0	37.0	100.0
Total	46	100.0	100.0	

*Triadic Communication*

Score	Frequency	Percent	Valid Percent	Cumulative Percent
3.00	3	6.5	6.5	6.5
3.50	2	4.3	4.3	10.9
4.00	19	41.3	41.3	52.2
4.50	6	13.0	13.0	65.2
5.00	16	34.8	34.8	100.0
Total	46	100.0	100.0	

*Triadic Cohesion*

Score	Frequency	Percent	Valid Percent	Cumulative Percent
1.00	1	2.2	2.2	2.2
3.00	3	6.5	6.5	8.7
3.50	2	4.3	4.3	13.0
4.00	11	23.9	23.9	37.0
4.50	4	8.7	8.7	45.7
5.00	25	54.3	54.3	100.0
Total	46	100.0	100.0	



The first column in each table shows the frequency of each score, and the associated graph shows it visually. Based on these numeric data regarding frequency, the researcher's external knowledge of the interviews and industry, and the theoretical background, the researcher established three calibration points. The first point is the data value at which one considers a case entirely out of the set. The second point is the data value representing the crossover point, while the third is the data value at which one considers a case entirely in the set.

The researcher assigned full membership and non-membership scores based on the frequency percentile points, 95% and 5%. The researcher also re-reviewed trust's theoretical and empirical review (thematic analysis details). As explained in Section 5.5.2, the judges assigned the SMVs to the conditions for cases based on business knowledge and empirical evidence (Figure 5.6).

Most of the cross-over points were similar to the mean values except for dyadic integrity. The cumulative frequency percentile at the cross-over point is low for dyadic integrity because there are not enough cases with low integrity scores. Since the researcher did not intentionally seek cases with low integrity, which is rare in the real world, the researcher accepted that the sample has 2.2% of cases with integrity absent.

Using fsQCA software enables automatic calibration simply by entering the calibration points selected in the previous section into the tool. Appendix B.1 presents the output from the fsQCA. The software transformed the 5-point scaled scores into decimal points from 0.00 to 1.00 for the outcome and causal conditions. Because the fuzzy-set membership values of 0.5 for the cross-over points cause difficulties in calibration, the researcher added a constant 0.001 to all the fuzzy-set membership values (Fiss et al., 2013; Pappas & Woodside, 2021). Similarly, scores of 1 or 0 for the crisp-set membership/non-membership values were changed to 0.99 and 0.01.

5.9.2 Calibration Anchors

Table 5.11 summarises the calibration outcomes of mean, maximum and minimum numbers for the outcome and conditions as fuzzy-set variables (except for the contextual conditions, which did not require calibration since they are crisp-set conditions).

Table 5.11

Calibration Rules Overview

Outcome / Condition	Descriptive Statistics					Calibration Points		
	Mean	Std. Dev.	Min.	Max.	N	FM	CO	FNM
Trust	4.35	0.81	1	5	46	4.9	4.1	1.7
Self-competence	4.64	0.51	3	5	46	4.9	4.4	1.2
Dyadic communication	4.68	0.55	2	5	46	4.9	4.4	1.2
Dyadic benevolence	4.29	0.81	2	5	46	4.9	4.3	2.0
Dyadic integrity	3.75	0.94	2	5	46	4.9	2.9	2.1
SOP competence	4.10	0.87	2	5	46	4.9	3.9	2.2
Triadic communication	4.33	0.59	3	5	46	4.9	3.8	2.6
Triadic cohesion	4.43	0.80	1	5	46	4.9	3.9	1.9

Notes. FM = Full membership. CO = Cross-over point. FNM = Full non-membership.

5.10 Analytic Moment Overview

The following two sections (Sections 5.11 and 5.12) cover the analytic moment of the QCA. The analytic moment is the central part of QCA, testing the research propositions. For each research question, the researcher tested the pertinent research propositions utilising the functions available in fsQCA. However, before providing findings for testing each research question, the researcher analysed the necessity for all the selected conditions for trust because fsQCA uses the researcher's input based on the result of the necessary condition analysis in logical minimisation during the analysis of sufficiency (Fiss, 2011; Ragin, 2000, 2009a; Scarpi et al., 2021).

For Research Question One (RQ1) and the related propositions (P1.1 and P1.2), the researcher used the Subset/Superset Analysis function under the 'Analyze' menu to test whether the dyadic conditions of traditional relationship quality factors are still valid in the SO context.

Secondly, the researcher tested Research Question Two (RQ2) and the related propositions (P2.1, P2.2 and P2.3) for the effect of adding triadic causal conditions in the recipe, also using the Subset/Superset Analysis function, analysis of necessity and analysis of sufficiency.

Finally, the researcher tested Research Question Three (RQ3) and the relevant propositions (P3.1 and P3.2) on contextual conditions, culture and project type. The research performed an analysis of necessity and analysis of sufficiency to test

5.11 QCA Phase Three: Initial Analysis

In this section, the researcher initiates the analytic process. The initial analysis consists of analysing necessity and constructing the truth table. This initial analysis phase is to prepare the scheme and rules for logical minimisation before the sufficiency analyses to test each research proposition.

5.11.1 Analysis of Necessity

The researcher first performs an analysis of necessity (Fiss, 2011; Ragin, 2009a). The purpose of the analysis of necessity is to use the results for further logical minimisation. Analysing a necessary condition involves analysing three dimensions of the set relations: empirical consistency, empirical relevance, and conceptual meaningfulness (Oana et al., 2021; Schneider & Wagemann, 2012).

Firstly, to address the empirical consistency, ask, "is the condition a superset of the outcome?" The researcher checked the parameters of fit and deviant consistency in kind (DCK) cases and deviant consistency in degree (DCD) cases in XY plots for the individual conditions or SUIN, which is a sufficient but unnecessary part of a factor that is insufficient but necessary for an

outcome (Oana et al., 2021; Ragin, 2017; Schneider & Rohlfing, 2013; Schneider & Wagemann, 2012).

Secondly, the research checks for empirical relevance, asking, “is the condition a non-trivial superset of the outcome?” Two trivialness aspects were tested. The trivialness tests check if the outcome is much smaller than the condition and if the condition approximates a constant (Kahwati & Kane, 2018; Oana et al., 2021).

Lastly, the research checks for conceptual meaningfulness, asking, “does the condition represent a meaningful concept that connects the condition and the outcome?” The researcher evaluated the meaningfulness based on the theoretical background of the conditions described in Chapter 2 and her work experience as an account manager, leading client projects in the SO context.

For empirical consistency, the researcher first used the Necessary Condition Analysis and then checked for the deviant first checked the consistency through the ‘Necessary Condition Analysis’ function under the ‘Analyze’ menu in fsQCA. The researcher checked for empirical consistency using this analysis at two steps in the tool, once when trust is present and another when trust is absent. Table 5.12 shows the result.

Table 5.12

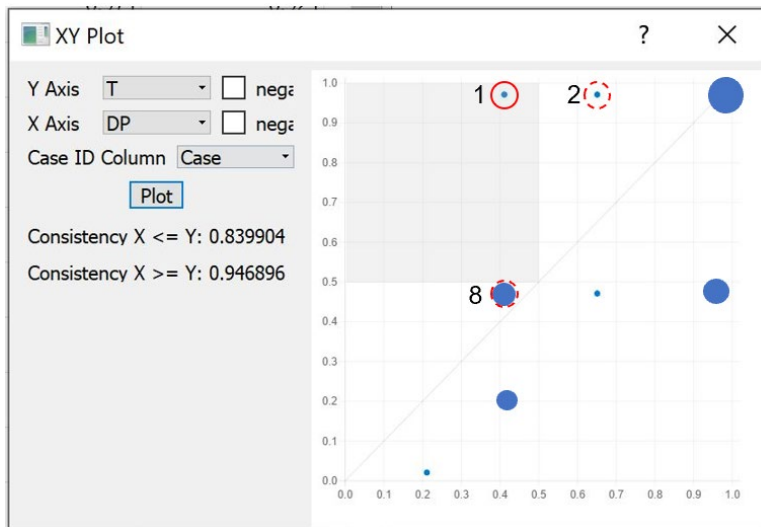
Analysis of Necessity – Causal Conditions of Trust

Condition	Presence of Trust		Absence of Trust	
	Consist.	Coverage	Consist.	Coverage
Dyadic Causal				
Self-competence	0.95	0.84	0.77	0.31
~ Self-competence	0.22	0.68	0.60	0.84
Dyadic communication	0.91	0.78	0.87	0.34
~ Dyadic communication	0.22	0.79	0.43	0.69
Dyadic benevolence	0.75	0.80	0.71	0.34
~ Dyadic benevolence	0.38	0.74	0.58	0.52
Dyadic integrity	0.84	0.82	0.88	0.39
~ Dyadic integrity	0.38	0.88	0.60	0.62
Triadic Causal				
SOP competence	0.82	0.89	0.64	0.32
~ SOP competence	0.38	0.70	0.79	0.66
Triadic communication	0.92	0.86	0.79	0.34
~ Triadic communication	0.30	0.75	0.68	0.79
Triadic cohesion	0.92	0.83	0.80	0.33
~ Triadic cohesion	0.26	0.74	0.58	0.76

Based on the result of the analysis of necessity, the conditions whose consistency is greater than 0.9 are self-competence (0.95), dyadic communication (0.91), triadic communication (0.92) and triadic cohesion (0.92). The researcher also checked if these conditions do not appear necessary when trust is absent. As the consistency numbers are 0.77, 0.87, 0.79, and 0.80 for self-competence, dyadic communication, triadic communication, and triadic cohesion, respectively, the researcher concluded that the researcher can still consider these four conditions as necessary. Put differently, there are two dyadic causal conditions and two triadic causal conditions as necessary conditions.

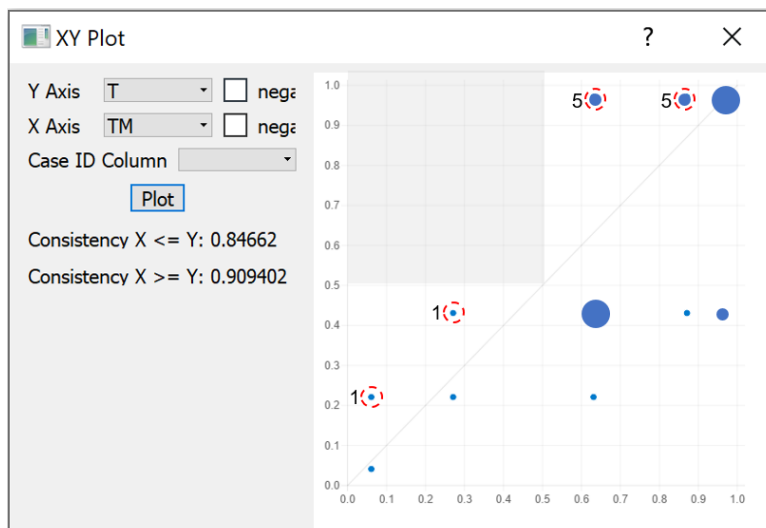
As a part of the empirical consistency test, the researcher then tested if there were any DCK cases by evaluating the XY Plot graphs generated by the fsQCA software. Figure 5.13, Figure 5.14, and Figure 5.15 show the XY plots presenting the distributions of DCK and DCD cases for the four causal conditions. DCK cases are expressed with a solid circle (in the grey background) around the point in the graph, while DCD cases are expressed with a dotted circle around the point. The number next to the circles is the number of cases.

Figure 5.13

XY Plot – Necessity Condition, Self-Competence (DP)

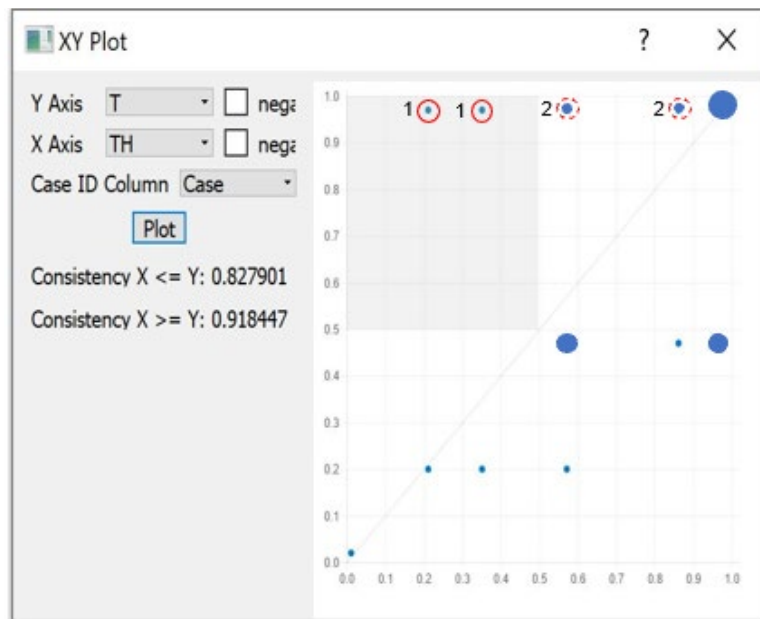
There is one DCK case for self competency.

5.14

– Necessity Condition, Triadic Communication (TM)

There is no DCK case for the necessary condition, triadic communication.

Figure 5.15

XY Plot – Necessity Condition, Triadic Cohesion (TH)

There are two DCK cases for the necessary condition, triadic cohesion. The researcher reviewed the interview data for the DCK cases and concluded that they are all valid as necessary conditions.

The analysis of the necessity for the contextual conditions, culture and project type, shown in Table 5.13, confirms that no conditions exceed the consistency threshold of 0.90. Therefore, their necessity analysis stops at this point.

Table 5.13

Analysis of Necessity – Contextual Conditions of Trust

Condition	Presence of Trust		Absence of Trust	
	Consist.	Coverage	Consist.	Coverage
Contextual				
Culture	0.35	0.69	0.39	0.34
~ Culture	0.66	0.70	0.65	0.31
Project Type	0.36	0.67	0.42	0.35
~ Project Type	0.65	0.71	0.61	0.30

Then the researcher tested the empirical importance with coverage necessity (Ragin, 2008) and Relevance of Necessity (RoN) as the parameters of fit (Schneider & Wagemann, 2012). The

coverage values for the four conditions are 0.84, 0.78, 0.86, and 0.83 for self-competence, dyadic communication, triadic communication, and triadic cohesion, respectively. No strict thresholds exist for coverage and RoN yet, but research indicates that an RoN close to 0.5 could be a concern. Oana et al. (2021) suggest that part of assessing empirical trivialness (coverage and RoN) is visually evaluating the empirical pattern using an XY plot. Oana et al. (2021) suggest that whenever the cases cluster very unevenly in either the outcome set or the condition set, that is, whenever the outcome or the condition or both are skewed, this can indicate that the necessary relation is trivial. By reviewing the XY plots above, all four conditions are empirically important.

Finally, any potential necessary condition must also be conceptually meaningful (Oana et al., 2021; Schneider & Rohlfing, 2013). Based on the theoretical background and the insights from the researcher's work experiences evaluated in Chapter 2, the researcher concluded that all four variables are necessary conditions. The researcher later used this information when conducting the sufficiency analysis (the truth table algorithm function of fsQCA).

5.11.2 Truth Table Construction

The sections below show how the researcher performed either the subset/superset analysis or the truth table algorithm functions to test the propositions. Before testing each proposition, this section constructs the truth table with the logic to refine the truth tables.

Transforming a data matrix (i.e., the SMVs generated through the process of calibration) into a truth table involves three steps: (1) creating a truth table shell; (2) assigning cases from the data matrix to truth table rows; and (3) assigning an outcome value to each truth table row. All these steps are done using fsQCA software, but the author presents the details for deeper understanding and ultimately to help researchers replicate with the fsQCA software or any other similar software.

As Ragin (1987) suggests, the researcher chose an intermediate solution between complex, intermediate, and parsimonious. This section describes all the logical minimisation input to the fsQCA system to minimise the truth table from the total number of logically possible truth table rows (2^k number of configurations for k number of conditions) (Greckhamer et al., 2018). There are seven causal conditions and two contextual conditions for forty-six cases. The researcher conducted the truth table analyses separately for each contextual condition to avoid possible threats to internal validity arising from limited empirical diversity, considering the suggested ratio of the number of cases to that of conditions in QCA (Fiss, 2011). As a result, the research performed three separate truth table analyses: one with seven causal conditions only ($2^k = 126$),

another with seven causal conditions and the contextual condition, culture ($2^k = 256$), and another with seven causal conditions and the contextual condition, project type ($2^k = 256$).

For sufficiency analysis, the researcher also ensured the three criteria similarly to necessity analysis; empirical consistency, empirical importance, and substantive importance. First, the parameter of fit for empirical consistency, the raw consistency cut-off threshold for truth table analysis for the research, is 0.80, as suggested by most QCA experts (Greckhamer et al., 2018; Ragin, 1987). The minimum number of cases for each truth table row is 1. If a solution lacks necessary conditions, the researcher removes it from the solution list (Wagemann et al., 2016).

To ensure the empirical importance of the solutions, the researcher ensured that the solution coverage is at least 0.5 and unique coverage is at least 0.01. The researcher checked if the case distribution supports empirical relevance using the XY plot function in fsQCA, checking if there is a small share of deviant coverage to typical cases.

Lastly, the researcher checked for the substantive importance of the solutions by using external knowledge, theoretical background, and empirical cases. The research uses this information in logical minimisation options by selecting relevant directional expectations during Standard Analysis in fsQCA. For testing for dyadic causal conditions only, the researcher chose the four necessary conditions (self-competence, dyadic communication, triadic communication, and triadic cohesion) to be 'present' and others to be 'present or absent' for other conditions because the researcher wanted to see the solutions in which one condition is especially important for high trust when other conditions are absent. However, for the truth table analyses with contextual conditions, the researcher selected all the causal conditions to be 'present' and the contextual condition to be 'present or absent'. The researcher chose this way because the researcher wanted to see how the presence or absence of contextual conditions potentially offers substantively different interpretations when the causal conditions are controlled (present) (Emmenegger et al., 2013). When the prime implicant options appear, the research prioritised the configurations with present necessary conditions and conditions with higher consistency and avoided the configurations with absent necessary conditions and conditions with higher consistency.

Creating a truth table shell first involves constructing a table of all possible combinations of conditions in an analysis. FsQCA automatically assigns all the cases in the equivalent truth table. FsQCA assigns an outcome value to each truth table with the conditions provided by the researcher. The researcher provided '1' for the minimum number of cases and '0.8' for the minimum consistency level.

When the cases with the same condition produce different outcomes, one needs to resolve the issue. FsQCA software helps check and resolve these contradictions. FsQCA shows the contradictory truth table rows based on the data. Among the configuration choices, the researcher first selected the necessary conditions (self-competence, dyadic communication, triadic communication, and triadic cohesion). After resolving the set of contradictory rows, fsQCA automatically finds the next set of contradictory rows. After all the contradictory rows are resolved, fsQCA generates three sets of solutions: complex, parsimonious, and intermediate. The researcher selected intermediate solutions to be interpreted and referred to the complex and parsimonious solutions as references.

5.12 QCA Phase Four: Analyses of Sufficiency

This section answers the research questions and the research propositions developed in Section 5.5.3.

5.12.1 Analysis of Sufficiency for Dyadic Causal Conditions (RQ1)

As RQ1 questions if the dyadic conditions identified from the traditional relationship marketing literature are still influencing trust. For proposition P1.1, the researcher conducted the subset/superset analysis function (see Appendix B.4.1). The consistency and coverage are shown below.

$$P1.1 \quad DP \bullet DM \bullet DB \bullet DI \leq T \quad (\text{consistency} = 0.93, \text{coverage} = 0.63)$$

$$\sim DP \bullet \sim DM \bullet \sim DB \bullet \sim DI \leq T \quad (\text{consistency} = 0.40, \text{coverage} = 0.59)$$

With the consistency of 0.93 and coverage of 0.63, one can conclude that the combination of all the dyadic causal conditions present is still sufficient in the SO context. For the robustness of the analysis, the researcher evaluated the consistency and coverage of the combinations of absent dyadic causal conditions. Consistency and coverage levels are 0.40 and 0.59, reassuring the sufficiency of the combination of present conditions. In summary, Proposition P1.1 for RQ1 is supported.

5.12.2 Analyses of Sufficiency for Triadic Causal Conditions (RQ2)

The analytic moment for RQ2 is the essential part of the research because this research question focuses on the triadic causal conditions with which the research contributes theoretically and practically to the SO triad. In the following sections, the author shows the result of analyses for each proposition identified for the research question. RQ2 focuses on triadic causal conditions.

The following are the results of analyses of subset/superset for propositions P2.1 and P2.2 and the analyses of sufficiency for propositions P2.3.

5.12.2.1 Analysis for Proposition P2.1

Firstly, the researcher tested Proposition P2.1 with the subset/superset analysis (see Appendix B.5.1). The consistency and coverage are as follows:

$$\text{P2.1 } TP \bullet TM \bullet TH \leq T \quad (\text{consistency} = 0.92, \text{ coverage} = 0.77)$$

$$\sim TP \bullet \sim TM \bullet \sim TH \leq T \quad (\text{consistency} = 0.65, \text{ coverage} = 0.15)$$

The consistency and coverage of the combination of present triadic causal conditions are 0.92 and 0.77, respectively, while those of absent triadic causal conditions are 0.65 and 0.15, respectively. Therefore, the subset/superset analysis of the triadic causal conditions supports Proposition P2.1.

5.12.2.2 Analysis for Proposition P2.2

Secondly, the researcher tested Proposition P2.2 with the subset/superset analysis as below.

$$\text{P2.2 } DP \bullet DM \bullet DB \bullet DI \leq T \quad (\text{consistency}=0.93, \text{ coverage}=0.63)$$

vs

Presence of triadic causal conditions:

$$DP \bullet DM \bullet DB \bullet DI \bullet TP \leq T \quad (\text{consistency}=0.97, \text{ coverage}=0.57)$$

$$DP \bullet DM \bullet DB \bullet DI \bullet TM \leq T \quad (\text{consistency}=0.96, \text{ coverage} =0.62)$$

$$DP \bullet DM \bullet DB \bullet DI \bullet TH \leq T \quad (\text{consistency}=0.95, \text{ coverage}=0.62)$$

$$DP \bullet DM \bullet DB \bullet DI \bullet TP \bullet TM \bullet TH \leq T \quad (\text{consistency}=0.97, \text{ coverage}=0.55)$$

Absence of triadic causal conditions:

$$DP \bullet DM \bullet DB \bullet DI \bullet \sim TP \leq T \quad (\text{consistency}=0.93, \text{ coverage}=0.29)$$

$$DP \bullet DM \bullet DB \bullet DI \bullet \sim TM \leq T \quad (\text{consistency}=0.93, \text{ coverage}=0.25)$$

$$DP \bullet DM \bullet DB \bullet DI \bullet \sim TH \leq T \quad (\text{consistency}=0.91, \text{ coverage}=0.20)$$

$$DP \bullet DM \bullet DB \bullet DI \bullet \sim TP \bullet \sim TM \bullet \sim TH \leq T \quad (\text{consistency}=0.87, \text{ coverage}=0.13)$$

The above Boolean statements and relevant consistency and coverage show that adding present triadic causal conditions to the combination results in higher consistency than adding absent triadic causal conditions.

5.12.2.3 Analysis for Proposition P2.3

Lastly, for RQ2, the researcher tested Proposition P2.3 by conducting a truth table analysis. The Boolean statement is as follows:

$$P2.3 (A \text{ combination of DP, DM, DB, DI, TP, TM, and TH}) \leq T$$

The analysis using the fsQCA function, Truth Table Algorithm, created a truth table and solutions as shown in Appendices C.5.3 and C.5.4. As mentioned in Chapter 3, this research chose to use intermediate solutions among complex, parsimonious, and intermediate solutions. Table 5.14 presents the intermediate solution in the configuration chart format that Fiss (2011) introduced.

5.14

ion Chart – Presence of Trust with Causal Conditions (No Contextual Conditions)

Condition	Configuration			
	P23C1	P23C2	P23C3	P23C4
Dyadic Causal Conditions				
Self-Competence (DP)				●
Dyadic Communication (DM)		●	●	●
Dyadic Benevolence (DB)		●	●	●
Dyadic Integrity (DI)	●		●	●
Triadic Causal Conditions				
SOP Competence (TP)	●	⊗		
Triadic Communication (TM)	●	●		●
Triadic Cohesion (TH)	●	●	●	
Consistency	0.94	0.92	0.91	0.96
Raw Coverage	0.66	0.30	0.62	0.62
Unique Coverage	0.03	0.01	0.01	0.01
Overall Solution Consistency		0.87		
Overall Solution Coverage		0.79		

Condition	Configuration
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Notes.

- Frequency cut-off: 1; consistency cut-off: 0.82.
- Solid black circles (●) indicate the presence of a condition; empty circles with 'x' (⊗) indicate its absence.
- Large circles indicate core conditions; small circles indicate peripheral conditions; blank spaces indicate the 'do not care' conditions.

The Boolean statements for all empirically identified recipes (coverage ≥ 0.01) sufficient for the presence of trust are as follows :

P23C1 $DI \bullet TP \bullet TM \bullet TH \leq T$ (consistency = 0.94, coverage = 0.03)

P23C2 $DM \bullet DB \bullet \sim TP \bullet TM \bullet TH \leq T$ (consistency = 0.92, coverage = 0.01)

P23C3 $DM \bullet DB \bullet DI \bullet TH \leq T$ (consistency = 0.91, coverage = 0.01)

P23C4 $DP \bullet DM \bullet DB \bullet DI \bullet TM$ (consistency = 0.96, coverage = 0.01)

Put differently, the empirical solution for Proposition 2.3 in the Boolean statement is as follows:

$DI \bullet TP \bullet TM \bullet TH$ (P23C1) +

$DM \bullet DB \bullet \sim TP \bullet TM \bullet TH$ (P23C2) +

$DM \bullet DB \bullet DI \bullet TH$ (P23C3) +

$DP \bullet DM \bullet DB \bullet DI \bullet TM$ (P23C4) $\leq T$

Where DM indicates dyadic communication, DB indicates dyadic benevolence, DI indicates dyadic integrity, TP indicates SOP competence, TM indicates triadic communication, and TH indicates triadic cohesion. Bold letters indicate core elements.

The first configuration, P23C1 ($DI \bullet TP \bullet TM \bullet TH$), reveals a combination of causal conditions that includes the core presence of triadic communication and the peripheral presence of dyadic integrity, SOP competence and triadic cohesion; all remaining factors are immaterial. The second configuration, P23C2 ($DM \bullet DB \bullet \sim TP \bullet TM \bullet TH$), reveals a combination of causal conditions that includes the core presence of dyadic communication and triadic communication and the peripheral presence of dyadic benevolence and triadic cohesion but also features the absence of SOP competence when both self-competence and dyadic integrity are neither present nor absent.

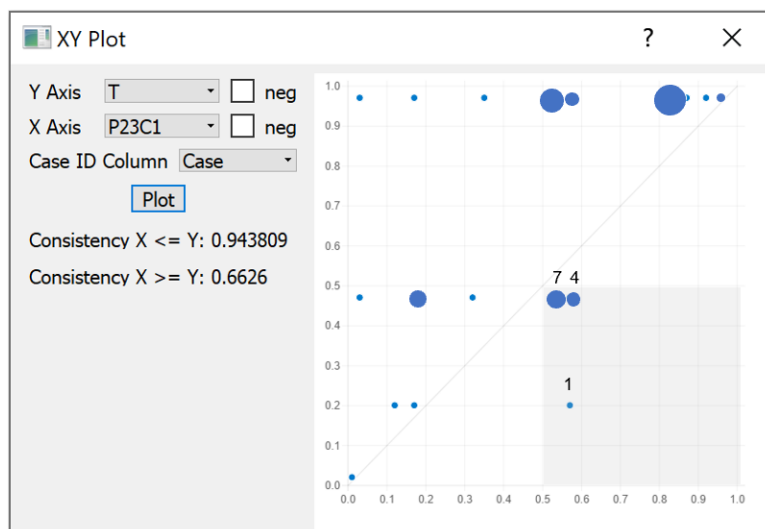
The third configuration, P23C3 (**DM•DB•DI•TH**), reveals a combination of causal conditions that includes the core presence of self-competence and the peripheral presence of dyadic benevolence, dyadic integrity, and triadic cohesion when self-competence, SOP competence and triadic communication are neither present nor absent. The fourth and last configuration, P23C4 (**DP•DM•DB•DI•TM**), reveals a combination of causal conditions that includes the core presence of dyadic and triadic communication and the peripheral presence of self-competence, dyadic benevolence, and dyadic integrity when SOP competence and triadic cohesion are neither present nor absent.

In the following paragraphs, the author describes the empirical consistency, the empirical importance, and the substantive importance of the solution set for Proposition 2.3 (using the XY plot as a part of the evidence for empirical consistency).

Firstly, the researcher analysed empirical consistency. The overall consistency level of 0.87 confirms that this fit parameter suggests a set relation. Appendices C.5.5 and C.5.6 show the result of the truth table analysis in detail. The solution consistency and coverage of the intermediate solution when trust is present are 0.87 and 0.79, respectively. The researcher also checked if DCK cases exist in the lower-right quadrant (Figure 5.16).

Figure 5.16

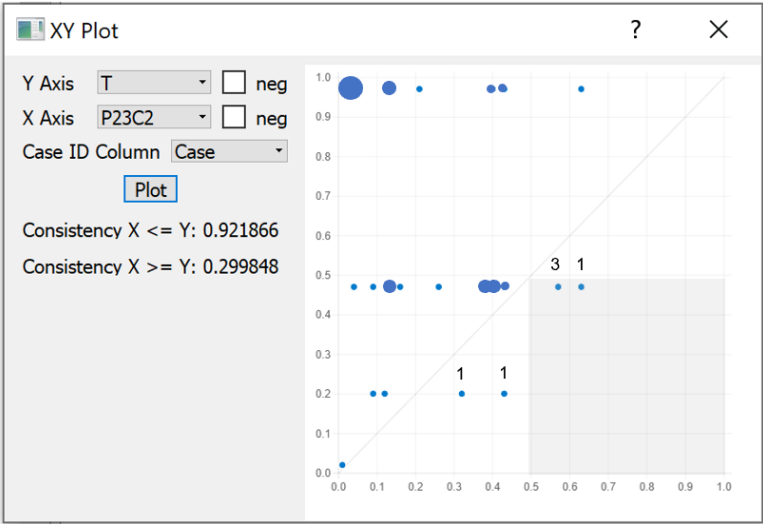
XY Plot – Presence of Trust and Configuration Formula $DI•TP•TM•TH$ (P23C1)



The configuration P23C1 The XY plot for the configuration P23C1 shows that most cases lie above the diagonal line, meaning there are many typical cases for this configuration. There are three points with twelve DCK cases; however, the high consistency level of 0.94 confirms that the configuration of the conditions is sufficient for a high level of trust.

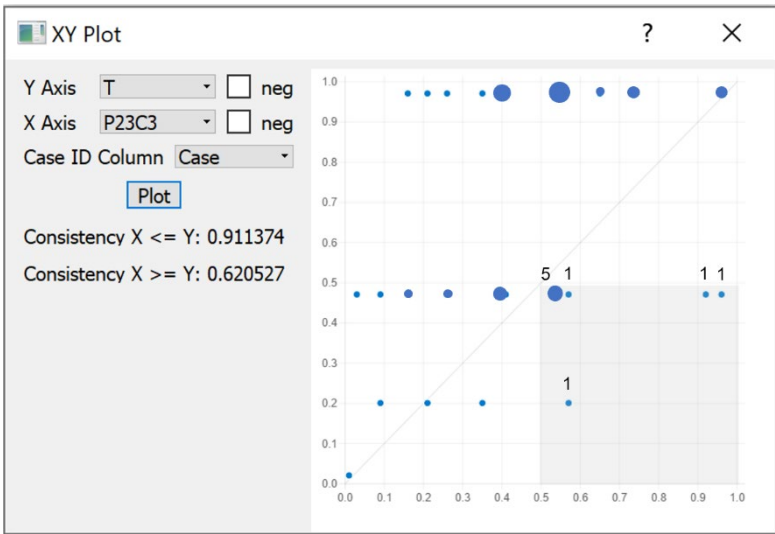
The XY plot for the configuration P23C2, as shown in Figure 5.17, shows that most cases lie above the diagonal line, meaning there are many typical cases for this configuration. There are two points with four DCK cases. However, the high consistency level of 0.92 confirms that the conditions' configuration is sufficient for a high level of trust.

Figure 5.17
XY Plot – Presence of Trust and Configuration Formula $DM \bullet DB \bullet \sim TP \bullet TM \bullet TH$ (P23C2)



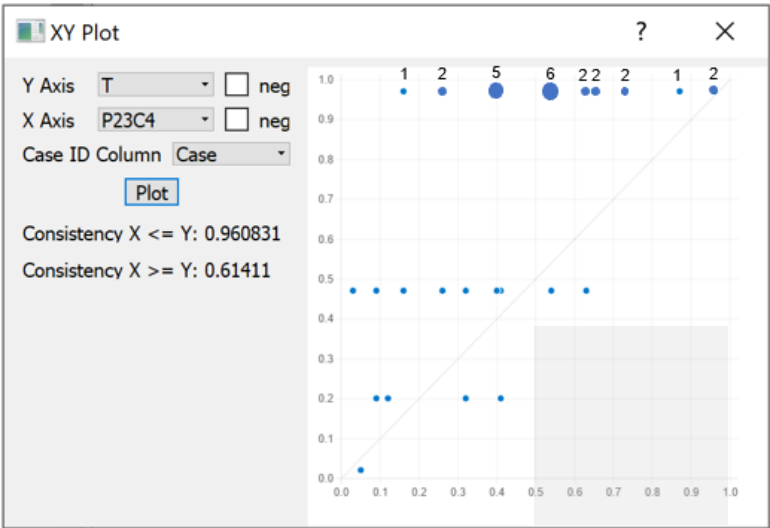
The XY plot for Proposition P23C3 in Figure 5.18 also shows that most cases lie above the diagonal, and only a few DCK cases (nine cases) exist. These XY plots provide evidence for empirical consistency.

Figure 5.18
XY Plot – Presence of Trust and Configuration Formula $DM \bullet DB \bullet DI \bullet TH$ (P23C3)



The XY plot for Proposition P2.3C1 in Figure 5.19 shows that most cases lie above the diagonal line in the upper right quadrant of the figure, meaning that there are many typical cases for the configuration. Moreover, there are only two DCK cases.

Figure 5.19
XY Plot – Presence of Trust and Configuration Formula DP•DM•DB•DI•TM (P23C4)



Secondly, to confirm the solution's empirical importance, the researcher checked that the solution coverage is 0.79, which is greater than 0.5 (Oana et al., 2021) and selected the configurations with a unique coverage level greater than 0.01 (Franklin & Marshall, 2019). The XY plot also confirms that there is only a tiny percentage of deviant coverage among typical cases, as shown in Figure 5.19.

To ensure empirical consistency, the researcher also analysed the truth table for the absence of trust. Table 5.15 presents the configuration chart of the causal conditions with no contextual condition, sufficient for the absence of trust.

Table 5.15

Configuration Chart – Absence of Trust with Causal Conditions (No Contextual Conditions)

Condition	Configuration					
	P23T0C1	P23T0C2	P23T0C3	P23T0C4	P23T0C5	P23T0C6
Dyadic Causal Conditions						
Self-Competence (DP)	⊗	⊗	⊗	⊗	⊗	⊗
Dyadic Communication (DM)		●	●	●	●	⊗
Dyadic Benevolence (DB)	⊗		●	●		⊗
Dyadic Integrity (DI)	●	●		●	●	●
Triadic Causal Conditions						
SOP Competence (TP)	⊗	⊗	⊗	●	●	⊗
Triadic Communication (TM)	⊗	⊗	●		●	●
Triadic Cohesion (TH)	⊗	⊗	●	●	●	●
Consistency	0.97	0.97	0.89	0.85	0.86	0.87
Raw Coverage	0.30	0.32	0.34	0.30	0.32	0.17
Unique Coverage	0.04	0.02	0.07	0.01	0.03	0.01
Overall Solution Consistency	0.87					
Overall Solution Coverage	0.57					

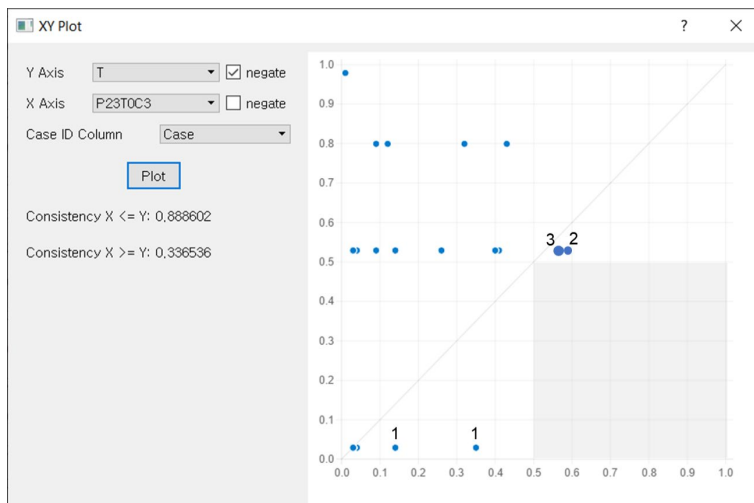
Notes.

- Frequency cut-off: 1; consistency cut-off: 0.84.
- Solid black circles (●) indicate the presence of a condition; empty circles with 'x' (⊗) indicate its absence.
- Large circles indicate core conditions; small circles indicate peripheral conditions; black space indicates the 'do not care' conditions.

Figure 5.20 presents the XY plot of the absence of trust and the causal conditions with no contextual condition.

Figure 5.20

XY Plot – Absence of Trust and Configuration Formula $\sim DP \bullet DM \bullet DB \bullet \sim TP$ (P23T0C3)



The intermediate solution when trust is absent differs from the one when trust is present, with the solution consistency and coverage of 0.87 and 0.57, respectively. These fit parameters provide clear evidence of asymmetric causality because different sets of core and peripheral conditions are observable for the presence and absence of trust (Ragin, 2009b; Tóth et al., 2015). The XY plot graph also shows that there is no DCK case. Consequently, the researcher concluded that empirical consistency for the solution exists.

Lastly, for substantive importance, the researcher analysed each selected (unique coverage ≥ 0.01) configuration in the aspect of the theory, concepts, empirical cases, and the external knowledge the researcher gained through work experiences. The author reports the detailed interpretation at the case level in the next phase (Section 5.13 and Chapter 7). This section covers the findings in only the condition level instead of the case level.

Later in the chapter, within- and cross-case analysis will give examples of cases for typical and deviant cases for these solutions.

5.12.3 Analyses of Sufficiency for Contextual Causal Conditions (RQ3)

Although RQ3 is not the primary focus of the research, addressing the RQ can enrich the guidelines to service providers by providing other contextual factors to strengthen or change the direction of the solutions in RQ2. The researcher conducted truth table analyses separately for the two contextual causal conditions (culture and project type).

5.12.3.1 Analysis for Proposition P3.1 (Culture Contextual Conditions)

The Boolean statement for Proposition P3.1 is as follows:

$$P3.1 \quad (A \text{ combination of DP, DM, DB, DI TP, TM, and TH}) \bullet XC \leq T$$

Similarly, for analysing Proposition P2.3, the researcher used the Truth Table Algorithm function in fsQCA. Appendices C.6.2, C.6.3, and C.6.4 show the truth table and the solution generated by fsQCA when trust is present and absent. Based on the unique coverage threshold, the researcher selected the two configurations whose unique coverages are marked in boldface as the final configurations for the solution. The following is the Boolean statement for the solution:

$$\begin{aligned} & \text{DP} \bullet \text{DI} \bullet \text{TM} \bullet \sim \text{XC} \text{ (P31C1)} + \\ & \text{DM} \bullet \text{DB} \bullet \text{TM} \bullet \text{TH} \bullet \text{XC} \text{ (P31C2)} \leq T \end{aligned}$$

Table 5.16 shows the configuration chart for the solution.

Table 5.16

Configuration Chart – Presence of Trust with Causal Conditions and a Contextual Condition, Culture

Condition	Configuration	
	P31C1 (West)	P31C2 (East)
Dyadic Causal Conditions		
Self-Competence (DP)	●	
Dyadic Communication (DM)		●
Dyadic Benevolence (DB)		●
Dyadic Integrity (DI)	●	
Triadic Causal Conditions		
SOP Competence (TP)		
Triadic Communication (TM)	●	●
Triadic Cohesion (TH)		●
Contextual Conditions		
Culture (XC)	⊗	●
Consistency	0.94	0.89
Raw Coverage	0.50	0.25
Unique Coverage	0.04	0.03
Overall Solution Consistency		0.89
Overall Solution Coverage		0.83

Notes:

- Frequency cut-off: 1; consistency cut-off: 0.84.
- Solid black circles (●) indicate the presence of a condition; empty circles with 'x' (⊗) indicate its absence.
- Large circles indicate core conditions; small circles indicate peripheral conditions; black space indicates the 'do not care' conditions.
- XC indicates that the culture is Eastern, and ~XC indicates Western.

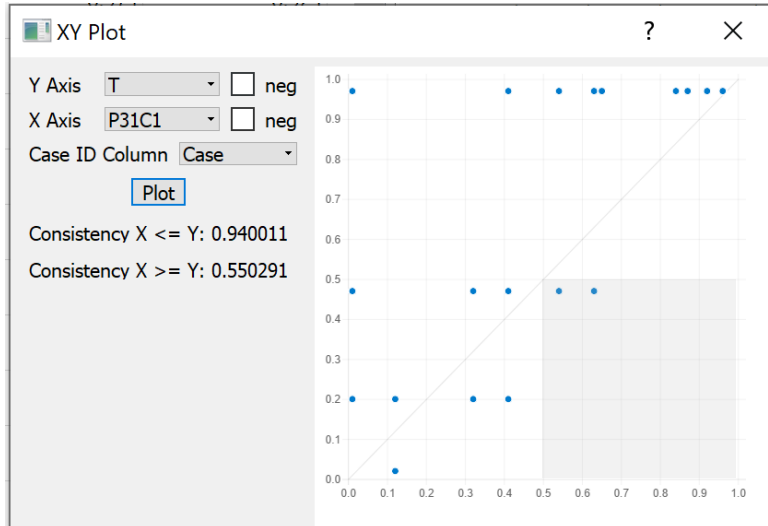
The configuration P31C1 reveals a combination of three causal conditions; triadic communication playing a core role and self-competence and dyadic integrity playing peripheral roles in the presence of trust in the Western cultural context. The configuration P31C2 reveals a combination of triadic communication and triadic cohesion playing core roles and dyadic communication and dyadic benevolence playing peripheral roles in the Eastern cultural context.

For empirical consistency, the consistency and coverage of the overall solution are 0.90 and 0.87, respectively. Therefore, the parameters of fit suggest a set relation. Similarly, the consistency levels of the configuration P31C1 (DP•DI•TM•~XC) and P31C2 (DM•DB•TM•TH•XC) are 0.94 and 0.92, which are big enough to meet the parameters of fit

thresholds. Both solutions have a small number of DCK cases. Figure 5.21 shows the XY plot of P31C1 and the presence of trust to show the evidence.

Figure 5.21

XY Plot – Presence of Trust and Configuration Formula $DP \bullet DI \bullet TM \bullet \sim XC$ (P31C1)



For testing empirical relevance, the researcher created a variable for each configuration. Here the XY plot for the first configuration (P31C1) is presented in Figure 5.21. There are only four cases that fall in the lower-right quadrant. This finding confirms empirical relevance.

Finally, the researcher evaluated the substantive importance of the solution. The case-level interpretations are reviewed in within- and cross-case analysis, and here the researcher evaluated and confirmed that the solution is meaningful. The following paragraph explains the solution.

The first configuration, P31C1 ($DP \bullet DI \bullet TM \bullet \sim XC$), reveals a combination of triadic communication playing a core role and self-competence and dyadic integrity playing peripheral roles in the presence of trust in the Western cultural context. The second configuration, P31C2 ($DM \bullet DB \bullet TM \bullet TH \bullet XC$), reveals a combination of triadic communication and triadic cohesion play core roles and dyadic communication and dyadic benevolence play peripheral roles in the presence of trust in the Eastern cultural context.

To test the causal asymmetry, the researcher conducted the truth table analysis for the same causal and contextual conditions but with the absence of trust. Appendices C.6.3 and C.6.4 present the truth table and analysis results in detail. The parsimonious solution shows that the consistency cut-off is 0.80, and the core combinations of conditions are $\sim DP \bullet DM$, $\sim TP \bullet XC$, and $\sim TM$.

Table 5.17 shows the configuration chart for the causal and cultural contextual conditions sufficient for the absence of trust. This table shows that the solutions differ from the analysis for the presence of trust, confirming the causal asymmetry.

Table 5.17

Configuration Chart – Absence of Trust with Causal Conditions and a Contextual Condition, Culture

Condition	Configuration		
	P31T0C1	P31T0C2	P31T0C3
Dyadic Causal Conditions			
Self-Competence (DP)		⊗	⊗
Dyadic Communication (DM)		●	
Dyadic Benevolence (DB)			
Dyadic Integrity (DI)			
Triadic Causal Conditions			
SOP Competence (TP)	⊗		⊗
Triadic Communication (TM)			⊗
Triadic Cohesion (TH)			⊗
Contextual Conditions			
Culture (XC)	●	⊗	
Consistency	0.78	0.80	0.98
Raw Coverage	0.33	0.34	0.41
Unique Coverage	0.12	0.14	0.06
Overall Solution Consistency		0.79	
Overall Solution Coverage		0.72	

Notes:

- Frequency cut-off: 1; consistency cut-off: 0.80.
- Solid black circles (●) indicate the presence of a condition; empty circles with 'x' (⊗) indicate its absence.
- Large circles indicate core conditions; small circles (○) indicate peripheral conditions; black space indicates the 'do not care' conditions.
- XC indicates that the culture is Eastern, and ~XC indicates Western.

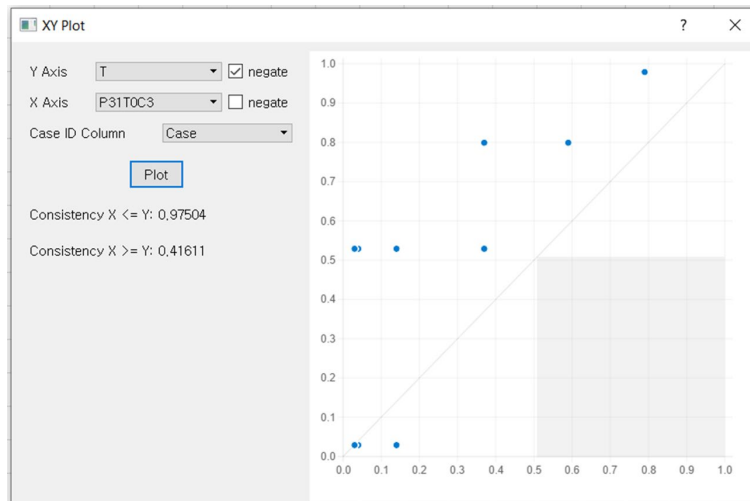
Configuration P31T0C1 reveals the absence of SOP competence playing a core role in the absence of trust in the Eastern cultural context. Configuration P31T0C2 reveals a combination of the presence of dyadic communication and the absence of self-competence playing the core roles in the absence of trust in the Western cultural context. Configuration P31T0C3 reveals a combination of the absence of triadic communication playing the core role and the absence of

self-competence and SOP competence playing the peripheral roles in the absence of trust in the Western cultural context; all remaining factors are immaterial.

For testing empirical relevance, the researcher created a variable for each configuration. Figure 5.22, the XY plot for the third configuration (P31T0C3), shows that no DCK case falls in the lower-right quadrant. This finding confirms empirical relevance.

Figure 5.22

XY Plot – Absence of Trust and Configuration Formula $\sim DP \bullet \sim TP \bullet TM \bullet \sim TH$ (P31T0C3)



5.12.3.2 Analysis for Proposition P3.2 (Project Type Contextual Condition)

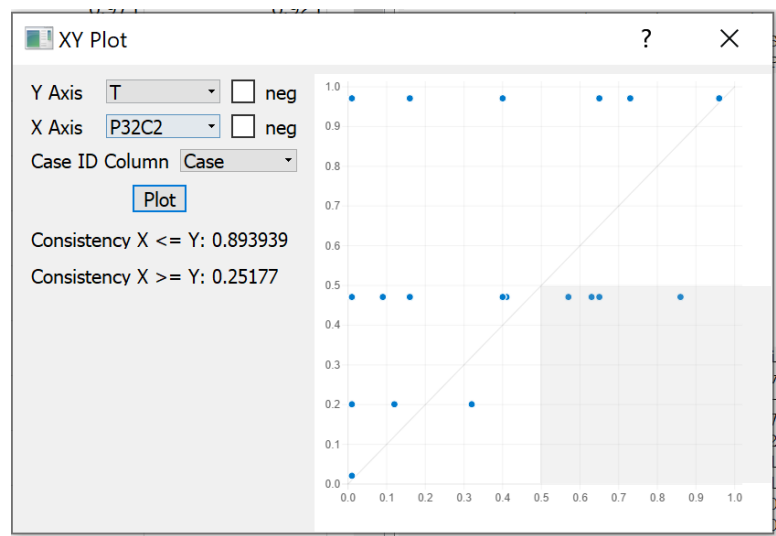
The Boolean statement for Proposition P3.1 is as follows:

$$P3.2 \quad (A \text{ combination of } DP, DM, DB, DI \text{ TP, TM, and TH}) \bullet XP \leq T$$

Appendices C.6.5, C.6.6, C.6.7, and C.6.8 present the truth table analysis results for the presence of trust and also for the absence of trust) for Proposition P3.2.

For empirical consistency testing, the researcher reviewed the overall solution consistency as 0.89, which satisfies the parameter of the fit test. The researcher also checked if there were any DCK cases through the XY plot (see Figure 5.23).

Figure 5.23
XY Plot – Presence of Trust and Configuration Formula $DP \bullet DI \bullet TM \bullet \sim XP$ (P32C1)



Many cases lie above the diagonal line, but only four DCK cases exist. The researcher concluded that the configuration meets the empirical consistency test.

As a result, the researcher confirmed that the parameters of fit suggest a set relation. The solution consistency is 0.84 (above 0.8), and the solution coverage is 0.66 (above 0.50).

Lastly, the researcher reviewed the solution’s meaningfulness for the substantive importance test. Table 5.18 presents the configuration table and explains why the solution is meaningful.

Table 5.18

Configuration Chart – Presence of Trust with Causal Conditions and a Contextual Condition, Project Type

Condition	Configuration	
	P32C1(Non-IT)	P32C2(IT)
Dyadic Causal Conditions		
Self-Competence (DP)	●	
Dyadic Communication (DM)		●
Dyadic Benevolence (DB)		●
Dyadic Integrity (DI)	●	
Triadic Causal Conditions		
SOP Competence (TP)		
Triadic Communication (TM)	●	●
Triadic Cohesion (TH)		●
Contextual Conditions		
Project Type (XP)	⊗	●
Consistency	0.94	0.89
Raw Coverage	0.50	0.25
Unique Coverage	0.04	0.03
Overall Solution Consistency		0.89
Overall Solution Coverage		0.83

Notes:

- Frequency cut-off: 1; consistency cut-off: 0.84.
- Solid black circles (●) indicate the presence of a condition; empty circles with 'x' (⊗) indicate its absence.
- Large circles indicate core conditions; small circles (○) indicate peripheral conditions; black space indicates the 'do not care' conditions.
- XP indicates that the project type is IT, and ~XP indicates non-IT.

The first configuration, P32C1 (DP•DI•TM•~XP), reveals that a combination of conditions, including triadic communication playing the core role, self-competence, and dyadic integrity playing the peripheral roles in the presence of trust in the non-IT project type context.; all remaining factors are immaterial. The second configuration, P32C2 (DM•DB•TM• TH•XP), reveals that a combination of conditions, including triadic communication and triadic cohesion playing the core roles and dyadic communication and dyadic benevolence playing the peripheral roles in the presence of trust in the IT project type context.

The researcher also analysed the truth table analysis for the absence of trust. Appendices C.6.7 and C.6.8 show the result of the truth table analysis. The parsimonious solutions were $\sim\text{TM}$, $\sim\text{DP}\bullet\sim\text{TP}$, $\sim\text{DM}\bullet\text{XP}$, $\sim\text{DP}\bullet\text{DM}\bullet\sim\text{DB}$ and $\sim\text{TP}\bullet\text{XP}$. Table 5.19 presents the configuration chart of causal conditions and the project type contextual condition sufficient for the absence of trust.

Table 5.19

Configuration Chart – Absence of Trust with Causal Conditions and a Contextual Condition, Project Type

Condition	Configuration			
	P32T0C1	P32T0C2	P32T0C3	P32T0C4
Dyadic Causal Conditions				
Self-Competence (DP)	⊗	⊗	⊗	⊗
Dyadic Communication (DM)			●	
Dyadic Benevolence (DB)			⊗	
Dyadic Integrity (DI)				
Triadic Causal Conditions				
SOP Competence (TP)	⊗			⊗
Triadic Communication (TM)		⊗		
Triadic Cohesion (TH)				
Contextual Conditions				
Project Type (XP)		⊗		●
Consistency	0.92	0.91	0.87	0.79
Raw Coverage	0.52	0.29	0.33	0.25
Unique Coverage	0.08	0.03	0.01	0.01
Overall Solution Consistency			0.81	
Overall Solution Coverage			0.66	

Notes:

- Frequency cut-off: 1; consistency cut-off: 0.84.
- Solid black circles (●) indicate the presence of a condition; empty circles with 'x' (⊗) indicate its absence.
- Large circles indicate core conditions; small circles (○) indicate peripheral conditions; black space indicates the 'do not care' conditions.
- XP indicates that the project type is IT, and $\sim\text{XP}$ indicates non-IT.

The configuration P32T0C1 reveals a combination of conditions, including the absence of self-competence and the absence of SOP competence playing core roles in the absence of trust in the

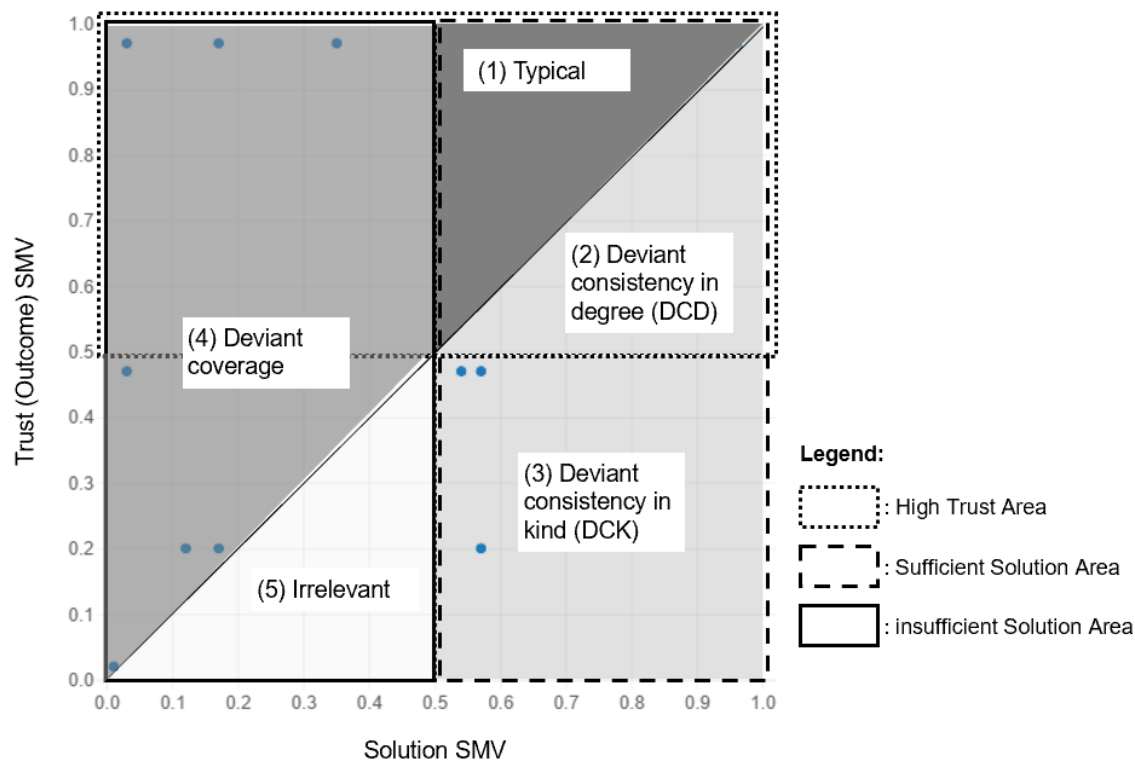
IT and non-IT projects; all remaining factors are immaterial. The configuration P32T0C2 reveals a combination of conditions, including the absence of self-competence and the absence of triadic communication playing peripheral roles in the absence of trust in the non-IT project type context. The configuration P32T0C3 reveals a combination of the absence of self-competence, the presence of dyadic communication and the absence of dyadic benevolence in the absence of trust in IT and non-IT projects type contexts. The configuration P32T0C4 reveals a combination of the absence of SOP competence playing a core role and the absence of dyadic benevolence playing a peripheral role in the absence of trust in the IT project type context.

5.13 QCA Phase Five: In-Depth Interpretation

This phase enhances interpretation through post-solution exploration using within- and cross-case analyses. Interpretation using within- and cross-case analysis helps researchers go beyond simply describing “what the results are” to “what these results mean.” (Kahwati & Kane, 2018). While Section 5.9 covers interpretation at the solution (or set of conditions) level, this section covers the interpretation at the case level. Oana et al. (2021) emphasise that solution formulas and high fit parameters should not be seen as the ultimate goal of QCA; the researchers need to relate them to the individual cases.

In this section, the researcher selected four types of cases for conducting the within- and cross-case analysis: typical, unique, deviant, and irrelevant (Oana et al., 2021) describe types of cases in fsQCA for sufficiency, as shown in Figure 5.24.

Figure 5.24

XY Plot – Types of Cases in fsQCA for Sufficiency*Source.* Kahwati and Kane (2018)*Note.* Each dot represents a case.

Typical cases (1) are located above the diagonal of the upper right quadrant (shaded darkest in the figure). Deviant cases are not “in line” with the empirical findings. Deviant cases come in two types; those that decrease solution consistency and those that decrease solution coverage. Deviant cases that decrease consistency are those in the solution but not in the outcome set. The deviant cases for consistency can be in deviant consistency in kind (DCK) (lower right of Figure 5.24, numbered as (3)) or in deviant consistency in degree (DCG) (lower right of the figure but below the diagonal line, numbered as (2)). The other type of deviant case is those that decrease solution coverage (number (4) in Figure 5.24). Lastly, irrelevant cases are located below the diagonal in the lower left quadrant of Figure 5.24, numbered as (5). In these cases, the SMV of the outcome set is lower than the SMV of the solution set, so they are not in line with the sufficiency statement generated by the solution.

Kahwati and Kane (2018) introduce three post-solution exploration aims and their case selection strategies. Firstly, the researcher aimed to build or test the theories for causal mechanisms. For this aim, the researcher selected two typical cases for one solution and compared a typical case with an irrelevant one. Secondly, the researcher aimed to identify any missing conditions. For this aim, the researcher compared a typical case with a deviant case for consistency. (Kahwati &

Kane, 2018) also suggest that in-depth analysis can help the researchers identify new or distinct theories through unique cases. This research adopts the first two aims.

In the following sections, the author presents how the researcher explored the cases using within- and cross-case analysis for the three major sufficiency tests performed: the sufficiency analysis for Proposition 2.3 (with no contextual condition), Proposition 3.1 (with the contextual condition, culture), and Proposition 3.2 (with the contextual condition, project type). Among the configurations of the solution, the research selected a relatively empirically relevant configuration by comparing the coverage values, which is substantively meaningful.

5.13.1 In-Depth Interpretation of Cases: Causal Conditions with No Contextual Condition

This section describes the in-depth case-level analysis for the sufficiency analysis result for Proposition P2.3. The researcher selected the configuration P2.3C1 (DI•TP•TM•TH) among the configurations of the solution for Proposition 2.3 for two reasons. The first reason is that the configuration is relatively high in empirical relevance for sufficiency (raw coverage and unique coverage values of 0.66 and 0.03). Secondly, the configuration consists of all the three triadic conditions, which can help the researcher explore each triadic condition. In the XY plot (Figure 5.25), the researcher indicated where the typical and deviant cases lie on the graph.

For testing the theories for causal mechanisms, the researcher chose the typical cases 9 and 27. Table 5.20 provides the qualitative evidence for the within-case analysis. The researcher chose two instead of one to provide insight into the causal mechanisms underlying sufficient combinations identified (Kahwati & Kane, 2018).

*XY Plot – Presence of Trust and Configuration Formula P23C1 (DI•TP•TM•TH)
with Selected Cases for In-Depth Interpretation*

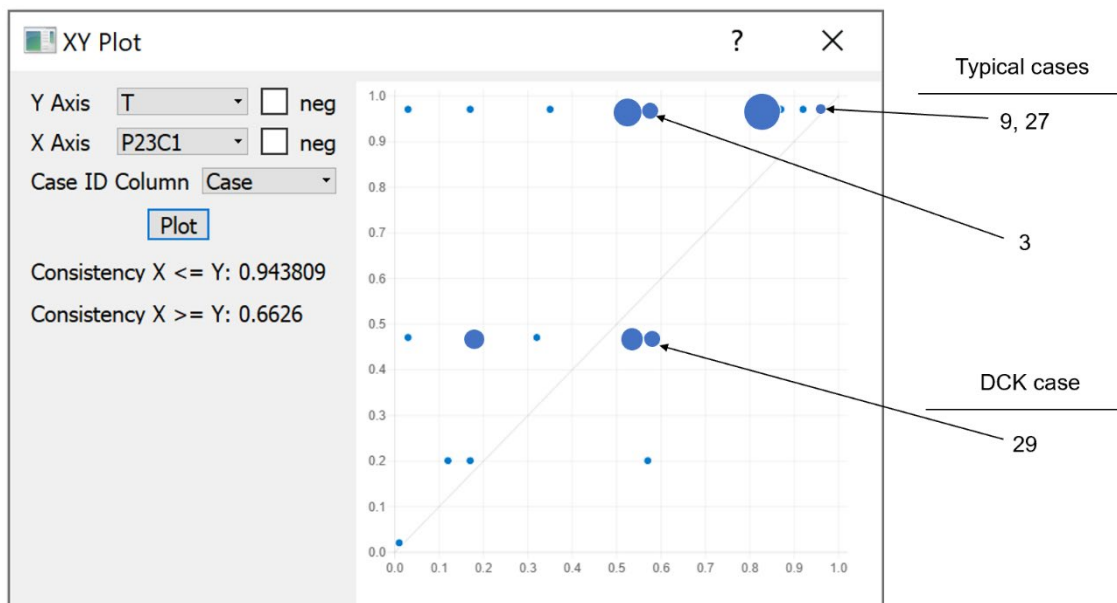


Table 5.20

Qualitative Evidence in Typical Cases of Configuration P23C1 (DI•TP•TM•TH)

Condition	Qualitative Evidence	
	Configuration P23C1 (DI•TP•TM•TH)	
	Typical Case: Case 9 Culture: Western Project Type: IT	Typical Case: Case 27 Culture: Western Project Type: Non-IT
Dyadic		
DI	However, that was because we always knew that we had to be completely trustworthy in our relationship and our service by being secure and scalable, and reliable.	We're honest, and we accept that people make mistakes
Triadic		
TP	Our uptime is beyond most companies' wildest imagination. It's typically 99.9 something in terms of uptime.	The manager of that particular firm was a very engaging individual, so he knew what he was doing; he was very competent and professional.
TM	We then immediately started to do global all-hands calls every week.	So there was frequent interaction, which I think is a key component. Oh, daily, yeah, absolutely daily.
TH	So the support team can send back standardised responses. And so there's some consistency there that can direct people to help articles.	The airfields are very well-controlled because you can't have tractors and things running around whilst you've got aircraft moving, so there's quite stringent safety regulations.

Notes:

- The outcome condition is the presence of trust.
- DI indicates dyadic integrity, TP indicates SOP competence, TM indicates triadic communication, and TH indicates triadic cohesion.

Comparing the two typical cases shows that when all triadic conditions are achieved, the service provider should focus mainly on dyadic integrity to achieve customers' high trust.

To identify missing conditions, the researcher compared a typical case (case 3) with a deviant case for consistency (case 29). Table 5.21 shows that a new condition, centrality exists in the solution term to achieve high trust. This condition was identified during thematic analysis, but it was removed because there were too many cases missing this condition. This condition may be a good candidate for future studies with cases relevant to centrality.

Table 5.21

Qualitative Evidence in Typical Cases of Configuration P23C1 (DI•TP•TM•TH)

Condition	Qualitative Evidence	
	Configuration P23C1 (DI•TP•TM•TH)	
	Typical Case: Case 3 Culture: Western Project Type: IT	Typical Case: Case 29 Culture: Eastern Project Type: Non-IT
Dyadic		
DI	Data transparency, I talked to you about that to share shopper insights and reduction in costs, suggesting to them how we can help relieve their overall costs or improve their margins.	If you keep security well and healthy and in good condition, so there will be no attack
Triadic		
TP	If you are the contact key go-to person, and if you can solve something for them, you can respond in time, and you can solve the issue promptly. That is what they want. So, these things we discovered.	We have three service delivery managers for the three regions. So, they will handle it. So, if they are not able to handle it and they need some additional support, then they will wake me up, and I'll join the calls.
TM	So, if there are going to be any delays like there is a strike in the distribution centre, we need to inform the customers every step of the way so what customers value is communication.	More into the 99% interaction between A to C's are on a daily basis. And they are a friend of the team and infrastructure.
TH	You train them, so what we do is internal. We have weekly meetings to say where we are at, where the challenges are, do we need extra hands to help us.	So due to that challenge, the B decided to remove the shared model and put the dedicated model into the service structure.
Missing		
Centrality	Hey, looking up, we noticed you have many branded products. If you had replaced them with some other products in that range, I think you would make made a better margin, and we prefer some mutual benefits. So we also maybe initiate a joint business plan, and we both are committed to working towards the goals, their targets	So but that it is giving a lot of trouble to application service and for that the A's a little bit upset on that and he is not happy with that services which we are providing from the data centre. So for that, we are having a different plan now.

Notes:

- The outcome condition is the presence of trust.
- DI indicates dyadic integrity, TP indicates SOP competence, TM indicates triadic communication, and TH indicates triadic cohesion.

Although the two cases selected achieved the solution term, case 3 achieved trust while case 29 did not. By thoroughly going through the interview transcripts, the researcher noticed that centrality, explored in thematic analysis, is crucial to gaining customers' trust in some conditions.

5.13.2 In-Depth Interpretation of Cases: Causal Conditions with Culture Contextual Condition

This section discusses the in-depth interpretation of cases for the solution terms for Proposition 3.1, which tested the sufficiency using the causal conditions and a contextual condition, culture (XC indicates Eastern culture, while \sim XC indicates Western culture). Between the two solution terms, the researcher selected solution term P31C1 for in-depth analysis because it is more empirically relevant (coverage = 0.55).

Figure 5.26 shows where the selected cases (cases 11 and 19) lie in the XY plot of the presence of trust and the configuration P31C1, and Table 5.22 presents the in-depth analysis of the two cases 11 and 18 to provide insight into the causal mechanisms underlying the sufficient combinations identified.

Figure 5.26

XY Plot – Configuration P31C1 (DP•DI•TM• \sim XC) and Presence of Trust

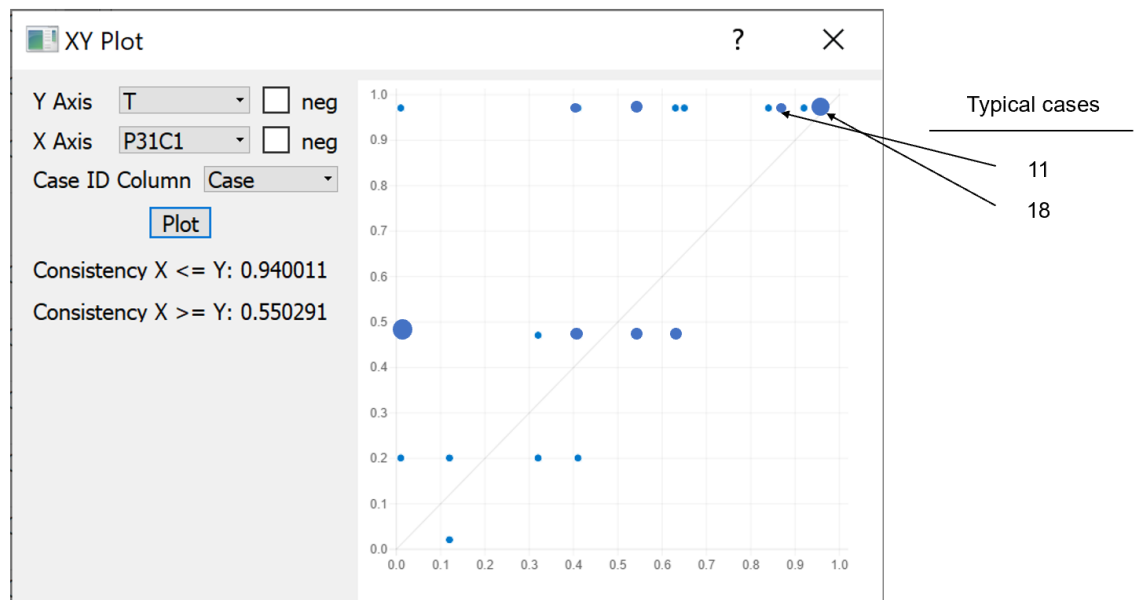


Table 5.22

Qualitative Evidence in Typical Cases of Configuration P31C1 (DP•DI•TM•~XC)

Condition	Qualitative Evidence	
	Configuration P31C1 (DP•DI•TM•~XC)	
	Typical Case: Case 11 Culture: Western Project Type: Non-IT	Typical Case: 8 Culture: Western Project Type: Non-IT
Dyadic Causal Condition		
DP	So they trusted in the reputation, and they trusted in our ability to work with our contractors.	We choose differently because ours is a premium service, higher-end service, and high-touch service. What that also means is that we're targeting larger clients
DI	Integrity is more they want to know that what we say and what we do is exactly what they see. There's no illusion around how we actually operate.	There's transparency; there has been shared success here, which makes it work well.
Triadic Causal Condition		
TM	And then we got a noncompliance reporting mechanism where the site staff, where the drivers, all the other transport companies interact, they can raise an issue or concern.	But to her, she calls us up like we're B. She calls us up as if she were calling my A.

Notes:

- The outcome condition is the presence of trust.
- DP indicates self-competence, DI indicates dyadic integrity, TM indicates triadic communication
- ~XC value is non-IT. No qualitative evidence is required because the information comes from the case profile.

By evaluating the qualitative evidence of conditions for the two cases, the researcher can conclude that the solution term supports the causal mechanism.

5.13.3 In-Depth Interpretation of Cases: Causal Conditions with Project Type Contextual Condition

This section discusses the in-depth interpretation of cases for the solution terms for Proposition 3.2, which tested the sufficiency using the causal conditions and a contextual condition, project type (XP indicates IT project type, while ~XP indicates non-IT project type). Between the two solution terms, the researcher selected solution term P32C1 for in-depth analysis because it is more empirically relevant (coverage = 0.50).

The researcher selected cases 14 and 19 for the in-depth analysis to provide insight into the identified combinations' causal mechanisms. Figure 5.27 shows where these two cases lie in the XY plot of the presence of trust and the configuration P32C1 ($DP \bullet DI \bullet TM \bullet \sim XP$).

Figure 5.27

XY Plot – Presence of Trust and Configuration P32C1 ($DP \bullet DI \bullet TM \bullet \sim XP$)

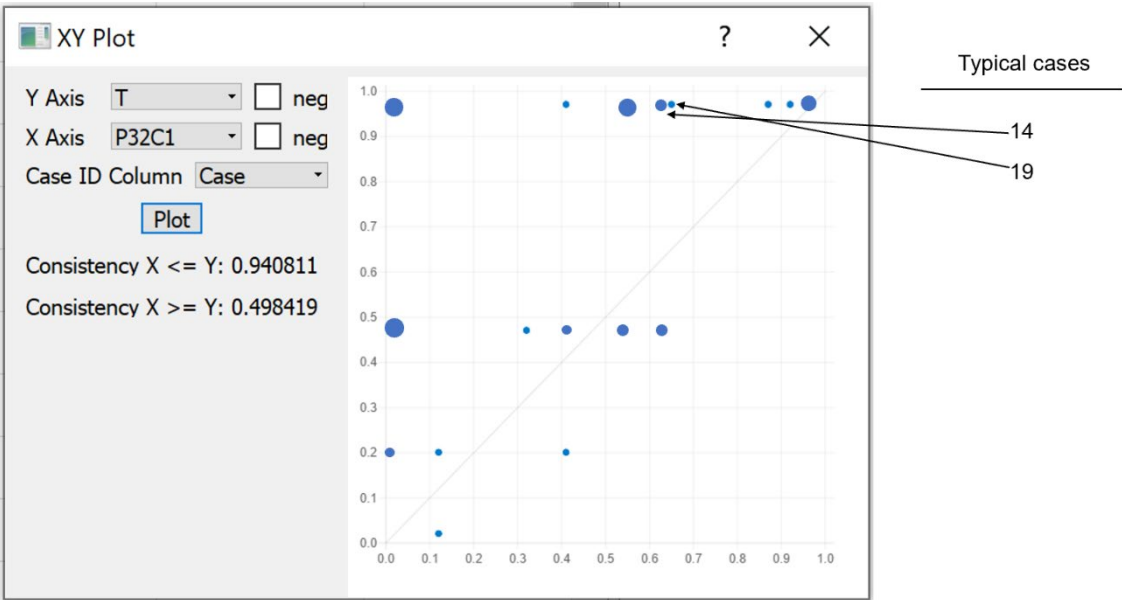


Table 5.23 provides the qualitative evidence in these cases with each condition.

Table 5.23

Qualitative Evidence in Typical Cases of Configuration P32C1 (DP•DI•TM•~XP)

Condition	Qualitative Evidence	
	Configuration P32C1 (DP•DI•TM•~XP)	
	Typical Case: Case 14 Culture: Western Project Type: Non-IT	Typical Case: Cases 19 Culture: Western Project Type: Non-IT
Dyadic Causal Condition		
DP	Because of our experience, we've done a lot of work for them before. We have a very experienced, stable workforce, so when they give the work to us, they know we have the people to do it, they like working with our people, and they trust our people.	And availability-wise, very wide, right, deep and wide
DI	We could have hidden it, but we didn't, so we're being open and transparent.	Hey, there's a benefit in where there's shared economics
Triadic Causal Condition		
TM	Communication with sub-contractors, depending on the stage of the job, could be daily. Periodic meetings with your sub-contractors as well	We recommend to work with their clients, and C has to access the private information of A. We cannot solely make that decision on our own without understanding how that will work.

Notes:

- The outcome condition is the presence of trust.
- DP indicates self-competence, DI indicates dyadic integrity, TM indicates triadic communication
- ~XP value is non-IT. No qualitative evidence is required because the information comes from the case profile.

By evaluating the two typical cases in the context of each condition within the configuration of the solution term, the researcher concluded that the solution term supports sufficiency and causal mechanism with the presence of trust.

5.14 Validity and Reliability of the Methods

In addition to carefully selecting the sample during data collection, the cases and variables/conditions were iteratively reviewed and verified as the research progressed from thematic analysis, data transformation, and case selection in QCA to data calibration. The researcher evaluated the data using the published theoretical background, her practical experiences, and the empirical cases (Creswell, 2018; Fainshmidt et al., 2020).

As explained in the data transformation section, the reliability test is formally performed with review and modified if necessary (Booth et. al., 2016; Creswell, 2018; Fainshmidt et al., 2020), with the researcher's trained team of experts. Reliability is enhanced as the researcher and her assistants/advisors are experienced and competent in both the method and B2B context.

5.15 Chapter Conclusion

This chapter focused on the findings of the primary QCA analysis. In the pre-phases of QCA, the author also reviewed the thematic analysis and data transformation findings to prepare the data appropriately for QCA. Throughout the chapter, the researcher revised the conceptual model created in Chapter 2 three times; first, after thematic analysis, second, after data transformation, and lastly, in the QCA section, when the researcher translated the general conceptual framework to the configurational conceptual framework to fit the set-theoretic method. From the research questions, the researcher developed the proposition in QCA terms, where they were tested and supported. As this chapter concludes the essential part of the thesis, the next chapter describes the findings of a simple regression analysis conducted to offer further (convergent) validity.

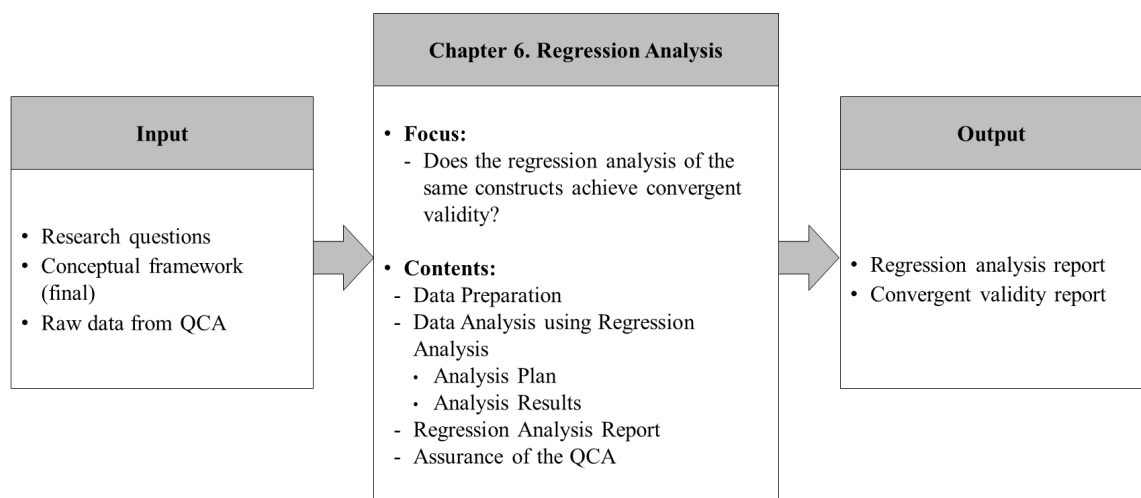
Chapter 6. Findings of the Regression Analysis

6.1 Chapter Introduction

This chapter shows and explains the findings of the regression analysis. Chapter Three describes how the analysis is designed, and this chapter describes the results of the analysis conducted. The regression analysis aims to test the convergent validity of the QCA and regression analysis methods. Figure 6.1 shows where Chapter 6 sits within the thesis.

Figure 6.1

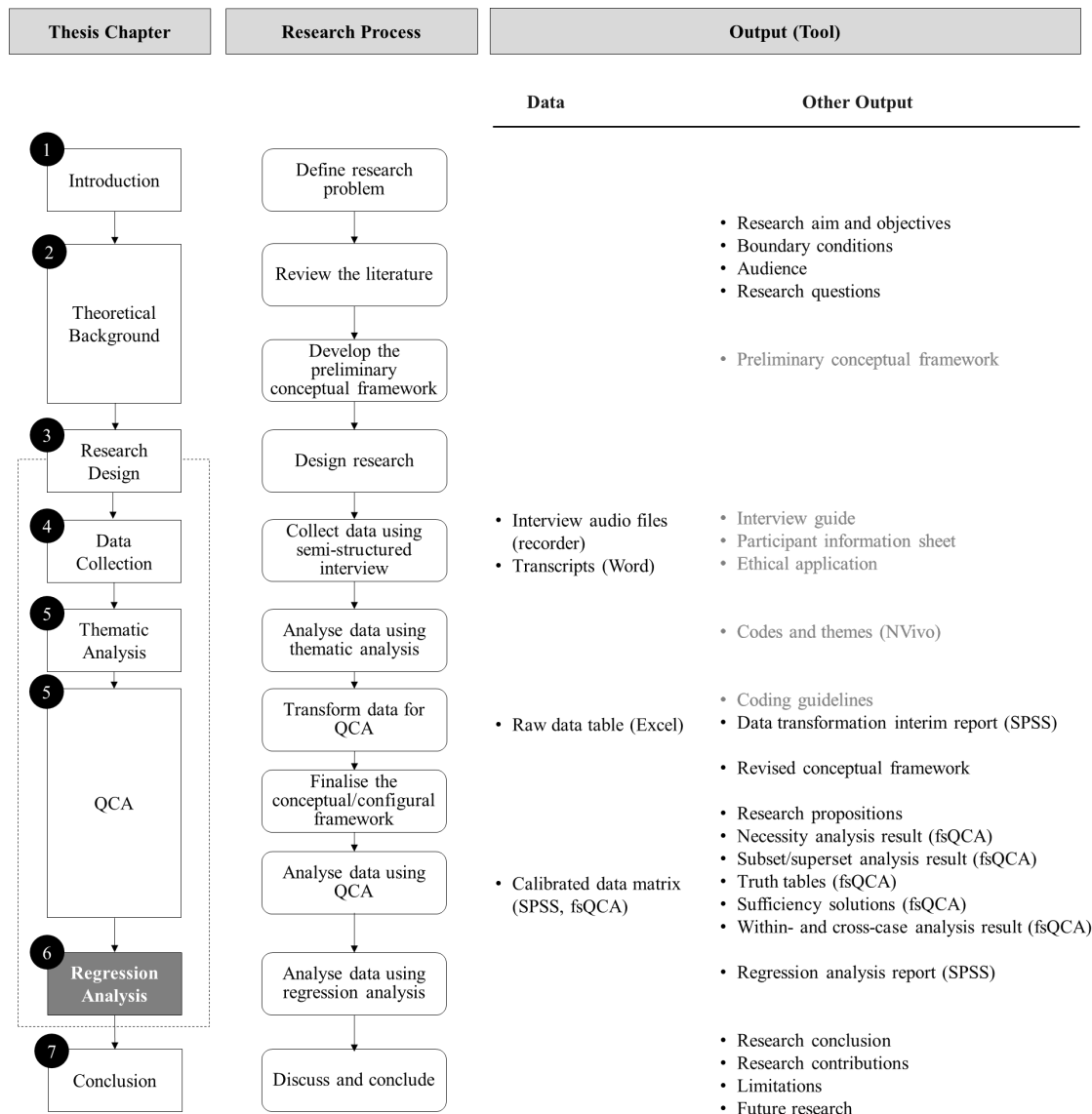
Chapter 6 in Thesis Structure



The previous chapter, Chapter 5, describes the QCA analysis results using the conditions selected in thematic analysis. This chapter uses the same raw data used in QCA (after calibration) and endeavours to discover if the main effects of the regression analysis provide confirmatory, convergent validity to the findings of the QCA analysis.

Figure 6.2 shows the thesis chapters map the research process, tools used, and primary and secondary deliverables.

Figure 6.2

Regression Analysis in Research Process

Note. The texts in grey color represent 'secondary' process or deliverables.

The regression analysis report consists of correlation, omnibus, and regression analyses, including contextual variables as moderators. The analysis was conducted using SPSS Version 28.

6.2 Specific Analysis Aim

The QCA analyses indicate that four factors (self-competence, dyadic communication, triadic communication and triadic cohesion) emerge as critical (necessary) conditions for customer trust. It was also found that neither of the two contextual conditions – customer's culture and project type – add to the overall fit of the best solution set. It is with the expectation that these QCA findings will also emerge that the regression analysis is conducted.

6.3 Regression Analysis Overview

The researcher conducted regression analyses in several phases. Because the sample size was not designed for multiple regression analysis and is somewhat restrictive for analysis with so many independent variables, the expectation was that a general linear model would not perform well. This issue soon became evident, as only triadic communication is significant (in a poorly fitting model) when all seven variables are included. Moreover, only two (triadic communications and self-competence) are significant when just the expected four variables are tested in a single general linear equation, probably because of the high correlational nature of the predictors.

Thus, a stepwise variation is employed rather than a general omnibus analysis. The model includes Trust as a dependent variable, and all seven variables (ex-conditions in QCA) are included as potential independent predictors. The seven factors consist of four dyadic relationship factors (self-competence, dyadic communication, dyadic benevolence, dyadic integrity) and three triadic relational factors (SOP competence, triadic communication, and triadic cohesiveness). This analysis proved more satisfactory.

The second phase examines the moderating role of the two contextual factors – culture (Eastern vs Western) and project type (IT vs non-IT project). In this phase, the researcher restricted the predictors for analysis to only those found significant in the earlier regression analyses. Then, each of the two contextual factors and its interaction term with each predictor was added to the model as further potential predictors.

The data collected through semi-structured interviews were transcribed, and the resultant text was analysed to seek themes. The identified themes inform the selection of the conditions for analysis by QCA, which were duly quantified for QCA analyses – these procedures are contained in previous chapters. The same quantitative, raw, un-calibrated data used as input to QCA is used here for regression analysis.

The software program used to analyse the data is IBM SPSS Statistics (version 28), a commercially available software. It is the most popular software for regression analysis and was provided by the researcher's university.

6.4 Regression Analysis Pre-Phase: Correlation Analysis

Prior to the omnibus regression analyses, a correlation analysis between the dependent variable ("trust") and seven independent variables (potential determinants of trust) was conducted (see Table 6.1 for a summary of correlations between each pair of these variables).

Table 6.1
Correlation Table for All Variables

		Trust	Self-Comp.	Dyadic Comm.	Triadic Comm.	Dyadic Benev.	Dyadic Integ.	SOP Comp.	Triadic Cohes.
Trust	B	1	.724**	.566**	.713**	.405**	.284	.597**	.699**
	<i>p</i>		.000	.000	.000	.005	.056	.000	.000
Self-Competence	B	.724**	1	.515**	.643**	.335*	.199	.572**	.675**
	<i>p</i>	.000		.000	.000	.023	.185	.000	.000
Dyadic Communication	B	.566**	.515**	1	.355**	.602**	.291*	.523**	.647**
	<i>p</i>	.000	.000		.000	.000	.050	.000	.001
Triadic Communication	B	.713**	.643**	.335*	1	.435**	.146	.709**	.638**
	<i>p</i>	.000	.000	.023		.003	.332	.000	.000
Dyadic Benevolence	B	.405**	.355*	.602**	.435**	1	.231	.406*	.420**
	<i>p</i>	.005	.023	.000	.003		.123	.005	.004
Dyadic Integrity	B	.284	.199	.291*	.146	.231	1	.215	.201
	<i>p</i>	.056	.185	.050	.332	.123		.151	.181
SOP Competence	B	.6597**	.572**	.523**	.709**	.406*	.215	1	.545**
	<i>p</i>	.000	.000	.000	.000	.005	.151		.000
Triadic Cohesion	B	.699**	.675**	.647**	.638**	.420**	.201	.545**	1
	<i>p</i>	.000	.000	.000	.000	.004	.181	.000	

Note. All $N = 46$

First, trust is significantly correlated with each of six independent variables and approaches significance on the seventh, Dyadic Integrity. This suggests that all the independent variables under consideration are potentially good predictors of trust and justifies an omnibus regression analysis. Furthermore, the four variables of most interest all correlate strongly with trust, which is encouraging.

Second, the independent variables are correlated quite strongly (except for benevolence). This also suggests the possibility of a multicollinearity issue in the regression analysis, which could be particularly problematic given the small sample size in this study ($N = 46$). This confirms the wisdom of using the stepwise procedure already suggested. It also, incidentally, highlights the superiority of using fsQCA as a major analysis tool, as there is no requirement for independent predictor conditions. Indeed, the strength of QCA is that such interdependence of predictors allows the construction of a superior explanation of the predictors when clustered together in a solution set.

6.5 Regression Analysis Phase One: Omnibus Regression Analysis

A stepwise omnibus regression analysis of trust was conducted with all seven variables as predictors. The model employs the following standard form, equation:

$$T = b_0 + b_1 DP + b_2 DM + b_3 TM \\ + b_4 DB + b_5 DI + b_6 TP + b_7 TH + \epsilon$$

The stepwise procedure was used.

The stepwise regression process shows only three significant variables, but the adjusted r^2 (.678) is satisfactory, and there are no multicollinearity issues despite the relatively high correlations between the independent variables and the small sample size. The result generally confirms the conclusion of the QCA analysis. Specifically, as shown in Table 6.2, among the seven predictors included in the analysis, the three factors that emerged as important in the QCA analysis significantly predict trust in the regression equation: (1) B's competence ($b = .514$, $SE = .202$, $t = 2.548$, $p = .015$), (2) AB communication ($b = .577$, $SE = .157$, $t = 3.669$, $p = .001$). Finally (3), ABC communication ($b = .388$, $SE = .152$, $t = 2.548$, $p = .015$). This finding provides some convergent validity for the conclusions drawn from the QCA analysis.

Table 6.2

Summary of Regression Results

	Unstandardized		Standardi			Collinearity	
	Coefficients		zed			Statistics	
			Coefficie				
Model	β	Std Error	nts	<i>t</i>	Sig	Tolerance	VIF
Model 1							
Constant	-1.042	.779		-1.338	.188		
Self-Competence	1.161	.167	.724	6.963	<.001	1.00	1.00
Model 2							
Constant	-1.530	.710		-.2514	.037		
Self-Competence	.726	.195	.453	3.730	.001	.586	1.706
Triadic Communication	.579	.167	.421	3.471	.001	.586	1.706
Model 3							
Constant	-2.349	.742		-3.165	.003		
Self-Competence	.514	.202	.320	2.548	.015	.485	2.060
Triadic Communication	.577	.157	.420	3.669	<.001	.586	1.706
Dyadic Communication	.388	.152	.260	2.548	.015	.735	1.361

Notes.

- The dependent variable is Trust
- All other variables are excluded.

In addition, it is worth noting that, according to the standardized beta coefficients, triadic communication, a triadic factor, has a more significant impact on trust ($Beta = .42$) than the other “dyadic” factors do ($Beta = .32$ for self-competence and $Beta = .26$ for dyadic communication).

6.6 Regression Analyses Phase Two: Including Contextual Variables as Moderators

Given the omnibus regression analysis results, the moderating impact of contextual variables is now examined for the effect of the three factors (self-competence, dyadic communication, and triadic communication) that were significant predictors. A contextual variable and its interaction term with each of the three factors are now included as predictors in the regression equation. In addition, the “enter” procedure (instead of the stepwise procedure) was used, as the three factors in the regression model have already been shown to be significant.

However, the small sample size does not allow for simultaneous testing of the moderating role of all four contextual factors. Therefore, each contextual factor is considered separately in four models. The models again take a standard form.

$$T = b_0 + b_1 DP + b_2 DM + b_3 TM + b_4 XC \\ + b_5 DP \cdot XC + b_6 DM \cdot XC + b_7 TM \cdot XC + \varepsilon$$

$$T = b_0 + b_1 DP + b_2 DM + b_3 TM + b_4 XP \\ + b_5 DP \cdot XP + b_6 DM \cdot XP + b_7 TM \cdot XP + \varepsilon$$

6.6.1 Moderation Role of Culture

The respondents’ cultural background (Eastern vs Western) operationalised for the firm's culture. This variable and its interaction term with each of the three factors were included as additional predictors in the regression analysis. Once again, the adjusted r^2 of the equation (.646) is reasonable, and no collinearity issues are evident. Table 6.3 shows the interactions between these factors.

Table 6.3

Regression Analysis showing Interaction of Significant Variables with Culture

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	β	SE	B	<i>t</i>	Sig	Tol	VIF
Constant	-2.505	.771		-3.248	.002		
DP	.682	.243	.426	2.810	.008	.343	2.92
DM	.329	.164	.220	1.998	.053	.452	1.55
TM	.505	.195	.368	2.584	.014	.526	2.57
Interaction							
DP x XC	-.545	.444	-1.534	-1.228	.227	.005	198
DM x XC	.337	.357	.945	.943	.351	.008	128
TM x XC	.200	.334	.524	.600	.552	.010	97

Notes.

- Dependent variable = T (Trust)
- N = 46
- DP = Self-competence; DM = Dyadic communication; TM = Triadic communication; XC = Culture (1= Easter; 0 = Western)

There is no interaction effect for any trust antecedent variables included when culture is introduced as a potential moderator. Although this could be a small sample artefact, the result is clear, corresponds to and confirms the QCA analysis, and will be discussed later.

6.6.2 Moderation Role of Project Type

Project type is operationalized based on the client firm's industry (IT vs non-IT). The sample structure allows this categorisation, and it is subjectively considered that IT outsourcing (which is very prevalent) is somewhat unique.

The equation is run as in the initial analysis, simultaneously entering all three predictive variables and their interaction terms. The adjusted r^2 value of the significant equation remains the same as previously, at .646. As can be seen from Table 6.4, there is no interaction observable, and the three predictor variables retain their significance levels.

Table 6.4

Regression Analysis showing Interaction of Significant Variables with Project Type

	Unstandardized Coefficients		Standardized Coefficients		<i>t</i>	Sig	Collinearity statistics	
	β	SE	β				Tol.	VIF
Constant	-2.592	.779			-3.327	.002		
DP	.651	.244	.406		2.670	.011	.339	2.946
DM	.265	.180	.178		1.473	.149	.541	1.849
TM	.624	.186	.454		3.352	.002	.429	2.331
Interaction								
DP x XP	-.354	.447	-.989		-.792	.433	.056	198
DM x XP	.392	.300	1.103		1.306	.199	.011	91
TM x XP	-.058	.359	-.153		-.163	.872	.009	113

Notes.

- Dependent variable: T (Trust)
- N = 4t
- DP = self-competence; DM = dyadic communication; TM = triadic communication; XP = project type (1 = IT project; 0 = non-IT project)

The significant equation has an adjusted r^2 of .65; again, there is no multicollinearity issue for the three predictive variables. Interestingly, dyadic communications lose significance in the face of project type – this anomaly will be discussed later in the following chapter.

The researcher concluded that the regression-based investigation of the data does offer the validity sought to the QCA results within the limits of a small sample size. The next chapter discusses the results and their implications for the practice and theoretical development of marketing.

6.7 Chapter Conclusion

This chapter focused on the regression analysis findings to provide confirmatory, convergent validity. By comparing the similarities and contrasting the differences in the QCA and regression analysis results, the author describes the strength of the triadic RQ factors in relationship marketing in the SO context. This chapter also emphasises the advantages of QCA.

As this chapter completes all the findings of three analyses in the research, the next chapter concludes the research report. The next chapter also summarises the contribution of the research, entailing the limitation and future research opportunities.

Chapter 7. Conclusion

7.1 Chapter Introduction

This chapter concludes by briefly summarising the critical research findings concerning the research aims and questions and discussing the value and contribution thereof. It also reviews the study's limitations and proposes opportunities for future research.

7.2 Summary of Findings

Outsourcing and offshoring have become common in business. Service providers utilizing these sub-outsourcing partners (SOPs) face a serious issue; the performance of SOPs can influence the relationship quality (RQ) with their customers. Nevertheless, the existing research on relationship marketing has primarily focused on the supplier-customer dyadic relationship context rather than the triadic relationship context. The research investigated factors affecting a customer's trust toward its supplier in a triadic relationship involving an SOP as a third party. Specifically, the present re-examined the role of dyadic relational factors in obtaining trust from the customer and by identifying unique triadic relational factors for trust in an SOP context.

This study adopted a series of in-depth interviews with company representatives in all three roles of the triadic relationship for data collection purposes. QCA was used as a primary method for data analysis, supplemented by statistical regression analysis for a confirmatory purpose. In total, 58 senior managers and executives from IT and non-IT companies in various Eastern and Western firms were interviewed individually. The interviews were transcribed verbatim and were analysed through thematic analysis (using Nvivo software). Then, the QCA as a method and set of tools was applied to the coded data for analyses (with supplementary regression analysis used to provide validity).

These analyses generated several significant findings. First, the importance of some of the dyadic relational factors (called "conditions" in QCA terminology) as found in prior research necessary for customers' trust toward service providers was re-confirmed. In particular, a service provider's competence emerged as the most robust among the dyadic factors determining trust. Second, several unique triadic relational factors are critical to trust development in triadic relationship contexts. Third, dyadic and triadic relational factors combine to produce trust, whilst culture and project type do not moderate the results. Details of the specifics within and between dyadic and triadic trust relationships are covered in the next section.

7.3 Research Aims and Research Questions addressed

The research aims to extend the relationship marketing model of dyadic relationships to triadic relationships by investigating how service providers can manage and strengthen the relationship quality with their customers in the context of SO. Two research questions were raised at the beginning of the research as follows:

RQ1 Which antecedents that have been shown to affect a customer's trust toward its service provider are also important in the sub-outsourcing context?

RQ2 Are there any new antecedents specific to the sub-outsourcing context that affect a customer's trust toward the service provider?

The research first planned to explore the moderating effect of culture (Eastern vs Western) and project type (IT vs non-IT project type). As the researcher developed more detailed propositions in the QCA design phase, the researcher added another research question (RQ3) regarding contextual conditions more explicitly than at the beginning of the research as follows:

RQ3 Are there any contextual conditions in a recipe affecting different combinations of conditions featuring high trust?

As the research refined the list of causal and contextual conditions, the researcher found the best combinations of these conditions to pursue to strengthen for achieving high trust from the customers.

7.4 Explication of Findings

A primary tenant of QCA is that there are typically alternative ways to attain an output variable – multiple causal paths. These acceptable solution sets contain the necessary conditions and various other conditions. In a nutshell, the research seeks multiple solutions from a solution set (recipe) to focus so that the service providers, tightly teaming with the SOPs, can achieve optimal customer trust.

Through subset analysis, the research shows that the dyadic causal conditions are positively influencing trust. The research also showed, through subset analysis, that adding triadic conditions will enhance the solutions to achieve even higher trust.

First, the analysis of necessary conditions suggests four crucial RQ factors in achieving high trust – two dyadic causal conditions (self competence and dyadic communication) and two triadic causal conditions (triadic communications and triadic cohesion). Consequently, the service providers should pursue achieving high levels of these four particular causal conditions.

Analyses of sufficiency provide a substantial guideline to the service providers on collaborating well with the SOPs to gain the customers' trust. FsQCA notations for each condition are used: DP stands for self-competence, DM stands for dyadic communication, DB stands for dyadic benevolence, and DI stands for dyadic integrity. Likewise, TP indicates SOP competence, TM indicates triadic communication, and TH indicates triadic cohesion. For contextual condition, XC stands for culture (1 = Eastern; 0 = Western) while XP stands for project type (1 = IT; 0 = non-IT)

There are four solutions (or combinations of causal conditions) to achieve the high trust of customers. The first solution, P23C1 (DI•TP•TM•TH), suggests that it is essential for service providers to ensure the integrity of their services when all the triadic conditions work well – that is, the SOP is competent, triadic communication is smooth, and the service providers and SOPs work as one cohesive team. This result is plausible because, in the SO context, if the performance, communication, and teamwork with the service provider are excellent, the customers neither expect too much from separate communication only with the service provider nor expect the service providers to be benevolent in their services. However, it is essential to remember that the customers' integrity is preserved to trust them.

The second solution, P23C2 (DM•DB•~TP•TM•TH), shows that when the SOP is not competent enough, the customers' expectations from the service providers extend. Because SOPs do not provide quality work due to a lack of competence, customers expect the team to have high-quality communication (both dyadic and triadic) and to be tightly coupled so that the service providers can cover the low competence of SOPs timely. In addition, the customers expect service providers to be benevolent so that service providers' benevolence can compensate for low-performance quality due to a lack of SOPs' skills and knowledge.

The third solution, P23C3 (DM•DB•DI•TH), reveals that if the customers are satisfied with how the service providers communicate, are benevolent and preserve integrity, they trust the service provider if service providers and SOPs are tightly coupled as one team.

The fourth and last solution, P23C4 (DP•DM•DB•DI•TM), reveals that if the customers are satisfied with all of the dyadic factors (i.e., service providers are competent, communicate well, benevolent, and preserve integrity), the service providers should focus on achieving a high level of triadic communication rather than SOP competence or triadic cohesion to achieve the high trust of the customer. This solution is beneficial when the service providers are confident of their service quality but have difficulty enhancing the satisfaction levels of SOPs.

It is exciting to find similar outcomes in the two contextual conditions. The exact combinations of factors are in the solutions for Eastern culture and non-IT projects, while the same is in the

solutions for Western culture and IT projects. In other words, for Eastern culture and non-IT projects, the service providers should focus on dyadic communication, benevolence, triadic communication, and triadic cohesion. In contrast, for Western culture and IT projects, the service providers should strive for self-competence, integrity, and triadic communication.

In Chapter 2, the author pointed out that benevolence in a relationship often becomes more critical in Eastern countries because Eastern customers consider long-term relationships more important (Fam et al., 2022; Jo, 2006). When *guanxi* is essential, the customers expect to focus on communication (dyadic and triadic communication in the SO context) and cohesiveness in the performing service provider (triadic cohesion in the SO context).

Because the work done in an IT project is technically complicated and systemised, and customers often depend on the service providers for the complicated design and performance, the configuration reveals that customers expect the service providers to focus on dyadic communication. Customers also want more flexibility and benevolence in performing service when unexpected risks and events happen. Because the environment is rather complex, the customer wants the SOPs to work as one team with the service provider (triadic cohesion).

Regression analysis results suggest that DP (self-competence), DM (dyadic communication) and TM (triadic communication) have a significant impact on achieving the high trust of the customers. Although the sample size is small (46) to have meaningful results in regression analysis, it was intriguing to see that regression analysis has similar results to the main QCA.

Nevertheless, QCA results provided rich solutions for various cases (for example, when SOPs are not performing well or when the service providers are restricted to providing high benevolence) to apply in the real-world practice in addition to its rich explanations to the existing literature of business relationship marketing.

The researcher gave much careful consideration to the statistical analysis results that show culture and project type to have no effect on the antecedents of trust in the research data when these two conditions seem at face value to be so important. There seem to be two plausible explanations that may provide answers. First, outsourcing implies that a respondent company (executive) is international. The internationalism in outlook mitigates finding cultural differences. The very nature of multinational operations is that cultural diversity is the norm, and as organizations grow into multinationals, cultural diversity is likely the norm – both for internal staff and for any alliances and cooperative relationships with stakeholders. However, nation-spanning organisations tend to converge in their methods, doing what works best in an international rather than a local sense. It is not apparent why there were no particular distinctions between IT outsourcers and others. However, no doubt there are many between-

industry differences in operations and outlook; it seems possible at least that the narrow subject of the pursuit of trust in a relationship involves more between-industry commonalities than differences. On further consideration, however, it seems most likely that the explanation is far more straightforward and lies with the small sample size

The QCA analysis, though, for which a sample size of 46 is adequate, digs more profound than the statistical analysis and sheds light on cultural and project-type differences, as discussed earlier. These results are logically compelling, as they parallel existing cultural understanding and exciting as they open up further research possibilities.

Finally, the nature of the sampling regarding the type of company accepted reduces differences and variation in the sample. First, the respondent selection criteria ensure a certain similarity of project situation for all. The similar nature of the organisations and individuals willing to share their experiences is another levelling factor. Finally, the sample size of under fifty final respondents is exhaustive regarding the interview data collection but mitigates against finding significant variations even in the QCA analysis.

7.5 Contributions

7.5.1 Theoretical Contributions

The first theoretical contribution is that the antecedents that lead to trust in a dyadic relationship (Brown et al., 2019; Casidy & Nyadzayo, 2019; Dowell et al., 2015; Franklin & Marshall, 2019; Morgan & Hunt, 1994; Riana et al., 2019) are similar but insufficient to cause trust in a triadic relationship. As explained in Chapter 2, the service providers and SOPs are encapsulated as one entity if SO triads are not considered. However, because SOPs often behave as separate organisations and do not treat the customers the same way as the service providers, the customers become dissatisfied with service providers, an encapsulated entity in the customers' perspectives (Choi & Wu, 2009; Karatzas et al., 2016; Vedel, 2016; Wu et al., 2010). In this research, the researcher tried to dissect the RQ factors that service providers must focus on in addition to their dyadic factors. Both QCA and regression analysis results show that consideration of triadic RQ factors helps achieve the high trust of the customers.

A second contribution to theory is that understanding complex relationships such as those experienced in a high-value, complicated, three-way relationship where millions of dollars may be at stake is better served using QCA than statistics. This is because there is no one answer – there are several answers, and each is nuanced to allow for variations in the circumstances and environmental conditions in which the relationship plays out (Oana, Schneider, & Thomann, 2021; Ragin & Armoroso, 2011; Rihoux & Ragin, 2008; Schneider & Wagemann, 2012). QCA also has the significant advantage that a particular solution is configured where all the causal

conditions are varied at once, in a non-linear way, rather than in the statistical situation, where everything is held constant. At the same time, one variable at a time is varied in response to the dependent variable. In real business situations, nothing remains constant for long, and dealing with sets, configurations, of conditions makes far more sense.

The third contribution to theory, the focus of this research, is contained in the specific responses to the research questions. They add to the traditional dyadic relationship marketing knowledge about trust by showing that there is no simple answer to what antecedents lead to trust, but this QCA approach has suggested multiple ways (Oana, Schneider, & Thomann, 2021; Ragin & Armoroso, 2011; Rihoux & Ragin, 2008; Schneider & Wagemann, 2012). In other words, service providers can attain trust in this complex, triadic situation. Furthermore, the key variables that have been shown to cause high levels of trust in a dyadic relationship are shown here to be bettered with the addition of specific triadic antecedents.

7.5.2 Managerial Contributions

This body of research is not simply of academic, theoretical value; it represents a way for firms to make profits by enhancing their relationships with contractors and customers. The research reported here has extended the literature significantly.

Service providers have different strengths and weaknesses in their service quality and their SOPs' qualities. It is best to optimise the strengths to compensate for their weaknesses to satisfy their customers more than their competitors. The service providers also need to strive to minimise all transactional costs and optimize benefits reaped from collaboration to remain sustainably competitive in a hypercompetitive environment. The four solutions mentioned in Section 7.3 provide options depending on their situations and SOPs.

For example, in the case of Boeing, where the SOPs competence was very low and the service providers' competence was not great (Baker, 2019; Robison, 2019), the service providers could have strengthened the communication of their own and triadic (DM and TM) and focused on benevolence and triadic cohesion. In other words, the senior management team of the service providers could visit the high management of Boeing to empathise and listen to the customers' pain points and provide some extra services that are out of their contract scope. Although the customers may not be delighted with the competence, these benevolent behaviours would have built up their rapport and trust with the customers.

Another example lies with one of the cases presented in this research. In case 22, in which the customer was based in Western culture and the project was non-IT, the QCA solution (DP•DI•TM) suggests that the service provider focused on strengthening the triadic

communication among the customers and their SOPs whilst ensuring the maximisation of their capabilities and integrity. As a result, the customer was pleased to achieve the highest score on the trust measure.

Further, the impact of the triadic factors is often more significant than the dyadic factors in the SO context. The findings thus suggest that B2B managers need to tune their strategic decision to combine efforts across dyadic and triadic factors by considering the culture and project type that they handle in order to optimize their resource investment to build trust and consequently strengthen the relationship quality they enjoy with their business partners.

7.6 Limitations and Future Research

There are several limitations in the present research, which can also suggest areas for future research. First, although the sample size (of 46) is sufficiently large for the QCA analysis method, it is very small for the regression analysis performed even for confirmatory purposes. Thus, future research is encouraged to replicate and extend the present research with a greater sample size (which perhaps comprises a greater variety in industry types than the IT vs non-IT distinction). Perhaps future researchers could conduct a few interviews to establish a base and then use an online survey, which would allow a much greater sample size to be collected with the possibility of more significant divergence in response. Of course, the disadvantage of this method is that when interviews/case studies are used, they provide a rich resource to show why a solution did or did not work for a particular firm, which is not typically possible with survey data.

Second, the respondents were recruited from several countries, including Korea and Hong Kong (for the Eastern countries) and England, the US, Fiji, Turkey, New Zealand and Australia (for the Western countries). Thus, recruiting respondents from other countries in both Eastern and Western cultures is desirable to increase the generalizability of findings in terms of cultural influence. This is also somewhat fraught, however, as although a company may be based in one country, it may well operate in many with executives drawn from a multitude of countries, Eastern and Western. Using one or more of Hofstede's cultural indices (<https://geerthofstede.com/culture-geert-hofstede-gert-jan-hofstede/6d-model-of-national-culture/>) which initially consisted of power distance, uncertainty avoidance, individualism/collectivism, masculinity, but now include long term orientation versus short term normative orientation and indulgence versus restraint. These traits are measurable, and selecting one or more of them might be a more practical way to find cultural divergence than using nationality.

There is also the related complexity to this question of culture, in that there is doubt about whose culture is in question. That is, is it the CEO's culture, the company's base culture of origin, the culture of the operational executives, the culture in which the company operates or

even the culture of SOPs/customers/service providers that drive the cultural differences? Extending the relationship and trust literature from a dyadic to a triadic situation is complex, and a particular relational construct was selected, that of an SOP involved in a dyadic contract between two other companies. The opportunity exists to extend this choice to other triadic situations, such as an artificial enabled service centre, for example, and ultimately, to a network of companies rather than a triad.

7.7 Thesis Conclusion

This research journey has been long, and many obstacles, such as a pandemic and working away from home, have made it seem even longer. Trying to convince busy executives to participate during a lockdown also had its challenges. Despite all the challenges, the research team managed to take advantage of the particular situation by, for instance, utilising virtual and face-to-face meetings. As a result of this strategy, the culture in the sample could span more countries, and the time and cost consumed for transportation in data collection became less demanding.

The contributions of the thesis are to extend the existing body of knowledge regarding trust in dyadic business relationships to trust in triadic, outsourcing relationships. Further, culture and project type have been shown to moderate the development of trust in such an outsourcing situation. It is also worth noting that the use of fsQCA has been demonstrated to be of significant value in analysing the complex relationships described in the research.

This thesis has detailed how service providers can offer better solutions to their customers by operating as one team with their SOPs. As the current business world inevitably becomes innovative in response to technological advances and geopolitical challenges to the supply chain, then dependence on third parties specialising in, e.g., specific digital transformation capabilities and on the challenges of managing SOPs will become yet more complicated and demanding. It gives the researcher personal satisfaction that the thesis has contributed some small increment to the body of knowledge underpinning B2B relationship marketing and has opened the door for further exciting research.

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Appendices

Appendix A. Data Collection Tools and Output

A.1 Ethical Approval Evidence

The following page presents the ethical application (EA1) approval letter from the Auckland University of Technology Ethics Committee (AUTEC) to the primary supervisor of the research then, Dr Roger Marshall.

Auckland University of Technology Ethics Committee (AUTEC)

Auckland University of Technology
D-88, Private Bag 92006, Auckland 1142, NZ
T: +64 9 921 9999 ext. 8316
E: ethics@aut.ac.nz
www.aut.ac.nz/researchethics

21 September 2020

Roger Marshall
Faculty of Business Economics and Law

Dear Roger

Re Ethics Application: **20/61 Factors affecting trust in business-business relationships in the context of sub-contracting and offshoring**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application has been approved for three years until 21 September 2023.

Standard Conditions of Approval

1. The research is to be undertaken in accordance with the [Auckland University of Technology Code of Conduct for Research](#) and as approved by AUTEC in this application.
2. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
4. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form.
5. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
6. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.
7. It is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard and that all the dates on the documents are updated.

AUTEC grants ethical approval only. You are responsible for obtaining management approval for access for your research from any institution or organisation at which your research is being conducted and you need to meet all ethical, legal, public health, and locality obligations or requirements for the jurisdictions in which the research is being undertaken.

Please quote the application number and title on all future correspondence related to this project.

For any enquiries please contact ethics@aut.ac.nz. The forms mentioned above are available online through <http://www.aut.ac.nz/research/researchethics>

(This is a computer-generated letter for which no signature is required)

The AUTEC Secretariat
Auckland University of Technology Ethics Committee

Cc: irene.park@aut.ac.nz

A.2 Participant Information Sheets

The following page presents the participant information sheets in English and Korean, which AUTEK approved through the ethical approval process.

Participant Information Sheet (English)

Date Information Sheet Produced:

14 February 2020

Project Title

Factors Affecting Trust in Business-to-Business Relationships in the Context of Subcontracting and Offshoring

An Invitation

My name is Suh-Young Irene Park, and I am a PhD candidate in the Department of Marketing, Advertising, Retailing and Sales at Auckland University of Technology (AUT) in Auckland, New Zealand. I am conducting research on how to develop and strengthen long-term relationships in a business-to-business (B2B) context as a part of my PhD thesis. I would like to invite you to participate in this research. Data collected will be used for the stated purpose below. Participation in this research is voluntary, and all information collected will be kept confidential. You may withdraw your participation any time before the completion of the research project without any effect on your rights.

What is the purpose of this research?

The purpose of this study is to identify the key factors affecting the client's trust toward its supplier in a B2B setting, particularly when the supplier uses a sub-outsourcing partner. A deeper understanding of the antecedents will increase our understanding of the way by which a company develops and improves the relationships with their business partners. I am conducting this study for my PhD thesis requirements at AUT in New Zealand as well as an opportunity to present the findings of this study at conferences and publish articles in academic journals.

How was I identified, and why am I being invited to participate in this research?

You were initially identified as you are a person who has been working in a B2B environment interacting with third-party suppliers as a decision-maker or an operations manager for outsourcing projects based in Korea, New Zealand, or the United States. The third-party suppliers include subcontractors and offshore team.

You were selected because you are likely to have the knowledge and/or experiences within this context. The introduction to this study was made using the LinkedIn networking site. I would like to ask for your voluntary expression of interest to participate in the study.

How do I agree to participate in this research?

You can agree to participate in this research by following the Qualtrics link provided in the initial invitation to participate notification on LinkedIn. Once this form is submitted, I will respond with a Consent Form for you to review before the interview. Before the interview commences, an oral consent protocol which echoes the statements in the Consent Form will take place. This protocol is audio-recorded and later stored separately from the interview data.

Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. You are able to withdraw from the study at any time. If you choose to withdraw from the study, then you will be offered the choice between having any data that is identifiable as belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, the removal of your data may not be possible. What will happen in this research?

Following your acceptance to take part in this study, I will email you within two days to confirm receipt, answer any queries you may have and include a Consent Form for you to review. An interview would take place at your time of convenience at a place of your choosing (normally a seminar room in your company, not in a private home). The interviews usually take between 30-40 minutes. These will be audio-recorded, and I will also be writing notes. Questions will relate to your experiences with suppliers. You will be asked to provide identifying information which will remain confidential, and only pseudonyms will be used in the final reporting. Generic workplace title (e.g. "general manager", "CEO"), company size (e.g. "large corporation", "small to medium enterprise") may be revealed in final reporting but will not enable your identification.

After transcription of the interview, you will receive a copy of the transcript for you to check (which should not take longer than 30 minutes to review) to ensure you are satisfied with the information provided as well as an opportunity for you to add further details if you wish to do so.

What are the discomforts and risks?

There may be very minor discomforts involved in answering questions as you will be asked about your thoughts and interactions with third-party suppliers, however, this is extremely unlikely. To minimise this, I assure you that questions are non-invasive as I am not seeking a level of detail that may identify you or create any discomfort. Similarly, I am not seeking knowledge of any interactions or activities that could be deemed illegal, immoral or unethical.

How will these discomforts and risks be alleviated?

Participation is voluntary, and if for any reason you feel uncomfortable, you are able to decline to answer certain questions or even withdraw from the research project at any time prior to the study's completion without any consequences. Additionally, you will have the opportunity of choosing a suitable time for participants to take place.

What are the benefits?

This research has several benefits for you as the participant, the wider community, and the researcher. As a token of appreciation for participating in this study, you will also have access to the results of the research and may use this information to add to your understanding of trust-building, exercises within a B2B environment. For the wider community, this study will provide both academics and practitioners with beneficial information regarding how business relationships are best created and sustained in competitive markets. This research will also allow me as the primary researcher, to fulfil the requirement for the award of PhD from AUT University in New Zealand.

How will my privacy be protected?

Participation in this study is strictly voluntary. Your identity will remain confidential and will not be disclosed to anyone except to the primary researcher and project supervisor. To ensure that privacy and confidentiality are respected, your name will be changed to pseudonyms and contact information will not be disclosed in final reporting. Given the nature of the research and representative sample, there is a small risk of being recognised from your answers. Consequently, I am only able to offer limited confidentiality for this research. Any data that the researcher extracts from the interview is for academic use only, and all reports or published findings will not, under any circumstance, contain names or identifying characteristics. After the project is completed, all data and the recordings of your oral consent will be stored on a password-protected memory stick and will be deleted after a period

of six years. Data and recordings will not be shared other than with the project supervisor. Contact details of the researcher and supervisor are provided in case of any concerns or complaints that need to be lodged.

What are the costs of participating in this research?

There are no costs to you other than your time to participate in the study. The interview will take 30-40 minutes to complete.

What opportunity do I have to consider this invitation?

You can take your time to decide if you wish to participate in the research. However, it would be appreciated for you to respond within two weeks' time from the date the follow-up email invitation is sent.

Will I receive feedback on the results of this research?

By completing a Consent Form or by responding to the invitation email, you may tick the box showing your interest in receiving feedback on the research's results. A result of the synopsis will be emailed to you once the study is complete.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Roger Marshall, roger.marshall@aut.ac.nz, +64 9 921 9999 ext. 5478

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTECH, Dr Carina Meares, ethics@aut.ac.nz, +64 9 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Primary Researcher: Suh Young Irene Park, irene.park@aut.ac.nz

Project Supervisor Contact Details:

Project Supervisor: Roger Marshall, roger.marshall@aut.ac.nz, +64 9 921 9999 ext. 5478

Approved by the Auckland University of Technology Ethics Committee on 21 September 2020, AUTECH Reference number 20/61.

Participant Information Sheet (Korean)

Information Sheet 생성일자:

2020 년 2 월 14 일

논문 제목

Factors Affecting Trust in Business-to-Business Relationships in the Context of Subcontracting and Offshoring

(Subcontracting 및 Offshoring 을 중심으로 하는 B2B 관계에서 신뢰에 영향을 끼치는 요인)

초대 글

저는 현재 뉴질랜드의 오클랜드 공과대학(Auckland University of Technology; AUT)의 박사과정에 있는 박서영 입니다. 저는 박사과정 논문을 위해 B2B 상황에서 장기적인 관계를 맺고 강화하는 방법에 관한 연구를 진행하고자 합니다. 수집된 모든 자료는 비밀 보장이 되며 아래에 명시된 목적을 위해서만 사용됩니다. 본 연구에 참여하는 것은 귀하의 선택 사항입니다. 설문을 끝내기 이전에도 아무런 문제없이 중단 가능합니다.

What is the purpose of this research? (본 연구의 목적은 무엇인가?)

본 연구의 목적은 sub-outsourcing partner 와 함께 일을 하는 B2B 상황에서 고객 업체가 서비스 제공 업체에 대해 갖는 신뢰에 영향을 미치는 요인들을 알아보는 것입니다. 그러한 요인들을 깊게 탐구하면 기업이 business partner 와의 관계를 어떻게 발전시키는지에 대해 더 잘 이해할 수 있게 됩니다. 저는 본 연구를 박사 논문 연구로 진행하며 향후 학회와 학술지에 발표할 예정입니다.

How was I identified, and why am I being invited to participate in this research? (본 연구에 초대된 이유는 무엇인가?)

우선 귀하는 제 3 자 서비스 공급업체 (third-party supplier)가 함께하는 B2B 환경에서 일하고 계시며, 한국, 뉴질랜드 또는 미국에서 아웃소싱 프로젝트를 담당하시거나 관리하시는 것으로 알고 있습니다. 참고로, 제 3 자 제공업체에는 서브컨트랙터 (subcontractor)나 오프쇼어 팀 (offshore team) 등이 모두 포함됩니다.

귀하는 LinkedIn 을 통해 이러한 프로젝트 상황에 대해 경험과 지식이 많으신 분이라고 판단되어 본 설문에 초대되었습니다. 귀하께서 본 설문에 기꺼이 참여해 주실 것을 부탁드립니다.

How do I agree to participate in this research? (본 연구에 어떻게 참여하는가?)

귀하께서 본 설문에 참여하고자 하실 경우, 이메일에 있는 LinkedIn 의 링크를 통해 참여 의사를 밝혀 주시기 바랍니다. 그러면 귀하께 인터뷰에 대한 개괄적인 내용을 미리 검토하실 수 있도록 동의서를 첨부한 이메일을 보내 드리겠습니다. 귀하는 인터뷰 시작 전, 보내 드렸던 동의서 내용을 읽고 구두로 동의 의사를 밝히시면 됩니다. 해당 내용은 녹음되어 인터뷰와는 별도로 저장 및 보관됩니다.

참여 여부는 귀하의 선택이시며, 어떠한 결정을 하셔도 괜찮습니다. 귀하께서는 설문 도중에도 중단이 가능하시며, 만일 중단하시는 경우 그때까지 응답하신 내용이 본 연구에 사용해도 되는지도 귀하께서 결정하실 수 있습니다. 다만 향후, 자료에 대한 분석이 모두 이루어진 이후에는 자료 삭제가 어려울 수 있음을 양해해 주시기 바랍니다.

What will happen in this research? (본 연구는 어떻게 이루어질 것인가?)

귀하께서 설문참여의사를 표시해 주시면 귀하께 이틀 내로 동의서를 보내 드리며, 아울러 혹시 갖고 계셨던 의문점이 있다면 그에 대한 답변을 포함해 이메일을 보내 드리겠습니다. 인터뷰는 귀하께서 원하시는 시간과 장소에서 가능하며 약 30-40 분 정도가 소요될 것으로 예상됩니다. 인터뷰 진행은 Skype 나 Zoom Meeting 등 온라인으로 할 예정이지만, 원하시는 경우 귀 회사의 세미나실 등 적절한 장소에서 대면으로 이루어질 수도 있습니다. 인터뷰 내용은 자동으로 녹음되며 제가 직접 노트 작성도 할 것입니다. 인터뷰 질문 내용은 서비스 공급 업체와의 비즈니스 경험과 관련된 것입니다. 귀하께서 말씀해주시는 모든 내용은 비밀이 보장됩니다. 연구 결과 발표 시에도 기업 규모나 응답자의 직책은 보고될 수 있으나 구체적인 기업명이나 설문 응답자의 개인 신상은 모두 익명 처리됩니다.

인터뷰가 끝난 후 인터뷰 내용을 글로 옮긴 것을 보내 드리겠습니다. 혹시라도 기록에 오류가 있는지 또는 추가하시고 싶은 내용이 있으신지 검토해주시면 감사하겠습니다. 검토 시간은 30 분 미만으로 예상됩니다.

What are the discomforts and risks? (불편함이나 주의사항은 무엇인가?)

본 설문은 제 3 자 서비스 공급업체와의 상호관계에 대해 귀하의 생각을 여쭙는 것으로, 불편한 느낌이 드실 수도 있을지 모르나 그럴 가능성은 거의 없습니다. 저는 사생활 침해나 불편한 감정을 느끼실 수준의 어떤 정보도 원하지 않으며, 또한 설문 진행 과정에서의 귀하의 불편함을 최소화시키도록 하겠습니다. 끝으로, 어떠한 이유에서도 규정이나 윤리에 어긋나게 생각될 수 있는 자료는 수집하지 않습니다.

How will these discomforts and risks be alleviated? (불편함이나 주의사항은 어떻게 완화될 것인가?)

귀하께서는 자발적으로 설문에 참여하실 수 있으며 만일 어떠한 이유로든 불편함을 느끼신다면 일부 질문에 대한 응답을 거절하시거나 본 연구의 최종 완료 이전에 설문 참여를 중단하실 수 있습니다. 또한 귀하가 인터뷰하시기 편한 시간과 장소를 선택하실 수 있습니다.

What are the benefits? (본 연구의 이점은 무엇인가?)

본 연구는 귀하 뿐만 아니라 지역사회에 도움을 줄 수 있으며, 또한 학문적 연구자들에게도 많은 도움이 됩니다. 본 연구에 참여하실 경우, 귀하는 추후에 최종 연구 결과를 받아 보실 수 있으며, 그 내용을 귀하의 B2B 관련 프로젝트나 사업에서 파트너 기업과의 신뢰 관계를 구축하는데 활용하실 수 있습니다. 나아가 이 본 연구는 B2B 관계를 구축하고 유지발전시키는 학문적 모델을 발전시키는 데에 많은 도움이 될 것입니다. 당연한 얘기지만 뉴질랜드의 오클랜드 공과대학에서 제가 박사학위를 받는 데에 커다란 도움이 됩니다.

How will my privacy be protected? (개인 신상은 어떻게 보호될 것인가?)

설문 참여 여부는 귀하의 선택이십니다. 아울러 귀하의 개인 신상은 저와 논문 지도교수 이외에는 절대로 비밀 보장됩니다. 이를 위해 귀하의 이름은 익명 처리되며, 논문 작성 시 귀하의 연락처 등은 절대로 포함되지 않습니다. 연구 방법과 샘플 방식에 비추어 볼 때, 귀하의 응답 내용을 통해 응답자에 대한 추측이 이루어질 가능성이 전혀 없다고 할 수는 없을 것입니다. 하지만, 그러한 추측 또한 학문적 목적을 위해서만 이루어질 것이며, 논문 발표 시 귀하의 개인 신상에 대한 정보는 절대로 포함되지 않을 것입니다. 연구가 완료되면 수집된 모든 데이터와 귀하의 동의서 녹음 본은 암호화 처리되어 저장되며, 6 년 후에 모두 폐기됩니다. 데이터와 녹음 본은 지도교수 외에는 절대로 공유되지 않습니다. 혹시라도 의문점이나 염려 사항이 있으시면 저 또는 지도교수에게 연락 주시기 바랍니다.

What are the costs of participating in this research? (본 연구에 참여하는 비용은 무엇인가?)

설문 참여에 의해 귀하에게 발생하는 비용은 인터뷰에 할애되는 시간 외에는 아무 것도 없습니다. 인터뷰에는 대략 30-40 분 정도가 소요됩니다.

What opportunity do I have to consider this invitation? (참여를 위해 고려해야 할 사항은 무엇인가?)

본 설문에 참여하실 지 여부는 천천히 생각해본 뒤 결정하여도 됩니다. 다만 후속 참여 요청 메일이 전송된 날짜로부터 2 주 이내로는 꼭 답변 주시기 바랍니다.

Will I receive feedback on the results of this research? (본 연구 결과에 대한 개요를 알 수 있는가?)

혹시 본 연구의 결과에 대한 내용에 대해 알고 싶으신 경우, 초대 이메일에 대한 답장이나 연구 참여 동의서에 귀하의 의향을 표시해 주십시오. 본 연구가 완료된 이후 연구 결과에 대한 개요를 보내 드리겠습니다.

What do I do if I have concerns about this research? (본 연구에 대한 의문이 있을 시 어떻게 해야하는가?)

연구내용에 대한 의문점 또는 염려 사항에 대해서는 저의 지도교수 (Roger Marshall)에게 알려주시기 바랍니다.

Roger Marshall, *roger.marshall@aut.ac.nz*, +64 9 921 9999 ext. 5478

연구의 수행에 대한 의문점 또는 염려 사항이 있으시면 아래 연락처로 연락 주시기 바랍니다.

Executive Secretary of AUTC, Dr Carina Meares, *ethics@aut.ac.nz*, +64 9 921 9999 ext 6038.

Whom do I contact for further information about this research? (본 연구에 대한 추가적인 정보를 위해서는 어디에 연락해야 하는가?)

추후 참조를 위해 본 서류와 동의서 사본을 소지하여 주십시오. 또한 아래 연락처에 연락 주시기 바랍니다.

Researcher Contact Details (연구자 연락처):

Primary Researcher: Suh Young Irene Park, *irene.park@aut.ac.nz*

Project Supervisor Contact Details (논문 지도교수 연락처):

Project Supervisor: Roger Marshall, *roger.marshall@aut.ac.nz*, +64 9 921 9999 ext. 5478

Approved by the Auckland University of Technology Ethics Committee on 21 September 2020, AUTC Reference number 20/61

A.3 Consent Form

The following page presents the consent forms in English and Korean, which AUTEK approved through the ethical approval process. Consent Form

Project title: *Factors Affecting Trust in B2B Relationships
in the Sub-outsourcing Context*

Project Supervisor: *Roger Marshall*

Researcher: *Suh Young Irene Park*

- ☐ I have read and understood the information provided about this research project in the Information Sheet dated 14 February 2020.
- ☐ I have had an opportunity to ask questions and to have them answered.
- ☐ I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.
- ☐ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.
- ☐ I understand that if I withdraw from the study then I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.
- ☐ I agree to take part in this research.
- ☐ I wish to receive a summary of the research findings (please tick one): Yes ☐ No ☐

Participant's signature:

Participant's name:

Participant's Contact Details (if appropriate):

.....

.....

.....

Date:

Approved by the Auckland University of Technology Ethics Committee on 21 September 2020, AUTEC Reference number 20/61

Note: The Participant should retain a copy of this form.

Consent Form (참가자 동의서)

프로젝트명: *Factors Affecting Trust in B2B Relationships in the Sub-outsourcing Context*

Subcontracting 및 Offshoring 을 중심으로 하는 B2B 관계에서 신뢰에 영향을 끼치는 요인

지도교수: 로저 마샬(Roger Marshall)

연구자: 박서영(Suh Young Irene Park)

- 2020 년 2 월 14 일에 작성된 Information Sheet 를 통해 본 연구에 대한 내용을 읽고 이해하였습니다.
- 질의응답 기회가 있었습니다.
- 인터뷰 전반에 걸쳐 노트 필기와 내용 녹음이 이루어짐을 이해하였습니다.
- 본 설문에 참여하는 것은 선택 사항이라는 것과, 원할 때에는 아무런 문제없이 설문 참여를 중단할 수 있다는 것을 이해하였습니다.
- 만일 설문 참여를 중단할 경우, 이미 제공한 정보를 연구자가 사용할 수 있을지 아니면 삭제해야 하는지에 대해 결정할 수 있음을 이해하였습니다. 단, 연구가 완료된 이후에는 정보 삭제가 불가할 수 있음도 이해하였습니다.
- 본 연구에 참여하겠습니다.
- 본 연구 결과에 대한 개요를 전달받고 싶습니다 (하나를 선택하여 주십시오):
예 ○ 아니오 ○

참가자 서명:

참가자 성명:

참가자 연락처 (필수항목 아님):

.....
.....
.....

날짜:

2020 년 9 월 21 일 Auckland University of Technology Ethics Committee 의 승인을 받음
(AUTEK Reference number 20/61)

노트: 참가자에게 본 문서의 복사본을 공유하시기 바랍니다.

A.4 Confidentiality Agreement

The researcher provided the confidentiality agreement form to transcribers before performing transcriptions. The transcribers started the transcriptions only after signing off and sharing the form.

Confidentiality Agreement

Project title: **Factors Affecting Trust in B2B Relationships
in the Suboutsourcing Context**

Project Supervisor: **Roger Marshall**

Researcher: **Suh Young Irene Park**

- ☐ I understand that all the material I will be asked to transcribe is confidential.
- ☐ I understand that the contents of the tapes or recordings can only be discussed with the researchers.
- ☐ I will not keep any copies of the transcripts nor allow third parties access to them.

Transcriber's signature:

Transcriber's name:

Transcriber's Contact Details (if appropriate):

.....
.....
.....

Date:

Project Supervisor's Contact Details (if appropriate):

.....
.....
.....

Approved by the Auckland University of Technology Ethics Committee on 21 September 2020, AUTEK Reference number 20/61.

Note: The Transcriber should retain a copy of this form.

A.5 Indicative Questions

Indicative Questions (English)

The following questions aim to understand the complexities of building and maintaining trust within a business-to-business marketing context.

1. The interview is not seeking to judge any ethical or moral decisions that may have been made due to, or in an attempt to recover from, trust violations.
2. Tell me about your experience in the (*industry-type*) with a key supplier. What efforts have your supplier(s) engaged in to build/support their relationship(s) with you?
 - a. Would you say you trust them? Are they a trusted supplier? How did they become a trusted supplier?
3. How have these efforts developed over time? How did it differ at the beginning of the relationship?
4. Tell me how your relationship has been impacted by these efforts, either in the past or currently.
5. How could these efforts by your supplier(s) be improved?
6. Do you know if one or more third parties are involved for your supplier(s) to deliver services to you?
 - a. If yes, are the third parties working on-site or in other countries?
 - b. Tell me about whether the way the suppliers are collaborating with the third parties is impacting your trust toward the supplier(s).
 - c. What kind of factors of the supplier or the third parties or both as a team impact your trust toward the supplier(s)?
7. Tell me about a time when a supplier(s) let you down.
 - a. Was your trust decreased?
 - b. Why did you feel the supplier(s) had let you down?
 - c. What did the supplier(s) do to recover the trust?
8. Can you reflect on how you consider these efforts relative to future decision-making or interaction with your supplier?
 - a. How does/did it affect future interactions? Did it change your decision-making?
9. How did this recovery exercise affect your relationships/interactions with other suppliers within your industry?

If the above open questions have not covered these areas, then they will be covered next:

1. (*an extension of question one, above*) Do these efforts differ between suppliers you have dealt with for a longer/shorter period? Can you reflect on how this differs with suppliers with whom you have enjoyed a longer/shorter relationship?
2. (*an extension of question five, above*) Who is the supplier firm's agent or representative who works with you to recover from this service failure? Can you reflect on how this influenced the recovery process?
3. (*an extension of questions one and five*) Can you reflect on the role of (competence, satisfaction, benevolence, co-creation, integrity, communication, and shared values) in trust-building?

Indicative Questions (Korean)

The following questions aim to understand the complexities of building and maintaining trust within a business-to-business marketing context.

The interview is not seeking to judge any ethical or moral decisions that may have been made due to, or in an attempt to recover from, trust violations.

1. Tell me about your experience in the (*industry-type*) with a key supplier. What efforts have your supplier(s) engaged in to build/support their relationship(s) with you?

[Korean] 고객님의 (산업 분야)에서 주서비스업체와의 경험을 전반적으로 말씀해주시기 바랍니다. 해당 주서비스업체가 고객님의 관계를 잘 맺고 유지하기 위하여 어떠한 노력을 기울였나요?

1	2	3	4	5

2. Would you say you trust them? Please indicate your evaluation on the scale below. (1=I do not trust them at all, 5=I completely trust them)

- a. Are they a trusted supplier? How did they become a trusted supplier?

[Korean] 해당 서비스업체를 신뢰하고 계십니까? 귀하의 신뢰도를 아래 척도에 나타내어 주십시오. (1=전혀 신뢰하지 않음, 7=매우 신뢰함)

1	2	3	4	5

해당 서비스업체는 신뢰할 수 있는 업체인가요? 만약 그렇다면, 어떻게 신뢰가 쌓이게 되었나요?

3. How have these efforts developed over time? How did it differ at the beginning of the relationship?

[Korean] 그동안 관계를 맺는 동안에 해당 서비스업체의 노력의 형태가 어떻게 변화되어 왔었나요? 해당 서비스업체와 처음 관계를 맺었을 당시에 비하여 그 노력의 형태가 어떻게 다른가요?

4. Tell me how your relationship has been impacted by these efforts, either in the past or currently.

[Korean] 해당 서비스업체가 공을 들이는 이러한 노력이 고객님의 과거 또는 현재에서의 관계에 어떠한 영향을 주었나요?

5. How could these efforts by your supplier(s) be improved?

[Korean] 해당 서비스업체는 이러한 노력을 어떻게 향상할 수 있었나요?

6. Do you know if one or more third parties are involved for your supplier(s) to deliver services to you?
 [Korean] 해당 업체가 고객님과 맺어진 계약 범위의 서비스를 지원하기 위하여 하청업체나 offshoring 업체와 함께 서비스를 제공하고 있는지 인지하고 계시나요?
 - a. If yes, are the third parties working on-site or in other countries?
 [Korean] 만약 그렇다면, 하청업체가 서비스를 제공하는 국가가 국내인가요 아니면 해외인가요?
 - b. Tell me about whether the way the suppliers are collaborating with the third parties is impacting your trust toward the supplier(s).
 [Korean] 주서비스업체가 하청업체 또는 offshoring 팀과 어떻게 협업하고 있는지가 고객님의 해당업체에 대한 신뢰에 영향을 끼치는지 말씀해주시기 바랍니다.
 - c. What kind of factors of the supplier or the third parties or both as a team impact your trust toward the supplier(s)?
 [Korean] 주서비스업체 또는 하청업체 또는 업체들의 팀 단위로 볼 때 그들의 어떠한 요인이 고객님의 주서비스업체에 대한 신뢰에 영향을 끼치는지 말씀해주시기 바랍니다.
7. Tell me about a time when a supplier(s) let you down.
 [Korean] 서비스업체가 고객님에게 실망을 끼쳤던 적이 있었다면 어떻게 실망을 끼쳤었는지 말씀해주시기 바랍니다.
 - a. Was your trust decreased?
 [Korean] 그 때 고객님의 업체의 대한 신뢰가 떨어졌는지요?
 - b. Why did you feel the supplier(s) had let you down?
 [Korean] 해당 업체가 고객님께 실망을 끼치게 된 이유들을 말씀해주시기 바랍니다.
 - c. What did the supplier(s) do to recover the trust?
 [Korean] 해당 업체가 고객의 신뢰를 되찾기 위하여 무슨 노력을 하였나요?
8. Can you reflect on how you consider these efforts relative to future decision-making or interaction with your supplier?
 [Korean] 해당업체가 취한 이러한 노력이 고객님께서 이 해당업체에 관련하여 취하는 향후 비즈니스 관련 결정이나 업체와의 향후 상호 사업적 교류에 어떻게 작용하였는지 말씀해 주시기 바랍니다.
 - a. How does/did it affect future interactions? Did it change your decision-making?
 [Korean] 업체의 이러한 노력이 향후 상호 교류에 대해 현재 또는 과거에 어떻게 영향을 끼쳤나요? 고객님의 비즈니스 결정이 변경 되었나요?
9. How did this trust-building exercise affect your relationships/interactions with other suppliers within your industry?
 [Korean] 이러한 신뢰 강화의 경험이 고객님의 기업에서 협업하는 타 서비스업체와의 관계와 상호 교류에 어떠한 영향을 끼치게 되었나요?

If the above open questions have not covered these areas, then they will be covered next:

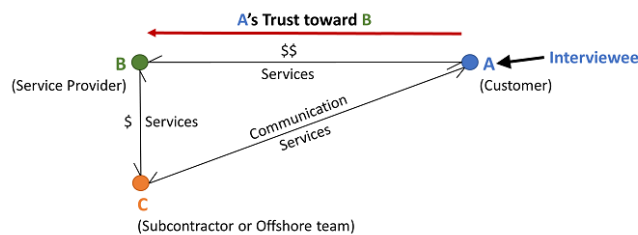
1. *(an extension of question one, above)* Do these efforts differ between suppliers you have dealt with for a longer/shorter period? Can you reflect on how this differs with suppliers with whom you have enjoyed a longer/shorter relationship
2. *(an extension of question five, above)* Who is the supplier firm's agent or representative who works with you to recover from this service failure? Can you reflect on how this influenced the recovery process?
3. *(an extension of questions one and five)* Can you reflect on the role of (competence, satisfaction, benevolence, co-creation, integrity, communication, and shared values) in trust-building?

A.6 Interview Overview for Participants

The researcher used the following pages during recruiting, preparation meetings with the recruiters and participants, and interviewing.

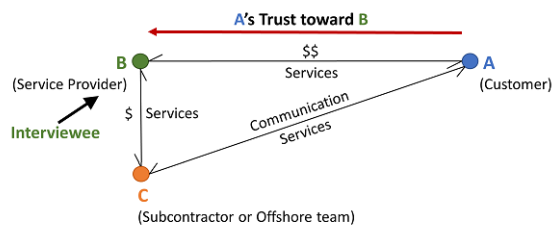
Interview Overview – Customer

- **Question:** What are the factors affecting **A's** trust toward **B** when **C** is involved? (Refer to the diagram below)
- **Project:**
 - An **Outsourcing** (the business practice of hiring a party outside a company to perform services that traditionally were performed in-house by the company's own employees and staff) project **or**
 - A project whose contract period is **longer than ten months** in which one or more **subcontractors** or **offshore** teams are involved
- **Job Role:**
 - Decision-making manager/executive (funding and contract decision-making for the project) **or**
 - Operations manager (main contact focal for the service provider lead)



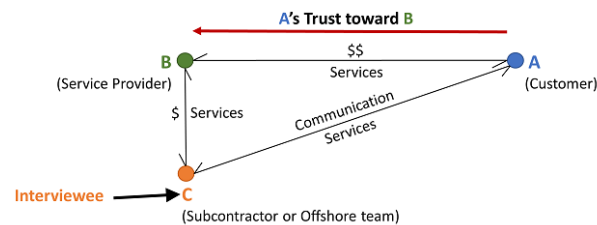
Interview Overview – Service Provider

- **Question:** What are the factors affecting **A's** trust toward **B** when **C** is involved? (Refer to the diagram below)
- **Project:**
 - An **Outsourcing** (the business practice of hiring a party outside a company to perform services that traditionally were performed in-house by the company's own employees and staff) project **or**
 - a project whose contract period is **longer than ten months** in which one or more **subcontractors** or **offshore** teams are involved
- **Job Role:**
 - Project Manager of Service Provider company



Interview Overview – Subcontractor or Offshore Team

- **Question:** What are the factors affecting A's trust toward B when C is involved? (Refer to the diagram below)
- **Project:**
 - An **Outsourcing** (the business practice of hiring a party outside a company to perform services that traditionally were performed in-house by the company's own employees and staff) project **or**
 - A project whose contract period is **longer than ten months**
- **Job Role:**
 - Leader of the subcontractor or offshore team



A.7 Recruiting via LinkedIn Post

The researcher posted the following via LinkedIn to recruit interview participants.

The screenshot shows a LinkedIn profile for Suh-Young Irene Park, a PhD Candidate at Auckland University of Technology, with 713 followers. The post is titled "Invitation to Participate in a Research Interview" and includes a diagram of B2B relationships. The post text reads: "I am seeking participants for a research #interview related to #B2B relationships. If you meet the following conditions, please register at the Qualtrics link (<https://lnkd.in/g/JHbTug>):"

Invitation to Participate in a Research Interview

I am seeking participants for an interview related to B2B relationships. If you meet the following conditions, please register at the Qualtrics link (<https://aut.au1.qualtrics.com>):

- Project:**
 - An **Outsourcing** (the business practice of hiring a party outside a company to perform services that traditionally were performed in-house by the company's own employees and staff) project or
 - A project whose contract period is **longer than ten months** in which one or more **subcontractors** or **offshore** teams are involved
- Job Role:**
 - Decision-making manager/executive (funding and contract decision-making for the project) or
 - Operations manager (major contact focal for the service provider lead)
- Project's Base Country:** Korea, New Zealand, or the United States

We have received ethical approval for this project and will do everything to maintain confidentiality. Please contact Irene Park (peacefullake4us@gmail.com) if you have any questions.

The diagram illustrates the B2B relationship structure:

```

graph LR
    SP[Service Provider B] --- C[Customer A]
    SP --- SO[Subcontractor or Offshore C]
    SO --- C
    C -- Interviewee --> Interview[Interview]
  
```

A.8 Interview Transcript Exemplars

The following is an exemplary interview transcript whose trust is present, the culture is Western, and the project type is non-IT.

Participant 10

Interviewer:

Thank you very much for your time today. So today you already told us that you're going to take the role as B in this case, and in front of you you have the diagram with A being the customer, C being the sub-contractor. So can you first of all tell me about your role and your company's nature, and can you also tell me about the project that you chose; what kind of client it is; what your role is; what the project is for; and what are the Cs, the sub-contractors please?

Participant:

Ok. So we are qualified as B, a service provider; we also do management. It is a global sports and entertaining marketing company; we are world-wide; we are one of the top sports and entertainment marketing firms, and what I do for the company is, I cover operations, as well as management.

So to give you an example of what we do and what might be coupled to... what you're looking for is that one of our major clients, global client's name is [REDACTED]. We do a lot of work for them around event execution, strategy to entertainment and so on. So to give you a really good example, [REDACTED] is a major sponsor, primary sponsor of the Open Championship. The Open Championship is a major golf event; it's one of the four majors in the world of golf, and from the start of the event when they want to become a sponsor they ask us what the price is to get in to become a sponsor, and how to activate it; how to maximise the sponsorship involvement around the world. So we guide them firstly, what price they have to invest or level of investment they have to make, and how to communicate to negotiate the pricing and benefits. Then we come up with a plan that is properly coupled for global [REDACTED] marketing strategy.

So that was one of the services we provided them. Then when it comes down to execution onsite, we bring guests and customers from around the world to entertain them. The customers, we call them, we call them partners, we incorporate partners and so on, and they bring those guests to the Open Championship. But when you bring those guests to Open Championship, the golf event, you want to make sure that they have a good time and they are pleased, and give the opportunity to have a relationship with them.

So what we did was, we sub-contracted with our vendors and the partners to provide the executional service that includes transportation, how they service, catering and so on. So we actually come up with all the ideas and plans, but at the end of the day, at the executional stage, we have to work with the local vendors or strategic vendors that can provide the service that we don't have, to maximise the opportunity for our client. So that is sort of the dynamic that when you get like A,B,C events, so we are qualified as a service provider, B is [REDACTED]. [REDACTED] is the customer, and sub-contractors are our catering company to transportation companies and so on.

Interviewer:

So to get some profile of the A,B,Cs, A is the global company and it's a large company, right?

Participant:

Yeah.

Interviewer:

And your company is also a large company, a global company?

Participant:

Right.

Interviewer:

How many Cs were involved in this specific project?

Participant:

Three or four.

Interviewer:

You mentioned maybe three or four companies, the transportation, the catering, the, right?

Participant:

You're talking about the sub-contractors?

Interviewer:

Yes, sub-contractors.

Participant:

Depending on the size within the specific project I mentioned, the Open Championship. So from a service provider perspective our [REDACTED] team, about 15 people are dedicated to this project, and we hire sub-contractors and so on. So I think all in all we can expect that... Are you counting the chefs and the waitresses and all the drivers and everything, all combined, or are you looking at just...

Interviewer:

I think so, because they are the contact for the customers as well, right?

Participant:

Yeah.

Interviewer:

Yeah, so...

Participant:

Yes and no. Yes and no.

Interviewer:

I see.

Participant:

So they hire us and we are... coming from a communication perspective, it's much clearer. We have direct communication with C. Meanwhile, we don't necessarily... I mean, we try to minimise the communication between C and A. The reason behind it is, we have a plan. Everything was all planned that way but then on an executional level if A and C are communicating directly, that means that we're talking two different channels and some issues always arise. Because when you have multiple channels and multiple lines of communication they always cause issues.

Interviewer:

So is it true that the formal communication is mainly through B, your company?

Participant:

Correct.

Interviewer:

However, because they are the customer experience service area, like if you are the chef, the customer will write on that card and they need to see each other.

Participant:

Exactly, yeah.

Interviewer:

So let's include all those.

Participant:

Yes. Yeah.

Interviewer:

Let's change the word from 'communication' to 'contacts'.

Participant:

If you have to, yeah.

Interviewer:

Then around how many people?

Participant:

For communication and contact?

Interviewer:

Yeah, including the context itself.

Participant:

Say again?

Interviewer:

Including the context itself. Even if they don't do the formal communication; if they do contact face-to-face, that's included. So would that be more than 50 people? It can be a rough number.

Participant:

Roughly... I think that... I'd say...

Interviewer:

30-50?

Participant:

Communication. Yeah, I think roughly 50-60 people. I think that's really roughly. When you're looking at all the waitresses, the desk people; people sitting at a reception desk and so on... I mean, all combined I think that might be about right, but it could be less or more.

Interviewer:

And transportation, hospitality catering, these different areas are from different companies, right?

Participant:

Correct.

Interviewer:

Ok, so it involves about three to four companies.

Participant:

Companies, yeah.

Interviewer:

Ok, got it.

Participant:

Usually. But some companies provide multiple services, some companies don't, but usually we pick and choose, or we work with the specific vendors or sub-contractors to cover the service. For example, there is a company who would provide both procurement and hospitality, or catering. Some companies would provide new services and sometimes you work much better that way and sometimes not. But you can safely say we work with three or four different vendors, or more from time to time. I would say four or five.

Interviewer:

Ok, thank you.

Participant:

Because these are all components; there are some other PR activities around it as well. So when you combine all of the above then I think it could be as many as six or seven companies. But typically I would say four or five to be safe.

Interviewer:

Thank you. Is this the Open Championship event?

Participant:

Yeah.

Interviewer:

So for one event you would have a separate contract, or is it like a continuous contract, and within that contract you do these multiple events?

Participant:

Yeah. It's an annual event; it's happening in the UK. It's a once a year event. But we use those vendors or sub-contractors for other events, so we utilise those partners or vendors... We know how to best work with them so we work with those vendors or sub-contractors for other clients, other customers, and/or the same customer for different events or different projects.

Interviewer:

Ok, how about the project between B and A, with [REDACTED], how do you do the contract? Is it for each event?

Participant:

Between B and A?

Interviewer:

Yeah, your company with the [REDACTED]. How does the contract work?

Participant:

Yes. So our contract is very big, meaning we do... I'm just giving you one example of the product we're doing for [REDACTED]. Let's say we do... this is maybe one of a hundred things that we do for [REDACTED] around the world.

Interviewer:

And you sign off one-by-one; you do not have a master contract and...

Participant:

We have a master contract; so we have the core [REDACTED] team globally, and then if the client was to do more or less, depending on products, if we add more time and head counts, depending on what it is. So let's say we have a master contract with them on an annual basis or a multi-year basis; so we provide ongoing services to them globally. So we have a core team with the [REDACTED] and then let's say... as part of a strategy [REDACTED] wants to do a Grammy sponsorship, then we create a team to dedicate to the Grammy sponsorship and activate, as an example. Let's say, if they want to do a new fashion show, the fashion show sponsorship, then that's another one that we just talk to the client, just the strategy and in order for it to execute, here are the people, what percentage are they going to be involved, and here is the fee. So it's on an annual basis... sometimes project by project. So every year we discuss with the client to come up with the idea of how much time, how many people will be dedicated to the client's projects.

Interviewer:

So as a general manager you are involved as the major contact for signing off the contract; for the?

Participant:

Yes.

Interviewer:

And also you are the major contact for the operations level as well, the major leader?

Participant:

Right.

Interviewer:

Good. So, let's say you have [REDACTED] trust; how you are perceived as [REDACTED] trust toward your company.

Participant:

Yeah.

Interviewer:

5 being very, very satisfied; 1 being very dissatisfied; and 3 being so-so. What do you think [REDACTED] would rate you for that?

Participant:

We've been working... this specific client, I think we really have great trust from top to bottom level, and we've been working with them for over 30 years now. that [REDACTED] is really doing exceptionally well for the past 30 years and we've been fortunate to provide a service that we are really great at. And from a senior level to CEO level of [REDACTED] we have a really great relationship with them. However, at some working level some countries or some regions... obviously there's some difficult clients because there are some internal issues, there's politics and so on, and personalities as well. So there are some issues here and there but it's this powerful nature, the corporate culture with the [REDACTED], with the client, or it could be us. So there are some issues that we have to always face but those challenges are pretty common. From an overall perspective we have a very good relationship and out of 5, I would rate on a 1-5 scale I would rate them as 5.

Interviewer:

Thank you, that's very good. So you already told me that you are doing great in communication with the higher management level.

Participant:

Absolutely.

Interviewer:

What are the other things you did well?

Participant:

Top management communication I think is important, but you cannot forget about their mid-level execution, day-to-day contacts, and we have to understand how they can maximise their potential talents from both the client side and our guys. We want them, everybody, to succeed in certain ways and at end of the day we do something for good then we want to make sure that everybody... they get something positive out of how we work together. So a top management relationship is always important, but as importantly, managing middle level, lower level, any level people, having the right relationship, understanding them and how to just collaborate and work together; I think that's the chief component to have a longer positive relationship.

Interviewer:

Thank you. I think overall competence is very important but communication plays a big part for your service. Let's dig down a little bit. Let's start with the high management level. So how often do you meet with them; what kind of content do you talk about; what is your focus with top management?

Participant:

Yeah, that's a great question. With the top management people, sometimes it varies depending on how much of the project we're involved with. Sometimes as much as once a week, or sometimes once a month, it all depends. Sometimes five times a week, depending on the timing of the year. I cannot really say but on average, it all varies, it all depends.

Interviewer:

So for that specific Open Championship, for the very latest one, how long was the project for that event?

Participant:

We've been serving for [REDACTED] globally...when they first came in. So it's over eight years now.

Interviewer:

Eight years. Ok. So do you think [REDACTED] trust on you or relationship has changed over the last eight years?

Participant:

Absolutely, we have big trust. Yeah, I mean, it's all about the trust.

Interviewer:

So what was it like in the beginning, and what is it like now? What's the difference?

Participant:

I think we're the same. We promise to deliver what we want to deliver and a few years later you deliver something we promise to deliver, and we exceeded their expectations as well. I mean, that's always our goal. The relationship has got much better of course, given that once you have good trust then I think everything sells itself.

Interviewer:

So what is the major key performance index that your client is looking for in your performance? What is the KPI for event management?

Participant:

The KPIs are... it's very simple. We actually jot down things that we deliver and we want to make sure that those are delivered quickly at the highest level. When you're delivering a KPI, at a dangerous level of delivering a KPI. But at the end of the day, as long as clients are happy with what we promise to deliver; that actually tells everything. Again, it comes down to the trust; it comes down to every level. Let's say, some people make mistakes because we're all human beings; but if they try to blame somebody else then we all know that it's never good. So we have to be transparent about if something happens and is our fault, we have to be transparent and communicate instead of blaming others. So to answer your question – What's the true KPI? Yeah, delivering the service; what we promise to deliver, the scope of work we planned to deliver.

Interviewer:

So in delivering that kind of service at that level, working with the different teams that are involved, what did you do well to gain that big trust from the client? How do you select the fee and how do you manage it?

Participant:

We're a head count company. We're working like other managing consulting firms. The term of our fees is based on the head count. For example, let's say JJ, Jung Jee, is spending 50% of my time attending to this specific client or project, then there is a daily rate against it. Let's say there are three directors who get involved and, let's say, two associates and so on. So it's really on a head count basis and time basis.

Interviewer:

So let's say within the contract you cannot say all the details of what's going to happen; we never know what's going to happen, so upon a client's request you need to provide in that sense and your head count will do whatever is asked, pretty much.

Participant:

Right. So there is no... the really interesting thing is, we actually don't promise on certain numbers. Sometimes it's out of our control. But we provide services and the working hours for delivering services well. As I said, we over-deliver.

Interviewer:

So because you worked with C in the long term they already know what's important in your quality of service.

Participant:

Yeah.

Interviewer:

And they are quite trained upon your style, your attitude and what you need to deliver to A. Is that how they're delivering well?

Participant:

Sure.

Interviewer:

Training is very important, training the Cs.

Participant:

Training... Educating them what our fee structure looks like?

Interviewer:

Yes.

Participant:

Yeah, depending on the client. So if some clients are, let's say... With [REDACTED], they know our fee structure and how our fee structure looks like, how we charge them. So it's much easier... we don't have to do any education for them, we just provide... Here is the rate and here are the people who will be dedicated to your projects, and here we go. But for other companies they might be new to this concept and some may or some may not, so the educational process is sometimes amended. It all depends on the client.

Interviewer:

I see, ok.

Participant:

And depending on the projects.

Interviewer:

I think in event management like your service, some unexpected things happen in the project. So if the customer asks you to do something out of the scope, was there any case like that...

Participant:

Absolutely.

Interviewer:

... and if so, how do you react? How do you manage that?

Participant:

Yeah, sometimes they ask for more things, it's pretty common. 1) because they're curious about the other stuff that we know and they don't know. Sometimes they genuinely ask the question and we provide some information, which is out of our scope. But we do provide and share some information and knowledge and so on, but when it kind of goes over the line then we actually tell them, and they understand. However, over-delivering is always... that's our major business... but over-delivering, we just do exceptional service to what we agreed to deliver. If they ask for additional services then sometimes we do provide information and support because that would allow us to create more opportunity with them. It all depends. But we don't want to be on a) we pass... Let's say we provided one more head count person out of a 100 people count project, then yeah, sometimes we just bear the cost and deliver more services to them, which is out of our scope. It all depends.

Interviewer:

I see, so it's a very high-management decision, whether it's the right timing or not.

Participant:

Absolutely, yeah.

Interviewer:

Got it. Ok, I think you need to go now. Thank you very much.

Participant:

Thank you, good luck to you.

Appendix B. QCA Tools and Output

This appendix provides the output list from QCA, including:

- Data transformation tools for QCA
 - Raw data coding guidelines
 - Raw data coding interim report
- QCA calibration data matrix
- QCA analysis of sufficiency results, including truth tables for:
 - Dyadic causal conditions only (RQ1)
 - Causal with no contextual conditions (RQ2)
 - Causal with cultural contextual condition (RQ3)
 - Causal with project type contextual condition (RQ3)

B.1 Data Transformation Tools

This section provides the tools used during data transformation for QCA as follows:

- Raw data coding guidelines
- Raw data coding interim report

B.1.1 Raw Data Coding Guidelines

- Please use these coding guidelines to code the cases as a part of QCA.
- Since the measure of the outcome, trust, is already given in the transcription, you do not code it. Instead, it is shown in the coding sheet as a reference. However, if the code is objectively measured, please input your comment.
- There are sub-dimensions for each construct for elaborating the construct in detail.
 - However, you do not code for each sub-dimension (except for the sub-dimensions for ABC Communication). The sub-dimensions are provided only to help you understand the construct better.
 - Please code for the sub-dimensions of ABC Communication (AC Communication, BC Communication, and ABC Communication). The researcher wants to measure and analyse these as the factors influencing trust.

Table B.1

Coding Scheme for B Competence (B-Focused Antecedent)

Construct	B Competence (B-Focused Antecedent)		
Definition	The customer's perception of the service provider's technological and commercial competence. This dimension includes the service provider's market knowledge, ability to provide proper advice, and ability to assist the customer in planning solutions.		
Scale	1 ~ 5 or blank		
	Score	Description	Quotes
	1	Very weak – B is not competent at all in their ability, knowledge, and resources.	“They lack knowledge and skills in our industry, our company’s situations, and required resources and processes.” “The response is very late or none; Information sharing was not explicit.” “프로젝트 관련 필요한 지식과 스킬이 많이 부족했어요.”
	2	Somewhat weak – B is not very competent in ability, knowledge, and resources.	“They somewhat lack the required knowledge and skills for our project.” “프로젝트에 필요한 지식과 기술이 좀 모자라서 진행이 원활치 않았습니다.”
	3	So so - B is neither competent nor incompetent.	“Their levels of knowledge and skills are neither superb nor low.” “그들은 지식과 기술이 아주 좋지도 나쁘지도 않았습니다.”
	4	Somewhat strong - B is slightly competent in ability, knowledge, and their resource and processes.	“They are quite competent in ability, knowledge, and their resources and processes.”; communication was reasonably strong in speed and clarity.” “그들은 어느 정도의 지식과 기술을 갖추고 있었어요.”
	5	Very strong - B is very competent in ability, knowledge, and their resource and processes.	“They are very much competent in the related product, industry, and our company.” “They facilitated their resources and processes well for the best performance.”

Construct	B Competence (B-Focused Antecedent)
	“프로젝트에 필요한 지식과 경험이 뛰어나서 믿고 맡길 수 있었어요.”
	Blank Not mentioned or not applicable
Sub-Dimension	Description
Ability and Utility	Demonstrating the ability to fix the problem and restore the product or service to specification; Producing a high-quality product at, or above, specification.
Knowledge and Negotiation	Demonstrating industry knowledge, product knowledge, customer knowledge, and ability to negotiate positive outcomes with upstream suppliers.
Resource and Processes	Aligning current resources, investing in personal and organisational resources to fix a problem, and initiating new corrective processes to minimise repeat product or service failure.

Table B.2

Coding Scheme for AB Communication (AB Dyadic Antecedent)

Construct		AB Communication (AB Dyadic Antecedent)	
Definition		B's sharing of meaningful and timely information within the relationship with A.	
Scale		1 ~ 5 or blank	
	Score	Description	Quotes
	1	Very weak - B communicates with A not timely, not frequently enough, and with no quality.	“They do not seem willing, not open to listening to us.”The response was very late or none; Information sharing was not transparent.” “의사소통의 내용, 빈도수 모두 문제가 있어요.”
	2	Somewhat weak - B communicates with A weakly in content quality, timeliness, and frequency.	“They do not communicate clearly on the issue. The information-sharing was somewhat weak.” “의사소통이 약간 명확치 않고 느려요.”
	3	So so - B communicates with A somewhat weakly in content quality, timeliness, and frequency.	“Their communication neither impressed nor dissatisfied us.” “의사소통은 그냥 기본 수준으로 합니다.”
	4	Somewhat strong - B communicates with A firmly in content quality, timeliness, and frequency.	“Their communication is fairly strong in speed and clarity.” “의사소통이 꽤 명료했고 응답이 빨라요.”
	5	Very strong - B communicates with A very strongly in content quality, timeliness, and frequency.	“They communicate somewhat strongly with a certain clarity and speed.” “의사소통이 항상 명료하고 응답이 빨라요.”
	Blank	Not mentioned or not applicable	
Sub-Dimension	Description		
Content Quality	Communicating in the level of detail, such as break-down of invoices into more granular line items, relative to face-face and electronic communication. The level of coherence, or intelligibility, of communication in the appropriate language or vernacular; Absence of pretence or deceit.		
Timeliness	Communicating on time allows customers to react to an issue affecting their downstream processes or customers. Responding to communications or queries in a reasonably responsive manner with a good turnaround. Actively forecasting potential problems, such as lead times due to supply chain issues, and communicating with customers accordingly.		
Frequency	Communicating frequently and regularly through scheduled communication means such as meetings. Both customer and service provider discuss and agree upon the appropriate degree of frequency.		

Table B.3

Coding Scheme for AB Benevolence (AB Dyadic Antecedent)

Construct AB Benevolence (AB Dyadic Antecedent)			
Definition	The extent to which a trustee is believed to want to do good to the trustor, aside from profit motive.		
Scale	1 ~ 5 or blank		
	Score	Description	Quotes
	1	Very weak - B would never devote their time and efforts if the job was not within the project scope.	“They are very inflexible in resolving the issues if the activities are beyond the project's scope even if the issue is at a big risk.” “급한 장애가 있는 경우에도 계약범위가 아니면 추가 계약 없이 문제해결을 하는데에 매우 인색합니다.”
	2	Somewhat weak - B usually would not devote their time and efforts if the job was not within the project scope.	“Not all the time, but they communicate poorly with us.” “항상 그런 건 아니었지만, 계약범위 이외에 대한 업무에 대해서는 시간과 노력을 들이려고 하지 않습니다.”
	3	So so – B neither tried nor denied allocating their time and efforts to work out of the contract scope.	“They neither proactively devote nor actively refuse to put their efforts to resolve urgent issues when the work involved is out of the project scope.” “특이 사항에 대해 요구되는 업무가 프로젝트 범위를 벗어나는 경우, 적극적이지도 않았고 그렇다고 적극적으로 거부하지도 않습니다.”
	4	Somewhat strong - B sometimes tries to put some time and effort into working out of the contract scope to resolve critical issues.	“They are not proactive but responded to our requests once even though the work involved was out of the project scope.” “프로젝트 범위 이외의 급한 요구 사항에 적극적이지는 아니더라도 거부하지 않고 응대하기도 합니다.”
	5	Very strong – B proactively devotes their time and effort to resolve issues even if the work involved is out of the project scope.	“They always put themselves in our shoes in resolving issues even if the work involved can be out of the project scope.” “B 는 항상 저희 입장에서 서서 프로젝트 범위가 아닌 일도 필요시에는 항상 지원이 강력합니다.”
	Blank	Not mentioned or not applicable	
Sub-Dimension	Description		
Authenticity	Activities or behaviours that are not purposefully attention-getting. Unseen, unannounced or unobserved to those outside of the sphere of relationship.		
Extra-curricular	Activities or behaviours that are outside of the expected concessions or reparative demands of a contract or other governance mechanism; out of the ordinary		

Table B.4

Coding Scheme for AB Co-Creation (AB Dyadic Antecedent)

Construct	AB Co-Creation (AB Dyadic Antecedent)		
Definition	The active participation, interactions, dialogue and collaboration of the buyer and seller and other marketing actors in the marketing exchange develop a deeper understanding of the customer problem-solving context.		
Scale	1 ~ 5 or blank		
	Score	Description	Quotes
	1	Very weak – A and B never interact or collaborate to develop a deeper understanding of customer problem-solving.	“We have no experience of joint problem solving with B.” “B 와 문제해결이나 향후 계획을 위하여 파트너십으로 협업을 하는 경우는 전혀 없습니다.”
	2	Somewhat weak – A and B are weak in working collaboratively in joint problem solving or integrated customer solution development context.	“We rarely have an experience of joint problem solving with B.” “B 와 문제해결이나 향후 계획을 위하여 파트너십으로 협업을 하는 경우는 거의 없습니다.”
	3	So so – A and B are neither active nor totally against working collaboratively in joint problem solving or integrated customer solution development context.	“They are neither proactive nor refusing to form a partnership to solve problems jointly or to achieve common goal and success.” “B 는 공동 성공을 위한 파트너십에 있어서 적극적이지도 소극적이지도 않아요.”
	4	Somewhat strong – A and B sometimes tried collaborating in joint problem solving or integrated customer solution development context.	“We sometimes try collaborating with B for joint problem-solving or operationalising a shared orientation.” “가끔은 양사가 협업하여 문제해결을 하거나공동 성공을 위한 계획을 세울 때가 있어요.”
	5	Very strong – A and B usually form a partnership relationship and work collaboratively in joint problem solving or integrated customer solution development context.	“We have a firm partnership with B. We often collaborate for problem-solving. We also operationalised a shared orientation on reparative processes.” “B 는와의 관계는 파트너십 관계로 협업하면서 문제해결도 하고 공동 성공을 위한 운영이 제도화되어 있습니다.”
	Blank	Not mentioned or not applicable	
Sub-Dimension	Description		
Partnership	The act of persisting with the design or deployment of a reparative activity or mechanism; perseverance.		
Collaborative Problem Solving	Demonstrating an iterative investigation and feedback process between customer and service provider.		

Construct	AB Co-Creation (AB Dyadic Antecedent)
Common Goal Solution	Operationalising a shared orientation on a reparative action or processes; harmonious.

Table B.5

Coding Scheme for AB Integrity (AB Dyadic Antecedent)

Construct	AB Integrity (AB Dyadic Antecedent)		
Definition	The perception that the trustee adheres to a set of principles that the trustor finds acceptable.		
Scale	1 ~ 5 or blank		
	Score	Description	Quotes
	1	Very weak – B lacks honesty, ethics, and fairness a great deal.	<p>“I cannot trust them because there is no fair play in the process.”</p> <p>“운영에 주요 사고가 있었는데도 저희에게 숨긴 적이 있습니다.”</p> <p>“알고보니 저희 기밀 정보를 영업에 사용하고 있었어요.”</p>
	2	Somewhat weak – B somewhat lacks honesty, ethics, and fairness a great deal.	<p>“They were hiding some critical operational issues in the beginning. Since that incident, the integrity level has been okay</p> <p>“B 의 비용 청구 시 보고하지 않고 청구한 적이 있어, 이를 재조정하였습니다.”</p>
	3	So so – B neither lacks nor excels in integrity.	<p>“They neither lack nor excel at the standard integrity level.”</p> <p>“인터그리티 측면에서 B 에 대하여 특별히 바라는 것도 없고 형편없는 것도 아니라서 기본 정도입니다.”</p>
	4	Somewhat strong – B demonstrates a great deal of honesty, ethics, and fairness.	<p>“Generally, B is okay in honesty and fairness in the process.”</p> <p>“일반적으로 B 는 솔직하고 기밀 정보 누출 등의 사고는 없습니다.”</p>
	5	Very strong – B consistently demonstrates great honesty, ethics, and fairness.	<p>“They are always honest and morally correct.”</p> <p>“They are also ethical in performing the services.”</p> <p>“B 는 항상 정직하고, 프로세스적으로 저희 기밀 정보가 외부에 노출되지 않도록 시스템적으로 보호하고 있습니다.”</p>
	Blank	Not mentioned or not applicable	
Sub-Dimension	Description		
Honesty	Demonstrating moral correctness and lack of ulterior motive in reparative behaviours and methods; lack of deception.		
Ethics	Exhibiting or developing a form of applied or professional ethics offers a code of conduct when presented with particular moral or ethical problems arising in business relationships.		
Consistency	Demonstrating consistency in behaviour before, during and after the service failure		
Procedural Fairness	Establishing a reparative mechanism that is fair, impartial and unbiased, such as appropriate payment terms.		

Table B.6

C Competence (C-Focused Antecedent)

Definition	The perception that the trustee adheres to a set of principles that the trustor finds acceptable.		
Construct	C Competence (C-Focused Antecedent)		
Definition	The customer's perception of the service provider's technological and commercial competence. This dimension includes the service provider's market knowledge, ability to provide proper advice, and ability to assist the customer in planning solutions.		
Scale	1 ~ 5 or blank		
	Score	Description	Quotes
	1	Very weak – C is not competent at all in their ability, knowledge, and resources.	“When B and C are involved, they do not seem willing, not open to listening to us.” The response was very late or none; Information sharing was not transparent.” B와 C가 모두 개입된 의사소통의 내용, 빈도수 모두 문제가 있어요.”
	2	Somewhat weak – C is not very competent in ability, knowledge, and resources.	“They do not communicate clearly on the issue. The information-sharing was somewhat weak.” “B와 C가 모두 개입된 의사소통이 약간 명확치 않고 느려요.”
	3	So so - C is neither competent nor incompetent.	“Their communication neither impressed nor dissatisfied us.” “B와 C가 모두 개입된 의사소통은 그냥 기본 수준으로 합니다.”
	4	Somewhat strong - C is slightly competent in ability, knowledge, and their resource and processes.	“Their communication is fairly strong in speed and clarity.” “B와 C가 모두 개입된 의사소통이 꽤 명료했고 응답이 빨라요.”
	5	Very strong - C is very competent in ability, knowledge, and their resource and processes.	“They communicate somewhat strongly with a certain level of clarity and speed.” “B와 C가 모두 개입된 의사소통이 항상 명료하고 응답이 빨라요.”
	Blank	Not mentioned or not applicable	
Sub-Dimension	Description		
Ability and Utility	Demonstrating the ability to fix the problem and restore the product or service to specification; Producing a high-quality product at, or above, specification.		
Knowledge and Negotiation	Demonstrating industry knowledge, product knowledge, customer knowledge, and ability to negotiate positive outcomes with upstream suppliers.		
Resource and Processes	Aligning current resources, investing in personal and organisational resources to fix a problem, and initiating new corrective processes to minimise repeat product or service failure.		

Table B.7

Coding Scheme for BC Communication

(Sub-Dimension of ABC Communication, ABC Triadic Antecedent)

Construct	ABC Communication (ABC Triadic Antecedent)		
Sub-Dimension	BC Communication (Sub-Dimension of ABC Communication)		
Definition	B and C share meaningful and timely information within the relationship with A.		
Scale	1 ~ 5 or blank		
	Score	Description	Quotes
	1	Very weak – The communication among A, B, and C is very ineffective.	“When B and C are involved, they do not seem willing, not open to listening to us.”The response was very late or none; Information sharing was not transparent.” B 와 C 가 모두 개입된 의사소통의 내용, 빈도수 모두 문제가 있어요.”
	2	Somewhat weak – The communication among A, B, and C is relatively ineffective.	“They do not communicate clearly on the issue. The information-sharing was somewhat weak.” “B 와 C 가 모두 개입된 의사소통이 약간 명확치 않고 느려요.”
	3	So so – The communication among A, B, and C is neither satisfactory nor unsatisfactory.	“Their communication neither impressed nor dissatisfied us.” “B 와 C 가 모두 개입된 의사소통은 그냥 기본 수준으로 합니다.”
	4	Somewhat strong – The communication among A, B, and C is relatively satisfactory.	“Their communication is fairly strong in speed and clarity.” “B 와 C 가 모두 개입된 의사소통이 꽤 명료했고 응답이 빨라요.”
	5	Very strong – The communication among A, B, and C is relatively very satisfactory.	“They communicate somewhat strongly with a certain level of clarity and speed.” “B 와 C 가 모두 개입된 의사소통이 항상 명료하고 응답이 빨라요.”
	Blank	Not mentioned or not applicable	
Sub-Dimension	Description		
Content Quality	Communicating in the level of detail, such as break-down of invoices into more granular line items, relative to face-face and electronic communication. The level of coherence, or intelligibility, of communication in the use of appropriate language or vernacular; Absence of pretence or deceit.		
Timeliness	Communicating on time allowing a customer time to react to an issue affecting their downstream processes or customers. Responding to communications or queries in a reasonably responsive manner with a good turnaround. Actively forecasting potential problems, such as lead times due to supply chain issues, and communicating with customers accordingly.		
Frequency	Communicating frequently and regularly through scheduled communication means such as meetings. Both customer and service provider discuss and agree upon the appropriate degree of frequency.		

Table B.8

*Coding Scheme for AC Communication**(Sub-Dimension of ABC Communication, ABC Triadic Antecedent)*

Construct	ABC Communication (ABC Triadic Antecedent)		
Sub-Dimension	AC Communication (Sub-Dimension of ABC Communication)		
Definition	C's sharing of meaningful and timely information within the relationship with A.		
Scale	1 ~ 5 or blank		
	Score	Description	Quotes
	1	Very weak – The communication with C is not satisfactory at all.	“They not seem willing, not open to listening to us.”The response was very late or none; Information sharing was not transparent.” “C 는 의사소통의 내용, 빈도수 모두 문제가 있어요.”
	2	Somewhat weak – The communication with C is relatively unsatisfactory.	“They do not communicate clearly on the issue. The information-sharing was somewhat weak.” “C 는 의사소통이 약간 명확치 않고 느려요.”
	3	So so – The communication with C is neither satisfactory nor unsatisfactory.	“Their communication neither impressed nor dissatisfied us.” “C 는 의사소통이 그냥 기본 수준으로 합니다.”
	4	Somewhat strong – The communication with C is pretty satisfactory.	“Their communication is fairly strong in speed and clarity.” “C 는 의사소통이 꽤 명료했고 응답이 빨라요.
	5	Very strong – The communication with C is very satisfactory.	“They communicate somewhat strongly with a certain level of clarity and speed.” “C 는 의사소통이 항상 명료하고 응답이 빨라요.”
	Blank	Not mentioned or not applicable	
Sub-Dimension	Description		
Content Quality	Communicating in the level of detail, such as break-down of invoices into more granular line items, relative to face-face and electronic communication. The level of coherence, or intelligibility, of communication in the use of appropriate language or vernacular; Absence of pretence or deceit.		
Timeliness	Communicating on time allowing a customer time to react to an issue affecting their downstream processes or customers. Responding to communications or queries in a reasonably responsive manner with a good turnaround. Actively forecasting potential problems, such as lead times due to supply chain issues, and communicating with customers accordingly.		
Frequency	Communicating frequently and regularly through scheduled communication means such as meetings. Both customer and service provider discuss and agree upon the appropriate degree of frequency.		

Table B.9

Coding Scheme for BC Communication

(Sub-Dimension of ABC Communication, ABC Triadic Antecedent)

Construct	ABC Communication (ABC Triadic Antecedent)		
Sub-Dimension	BC Communication (Sub-Dimension of ABC Communication)		
Definition	The sharing of meaningful and timely information between B and C.		
Scale	1 ~ 5 or blank		
	Score	Description	Quotes
	1	Very weak – The communication with C is not satisfactory at all.	“They not seem willing, not open to listening to us.”The response was very late or none; Information sharing was not transparent.” “C 는 의사소통의 내용, 빈도수 모두 문제가 있어요.”
	2	Somewhat weak – The communication with C is relatively unsatisfactory.	“They do not communicate clearly on the issue. The information-sharing was somewhat weak.” “C 는 의사소통이 약간 명확치 않고 느려요.”
	3	So so – The communication with C is neither satisfactory nor unsatisfactory.	“Their communication neither impressed nor dissatisfied us.” “C 는 의사소통이 그냥 기본 수준으로 합니다.”
	4	Somewhat strong – The communication with C is pretty satisfactory.	“Their communication is fairly strong in speed and clarity.” “C 는 의사소통이 꽤 명료했고 응답이 빨라요.
	5	Very strong – The communication with C is very satisfactory.	“They communicate somewhat strongly with a certain level of clarity and speed.” “C 는 의사소통이 항상 명료하고 응답이 빨라요.”
	Blank	Not mentioned or not applicable	
Sub-Dimension	Description		
Content Quality	Communicating in the level of detail, such as break-down of invoices into more granular line items, relative to face-face and electronic communication. The level of coherence, or intelligibility, of communication in the use of appropriate language or vernacular; Absence of pretence or deceit.		
Timeliness	Communicating on time allowing a customer time to react to an issue affecting their downstream processes or customers. Responding to communications or queries in a reasonably responsive manner with a good turnaround. Actively forecasting potential problems, such as lead times due to supply chain issues, and communicating with customers accordingly.		
Frequency	Communicating frequently and regularly through scheduled communication means such as meetings. Both customer and service provider discuss and agree upon the appropriate degree of frequency.		

Table B.10

*Coding Scheme for ABC Communication**(Sub-Dimension of ABC Communication, ABC Triadic Antecedent)*

Construct	ABC Communication (ABC Triadic Antecedent)		
Sub-Dimension	ABC Communication (Sub-Dimension of ABC Communication)		
Definition	The sharing of meaningful and timely information among A, B, and C.		
Scale	1 ~ 5 or blank		
	Score	Description	Quotes
	1	Very weak – The communication among A, B, and C is unsatisfactory.	<p>“The communication with B and C as a team was not timely and responsive at all.”</p> <p>”Their response was either very late or none, and the information sharing was not transparent.”</p> <p>“B 와 C 와 함께 하는 의사소통의 내용, 빈도수 모두 문제가 있어요.”</p>
	2	Somewhat weak – The communication among A, B, and C is relatively unsatisfactory.	<p>“They do not communicate clearly on the issue. The information-sharing was somewhat weak.”</p> <p>“B 와 C 와 함께 하는 의사소통이 약간 명확치 않고 느려요.”</p>
	3	So so – The communication among A, B, and C is neither satisfactory nor unsatisfactory.	<p>“Their communication neither impressed nor dissatisfied us.”</p> <p>“B 와 C 와 함께 하는 의사소통이 그냥 기본 수준으로 합니다.”</p>
	4	Somewhat strong – The communication among A, B, and C is relatively satisfactory.	<p>“Their communication is fairly strong in speed and clarity.”</p> <p>“B 와 C 와 함께 하는 의사소통이 꽤 명료했고 응답이 빨라요.”</p>
	5	Very strong – The communication among A, B, and C is excellent.	<p>“They communicate somewhat strongly with a certain level of clarity and speed.”</p> <p>“B 와 C 와 함께 하는 의사소통이 항상 명료하고 응답이 빨라요.”</p>
	Blank	Not mentioned or not applicable	
Sub-Dimension	Description		
Content Quality	Communicating in the level of detail, such as break-down of invoices into more granular line items, relative to face-face and electronic communication. The level of coherence, or intelligibility, of communication in the use of appropriate language or vernacular; Absence of pretence or deceit.		
Timeliness	Communicating on time allowing a customer time to react to an issue affecting their downstream processes or customers. Responding to communications or queries in a reasonably responsive manner with a good turnaround. Actively forecasting potential problems, such as lead times due to supply chain issues, and communicating with customers accordingly.		
Frequency	Communicating frequently and regularly through scheduled communication means such as meetings. Both customer and service provider discuss and agree upon the appropriate degree of frequency.		

Table B.11

Coding Scheme for BC Control (ABC Triadic Antecedent)

Construct	BC Control (ABC Triadic Antecedent)		
Definition	B's ability to select the appropriate C and control C in behaving in the same manner as B to A.		
Scale	1 ~ 5 or blank		
	Score	Description	Quotes
	1	Very weak – B failed to select and control C well to enable C to perform and achieve the tasks in the service scope.	<p>“We were not happy about the selected SOPs in general.”</p> <p>“They could not control the SOPs at all.”</p> <p>“B 가 C 를 전혀 컨트롤을 하지 못하고 휘둘리고 있어요.”</p>
	2	Somewhat weak – B was not very good at selecting and controlling C to perform and achieve the tasks in the service scope.	<p>“B somewhat has an issue in controlling C in the project.”</p> <p>“B 가 어느 부분에 있어서는 C 를 컨트롤을 하지 못하고 있어요.”</p>
	3	So so – B's selection and control over C were neither good nor bad.	<p>“I am neither satisfactory nor unsatisfactory with how B controls C.”</p> <p>“B 가 C 를 컨트롤하는 부분에는 잘하지도 잘 못하지도 않는 수준입니다.”</p>
	4	Somewhat strong – B was pretty good in selecting and controlling C to perform and achieve the tasks in the service scope.	<p>“I am quite happy about the selected SOPs and how B trains and controls them.”</p> <p>“그들은 어느 정도의 만족하는 수준의 SOP 들과 배정하였고, 그들을 잘 컨트롤하고 있는 듯합니다.”</p>
	5	Very strong – B successfully selected and controlled C to perform and achieve the tasks in the service scope.	<p>“I am pleased about the SOPs B has for the project, and they seem to control them very well.”</p> <p>“B controls the SOPs well so that the critical members stay in the project until the end.”</p> <p>“프로젝트에 배정된 C 멤버에 대해 매우 만족스럽고, B 가 그들과 협업을 잘 해서 프로젝트 완료할 때까지 주요멤버의 이동 없이 원활했습니다.”</p>
	Blank	Not mentioned or not applicable	
Sub-Dimension	Description		
Selection of SOPs	Selecting the SOPs and training them if required before the project starts.		
Controlling SOPs	Supervising and training the SOPs during the project.		
Retention of SOPs	Retaining the SOPs or the critical members of SOPs to avoid negative impacts on the project.		

Table B.12

Coding Scheme for Centrality (Triadic Antecedent)

Construct	Centrality (ABC Triadic Antecedent)		
Definition	B's ability to behave on behalf of A (customer) to control A, C and other Bs.		
Scale	1 ~ 5 or blank		
	Score	Description	Quotes
	1	Very weak – B do not practice centrality at all.	<p>“We were not happy about the selected SOPs in general.”</p> <p>“They could not control the SOPs at all.”</p> <p>“B가 C를 전혀 컨트롤을 하지 못하고 휘둘리고 있어요.”</p>
	2	Somewhat weak – B is practising centrality, but its play is somewhat dissatisfactory	<p>“B somewhat has an issue in controlling C in the project.”</p> <p>“B가 어느 부분에 있어서는 C를 컨트롤을 하지 못하고 있어요.”</p>
	3	So so – B is practising centrality. Their play is neither satisfactory nor dissatisfactory.	<p>“I am neither satisfactory nor unsatisfactory with how B controls C.”</p> <p>“B가 C를 컨트롤하는 부분에는 잘하지도 잘 못하지도 않는 수준입니다.”</p>
	4	Somewhat strong – B is practising centrality. Their play is pretty satisfactory.	<p>“I am quite happy about the selected SOPs and how B trains and controls them.”</p> <p>“그들은 어느 정도의 만족하는 수준의 SOP들과 배정하였고, 그들을 잘 컨트롤하고 있는 듯합니다.”</p>
	5	Very strong – B is practising centrality. Their play is excellent.	<p>“I am pleased about the SOPs B has for the project, and they seem to control them very well.”</p> <p>“B controls the SOPs well so that the critical members stay in the project until the end.”</p> <p>“프로젝트에 배정된 C 멤버에 대해 매우 만족스럽고, B가 그들과 협업을 잘 해서 프로젝트 완료할 때까지 주요멤버의 이동 없이 원활했습니다.”</p>
	Blank	Not mentioned or not applicable	
Sub-dimension	Description		
Understanding the roles of all parties	Understanding the roles and responsibilities of all the partners involved (namely, other Bs' and Cs').		
Acting on Behalf of Customer	Communicating and leading other parties (other service providers and their SOPs) to motivate them to perform toward the customers' needs and wants.		
Guidance to Customer	Guiding the customer on what to do leads all parties to perform for the customer's success.		

B.1.2 Raw Data Coding Interim Report

This appendix contains the QCA raw data coding interim report resulting from transforming the qualitative data into a raw data table for the first selected four cases, coded by two judges or judges.

Report Overview

Purpose of the Report

This report aims to share the up-to-date progress of the qualitative raw data coding with the experts (Dr Roger Marshall and Dr Drew Franklin) and receive confirmation to code the rest of the cases.

Scope of the Report

This report reviews the coding results of the first four cases to be coded subjectively by the designated judges. The coding result includes the selected causal conditions and sub-dimensions and excludes contextual conditions and the outcome. The contextual conditions and outcome are objectively coded from the project and company profiles and interview data – the interviewees explicitly provided a quantitative measure for the trust outcome.

Judge Agreement Setting

Judges

Two bilingual (fluent in English and Korean) judges are selected as follows:

- The primary researcher, a PhD candidate
- Research assistant, a university student.

Out of 46 cases selected, 16 cases are recorded in Korean, while 30 cases are in English.

Cases Selected for QCA

- Total number of cases interviewed: 52
- Number of selected cases: 46 (excluded the cases with no C and the ones with no AC communication)

- Refer to the ‘Thesis Interview List.xlsx’ file in Dropbox.

Figure B.1

Screen Shot of Thesis Interview List File

Schedule Interview Logis		Interviewee Profile			Company Country		
No (Interview)	Date (YYYY-MM-DD)	A/B/ C	Interviewee Name	Interviewee Company (Current)	A's Base Country (HQ)	B's Base Country (HQ)	C's Base Country (HQ)
1	2020-11-23	B	Chen Chen	Covington	US	US	US
2	2020-12-14	B	David Porter	Fisher & Paykel	US	NZ	US
3	2020-12-24	B	Prakash Subramaniam	Woolworths	FJ	NZ/AU	AU
4	2021-01-04	B	Ashok Peris	GHD	AU	AU	AU
5	2021-01-05	B	Prakash Ramanayaka	IBM Australia	AU	AU	AU
6	2021-01-07	B	Srinivas Paleologoudias	IBM Australia	AU	AU	AU
7	2021-01-08	B	Srinivasa Arivasinghe	TTEC (TeleTech)	US	AU	AU
8	2021-01-26	B	Hennie van Schoor	Maersk	NZ	NZ	NZ
9	2021-02-04	B	Greg Walker	Salesforce	NZ	NZ	IN, PH
10	2021-02-05	B	Jeff Lee	Octagon	US	KR	KR
11	2021-02-09	B	Chin Abayawardana	NetLogix	NZ	NZ	NZ
12	2021-02-09	A	Thalia Benyon	The Warehouse Group	NZ	CN	CN
13	2021-02-09	B	Angie Ho	United Aviation Services	HK	HK	HK
14	2021-02-11	B	Robert Ferris	Electric	NZ	NZ	NZ
15	2021-02-15	B	Jonathan Pardy	Orbit World Travel	NZ	NZ	NZ

Judge Agreement Trial 1

Cases Selected for Trial 1

Table B.13

Cases Selected – Trial 1

The researcher selected the following four cases below:

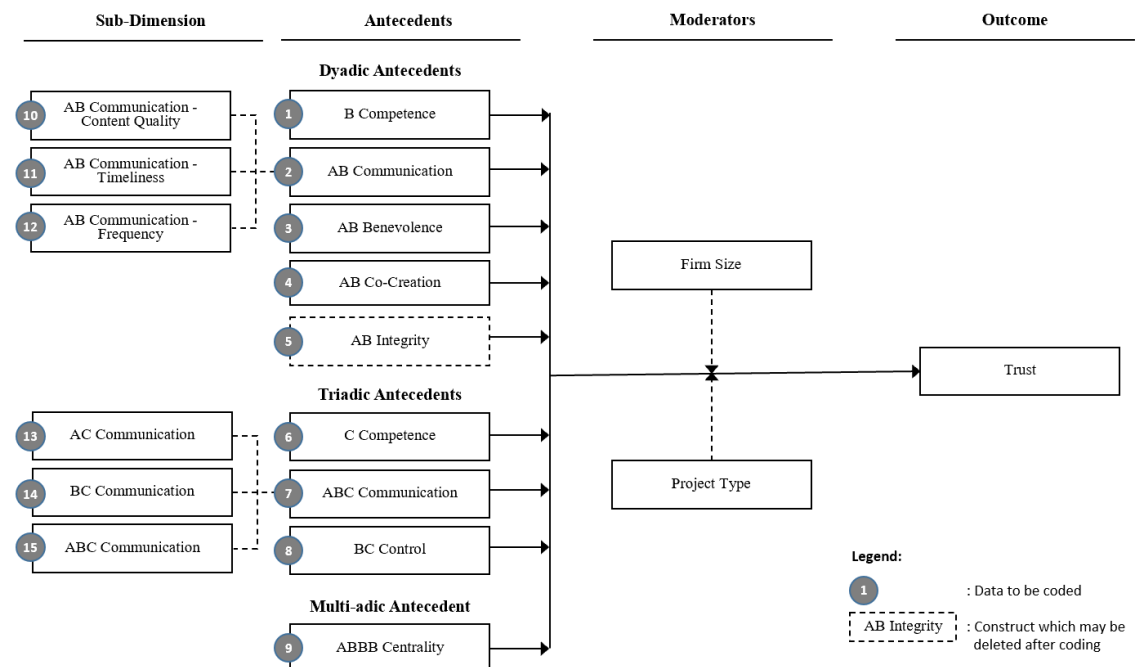
Case	Language	Project Role	A Industry	B Industry	C Industry
Case 1	English	Operations Manager	Food Products	Financials	Financials
Case 2	English	Business Executive	Healthcare	Healthcare	Healthcare
Case 3	Korean	Both	Financials	IT Services	IT Services
Case 4	Korean	Operations Manager	Food Retailing	IT Services	IT Services

Conditions and Sub-Dimensions Selected for Trial 1

The conceptual model below shows the conditions (i.e., antecedents) and sub-dimensions to be coded for Trial 1.

Figure B.2

Conceptual Model for Coder Agreement Trial 1



Notes:

- Although Samaha et al. (2014) categorized competence as seller-focused rather than dyadic, B competence and C competence are still classified as dyadic because competence includes customer knowledge and experiences.
- Although most of the interviews did not include Integrity, it is included to code to see its effects.
- Samaha et al. (2014) identified the moderators (i.e., contextual conditions) in the cultural dimension as individualism-collectivism, power distance, uncertainty avoidance, and masculine-femininity. However, in the current research, the firm size and project type are coded as the contextual conditions based on the project and company profile provided by the interviewees.

Coding Guideline Developed for Trial 1

The researcher developed the Raw Data Coding Guidelines with coding schemes for the selected conditions and sub-dimensions. After Trial 1, the researcher revised the guideline for Trial 2. The final version of the coding guideline is shown in Appendix C.1.

Judge Agreement Result for Trial 1

Correlation between Judges 1 and 2 – Trial 1 – Cases 1-4 Combined

The correlation between judge 1 and Judge 2 (all scores for case 1 to case 4 combined for each judge) was not significant.

Table B.14

Correlation between Judges 1 and 2 - Trial 1 – Cases 1-4 Combined

		Judge1	Judge2
Judge1	Pearson Correlation	1	.135
	Sig. (2-tailed)		.339
	N	57	52
Judge2	Pearson Correlation	.135	1
	Sig. (2-tailed)	.339	
	N	52	52

Correlation between Judge 1 and Judge 2 – Trial 1 – Cases 1

Because the correlation for all scored combines was not significant, the correlation for each case was reviewed. The correlation for Case 1 was significant, but the correlations for cases 2, 3, and 4 were not significant.

Table B.15

Correlation between Judge 1 and 2 - Trial 1 – Case 1

		Judge1	Judge2
Judge 1	Pearson Correlation	1	.629*
	Sig. (2-tailed)		.021
	N	15	13
Judge 2	Pearson Correlation	.629*	1
	Sig. (2-tailed)	.021	
	N	13	13

Note: Correlation for Case 1 was significant ($r = .63, p = .021$)

Judge Agreement Result for Trial 2

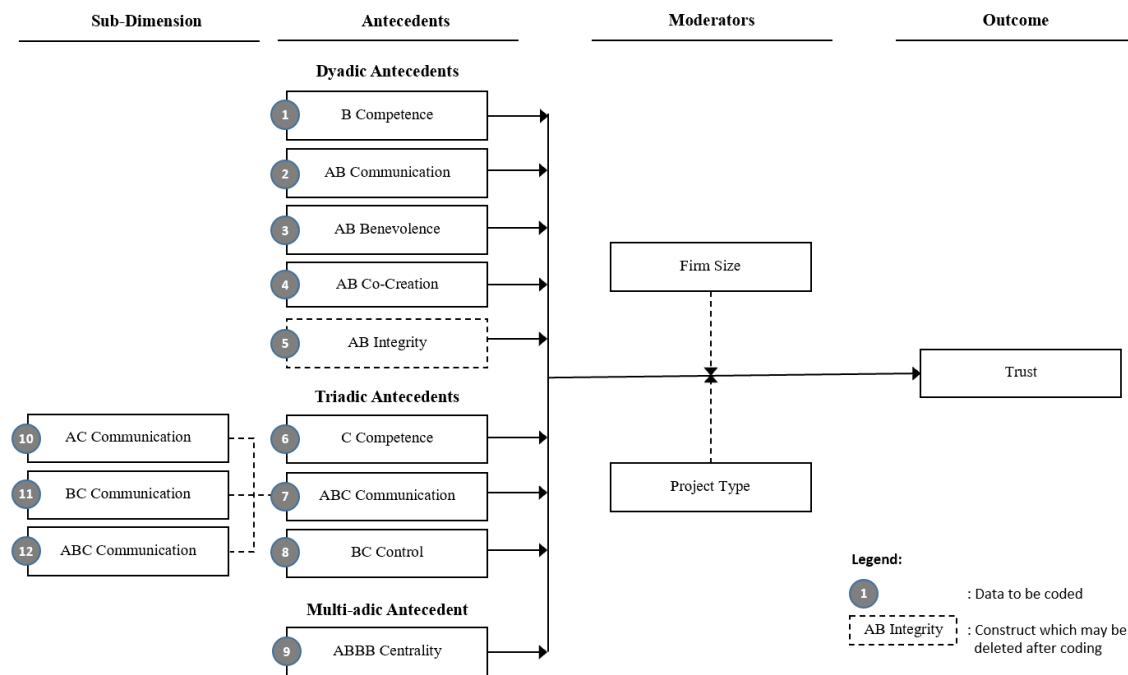
Cases Selected for Trial 2

Case 2, 3, and 4 are selected for Trial 2.

Conditions and Sub-Dimensions Selected for Trial 2

The conceptual model below shows the conditions (i.e., antecedents) and sub-dimensions to be coded for Trial 2. Except for ABC communication, only antecedents (i.e., conditions) were selected to be coded. The sub-dimensions for ABC communications were coded because the researcher wanted to examine the ABC communication in detail.

Figure C.3

Conceptual Model for Coder Agreement Trial 2**Coding Guideline for Trial 2**

The coding guideline was revised after Trial 1 was used.

Judge Agreement Result for Trial 2*Correlation between Judges 1 and 2 – Trial 2 – Cases 2-4 Combined*

Judge 1 and Judge 2 coded using the revised coding guideline. Refer to ‘QCA Raw Data Coding v3 – Combined.xlsx’ in Dropbox. Figure 3.3 shows the coded sheet.

Figure B.4

Raw Data Coding by Judges 1 and 2 Combined

				Coding Scheme Development	Outcome	Dyadic Antecedent 1					Dyadic Antecedent 2					Dyadic Antecedent 3					
Type	Seq	Nvivo File Name Prefix	Interviewee First Name and Company Initial		Trust	B Competence					AB Communication					AB Benevolence					
					Trial 2		1	2	3	4	Avg	1	2	3	4	Avg	1	2	3	4	Avg
1	1	1E001_B	Cecilia_C		Trial 1	5										####					
1	2	1E002_B	Brad_F		Trial 2	5	4				4.00	4	4			4.00	4	4			4.00
1	34	1K004_C	SDK_D		Trial 2	4	5	5			5.00	5	4			4.50	5	5			5.00
1	39	1K009_A	HJP_P		Trial 2	5	5	5			5.00	5	5			5.00	4	2			3.00

				Dyadic Antecedent 1																
Type	Seq	Nvivo File Name Prefix	Interviewee First Name and Company Initial	B Competence					B Competence Description					B Competence Quotation						
					1	2	3	4	Avg	1	2	3	4	Avg	1	2	3	4	Avg	
1	1	1E001_B	Cecilia_C																	
1	2	1E002_B	Brad_F		4				4.00	B played their role quite well as the managing role and 2nd level									"They will be able to answer to a certain level, but if it's too	
1	34	1K004_C	SDK_D		5	5			5.00	B was knowledgeable and experienced in the industry and for the									"첫번째는 업무에 대한 지식이고, 참여한 서비스 공급업체	
1	39	1K009_A	HJP_P		5	5			5.00											

Table B.16 shows the correlation between judge 1 and judge 2 for the scores of cases 2 to 4 combined.

Table B.16

Correlation between Judges 1 and 2

		Judge 1	Judge 2
Judge1	Pearson Correlation	1	.345
	Sig. (2-tailed)		.062
	N	30	30
Judge2	Pearson Correlation	.345	1
	Sig. (2-tailed)	.062	
	N	30	31

The correlation between judge 1 and Judge 2 (all scores for case 2 to case 4 combined for each judge) was only marginally significant, and the *r*-value was still not big enough. Consequently, the researcher decided to examine the differences between scores of judges 1 and 2 instead of examining their correlations. The following sections show the frequency of the differences between the two judges for each case (cases 2, 3, and 4).

Differences in Scores between Judges 1 and 2 – Case 2

Trial 1 Differences

	Frequency	Percentage	Valid Percent	Cumulative Percent
0	5	33.3	33.3	33.3
1	4	26.7	26.7	60.0
2	3	20.0	20.0	80.0
Valid 3	1	6.7	6.7	86.7
4	2	13.3	13.3	100.0
Total	15	100.0	100.0	

Trial 2 Differences

	Frequency	Percent	Valid Percent	Cumulative Percent
0	6	50.0	50.0	50.0
1	5	41.7	41.7	91.7
Valid 5	1	8.3	8.3	100.0
Total	12	100.0	100.0	

Cumulative percentage of 0 and 1 difference increased from 60.0% in Trial 1 to 91.7% in Trial 2.

Differences in Scores between Judges 1 and 2 – Case 3

Trial 1 Differences

	Frequency	Percent	Valid Percent	Cumulative Percent
0	5	33.3	33.3	33.3
1	9	60.0	60.0	93.3
2	1	6.7	6.7	100.0
Total	15	100.0	100.0	

Trial 2 Difference

	Frequency	Percent	Valid Percent	Cumulative Percent
0	6	50.0	50.0	50.0
1	4	33.3	33.3	83.3
2	2	16.7	16.7	100.0
Total	12	100.0	100.0	

Although the cumulative percentage of 0 and 1 difference decreased from 93.3% in Trial 1 to 83.3% in Trial 2, the cumulative percentage of Trial 2 is still considered very high.

Differences in Scores between Judges 1 and 2 – Case 4

Trial 1 Difference

	Frequency	Percent	Valid Percent	Cumulative Percent
0	3	20.0	20.0	20.0
1	4	26.7	26.7	46.7
2	3	20.0	20.0	66.7
3	3	20.0	20.0	86.7
4	2	13.3	13.3	100.0
Total	15	100.0	100.0	

Trial 2 Difference

	Frequency	Percent	Valid Percent	Cumulative Percent
0	5	41.7	41.7	41.7
1	6	50.0	50.0	91.7
2	1	8.3	8.3	100.0
Total	12	100.0	100.0	

Cumulative percentage of 0 and 1 difference increased from 46.7% in Trial 1 to 91.7% in Trial 2.

Overall, the Coding Scheme of Trial 2 consistently showed that the scores coded by judges 1 and 2 match extensively.

Selected Judges for Data Transformation

Two bilingual (fluent in English and Korean) judges are as follows:

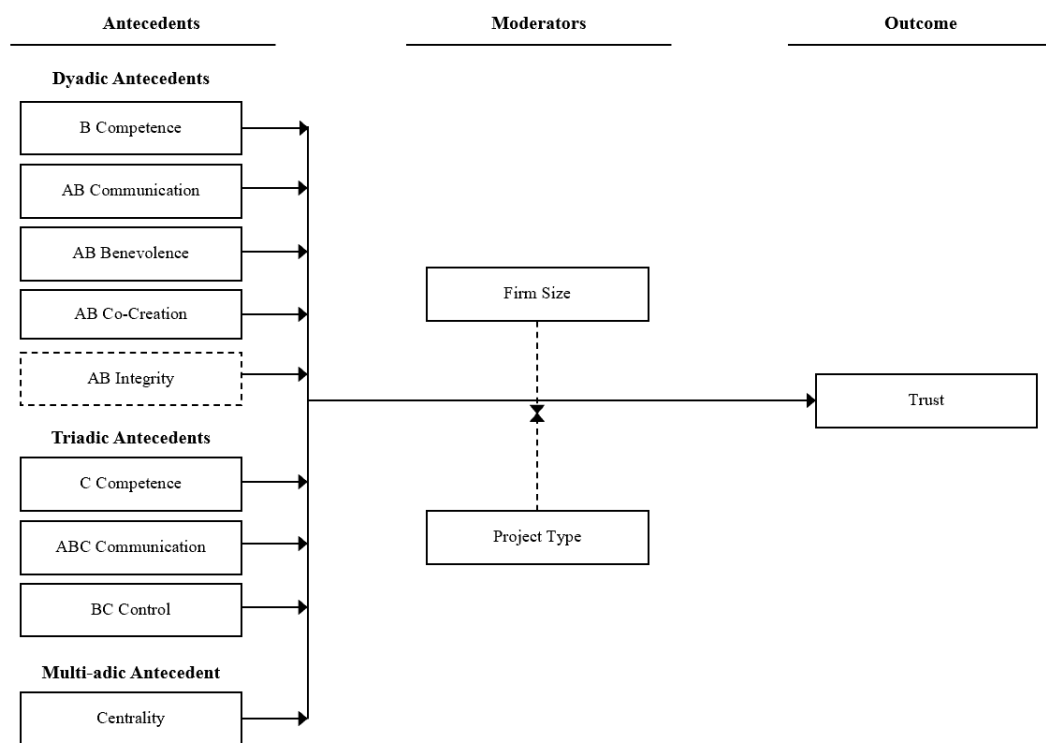
- The primary researcher, a PhD candidate
- Research assistant, a university student

Out of 46 cases selected, 16 cases are recorded in Korean, while 30 cases are in English.

Selected Conditions and Cases for QCA

Conditions Selected

The following are the conceptual model used in the thesis:



Notes:

Although B Competence and C Competence are B-focused or C-focused rather than dyadic, I still categorized them as dyadic and triadic since competence includes customer knowledge and experiences.

Although Integrity is often missing in the interviews, I will code it to see if it affects trust. It may be finally excluded as a condition if it is not apparent to be compelling enough.

Although moderators in the Culture dimension are often categorized as individualism-collectivism, power distance, uncertainty avoidance, and masculine-femininity, I used firm size

and project type to code them objectively based on the project profile rather than subjectively code by judges. Accordingly, only antecedents are coded by the judges in this data transformation phase.

Cases Selected for QCA

- Total number of cases interviewed: 52
- Number of selected cases: 46 (Excluded the cases with no C and the ones with no AC communication)
- Refer to the 'PhD Interview List.xlsx' file in Dropbox.

Judgement Training

Cases Selected for Judgement Training

Selected the following 4 cases to be coded by two judges:

Case	Language	Party	A Industry	B Industry	C Industry
Case 1	English	B	Agriculture	Financial	Financial
Case 2	English	B	Health	Health	Health
Case 3	Korean	C	Securities	IT Services	IT Services
Case 4	Korean	A	Retail	IT Services	IT Services

Step 1 – Correlation Check with a Coding Scheme Version 1

All Cases

Trial 1 - Correlations between Judge 1 and Judge 2 (All scores for cases 1-4 combined for each judge)

Correlations

		Judge	Judge
Judge1	Pearson Correlation	1	.135
	Sig. (2-tailed)		.339
	N	57	52

Pearson Correlation		.135	1
Judge2	Sig. (2-tailed)	.339	
N		52	52

Trial 2 - Correlations between Judge 1 and Judge 2 (All scores for cases 2-4 combined for each judge)

Correlations

	Judge1	Judge2
Pearson Correlation	1	.345
Judge1 Sig. (2-tailed)		.062
N	30	30
Pearson Correlation	.345	1
Judge2 Sig. (2-tailed)	.062	
N	30	31

➔ Overall correlation between Judge 1 and Judge 2 increased from .14 (*n.s.*) to .35 (*p* = .062)

Case 1 – Correlation between Judge 1 and Judge 2 (Trial 1)

Correlations

	Judge1	Judge2
Pearson Correlation	1	.629*
Judge1 Sig. (2-tailed)		.021
N	15	13
Pearson Correlation	.629*	1
Judge2 Sig. (2-tailed)	.021	
N	13	13

*. Correlation is significant at the 0.05 level (2-tailed).

➔ Correlation for Case 1 was significant ($r = .63, p = .021$)

Case 2 – Differences in score between Judge 1 and Judge 2

T1_difference

	Frequency	Percent	Valid Percent	Cumulative Percent
0	5	33.3	33.3	33.3
1	4	26.7	26.7	60.0
2	3	20.0	20.0	80.0
3	1	6.7	6.7	86.7
4	2	13.3	13.3	100.0
Total	15	100.0	100.0	

T2_difference

	Frequency	Percent	Valid Percent	Cumulative Percent
0	6	50.0	50.0	50.0
1	5	41.7	41.7	91.7
5	1	8.3	8.3	100.0
Total	12	100.0	100.0	

➔ Cumulative percentage of 0 and 1 difference increased from 60.0% in Trial 1 to 91.7% in Trial 2.

Case 3 – Differences in score between Judge 1 and Judge 2

T1_difference

	Frequency	Percent	Valid Percent	Cumulative Percent
0	5	33.3	33.3	33.3
1	9	60.0	60.0	93.3
2	1	6.7	6.7	100.0
Total	15	100.0	100.0	

T2_difference

	Frequency	Percent	Valid Percent	Cumulative Percent
0	6	50.0	50.0	50.0
1	4	33.3	33.3	83.3
2	2	16.7	16.7	100.0
Total	12	100.0	100.0	

➔ Although the cumulative percentage of 0 and 1 difference decreased from 93.3% in Trial 1 to 83.3% in Trial 2, the cumulative percentage of Trial 2 is still considered very high.

Case 4 – Differences in score between Judge 1 and Judge 2

T1_difference

	Frequency	Percent	Valid Percent	Cumulative Percent
0	3	20.0	20.0	20.0
1	4	26.7	26.7	46.7
2	3	20.0	20.0	66.7
3	3	20.0	20.0	86.7
4	2	13.3	13.3	100.0
Total	15	100.0	100.0	

T2_difference

	Frequency	Percent	Valid Percent	Cumulative Percent
0	5	41.7	41.7	41.7
1	6	50.0	50.0	91.7
2	1	8.3	8.3	100.0
Total	12	100.0	100.0	

-
- ➔ Cumulative percentage of 0 and 1 difference increased from 46.7% in Trial 1 to 91.7% in Trial 2.
 - ➔ Overall, Coding Scheme of Trial 2 consistently showed that the scores coded by Judge 1 and Judge 2 match extensively.

B.2 Calibrated Data Matrix

Case	T	DP	DM	DB	DI	TP	TM	TH	XC	XP
1	0.97	0.65	0.65	0.73	0.96	0.03	0.63	0.86	0.01	0.01
2	0.97	0.41	0.41	0.40	0.54	0.86	0.96	0.96	0.01	0.01
3	0.97	0.97	0.97	0.97	0.96	0.86	0.96	0.96	0.01	0.01
4	0.97	0.97	0.97	0.73	0.96	0.57	0.87	0.96	0.01	0.99
5	0.97	0.97	0.97	0.40	0.84	0.86	0.87	0.96	0.01	0.99
6	0.47	0.41	0.97	0.97	0.92	0.17	0.63	0.96	0.01	0.99
7	0.97	0.97	0.97	0.73	0.84	0.57	0.63	0.96	0.01	0.01
8	0.20	0.41	0.65	0.73	0.54	0.17	0.32	0.35	0.01	0.99
9	0.97	0.97	0.97	0.97	0.96	0.96	0.96	0.96	0.01	0.99
10	0.97	0.97	0.97	0.97	0.54	0.86	0.87	0.96	0.01	0.01
11	0.97	0.97	0.97	0.97	0.96	0.96	0.87	0.96	0.01	0.01
12	0.20	0.41	0.97	0.97	0.92	0.57	0.63	0.57	0.01	0.01
13	0.47	0.97	0.97	0.40	0.96	0.57	0.63	0.96	0.01	0.01
14	0.97	0.97	0.97	0.40	0.96	0.57	0.63	0.96	0.01	0.01
15	0.47	0.41	0.97	0.73	0.54	0.17	0.63	0.57	0.01	0.01
16	0.47	0.97	0.97	0.40	0.54	0.57	0.63	0.96	0.01	0.01
17	0.47	0.97	0.97	0.97	0.54	0.96	0.96	0.86	0.01	0.01
18	0.97	0.97	0.97	0.40	0.96	0.57	0.96	0.57	0.01	0.01
19	0.97	0.65	0.97	0.97	0.96	0.96	0.96	0.35	0.01	0.01
20	0.97	0.97	0.41	0.26	0.54	0.17	0.63	0.21	0.01	0.01
21	0.02	0.21	0.10	0.05	0.54	0.03	0.12	0.01	0.01	0.01
22	0.97	0.97	0.65	0.97	0.96	0.96	0.96	0.86	0.01	0.01
23	0.97	0.97	0.41	0.26	0.92	0.96	0.96	0.96	0.01	0.01
24	0.47	0.97	0.97	0.97	0.96	0.57	0.63	0.96	0.01	0.01
25	0.47	0.65	0.97	0.26	0.96	0.96	0.63	0.57	0.01	0.01
26	0.20	0.41	0.41	0.09	0.54	0.17	0.12	0.21	0.01	0.01
27	0.97	0.97	0.97	0.73	0.96	0.96	0.96	0.96	0.01	0.01
28	0.47	0.41	0.97	0.26	0.54	0.57	0.63	0.96	0.01	0.01
29	0.47	0.41	0.41	0.73	0.84	0.57	0.63	0.57	0.99	0.99
30	0.47	0.97	0.41	0.16	0.54	0.57	0.96	0.96	0.01	0.99
31	0.47	0.97	0.65	0.16	0.54	0.17	0.63	0.96	0.99	0.99
32	0.97	0.97	0.65	0.97	0.54	0.96	0.96	0.96	0.99	0.99
33	0.20	0.41	0.65	0.40	0.54	0.17	0.12	0.21	0.99	0.99
34	0.47	0.97	0.97	0.97	0.54	0.96	0.87	0.86	0.99	0.99
35	0.47	0.41	0.97	0.40	0.54	0.57	0.63	0.57	0.99	0.99
36	0.47	0.41	0.41	0.09	0.54	0.17	0.63	0.57	0.99	0.99
37	0.97	0.97	0.97	0.40	0.54	0.96	0.63	0.57	0.99	0.99
38	0.97	0.97	0.97	0.97	0.54	0.96	0.96	0.96	0.99	0.99
39	0.97	0.97	0.97	0.16	0.54	0.96	0.87	0.96	0.99	0.99
40	0.47	0.97	0.65	0.97	0.54	0.57	0.96	0.96	0.99	0.99
41	0.47	0.97	0.65	0.97	0.54	0.17	0.63	0.57	0.99	0.01
42	0.97	0.97	0.97	0.97	0.54	0.96	0.96	0.96	0.99	0.01
43	0.97	0.97	0.97	0.97	0.54	0.96	0.96	0.96	0.99	0.01
44	0.97	0.97	0.97	0.97	0.54	0.96	0.96	0.96	0.99	0.01
45	0.47	0.41	0.97	0.97	0.96	0.86	0.32	0.57	0.01	0.01
46	0.47	0.41	0.65	0.97	0.03	0.17	0.63	0.57	0.99	0.99

B.3 Directional Expectation for Truth Table Analysis

Truth Table Analysis	(Causal Conditions)	(Causal Conditions) • Culture	(Causal Conditions) • Project Type
Causal Conditions			
Self-Competence	Present	Present	Present
Dyadic Communication	Present	Present	Present
Dyadic Benevolence	Present or Absent	Present	Present
Dyadic Integrity	Present or Absent	Present	Present
SOP Competence	Present or Absent	Present	Present
Triadic Communication	Present	Present	Present
Triadic Cohesion	Present	Present	Present
Contextual Conditions			
Culture	(Not included)	Present or Absent	(Not included)
Project Type	(Not included)	(Not included)	Present or Absent

Note. Self-competence, dyadic communication, triadic communication, and triadic cohesion are necessary conditions, and they are set to ‘present’ when testing sufficiency for a combination of causal conditions without contextual conditions.

B.4 Sufficiency Analysis for RQ1

B.4.1 Subset/Superset Analysis for P1.1

 SUBSET/SUPERSET ANALYSIS

Outcome: **T**

	consistency	raw coverage	combined
	-----	-----	-----
DP*DM*DB*DI	0.933227	0.627323	0.784077
DP*DM*DB	0.899704	0.711720	0.826590
DP*DM*DI	0.906737	0.768302	0.858819
DP*DB*DI	0.934186	0.637122	0.790177
DM*DB*DI	0.868837	0.642812	0.769017
DP*DM	0.871731	0.889366	0.909456
DP*DB	0.880255	0.731951	0.829478
DP*DI	0.904272	0.800227	0.876481
DM*DB	0.829297	0.729422	0.792025
DM*DI	0.840451	0.787584	0.832510
DB*DI	0.861917	0.657036	0.773242
DP	0.839904	0.946896	0.912835
DM	0.778895	0.910861	0.820998
DB	0.797700	0.754077	0.771830
DI	0.820102	0.837211	0.838604

```
*****
SUBSET/SUPERSET ANALYSIS
*****
```

Outcome: **~T**

	consistency	raw coverage	combined
	-----	-----	-----
DP*DM*DB*DI	0.399229	0.591061	0.108725
DP*DM*DB	0.354431	0.617516	0.111132
DP*DM*DI	0.391405	0.730437	0.120867
DP*DB*DI	0.393493	0.591061	0.108725
DM*DB*DI	0.399983	0.651768	0.114173
DP*DM	0.336845	0.756892	0.087000
DP*DB	0.337185	0.617516	0.078582
DP*DI	0.382912	0.746310	0.122173
DM*DB	0.358298	0.694096	0.117822
DM*DI	0.395669	0.816625	0.127799
DB*DI	0.393100	0.659983	0.114890
DP	0.311221	0.772765	0.087907
DM	0.336469	0.866611	0.093092
DB	0.339999	0.707881	0.084136
DI	0.391813	0.880953	0.132737

B.5 Sufficiency Analysis for RQ2

B.5.1 Subset/Superset Analysis Result for Proposition P2.1

 SUBSET/SUPERSET ANALYSIS

Outcome: **T**

	consistency	raw coverage	combined
	-----	-----	-----
TP*TM*TH	0.922189	0.767986	0.863103
TP*TM	0.918333	0.792641	0.876848
TP*TH	0.920003	0.781578	0.870707
TM*TH	0.875144	0.866291	0.897581
TP	0.894722	0.816664	0.880813
TM	0.863079	0.916551	0.918274
TH	0.827901	0.918447	0.888743

```
*****
SUBSET/SUPERSET ANALYSIS
*****
```

Outcome: T

	consistency	raw coverage	combined
	-----	-----	-----
~TP*~TM*~TH	0.650580	0.155961	0.212671
~TP*~TM	0.745247	0.255215	0.404151
~TP*~TH	0.685535	0.192945	0.291369
~TM*~TH	0.692718	0.188835	0.297914
~TP	0.695866	0.376659	0.429608
~TM	0.752660	0.295107	0.441328
~TH	0.741379	0.255532	0.401229

B.5.2 Subset/Superset Analysis Result for Proposition P2.2

This section presents the subset/superset analysis result for Proposition P2.2. The author deleted the configurations of conditions irrelevant to Proposition P2.2.

Present Dyadic Causal Conditions and Absent Triadic Causal Conditions

```
*****
SUBSET/SUPERSET ANALYSIS
*****
Outcome: T
```

		raw	
	consistency	coverage	combined
	-----	-----	-----
DP*DM*DB*DI* TP*TM*TH	0.970878	0.547983	0.736548
DP*DM*DB*DI* TM	0.960525	0.615311	0.780486
DP*DM*DB*DI* TP	0.971205	0.565052	0.747932
DP*DM*DB*DI* TH	0.944730	0.615944	0.776933

Present Dyadic Causal Conditions and Absent Triadic Causal Conditions

```
*****
SUBSET/SUPERSET ANALYSIS
*****
Outcome: T
```

		raw	
	consistency	coverage	combined
	-----	-----	-----
DP*DM*DB*DI* ~TP*~TM*~TH	0.870858	0.129599	0.347170
DP*DM*DB*DI* ~TP	0.926501	0.286888	0.527524
DP*DM*DB*DI* ~TM	0.929515	0.253445	0.495825
DP*DM*DB*DI* ~TH	0.907854	0.202428	0.440829

B.5.3 Truth Table for Proposition P2.3 when Trust is PresentP2.3 (Causal Conditions) \leq T

DP	DM	DB	DI	TP	TM	TH	Number	T	Raw Consist.	PRI Consist.	SYM Consist
0	0	0	1	1	1	1	1	1	1.00	1.00	1.00
1	0	0	1	1	1	1	2	1	0.98	0.94	0.95
1	1	0	1	0	1	1	1	1	0.98	0.93	0.94
1	1	0	1	1	1	1	8	1	0.97	0.94	0.96
1	1	1	1	1	1	1	17	1	0.97	0.95	0.96
0	1	0	1	1	1	1	2	1	0.96	0.73	0.77
1	1	1	1	1	1	0	1	1	0.96	0.89	0.89
0	0	1	1	1	1	1	1	1	0.96	0.79	0.87
1	1	1	1	0	1	1	2	1	0.96	0.88	0.88
0	0	0	1	0	1	1	1	1	0.95	0.72	0.74
1	0	0	1	0	1	0	1	1	0.95	0.79	0.79
0	1	1	0	0	1	1	1	1	0.94	0.37	0.42
0	1	1	1	1	0	1	1	1	0.93	0.08	0.09
0	1	1	1	1	1	1	1	1	0.92	0.65	0.65
0	1	1	1	0	1	1	2	1	0.89	0.45	0.49
0	1	0	1	0	0	0	1	1	0.82	0.15	0.15
0	1	1	1	0	0	0	1	1	0.82	0.15	0.15
0	0	0	1	0	0	0	2	0	0.70	0.10	0.10

B.5.4 Solutions for Proposition P2.3 when Trust is Present

 TRUTH TABLE ANALYSIS

File:

Model: **T** = f(DP, DM, DB, DI, TP, TM, TH)

Algorithm: Quine-McCluskey

--- **COMPLEX** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.815315

	raw coverage	unique coverage	consistency
	-----	-----	-----
~DB*DI*TP*TM*TH	0.307371	0.0122645	0.95296
~DP*DI*TP*TM*TH	0.15849	0.00189656	0.891536
DP*DM*DI*TM*TH	0.70856	0.0592363	0.950394
~DP*DM*DI*~TP*~TM*~TH	0.115248	0.00347704	0.762124
~DP*~DM*~DB*DI*TM*TH	0.0981793	0.00189662	0.95746
~DP*DM*DB*~TP*TM*TH	0.150082	0.0177013	0.876986
~DP*DM*DB*DI*TP*TH	0.143381	0.00474149	0.906113
DP*DM*DB*DI*TP*TM	0.557782	0.0094828	0.970841
DP*~DM*~DB*DI*~TP*TM*~TH	0.0937539	0.0104311	0.946394
solution coverage:	0.78025		
solution consistency:	0.891699		

Cases with greater than 0.5 membership in term ~DB*DI*TP*TM*TH:

23 (0.739,0.971),
 5 (0.599,0.971), 13 (0.571,0.471), 14 (0.571,0.971),
 18 (0.571,0.971), 25 (0.571,0.471), 2 (0.541,0.971),
 16 (0.541,0.471), 28 (0.541,0.471), 30 (0.541,0.471),
 35 (0.541,0.471), 37 (0.541,0.971), 39 (0.541,0.971)

Cases with greater than 0.5 membership in term ~DP*DI*TP*TM*TH:

12 (0.571,0.201),
 29 (0.571,0.471), 2 (0.541,0.971), 28 (0.541,0.471),
 35 (0.541,0.471)

Cases with greater than 0.5 membership in term DP*DM*DI*TM*TH: 3

(0.961,0.971),
 9 (0.961,0.971), 27 (0.961,0.971), 4 (0.871,0.971),
 11 (0.871,0.971), 5 (0.841,0.971), 22 (0.651,0.971),
 1 (0.631,0.971), 7 (0.631,0.971), 13 (0.631,0.471),
 14 (0.631,0.971), 24 (0.631,0.471), 18 (0.571,0.971),
 25 (0.571,0.471), 10 (0.541,0.971), 16 (0.541,0.471),
 17 (0.541,0.471), 31 (0.541,0.471), 32 (0.541,0.971),
 34 (0.541,0.471)

Cases with greater than 0.5 membership in term

~DP*DM*DI*~TP*~TM*~TH: 8 (0.541,0.201),
 33 (0.541,0.201)

Cases with greater than 0.5 membership in term

~DP*~DM*~DB*DI*TM*TH: 2 (0.541,0.971),
 36 (0.541,0.471)

Cases with greater than 0.5 membership in term

~DP*DM*DB*~TP*TM*TH: 6 (0.589,0.471),

15 (0.571,0.471), 46 (0.571,0.471)

Cases with greater than 0.5 membership in term

~DP*DM*DB*DI*TP*TH: 12 (0.571,0.201),

45 (0.571,0.471)

Cases with greater than 0.5 membership in term

DP*DM*DB*DI*TP*TM: 9 (0.961,0.971),

11 (0.871,0.971), 3 (0.861,0.971), 27 (0.731,0.971),

19 (0.651,0.971), 22 (0.651,0.971), 4 (0.571,0.971),

7 (0.571,0.971), 24 (0.571,0.471), 10 (0.541,0.971),

17 (0.541,0.471), 32 (0.541,0.971), 34 (0.541,0.471),

38 (0.541,0.971), 40 (0.541,0.471), 42 (0.541,0.971),

43 (0.541,0.971), 44 (0.541,0.971)

Cases with greater than 0.5 membership in term

DP*~DM*~DB*DI*~TP*TM*~TH: 20 (0.541,0.971)

```
*****
*TRUTH TABLE ANALYSIS*
*****
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File:

Model: $T = f(DP, DM, DB, DI, TP, TM, TH)$

Algorithm: Quine-McCluskey

--- **PARSIMONIOUS** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.815315

	raw coverage	unique coverage	consistency
	-----	-----	-----
DM	0.910861	0.0613226	0.778895
TM	0.916551	0.0670124	0.863079
solution coverage: 0.977873			
solution consistency: 0.768482			

Cases with greater than 0.5 membership in term DM: 24

(0.971,0.471),
 3 (0.971,0.971), 4 (0.971,0.971), 5 (0.971,0.971),
 6 (0.971,0.471), 7 (0.971,0.971), 19 (0.971,0.971),
 9 (0.971,0.971), 10 (0.971,0.971), 11 (0.971,0.971),
 12 (0.971,0.201), 13 (0.971,0.471), 14 (0.971,0.971),
 15 (0.971,0.471), 16 (0.971,0.471), 17 (0.971,0.471),
 18 (0.971,0.971), 25 (0.971,0.471), 27 (0.971,0.971),
 28 (0.971,0.471)

Cases with greater than 0.5 membership in term TM: 23

(0.961,0.971),
 2 (0.961,0.971), 3 (0.961,0.971), 18 (0.961,0.971),
 19 (0.961,0.971), 9 (0.961,0.971), 22 (0.961,0.971),
 17 (0.961,0.471), 27 (0.961,0.971), 30 (0.961,0.471),
 32 (0.961,0.971), 38 (0.961,0.971), 40 (0.961,0.471),
 42 (0.961,0.971), 43 (0.961,0.971), 44 (0.961,0.971),
 4 (0.871,0.971), 5 (0.871,0.971), 10 (0.871,0.971),
 11 (0.871,0.971)

```
*****
*TRUTH TABLE ANALYSIS*
*****
```

File:

Model: **T** = f(DP, DM, DB, DI, TP, TM, TH)

Algorithm: Quine-McCluskey

--- **INTERMEDIATE** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.815315

Assumptions:

DP (present)

DM (present)

TM (present)

TH (present)

	raw coverage	unique coverage	consistency
	-----	-----	-----
DM*DI*~TP	0.336452	0.00252873	0.857695
~DB*DI*TM*TH	0.340056	0.00278169	0.937598
DM*DB*DI*TH	0.621633	0.0107473	0.911054
DI*TP* TM *TH	0.663674	0.0292073	0.943386
DP*~DB*DI*~TP*TM	0.229232	0.0041092	0.968224
DM*DB*~TP*TM*TH	0.299532	0.0139082	0.921432
DP* DM *DB*DI* TM	0.615311	0.00948286	0.960525
solution coverage:	0.793842		
solution consistency:	0.872863		

Cases with greater than 0.5 membership in term DM*DI*~TP: 6
(0.829,0.471),

1 (0.651,0.971), 8 (0.541,0.201), 15 (0.541,0.471),
31 (0.541,0.471), 33 (0.541,0.201), 41 (0.541,0.471)

Cases with greater than 0.5 membership in term ~DB*DI*TM*TH: 23
(0.739,0.971),

5 (0.599,0.971), 13 (0.599,0.471), 14 (0.599,0.971),
18 (0.571,0.971), 25 (0.571,0.471), 2 (0.541,0.971),
16 (0.541,0.471), 28 (0.541,0.471), 30 (0.541,0.471),
31 (0.541,0.471), 35 (0.541,0.471), 36 (0.541,0.471),
37 (0.541,0.971), 39 (0.541,0.971)

Cases with greater than 0.5 membership in term DM*DB*DI*TH: 3
(0.961,0.971),

9 (0.961,0.971), 11 (0.961,0.971), 24 (0.961,0.471),
6 (0.921,0.471), 4 (0.731,0.971), 7 (0.731,0.971),
27 (0.731,0.971), 1 (0.651,0.971), 22 (0.651,0.971),
12 (0.571,0.201), 45 (0.571,0.471), 10 (0.541,0.971),
15 (0.541,0.471), 17 (0.541,0.471), 32 (0.541,0.971),
34 (0.541,0.471), 38 (0.541,0.971), 40 (0.541,0.471),
41 (0.541,0.471)

Cases with greater than 0.5 membership in term DI*TP*TM*TH: 9
(0.961,0.971),

27 (0.961,0.971), 23 (0.921,0.971), 11 (0.871,0.971),
3 (0.861,0.971), 22 (0.861,0.971), 5 (0.841,0.971),
4 (0.571,0.971), 7 (0.571,0.971), 12 (0.571,0.201),

13 (0.571,0.471), 14 (0.571,0.971), 18 (0.571,0.971),
 24 (0.571,0.471), 25 (0.571,0.471), 29 (0.571,0.471),
 2 (0.541,0.971), 10 (0.541,0.971), 16 (0.541,0.471),
 17 (0.541,0.471)
 Cases with greater than 0.5 membership in term $DP^* \sim DB^* DI^* \sim TP^* TM$:
 20 (0.541,0.971),
 31 (0.541,0.471)
 Cases with greater than 0.5 membership in term $DM^* DB^* \sim TP^* TM^* TH$:
 1 (0.631,0.971),
 6 (0.631,0.471), 15 (0.571,0.471), 41 (0.571,0.471),
 46 (0.571,0.471)
 Cases with greater than 0.5 membership in term $DP^* DM^* DB^* DI^* TM$: 3
 (0.961,0.971),
 9 (0.961,0.971), 11 (0.871,0.971), 4 (0.731,0.971),
 27 (0.731,0.971), 19 (0.651,0.971), 22 (0.651,0.971),
 1 (0.631,0.971), 7 (0.631,0.971), 24 (0.631,0.471),
 10 (0.541,0.971), 17 (0.541,0.471), 32 (0.541,0.971),
 34 (0.541,0.471), 38 (0.541,0.971), 40 (0.541,0.471),
 41 (0.541,0.471), 42 (0.541,0.971), 43 (0.541,0.971),
 44 (0.541,0.971)

C.5.5 Truth Table for Proposition P2.3 when Trust is AbsentP2.3 (Causal Conditions) $\leq \sim T$

DP	DM	DB	DI	TP	TM	TH	Number	$\sim T$	Raw Consist.	PRI Consist.	SYM Consist
0	1	1	1	1	0	1	1	1	0.98	0.78	0.91
0	1	0	1	0	0	0	1	1	0.97	0.85	0.85
0	1	1	1	0	0	0	1	1	0.97	0.85	0.85
0	0	0	1	0	0	0	2	1	0.97	0.90	0.90
0	1	1	0	0	1	1	1	1	0.95	0.51	0.58
0	1	0	1	1	1	1	2	1	0.90	0.22	0.23
0	1	1	1	0	1	1	2	1	0.89	0.48	0.51
0	0	0	1	0	1	1	1	1	0.87	0.26	0.26
0	1	1	1	1	1	1	1	1	0.85	0.35	0.35
0	0	1	1	1	1	1	1	1	0.84	0.12	0.13
0	0	0	1	1	1	1	1	0	0.80	0.00	0.00
1	0	0	1	0	1	0	1	0	0.80	0.21	0.21
1	1	0	1	0	1	1	1	0	0.72	0.06	0.06
1	0	0	1	1	1	1	2	0	0.71	0.05	0.05
1	1	1	1	1	1	0	1	0	0.69	0.11	0.11
1	1	1	1	0	1	1	2	0	0.69	0.12	0.12
1	1	0	1	1	1	1	8	0	0.53	0.04	0.04
1	1	1	1	1	1	1	17	0	0.39	0.04	0.04

B.5.6 Solutions for Proposition P2.3 when Trust is Absent

 TRUTH TABLE ANALYSIS

File:

Model: $\sim T = f(DP, DM, DB, DI, TP, TM, TH)$

Algorithm: Quine-McCluskey

--- **COMPLEX** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.839506

	raw coverage	unique coverage	consistency
	-----	-----	-----
$\sim DP^* \sim DB^* DI^* \sim TP^* \sim TM^* \sim TH$	0.298663	0.0396825	0.972789
$\sim DP^* DM^* DI^* \sim TP^* \sim TM^* \sim TH$	0.324004	0.015316	0.972826
$\sim DP^* DM^* DB^* \sim TP^* TM^* TH$	0.336257	0.0707324	0.892132
$\sim DP^* DM^* DB^* DI^* TP^* TH$	0.297271	0.0144807	0.852977
$\sim DP^* DM^* DI^* TP^* TM^* TH$	0.320663	0.0336953	0.863517
$\sim DP^* DB^* DI^* TP^* TM^* TH$	0.287524	0.00821501	0.848747
$\sim DP^* \sim DM^* \sim DB^* DI^* \sim TP^* TM^* TH$	0.172654	0.011139	0.872625
solution coverage:	0.573935		
solution consistency:	0.865057		

Cases with greater than 0.5 membership in term

$\sim DP^* \sim DB^* DI^* \sim TP^* \sim TM^* \sim TH$: 21 (0.541, 0.979),
 26 (0.541, 0.799), 33 (0.541, 0.799)

Cases with greater than 0.5 membership in term

$\sim DP^* DM^* DI^* \sim TP^* \sim TM^* \sim TH$: 8 (0.541, 0.799),
 33 (0.541, 0.799)

Cases with greater than 0.5 membership in term

$\sim DP^* DM^* DB^* \sim TP^* TM^* TH$: 6 (0.589, 0.529),
 15 (0.571, 0.529), 46 (0.571, 0.529)

Cases with greater than 0.5 membership in term

$\sim DP^* DM^* DB^* DI^* TP^* TH$: 12 (0.571, 0.799),
 45 (0.571, 0.529)

Cases with greater than 0.5 membership in term

$\sim DP^* DM^* DI^* TP^* TM^* TH$: 12 (0.571, 0.799),
 28 (0.541, 0.529), 35 (0.541, 0.529)

Cases with greater than 0.5 membership in term

$\sim DP^* DB^* DI^* TP^* TM^* TH$: 12 (0.571, 0.799),
 29 (0.571, 0.529)

Cases with greater than 0.5 membership in term

$\sim DP^* \sim DM^* \sim DB^* DI^* \sim TP^* TM^* TH$: 36 (0.541, 0.529)


```
*****
*TRUTH TABLE ANALYSIS*
*****
```

File:

Model: $\sim T = f(DP, DM, DB, DI, TP, TM, TH)$

Algorithm: Quine-McCluskey

--- **PARSIMONIOUS** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.839506

	raw coverage	unique coverage	consistency
	-----	-----	-----
$\sim DP * \sim TP$	0.521721	0.0685047	0.916809
$\sim DP * DM$	0.525759	0.0737957	0.84531
$\sim DM * DB$	0.267613	0.0698971	0.674386
solution coverage:	0.665413		
solution consistency:	0.785761		

Cases with greater than 0.5 membership in term $\sim DP * \sim TP$: 21
(0.789,0.979),

6 (0.589,0.529), 8 (0.589,0.799), 15 (0.589,0.529),
26 (0.589,0.799), 33 (0.589,0.799), 36 (0.589,0.529),
46 (0.589,0.529)

Cases with greater than 0.5 membership in term $\sim DP * DM$: 6
(0.589,0.529),

8 (0.589,0.799), 12 (0.589,0.799), 15 (0.589,0.529),
28 (0.589,0.529), 33 (0.589,0.799), 35 (0.589,0.529),
45 (0.589,0.529), 46 (0.589,0.529)

Cases with greater than 0.5 membership in term $\sim DM * DB$: 29
(0.589,0.529)

 TRUTH TABLE ANALYSIS

File:

Model: $\sim T = f(DP, DM, DB, DI, TP, TM, TH)$

Algorithm: Quine-McCluskey

--- **INTERMEDIATE** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.839506

Assumptions:

	raw coverage	unique coverage	consistency
	-----	-----	-----
$\sim DP^* \sim DB^* DI^* \sim TP^* \sim TM^* \sim TH$	0.298663	0.0396825	0.972789
$\sim DP^* DM^* DI^* \sim TP^* \sim TM^* \sim TH$	0.324004	0.015316	0.972826
$\sim DP^* DM^* DB^* \sim TP^* TM^* TH$	0.336257	0.0707324	0.892132
$\sim DP^* DM^* DB^* DI^* TP^* TH$	0.297271	0.0144807	0.852977
$\sim DP^* DM^* DI^* TP^* TM^* TH$	0.320663	0.0336953	0.863517
$\sim DP^* DB^* DI^* TP^* TM^* TH$	0.287524	0.00821501	0.848747
$\sim DP^* \sim DM^* \sim DB^* DI^* \sim TP^* TM^* TH$	0.172654	0.011139	0.872625
solution coverage:	0.573935		
solution consistency:	0.865057		

Cases with greater than 0.5 membership in term

$\sim DP^* \sim DB^* DI^* \sim TP^* \sim TM^* \sim TH$: 21 (0.541, 0.979),

26 (0.541, 0.799), 33 (0.541, 0.799)

Cases with greater than 0.5 membership in term

$\sim DP^* DM^* DI^* \sim TP^* \sim TM^* \sim TH$: 8 (0.541, 0.799),

33 (0.541, 0.799)

Cases with greater than 0.5 membership in term

$\sim DP^* DM^* DB^* \sim TP^* TM^* TH$: 6 (0.589, 0.529),

15 (0.571, 0.529), 46 (0.571, 0.529)

Cases with greater than 0.5 membership in term

$\sim DP^* DM^* DB^* DI^* TP^* TH$: 12 (0.571, 0.799),

45 (0.571, 0.529)

Cases with greater than 0.5 membership in term

$\sim DP^* DM^* DI^* TP^* TM^* TH$: 12 (0.571, 0.799),

28 (0.541, 0.529), 35 (0.541, 0.529)

Cases with greater than 0.5 membership in term

$\sim DP^* DB^* DI^* TP^* TM^* TH$: 12 (0.571, 0.799),

29 (0.571, 0.529)

Cases with greater than 0.5 membership in term

$\sim DP^* \sim DM^* \sim DB^* DI^* \sim TP^* TM^* TH$: 36 (0.541, 0.529)

B.6 Sufficiency Analysis for RQ3

B.6.1 Truth Table for Proposition P3.1 when Trust is Present

P3.1 (Causal Conditions) • $XC \leq T$

DP	DM	DB	DI	TP	TM	TH	XC	Number	T	Raw Consist.	PRI Consist.	SYM Consist
1	1	0	1	1	1	1	1	2	1	1.00	1.00	1.00
0	0	0	1	1	1	1	0	1	1	1.00	1.00	1.00
1	1	1	1	1	1	1	1	7	1	0.98	0.96	0.96
1	0	0	1	1	1	1	0	2	1	0.98	0.94	0.95
1	1	1	1	0	1	1	1	1	1	0.97	0.50	0.55
0	1	0	1	1	1	1	0	1	1	0.97	0.85	0.87
1	1	0	1	0	1	1	1	1	1	0.97	0.22	0.26
1	1	1	1	1	1	1	0	10	1	0.97	0.95	0.96
1	1	0	1	1	1	1	0	6	1	0.96	0.92	0.95
0	1	0	1	1	1	1	1	1	1	0.96	0.00	0.00
0	0	0	1	0	1	1	1	1	1	0.96	0.00	0.00
1	1	1	1	0	1	1	0	1	1	0.95	0.90	0.90
0	1	1	0	0	1	1	1	1	1	0.95	0.00	0.00
1	1	1	1	1	1	0	0	1	1	0.94	0.86	0.86
0	0	1	1	1	1	1	1	1	1	0.93	0.00	0.00
1	0	0	1	0	1	0	0	1	1	0.92	0.79	0.79

B.6.2 Solutions for Proposition P3.1 when Trust is Present

 TRUTH TABLE ANALYSIS

File:

Model: **T** = f(DP, DM, DB, DI, TP, TM, TH, **XC**)

Algorithm: Quine-McCluskey

--- **COMPLEX** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.845173

	raw coverage	unique coverage	
consistency	-----	-----	-----

~DB*DI*TP*TM*TH*~XC 0.947083	0.231951	0.0163738	
DM*DB*DI*TM*TH*~XC 0.957363	0.426413	0.0446327	0.93421
DM*~DB*DI*TP*TM*TH 0.963332	0.290998	0.00189662	
DP*DM*DI*TM*TH*XC 0.874399	0.23252	0.132318	
~DP*DM*DB*DI*TP*TH*~XC 0.969048	0.103426	0.00474149	
DP*DM*DB*DI*TP*TM*~XC 0.920228	0.385953	0.00948292	
DP*~DM*~DB*DI*~TP*TM*~TH*~XC 0.845173	0.0612593	0.0104312	
~DP*DM*~DB*DI*~TP*~TM*~TH*XC 0.956468	0.0586673	0.00252873	
~DP*~DM*~DB*DI*~TP*TM*TH*XC 0.949032	0.0486155	0.00189662	
~DP*DM*DB*~DI*~TP*TM*TH*XC 0.0430522	0.058857	0.0139082	
~DP*~DM*DB*DI*TP*TM*TH*XC solution coverage: 0.75648	0.0430522	0.00189656	0.9316
solution consistency: 0.904733			

Cases with greater than 0.5 membership in term

~DB*DI*TP*TM*TH*~XC: 23 (0.739,0.971),
 5 (0.599,0.971), 13 (0.571,0.471), 14 (0.571,0.971),
 18 (0.571,0.971), 25 (0.571,0.471), 2 (0.541,0.971),
 16 (0.541,0.471), 28 (0.541,0.471), 30 (0.541,0.471)

Cases with greater than 0.5 membership in term

DM*DB*DI*TM*TH*~XC: 3 (0.961,0.971),
 9 (0.961,0.971), 11 (0.871,0.971), 4 (0.731,0.971),
 27 (0.731,0.971), 22 (0.651,0.971), 1 (0.631,0.971),
 6 (0.631,0.471), 7 (0.631,0.971), 24 (0.631,0.471),
 12 (0.571,0.201), 10 (0.541,0.971), 15 (0.541,0.471),
 17 (0.541,0.471)

Cases with greater than 0.5 membership in term

DM*~DB*DI*TP*TM*TH: 5 (0.599,0.971),
 13 (0.571,0.471), 14 (0.571,0.971), 18 (0.571,0.971),
 25 (0.571,0.471), 16 (0.541,0.471), 28 (0.541,0.471),
 35 (0.541,0.471), 37 (0.541,0.971), 39 (0.541,0.971)

Cases with greater than 0.5 membership in term

DP*DM*DI*TM*TH*XC: 31 (0.541,0.471),
 32 (0.541,0.971), 34 (0.541,0.471), 37 (0.541,0.971),
 38 (0.541,0.971), 39 (0.541,0.971), 40 (0.541,0.471),
 41 (0.541,0.471), 42 (0.541,0.971), 43 (0.541,0.971),
 44 (0.541,0.971)

Cases with greater than 0.5 membership in term

~DP*DM*DB*DI*TP*TH*~XC: 12 (0.571,0.201),
 45 (0.571,0.471)

Cases with greater than 0.5 membership in term

DP*DM*DB*DI*TP*TM*~XC: 9 (0.961,0.971),
 11 (0.871,0.971), 3 (0.861,0.971), 27 (0.731,0.971),
 19 (0.651,0.971), 22 (0.651,0.971), 4 (0.571,0.971),
 7 (0.571,0.971), 24 (0.571,0.471), 10 (0.541,0.971),
 17 (0.541,0.471)

Cases with greater than 0.5 membership in term

DP*~DM*~DB*DI*~TP*TM*~TH*~XC: 20 (0.541,0.971)

Cases with greater than 0.5 membership in term

~DP*DM*~DB*DI*~TP*~TM*~TH*XC: 33 (0.541,0.201)

Cases with greater than 0.5 membership in term

~DP*~DM*~DB*DI*~TP*TM*TH*XC: 36 (0.541,0.471)

Cases with greater than 0.5 membership in term

~DP*DM*DB*~DI*~TP*TM*TH*XC: 46 (0.571,0.471)

Cases with greater than 0.5 membership in term

~DP*~DM*DB*DI*TP*TM*TH*XC: 29 (0.571,0.471)

```
*****
*TRUTH TABLE ANALYSIS*
*****
```

File:

Algorithm: Quine-McCluskey

--- **PARSIMONIOUS** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.845173

	raw coverage	unique coverage	consistency
	-----	-----	-----
TM	0.916551	0.041851	0.863079
TH	0.918447	0.0470983	0.827901
DM*~DB	0.345619	0	0.854887
solution coverage: 0.968707			
solution consistency: 0.804949			

Cases with greater than 0.5 membership in term TM: 23

(0.961,0.971),
 2 (0.961,0.971), 3 (0.961,0.971), 18 (0.961,0.971),
 19 (0.961,0.971), 9 (0.961,0.971), 22 (0.961,0.971),
 17 (0.961,0.471), 27 (0.961,0.971), 30 (0.961,0.471),
 32 (0.961,0.971), 38 (0.961,0.971), 40 (0.961,0.471),
 42 (0.961,0.971), 43 (0.961,0.971), 44 (0.961,0.971),
 4 (0.871,0.971), 5 (0.871,0.971), 10 (0.871,0.971),
 11 (0.871,0.971)

Cases with greater than 0.5 membership in term TH: 2

(0.961,0.971),
 3 (0.961,0.971), 4 (0.961,0.971), 5 (0.961,0.971),
 6 (0.961,0.471), 7 (0.961,0.971), 9 (0.961,0.971),
 10 (0.961,0.971), 11 (0.961,0.971), 13 (0.961,0.471),
 14 (0.961,0.971), 23 (0.961,0.971), 16 (0.961,0.471),
 24 (0.961,0.471), 27 (0.961,0.971), 28 (0.961,0.471),
 30 (0.961,0.471), 31 (0.961,0.471), 32 (0.961,0.971),
 38 (0.961,0.971)

Cases with greater than 0.5 membership in term DM*~DB: 39

(0.839,0.971),
 25 (0.739,0.471), 28 (0.739,0.471), 31 (0.651,0.471),
 5 (0.599,0.971), 13 (0.599,0.471), 14 (0.599,0.971),
 16 (0.599,0.471), 18 (0.599,0.971), 33 (0.599,0.201),
 35 (0.599,0.471), 37 (0.599,0.971)

```
*****
*TRUTH TABLE ANALYSIS*
*****
```

File:

Model: $T = f(DP, DM, DB, DI, TP, TM, TH, \mathbf{XC})$

Algorithm: Quine-McCluskey

--- **INTERMEDIATE** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.845173

Assumptions:

DP (present)

DM (present)

DB (present)

DI (present)

TP (present)

TM (present)

TH (present)

	raw coverage	unique coverage	consistency
	-----	-----	-----
DP*DI* TM *~XC	0.550955	0.0420408	0.939623
DM*~DB*DI*XC	0.109559	0.00252879	0.878358
DI*TP*TM*TH	0.663674	0.00600582	0.943386
DI*TM*TH*XC	0.23821	0.00189662	0.935452
DM*DB*DI*TM*TH	0.607725	0.00379312	0.943098
DM*DB* TM * TH *XC	0.266342	0.0704893	0.916268
DM*DB*DI*TP*TH*~XC	0.38374	0.00758636	0.949922
solution coverage:	0.865027		
solution consistency:	0.898247		

Cases with greater than 0.5 membership in term DP*DI*TM*~XC: 3
(0.961,0.971),

9 (0.961,0.971), 18 (0.961,0.971), 22 (0.961,0.971),
27 (0.961,0.971), 23 (0.921,0.971), 4 (0.871,0.971),
11 (0.871,0.971), 5 (0.841,0.971), 19 (0.651,0.971),
1 (0.631,0.971), 7 (0.631,0.971), 13 (0.631,0.471),
14 (0.631,0.971), 24 (0.631,0.471), 25 (0.631,0.471),
10 (0.541,0.971), 16 (0.541,0.471), 17 (0.541,0.471),
20 (0.541,0.971)

Cases with greater than 0.5 membership in term DM*~DB*DI*XC: 31
(0.541,0.471),

33 (0.541,0.201), 35 (0.541,0.471), 37 (0.541,0.971),
39 (0.541,0.971)

Cases with greater than 0.5 membership in term DI*TP*TM*TH: 9
(0.961,0.971),

27 (0.961,0.971), 23 (0.921,0.971), 11 (0.871,0.971),
3 (0.861,0.971), 22 (0.861,0.971), 5 (0.841,0.971),
4 (0.571,0.971), 7 (0.571,0.971), 12 (0.571,0.201),
13 (0.571,0.471), 14 (0.571,0.971), 18 (0.571,0.971),
24 (0.571,0.471), 25 (0.571,0.471), 29 (0.571,0.471),
2 (0.541,0.971), 10 (0.541,0.971), 16 (0.541,0.471),
17 (0.541,0.471)

Cases with greater than 0.5 membership in term DI*TM*TH*XC: 29
(0.571,0.471),

31 (0.541,0.471), 32 (0.541,0.971), 34 (0.541,0.471),
35 (0.541,0.471), 36 (0.541,0.471), 37 (0.541,0.971),
38 (0.541,0.971), 39 (0.541,0.971), 40 (0.541,0.471),
41 (0.541,0.471), 42 (0.541,0.971), 43 (0.541,0.971),
44 (0.541,0.971)

Cases with greater than 0.5 membership in term DM*DB*DI*TM*TH: 3
(0.961,0.971),

9 (0.961,0.971), 11 (0.871,0.971), 4 (0.731,0.971),
27 (0.731,0.971), 22 (0.651,0.971), 1 (0.631,0.971),
6 (0.631,0.471), 7 (0.631,0.971), 24 (0.631,0.471),
12 (0.571,0.201), 10 (0.541,0.971), 15 (0.541,0.471),
17 (0.541,0.471), 32 (0.541,0.971), 34 (0.541,0.471),
38 (0.541,0.971), 40 (0.541,0.471), 41 (0.541,0.471),
42 (0.541,0.971)

Cases with greater than 0.5 membership in term DM*DB*TM*TH*XC:
38 (0.961,0.971),

42 (0.961,0.971), 43 (0.961,0.971), 44 (0.961,0.971),
34 (0.861,0.471), 32 (0.651,0.971), 40 (0.651,0.471),
41 (0.571,0.471), 46 (0.571,0.471)

Cases with greater than 0.5 membership in term

DM*DB*DI*TP*TH*~XC: 9 (0.961,0.971),
11 (0.961,0.971), 3 (0.861,0.971), 27 (0.731,0.971),
22 (0.651,0.971), 4 (0.571,0.971), 7 (0.571,0.971),
12 (0.571,0.201), 24 (0.571,0.471), 45 (0.571,0.471),
10 (0.541,0.971), 17 (0.541,0.471)

B.6.3 Truth Table for Proposition P3.1 when Trust is AbsentP3.1 (Causal Conditions) • $XC \leq \sim T$

DP	DM	DB	DI	TP	TM	TH	XC	Number	$\sim T$	Raw Consist.	PRI Consist.	SYM Consist
0	1	0	1	0	0	0	1	1	1	1.00	1.00	1.00
0	1	0	1	1	1	1	1	1	1	0.99	0.83	1.00
0	0	0	1	0	1	1	1	1	1	0.99	0.83	1.00
1	1	0	1	0	1	1	1	1	1	0.99	0.64	0.74
0	1	1	0	0	1	1	1	1	1	0.98	0.58	1.00
0	1	1	1	1	0	1	0	1	1	0.98	0.78	0.91
0	0	1	1	1	1	1	1	1	1	0.97	0.58	1.00
1	1	1	1	0	1	1	1	1	1	0.97	0.41	0.45
0	0	0	1	0	0	0	0	2	1	0.95	0.89	0.89
0	1	1	1	0	0	0	0	1	1	0.95	0.81	0.81
0	1	1	1	0	1	1	0	2	1	0.86	0.48	0.51
0	1	0	1	1	1	1	0	1	1	0.85	0.13	0.13
0	1	1	1	1	1	1	0	1	1	0.80	0.35	0.35
0	0	0	1	1	1	1	0	1	0	0.71	0.00	0.00
1	0	0	1	0	1	0	0	1	0	0.70	0.21	0.21
1	1	1	1	1	1	0	0	1	0	0.64	0.14	0.14
1	1	0	1	1	1	1	1	2	0	0.63	0.00	0.00
1	0	0	1	1	1	1	0	2	0	0.61	0.05	0.05
1	1	1	1	0	1	1	0	1	0	0.59	0.10	0.10
1	1	0	1	1	1	1	0	6	0	0.52	0.05	0.05
1	1	1	1	1	1	1	1	7	0	0.49	0.04	0.04
1	1	1	1	1	1	1	0	10	0	0.37	0.04	0.04

B.6.4 Solutions for Proposition P3.1 when Trust is Absent

 TRUTH TABLE ANALYSIS

File:

Model: $\sim T = f(DP, DM, DB, DI, TP, TM, TH, XC)$

Algorithm: Quine-McCluskey

--- **COMPLEX** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.80126

	raw coverage	unique coverage	
consistency	-----	-----	-----

$\sim DP*DM*DB*DI*TP*TH*\sim XC$ 0.803314	0.209273	0.0144807	
$\sim DP*DM*DB*DI*TM*TH*\sim XC$ 0.771693	0.255082	0.0360624	
$\sim DP*DM*\sim DB*DI*TP*TM*TH$ 0.895223	0.24269	0.0329992	
$DP*DM*DI*\sim TP*TM*TH*XC$ 0.973204	0.237678	0.0981622	
$\sim DP*\sim DM*\sim DB*DI*\sim TP*\sim TM*\sim TH*\sim XC$ 0.95029	0.159705	0.0633529	
$\sim DP*DM*DB*DI*\sim TP*\sim TM*\sim TH*\sim XC$ 0.949534	0.170287	0.015316	
$\sim DP*DM*\sim DB*DI*\sim TP*\sim TM*\sim TH*XC$ 0.992537	0.152882	0.0292398	1
$\sim DP*\sim DM*\sim DB*DI*\sim TP*TM*TH*XC$ 0.978593	0.111111	0.00821501	
$\sim DP*DM*DB*\sim DI*\sim TP*TM*TH*XC$ 0.971272	0.133667	0.03467	
$\sim DP*\sim DM*DB*DI*TP*TM*TH*XC$ 0.971272	0.0988583	0.00821501	
solution coverage: 0.672097			
solution consistency: 0.877318			

Cases with greater than 0.5 membership in term

$\sim DP*DM*DB*DI*TP*TH*\sim XC$: 12 (0.571,0.799),
 45 (0.571,0.529)

Cases with greater than 0.5 membership in term

$\sim DP*DM*DB*DI*TM*TH*\sim XC$: 6 (0.589,0.529),
 12 (0.571,0.799), 15 (0.541,0.529)

Cases with greater than 0.5 membership in term

$\sim DP*DM*\sim DB*DI*TP*TM*TH$: 28 (0.541,0.529),
 35 (0.541,0.529)

Cases with greater than 0.5 membership in term

$DP*DM*DI*\sim TP*TM*TH*XC$: 31 (0.541,0.529),
 41 (0.541,0.529)

Cases with greater than 0.5 membership in term

$\sim DP*\sim DM*\sim DB*DI*\sim TP*\sim TM*\sim TH*\sim XC$: 21 (0.541,0.979),

26 (0.541,0.799)
Cases with greater than 0.5 membership in term
~DP*DM*DB*DI*~TP*~TM*~TH*~XC: 8 (0.541,0.799)
Cases with greater than 0.5 membership in term
~DP*DM*~DB*DI*~TP*~TM*~TH*XC: 33 (0.541,0.799)
Cases with greater than 0.5 membership in term
~DP*~DM*~DB*DI*~TP*TM*TH*XC: 36 (0.541,0.529)
Cases with greater than 0.5 membership in term
~DP*DM*DB*~DI*~TP*TM*TH*XC: 46 (0.571,0.529)
Cases with greater than 0.5 membership in term
~DP*~DM*DB*DI*TP*TM*TH*XC: 29 (0.571,0.529)

```
*****
*TRUTH TABLE ANALYSIS*
*****
```

File:

Model: $\sim T = f(DP, DM, DB, DI, TP, TM, TH, XC)$

Algorithm: Quine-McCluskey

--- PARSIMONIOUS SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.80126

	raw coverage	unique coverage	consistency
	-----	-----	-----
$\sim DP * DM$	0.525759	0.0556946	0.84531
$\sim TP * XC$	0.33027	0.0278473	0.784911
$\sim TM$	0.679755	0.167502	0.787166
$\sim DM * XC$	0.234197	0.00696188	0.884332

solution coverage: 0.822473

solution consistency: 0.697156

Cases with greater than 0.5 membership in term $\sim DP * DM$: 6

(0.589,0.529),
 8 (0.589,0.799), 12 (0.589,0.799), 15 (0.589,0.529),
 28 (0.589,0.529), 33 (0.589,0.799), 35 (0.589,0.529),
 45 (0.589,0.529), 46 (0.589,0.529)

Cases with greater than 0.5 membership in term $\sim TP * XC$: 31

(0.829,0.529),
 33 (0.829,0.799), 36 (0.829,0.529), 41 (0.829,0.529),
 46 (0.829,0.529)

Cases with greater than 0.5 membership in term $\sim TM$: 21

(0.879,0.979),
 26 (0.879,0.799), 33 (0.879,0.799), 8 (0.679,0.799),
 45 (0.679,0.529)

Cases with greater than 0.5 membership in term $\sim DM * XC$: 29

(0.589,0.529),
 36 (0.589,0.529)

```
*****
*TRUTH TABLE ANALYSIS*
*****
```

File:

Model: $\sim T = f(DP, DM, DB, DI, TP, TM, TH, \mathbf{XC})$

Algorithm: Quine-McCluskey

--- **INTERMEDIATE** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.80126

Assumptions:

$\sim DP$ (absent)

$\sim DM$ (absent)

$\sim DB$ (absent)

$\sim DI$ (absent)

$\sim TP$ (absent)

$\sim TM$ (absent)

$\sim TH$ (absent)

	raw coverage	unique coverage	consistency
	-----	-----	-----
$\sim TP * \mathbf{XC}$	0.33027	0.123921	0.784911
$\sim DP * \mathbf{DM} * \sim \mathbf{XC}$	0.342802	0.143414	0.795991
$\sim DP * \sim DM * \mathbf{XC}$	0.167363	0.00696188	0.952456
$\sim DP * \sim TP * \sim \mathbf{TM} * \sim \mathbf{TH}$	0.414508	0.0602897	0.978632
$\sim DP * \sim DB * \mathbf{XC}$	0.178502	0.00696188	0.955291
solution coverage:	0.71526		
solution consistency:	0.792992		

Cases with greater than 0.5 membership in term $\sim TP * \mathbf{XC}$: 31

(0.829,0.529),

33 (0.829,0.799), 36 (0.829,0.529), 41 (0.829,0.529),

46 (0.829,0.529)

Cases with greater than 0.5 membership in term $\sim DP * \mathbf{DM} * \sim \mathbf{XC}$: 6

(0.589,0.529),

8 (0.589,0.799), 12 (0.589,0.799), 15 (0.589,0.529),

28 (0.589,0.529), 45 (0.589,0.529)

Cases with greater than 0.5 membership in term $\sim DP * \sim DM * \mathbf{XC}$: 29

(0.589,0.529),

36 (0.589,0.529)

Cases with greater than 0.5 membership in term $\sim DP * \sim TP * \sim \mathbf{TM} * \sim \mathbf{TH}$:

21 (0.789,0.979),

8 (0.589,0.799), 26 (0.589,0.799), 33 (0.589,0.799)

Cases with greater than 0.5 membership in term $\sim DP * \sim DB * \mathbf{XC}$: 33

(0.589,0.799),

35 (0.589,0.529), 36 (0.589,0.529)

B.6.5 Truth Table for Proposition P3.2 when Trust is PresentP3.2 (Causal Conditions) • $XP \leq T$

DP	DM	DB	DI	TP	TM	TH	XC	Number	T	Raw Consist.	PRI Consist.	SYM Consist
1	1	0	1	1	1	1	1	3	1	1.00	1.00	1.00
0	0	0	1	1	1	1	0	1	1	1.00	1.00	1.00
1	0	0	1	1	1	1	0	1	1	1.00	1.00	1.00
1	1	1	1	1	1	1	1	6	1	0.98	0.96	0.97
0	1	0	1	1	1	1	0	1	1	0.97	0.85	0.87
1	1	1	1	1	1	1	0	11	1	0.97	0.95	0.96
1	0	0	1	1	1	1	1	1	1	0.97	0.00	0.00
0	1	0	1	1	1	1	1	1	1	0.96	0.00	0.00
1	1	0	1	0	1	1	1	1	1	0.96	0.73	0.75
1	1	1	1	0	1	1	0	2	1	0.95	0.89	0.90
1	1	0	1	1	1	1	0	5	1	0.95	0.90	0.93
1	0	0	1	0	1	0	0	1	1	0.94	0.87	0.87
1	1	1	1	1	1	0	0	1	1	0.94	0.86	0.86
0	0	1	1	1	1	1	1	1	1	0.94	0.00	0.00
0	0	0	1	0	1	1	1	1	1	0.93	0.00	0.00
0	1	1	1	0	1	1	1	1	1	0.91	0.00	0.00
0	1	1	0	0	1	1	1	1	1	0.91	0.00	0.00
0	1	1	1	1	0	1	0	1	1	0.89	0.08	0.09
0	1	1	1	0	1	1	0	1	1	0.89	0.60	0.61
0	1	1	1	1	1	1	0	1	1	0.88	0.65	0.65
0	1	0	1	0	0	0	1	1	1	0.84	0.00	0.00
0	1	1	1	0	0	0	1	1	0	0.78	0.00	0.00
0	0	0	1	0	0	0	0	2	0	0.60	0.12	0.12

B.6.6 Solutions for Proposition P3.2 when Trust is Present

 TRUTH TABLE ANALYSIS

File:

Model: **T** = f(DP, DM, DB, DI, TP, TM, TH, **XP**)

Algorithm: Quine-McCluskey

--- COMPLEX **SOLUTION** ---

frequency cutoff: 1

consistency cutoff: 0.835085

	raw coverage	unique coverage	
consistency	-----	-----	-----

~DB*DI*TP*TM*TH*~XP	0.186686	0.00410926	
0.945565			
DM*DB*DI*TM*TH*~XP	0.400746	0.0395752	0.94485
DP*~DB*DI*TP*TM*TH	0.299469	0.00189662	
0.965356			
DM*~DB*DI*TP*TM*TH	0.290998	0.00189662	
0.957363			
DP*DM*DI*TP*TM*TH	0.62922	0.114237	
0.961828			
~DP*DM*DB*DI*TP*TH*~XP	0.0932482	0.00474149	
0.862573			
~DP*DM*DB*~TP*TM*TH*XP	0.087432	0.0233911	
0.891108			
DP*DM*DB*DI*TP*TM*~XP	0.366292	0.00948292	0.96744
DP*DM*~DB*DI*TM*TH*XP	0.14945	0.00948292	0.97164
DP*~DM*~DB*DI*~TP*TM*~TH*~XP	0.0543052	0.0104311	
0.944995			
~DP*DM*~DB*DI*~TP*~TM*~TH*XP	0.0653053	0.00252873	
0.835085			
~DP*~DM*~DB*DI*~TP*TM*TH*XP	0.0552535	0.00189662	
0.926829			
~DP*~DM*DB*DI*TP*TM*TH*XP	0.0487419	0.00189656	
0.939099			
solution coverage: 0.766342			
solution consistency: 0.907268			

Cases with greater than 0.5 membership in term

~DB*DI*TP*TM*TH*~XP: 23 (0.739,0.971),
 13 (0.571,0.471), 14 (0.571,0.971), 18 (0.571,0.971),
 25 (0.571,0.471), 2 (0.541,0.971), 16 (0.541,0.471),
 28 (0.541,0.471)

Cases with greater than 0.5 membership in term

DM*DB*DI*TM*TH*~XP: 3 (0.961,0.971),
 11 (0.871,0.971), 27 (0.731,0.971), 22 (0.651,0.971),
 1 (0.631,0.971), 7 (0.631,0.971), 24 (0.631,0.471),
 12 (0.571,0.201), 10 (0.541,0.971), 15 (0.541,0.471),

17 (0.541,0.471), 41 (0.541,0.471), 42 (0.541,0.971),
 43 (0.541,0.971), 44 (0.541,0.971)
 Cases with greater than 0.5 membership in term
 DP*~DB*DI*TP*TM*TH: 23 (0.739,0.971),
 5 (0.599,0.971), 13 (0.571,0.471), 14 (0.571,0.971),
 18 (0.571,0.971), 25 (0.571,0.471), 16 (0.541,0.471),
 30 (0.541,0.471), 37 (0.541,0.971), 39 (0.541,0.971)
 Cases with greater than 0.5 membership in term
 DM*~DB*DI*TP*TM*TH: 5 (0.599,0.971),
 13 (0.571,0.471), 14 (0.571,0.971), 18 (0.571,0.971),
 25 (0.571,0.471), 16 (0.541,0.471), 28 (0.541,0.471),
 35 (0.541,0.471), 37 (0.541,0.971), 39 (0.541,0.971)
 Cases with greater than 0.5 membership in term
 DP*DM*DI*TP*TM*TH: 9 (0.961,0.971),
 27 (0.961,0.971), 11 (0.871,0.971), 3 (0.861,0.971),
 5 (0.841,0.971), 22 (0.651,0.971), 4 (0.571,0.971),
 7 (0.571,0.971), 13 (0.571,0.471), 14 (0.571,0.971),
 18 (0.571,0.971), 24 (0.571,0.471), 25 (0.571,0.471),
 10 (0.541,0.971), 16 (0.541,0.471), 17 (0.541,0.471),
 32 (0.541,0.971), 34 (0.541,0.471), 37 (0.541,0.971),
 38 (0.541,0.971)
 Cases with greater than 0.5 membership in term
 ~DP*DM*DB*DI*TP*TH*~XP: 12 (0.571,0.201),
 45 (0.571,0.471)
 Cases with greater than 0.5 membership in term
 ~DP*DM*DB*~TP*TM*TH*XP: 6 (0.589,0.471),
 46 (0.571,0.471)
 Cases with greater than 0.5 membership in term
 DP*DM*DB*DI*TP*TM*~XP: 11 (0.871,0.971),
 3 (0.861,0.971), 27 (0.731,0.971), 19 (0.651,0.971),
 22 (0.651,0.971), 7 (0.571,0.971), 24 (0.571,0.471),
 10 (0.541,0.971), 17 (0.541,0.471), 42 (0.541,0.971),
 43 (0.541,0.971), 44 (0.541,0.971)
 Cases with greater than 0.5 membership in term
 DP*DM*~DB*DI*TM*TH*XP: 5 (0.599,0.971),
 31 (0.541,0.471), 37 (0.541,0.971), 39 (0.541,0.971)
 Cases with greater than 0.5 membership in term
 DP*~DM*~DB*DI*~TP*TM*~TH*~XP: 20 (0.541,0.971)
 Cases with greater than 0.5 membership in term
 ~DP*DM*~DB*DI*~TP*~TM*~TH*XP: 33 (0.541,0.201)
 Cases with greater than 0.5 membership in term
 ~DP*~DM*~DB*DI*~TP*TM*TH*XP: 36 (0.541,0.471)
 Cases with greater than 0.5 membership in term
 ~DP*~DM*DB*DI*TP*TM*TH*XP: 29 (0.571,0.471)


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*****
*TRUTH TABLE ANALYSIS*
*****
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File:

Model: **T** = f(DP, DM, DB, DI, TP, TM, TH, **XP**)

Algorithm: Quine-McCluskey

--- **PARSIMONIOUS** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.835085

	raw coverage	unique coverage	consistency
	-----	-----	-----
TM	0.916551	0.041851	0.863079
TH	0.918447	0.0470983	0.827901
DM*~DB	0.345619	0	0.854887
solution coverage: 0.968707			
solution consistency: 0.804949			

Cases with greater than 0.5 membership in term TM: 23

(0.961,0.971),
 2 (0.961,0.971), 3 (0.961,0.971), 18 (0.961,0.971),
 19 (0.961,0.971), 9 (0.961,0.971), 22 (0.961,0.971),
 17 (0.961,0.471), 27 (0.961,0.971), 30 (0.961,0.471),
 32 (0.961,0.971), 38 (0.961,0.971), 40 (0.961,0.471),
 42 (0.961,0.971), 43 (0.961,0.971), 44 (0.961,0.971),
 4 (0.871,0.971), 5 (0.871,0.971), 10 (0.871,0.971),
 11 (0.871,0.971)

Cases with greater than 0.5 membership in term TH: 2

(0.961,0.971),
 3 (0.961,0.971), 4 (0.961,0.971), 5 (0.961,0.971),
 6 (0.961,0.471), 7 (0.961,0.971), 9 (0.961,0.971),
 10 (0.961,0.971), 11 (0.961,0.971), 13 (0.961,0.471),
 14 (0.961,0.971), 23 (0.961,0.971), 16 (0.961,0.471),
 24 (0.961,0.471), 27 (0.961,0.971), 28 (0.961,0.471),
 30 (0.961,0.471), 31 (0.961,0.471), 32 (0.961,0.971),
 38 (0.961,0.971)

Cases with greater than 0.5 membership in term DM*~DB: 39

(0.839,0.971),
 25 (0.739,0.471), 28 (0.739,0.471), 31 (0.651,0.471),
 5 (0.599,0.971), 13 (0.599,0.471), 14 (0.599,0.971),
 16 (0.599,0.471), 18 (0.599,0.971), 33 (0.599,0.201),
 35 (0.599,0.471), 37 (0.599,0.971)

```
*****
*TRUTH TABLE ANALYSIS*
*****
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File:

Model: $T = f(DP, DM, DB, DI, TP, TM, TH, XP)$

Algorithm: Quine-McCluskey

--- **INTERMEDIATE** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.835085

Assumptions:

DP (present)

DM (present)

DB (present)

DI (present)

TP (present)

TM (present)

TH (present)

	raw coverage	unique coverage	consistency
	-----	-----	-----
DP*DI* TM *~XP	0.499052	0.0376154	0.940434
DM*~DB*DI*XP	0.153875	0.00252879	0.898818
DI*TP*TM*TH	0.663674	0.00600576	0.943386
DI*TM*TH*XP	0.292009	0.00632191	0.920303
DM*DB*DI*TM*TH	0.607725	0.0018965	0.943098
DM*DB* TM * TH *XP	0.252181	0.0306612	0.893593
DM*DB*DI*TP*TH*~XP	0.364079	0.00758636	0.94736
solution coverage:	0.825199		
solution consistency:	0.894777		

Cases with greater than 0.5 membership in term DP*DI*TM*~XP: 3
(0.961,0.971),

18 (0.961,0.971), 22 (0.961,0.971), 27 (0.961,0.971),
23 (0.921,0.971), 11 (0.871,0.971), 19 (0.651,0.971),
1 (0.631,0.971), 7 (0.631,0.971), 13 (0.631,0.471),
14 (0.631,0.971), 24 (0.631,0.471), 25 (0.631,0.471),
10 (0.541,0.971), 16 (0.541,0.471), 17 (0.541,0.471),
20 (0.541,0.971), 41 (0.541,0.471), 42 (0.541,0.971),
43 (0.541,0.971)

Cases with greater than 0.5 membership in term DM*~DB*DI*XP: 5
(0.599,0.971),

31 (0.541,0.471), 33 (0.541,0.201), 35 (0.541,0.471),
37 (0.541,0.971), 39 (0.541,0.971)

Cases with greater than 0.5 membership in term DI*TP*TM*TH: 9
(0.961,0.971),

27 (0.961,0.971), 23 (0.921,0.971), 11 (0.871,0.971),
3 (0.861,0.971), 22 (0.861,0.971), 5 (0.841,0.971),
4 (0.571,0.971), 7 (0.571,0.971), 12 (0.571,0.201),
13 (0.571,0.471), 14 (0.571,0.971), 18 (0.571,0.971),
24 (0.571,0.471), 25 (0.571,0.471), 29 (0.571,0.471),
2 (0.541,0.971), 10 (0.541,0.971), 16 (0.541,0.471),
17 (0.541,0.471)

Cases with greater than 0.5 membership in term DI*TM*TH*XP: 9
(0.961,0.971),

4 (0.871,0.971), 5 (0.841,0.971), 6 (0.631,0.471),
29 (0.571,0.471), 30 (0.541,0.471), 31 (0.541,0.471),
32 (0.541,0.971), 34 (0.541,0.471), 35 (0.541,0.471),
36 (0.541,0.471), 37 (0.541,0.971), 38 (0.541,0.971),
39 (0.541,0.971), 40 (0.541,0.471)

Cases with greater than 0.5 membership in term DM*DB*DI*TM*TH: 3
(0.961,0.971),

9 (0.961,0.971), 11 (0.871,0.971), 4 (0.731,0.971),
27 (0.731,0.971), 22 (0.651,0.971), 1 (0.631,0.971),
6 (0.631,0.471), 7 (0.631,0.971), 24 (0.631,0.471),
12 (0.571,0.201), 10 (0.541,0.971), 15 (0.541,0.471),
17 (0.541,0.471), 32 (0.541,0.971), 34 (0.541,0.471),
38 (0.541,0.971), 40 (0.541,0.471), 41 (0.541,0.471),
42 (0.541,0.971)

Cases with greater than 0.5 membership in term DM*DB*TM*TH*XP: 9
(0.961,0.971),

38 (0.961,0.971), 34 (0.861,0.471), 4 (0.731,0.971),
32 (0.651,0.971), 40 (0.651,0.471), 6 (0.631,0.471),
46 (0.571,0.471)

Cases with greater than 0.5 membership in term

DM*DB*DI*TP*TH*~XP: 11 (0.961,0.971),
3 (0.861,0.971), 27 (0.731,0.971), 22 (0.651,0.971),
7 (0.571,0.971), 12 (0.571,0.201), 24 (0.571,0.471),
45 (0.571,0.471), 10 (0.541,0.971), 17 (0.541,0.471),
42 (0.541,0.971), 43 (0.541,0.971), 44 (0.541,0.971)

B.6.7 Truth Table for Proposition P3.2 when Trust is AbsentP3.2 (Causal Conditions) • $XP \leq \sim T$

DP	DM	DB	DI	TP	TM	TH	XC	Number	$\sim T$	Raw Consist.	PRI Consist.	SYM Consist
0	1	0	1	0	0	0	1	1	1	1.00	1.00	1.00
0	1	1	1	0	0	0	1	1	1	1.00	1.00	1.00
1	0	0	1	1	1	1	1	1	1	0.99	0.83	1.00
0	1	0	1	1	1	1	1	1	1	0.99	0.83	1.00
0	0	0	1	0	1	1	1	1	1	0.99	0.91	1.00
0	1	1	0	0	1	1	1	1	1	0.98	0.81	1.00
0	1	1	1	0	1	1	1	1	1	0.98	0.75	1.00
0	1	1	1	1	0	1	0	1	1	0.97	0.78	0.91
0	0	1	1	1	1	1	1	1	1	0.97	0.58	1.00
0	0	0	1	0	0	0	0	2	1	0.94	0.88	0.88
1	1	0	1	0	1	1	1	1	1	0.89	0.25	0.25
0	1	0	1	1	1	1	0	1	1	0.84	0.13	0.13
0	1	1	1	0	1	1	0	1	1	0.84	0.39	0.39
0	1	1	1	1	1	1	0	1	0	0.78	0.35	0.35
0	0	0	1	1	1	1	0	1	0	0.67	0.00	0.00
1	0	0	1	0	1	0	0	1	0	0.65	0.13	0.13
1	1	1	1	1	1	0	0	1	0	0.64	0.14	0.14
1	1	1	1	0	1	1	0	2	0	0.62	0.10	0.10
1	1	0	1	1	1	1	1	3	0	0.56	0.00	0.00
1	1	0	1	1	1	1	0	5	0	0.55	0.06	0.07
1	0	0	1	1	1	1	0	1	0	0.50	0.00	0.00
1	1	1	1	1	1	1	1	6	0	0.49	0.03	0.03
1	1	1	1	1	1	1	0	11	0	0.36	0.04	0.04

B.6.8 Solutions for Proposition P3.2 when Trust is Absent

 TRUTH TABLE ANALYSIS

File:

Model: $\sim T = f(DP, DM, DB, DI, TP, TM, TH, \mathbf{XP})$

Algorithm: Quine-McCluskey

--- **COMPLEX** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.835036

	raw coverage	unique coverage	
consistency	-----	-----	-----

$\sim DP*DM*DI*\sim TP*\sim TM*\sim TH*XP$	0.19897	0.044556	1
$\sim DP*DM*DB*DI*\sim TP*TM*TH$	0.301587	0.0291007	
0.894302			
$\sim DP*DM*\sim DB*DI*TP*TM*TH$	0.24269	0.0329993	
0.895223			
$\sim DP*DM*DB*\sim TP*TM*TH*XP$	0.208995	0.0346701	
0.967139			
$\sim DP*\sim DM*\sim DB*DI*\sim TP*\sim TM*\sim TH*\sim XP$	0.140351	0.0661377	
0.94382			
$\sim DP*\sim DM*\sim DB*DI*\sim TP*TM*TH*XP$	0.130465	0.00821507	
0.993637			
$\sim DP*DM*DB*DI*TP*\sim TM*TH*\sim XP$	0.172793	0.0271512	
0.974863			
$DP*DM*\sim DB*DI*\sim TP*TM*TH*XP$	0.210248	0.0249235	
0.887713			
$DP*\sim DM*\sim DB*DI*TP*TM*TH*XP$	0.143414	0.00821507	
0.994209			
$\sim DP*\sim DM*DB*DI*TP*TM*TH*XP$	0.11139	0.00821507	
0.974421			
solution coverage: 0.633667			
solution consistency: 0.871672			

Cases with greater than 0.5 membership in term

$\sim DP*DM*DI*\sim TP*\sim TM*\sim TH*XP$: 8 (0.541,0.799),

33 (0.541,0.799)

Cases with greater than 0.5 membership in term

$\sim DP*DM*DB*DI*\sim TP*TM*TH$: 6 (0.589,0.529),

15 (0.541,0.529)

Cases with greater than 0.5 membership in term

$\sim DP*DM*\sim DB*DI*TP*TM*TH$: 28 (0.541,0.529),

35 (0.541,0.529)

Cases with greater than 0.5 membership in term

$\sim DP*DM*DB*\sim TP*TM*TH*XP$: 6 (0.589,0.529),

46 (0.571,0.529)

Cases with greater than 0.5 membership in term

$\sim DP*\sim DM*\sim DB*DI*\sim TP*\sim TM*\sim TH*\sim XP$: 21 (0.541,0.979),

26 (0.541,0.799)

Cases with greater than 0.5 membership in term

$\sim DP^* \sim DM^* \sim DB^* DI^* \sim TP^* TM^* TH^* XP$: 36 (0.541,0.529)

Cases with greater than 0.5 membership in term

$\sim DP^* DM^* DB^* DI^* TP^* \sim TM^* TH^* \sim XP$: 45 (0.571,0.529)

Cases with greater than 0.5 membership in term

$DP^* DM^* \sim DB^* DI^* \sim TP^* TM^* TH^* XP$: 31 (0.541,0.529)

Cases with greater than 0.5 membership in term

$DP^* \sim DM^* \sim DB^* DI^* TP^* TM^* TH^* XP$: 30 (0.541,0.529)

Cases with greater than 0.5 membership in term

$\sim DP^* \sim DM^* DB^* DI^* TP^* TM^* TH^* XP$: 29 (0.571,0.529)

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*****
*TRUTH TABLE ANALYSIS*
*****
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File:

Model: $\sim T = f(DP, DM, DB, DI, TP, TM, TH, \mathbf{XP})$

Algorithm: Quine-McCluskey

--- **PARSIMONIOUS** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.835036

	raw coverage	unique coverage	consistency
	-----	-----	-----
$\sim TM$	0.679755	0.151072	0.787166
$\sim DP^* \sim TP$	0.521721	0.0153161	0.916809
$\sim DM^* XP$	0.271651	0.0139237	0.886415
$\sim DP^* DM^* \sim DB$	0.33208	0.0139237	0.865384
$\sim TP^* XP$	0.414369	0.0250627	0.765826
solution coverage:	0.842662		
solution consistency:	0.701031		

Cases with greater than 0.5 membership in term $\sim TM$: 21
(0.879,0.979),

26 (0.879,0.799), 33 (0.879,0.799), 8 (0.679,0.799),
45 (0.679,0.529)

Cases with greater than 0.5 membership in term $\sim DP^* \sim TP$: 21
(0.789,0.979),

6 (0.589,0.529), 8 (0.589,0.799), 15 (0.589,0.529),
26 (0.589,0.799), 33 (0.589,0.799), 36 (0.589,0.529),
46 (0.589,0.529)

Cases with greater than 0.5 membership in term $\sim DM^* XP$: 29
(0.589,0.529),

30 (0.589,0.529), 36 (0.589,0.529)

Cases with greater than 0.5 membership in term $\sim DP^* DM^* \sim DB$: 28
(0.589,0.529),

33 (0.589,0.799), 35 (0.589,0.529)

Cases with greater than 0.5 membership in term $\sim TP^* XP$: 6
(0.829,0.529),

8 (0.829,0.799), 31 (0.829,0.529), 33 (0.829,0.799),
36 (0.829,0.529), 46 (0.829,0.529)

 TRUTH TABLE ANALYSIS

File:

Model: $\sim T = f(DP, DM, DB, DI, TP, TM, TH, \mathbf{XP})$

Algorithm: Quine-McCluskey

--- **INTERMEDIATE** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.835036

Assumptions:

$\sim DP$ (absent)

$\sim DM$ (absent)

$\sim DB$ (absent)

$\sim DI$ (absent)

$\sim TP$ (absent)

$\sim TM$ (absent)

$\sim TH$ (absent)

	raw coverage	unique coverage	consistency
	-----	-----	-----
$\sim DP * \sim TP$	0.521721	0.0793654	0.916809
$\sim DP * \sim TM * \sim XP$	0.289056	0.0271512	0.912127
$\sim DP * DM * \sim DB$	0.33208	0.0139238	0.865384
$\sim DB * \sim TP * \mathbf{XP}$	0.254247	0.0132275	0.790134
$\sim DM * \sim DB * \mathbf{XP}$	0.203425	0.00696188	0.960552
$\sim DP * \sim DM * \mathbf{XP}$	0.192286	0.00696188	0.958362
solution coverage:	0.661654		
solution consistency:	0.814675		

Cases with greater than 0.5 membership in term $\sim DP * \sim TP$: 21
 (0.789,0.979),

6 (0.589,0.529), 8 (0.589,0.799), 15 (0.589,0.529),
 26 (0.589,0.799), 33 (0.589,0.799), 36 (0.589,0.529),
 46 (0.589,0.529)

Cases with greater than 0.5 membership in term $\sim DP * \sim TM * \sim XP$: 21
 (0.789,0.979),

26 (0.589,0.799), 45 (0.589,0.529)

Cases with greater than 0.5 membership in term $\sim DP * DM * \sim DB$: 28
 (0.589,0.529),

33 (0.589,0.799), 35 (0.589,0.529)

Cases with greater than 0.5 membership in term $\sim DB * \sim TP * \mathbf{XP}$: 31
 (0.829,0.529),

36 (0.829,0.529), 33 (0.599,0.799)

Cases with greater than 0.5 membership in term $\sim DM * \sim DB * \mathbf{XP}$: 30
 (0.589,0.529),

36 (0.589,0.529)

Cases with greater than 0.5 membership in term $\sim DP * \sim DM * \mathbf{XP}$: 29
 (0.589,0.529),

36 (0.589,0.529)

Truth Table Analysis for (Causal Condition) → T

 TRUTH TABLE ANALYSIS

File:

Model: **T** = f(DP, DM, DB, DI, TP, TM, TH)

Algorithm: Quine-McCluskey

--- **COMPLEX** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.815315

	raw coverage	unique coverage	consistency
	-----	-----	-----
~DB*DI*TP*TM*TH	0.307371	0.0122645	0.95296
~DP*DI*TP*TM*TH	0.15849	0.00189656	0.891536
DP*DM*DI*TM*TH	0.70856	0.0592363	0.950394
~DP*DM*DI*~TP*~TM*~TH	0.115248	0.00347704	0.762124
~DP*~DM*~DB*DI*TM*TH	0.0981793	0.00189662	0.95746
~DP*DM*DB*~TP*TM*TH	0.150082	0.0177013	0.876986
~DP*DM*DB*DI*TP*TH	0.143381	0.00474149	0.906113
DP*DM*DB*DI*TP*TM	0.557782	0.0094828	0.970841
DP*~DM*~DB*DI*~TP*TM*~TH	0.0937539	0.0104311	0.946394
solution coverage: 0.78025			
solution consistency: 0.891699			

Cases with greater than 0.5 membership in term ~DB*DI*TP*TM*TH:
 23 (0.739,0.971),

5 (0.599,0.971), 13 (0.571,0.471), 14 (0.571,0.971),
 18 (0.571,0.971), 25 (0.571,0.471), 2 (0.541,0.971),
 16 (0.541,0.471), 28 (0.541,0.471), 30 (0.541,0.471),
 35 (0.541,0.471), 37 (0.541,0.971), 39 (0.541,0.971)

Cases with greater than 0.5 membership in term ~DP*DI*TP*TM*TH:
 12 (0.571,0.201),

29 (0.571,0.471), 2 (0.541,0.971), 28 (0.541,0.471),
 35 (0.541,0.471)

Cases with greater than 0.5 membership in term DP*DM*DI*TM*TH: 3
 (0.961,0.971),

9 (0.961,0.971), 27 (0.961,0.971), 4 (0.871,0.971),
 11 (0.871,0.971), 5 (0.841,0.971), 22 (0.651,0.971),
 1 (0.631,0.971), 7 (0.631,0.971), 13 (0.631,0.471),
 14 (0.631,0.971), 24 (0.631,0.471), 18 (0.571,0.971),
 25 (0.571,0.471), 10 (0.541,0.971), 16 (0.541,0.471),
 17 (0.541,0.471), 31 (0.541,0.471), 32 (0.541,0.971),
 34 (0.541,0.471)

Cases with greater than 0.5 membership in term

~DP*DM*DI*~TP*~TM*~TH: 8 (0.541,0.201),
 33 (0.541,0.201)

Cases with greater than 0.5 membership in term

~DP*~DM*~DB*DI*TM*TH: 2 (0.541,0.971),
 36 (0.541,0.471)

Cases with greater than 0.5 membership in term

~DP*DM*DB*~TP*TM*TH: 6 (0.589,0.471),
15 (0.571,0.471), 46 (0.571,0.471)

Cases with greater than 0.5 membership in term

~DP*DM*DB*DI*TP*TH: 12 (0.571,0.201),
45 (0.571,0.471)

Cases with greater than 0.5 membership in term

DP*DM*DB*DI*TP*TM: 9 (0.961,0.971),
11 (0.871,0.971), 3 (0.861,0.971), 27 (0.731,0.971),
19 (0.651,0.971), 22 (0.651,0.971), 4 (0.571,0.971),
7 (0.571,0.971), 24 (0.571,0.471), 10 (0.541,0.971),
17 (0.541,0.471), 32 (0.541,0.971), 34 (0.541,0.471),
38 (0.541,0.971), 40 (0.541,0.471), 42 (0.541,0.971),
43 (0.541,0.971), 44 (0.541,0.971)

Cases with greater than 0.5 membership in term

DP*~DM*~DB*DI*~TP*TM*~TH: 20 (0.541,0.971)

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*****
*TRUTH TABLE ANALYSIS*
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File:

Model: $T = f(DP, DM, DB, DI, TP, TM, TH)$

Algorithm: Quine-McCluskey

--- **PARSIMONIOUS** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.815315

	raw coverage	unique coverage	consistency
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DM	0.910861	0.0613226	0.778895
TM	0.916551	0.0670124	0.863079
solution coverage: 0.977873			
solution consistency: 0.768482			

Cases with greater than 0.5 membership in term DM: 24

(0.971,0.471),

3 (0.971,0.971), 4 (0.971,0.971), 5 (0.971,0.971),
 6 (0.971,0.471), 7 (0.971,0.971), 19 (0.971,0.971),
 9 (0.971,0.971), 10 (0.971,0.971), 11 (0.971,0.971),
 12 (0.971,0.201), 13 (0.971,0.471), 14 (0.971,0.971),
 15 (0.971,0.471), 16 (0.971,0.471), 17 (0.971,0.471),
 18 (0.971,0.971), 25 (0.971,0.471), 27 (0.971,0.971),
 28 (0.971,0.471)

Cases with greater than 0.5 membership in term TM: 23

(0.961,0.971),

2 (0.961,0.971), 3 (0.961,0.971), 18 (0.961,0.971),
 19 (0.961,0.971), 9 (0.961,0.971), 22 (0.961,0.971),
 17 (0.961,0.471), 27 (0.961,0.971), 30 (0.961,0.471),
 32 (0.961,0.971), 38 (0.961,0.971), 40 (0.961,0.471),
 42 (0.961,0.971), 43 (0.961,0.971), 44 (0.961,0.971),
 4 (0.871,0.971), 5 (0.871,0.971), 10 (0.871,0.971),
 11 (0.871,0.971)

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*****
*TRUTH TABLE ANALYSIS*
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File:

Model: $T = f(DP, DM, DB, DI, TP, TM, TH)$

Algorithm: Quine-McCluskey

--- **INTERMEDIATE** SOLUTION ---

frequency cutoff: 1

consistency cutoff: 0.815315

Assumptions:

DP (present)

DM (present)

TM (present)

TH (present)

	raw coverage	unique coverage	consistency
	-----	-----	-----
DM*DI*~TP	0.336452	0.00252873	0.857695
~DB*DI*TM*TH	0.340056	0.00278169	0.937598
DM*DB*DI*TH	0.621633	0.0107473	0.911054
DI*TP*TM*TH	0.663674	0.0292073	0.943386
DP*~DB*DI*~TP*TM	0.229232	0.0041092	0.968224
DM*DB*~TP*TM*TH	0.299532	0.0139082	0.921432
DP*DM*DB*DI*TM	0.615311	0.00948286	0.960525
solution coverage:	0.793842		
solution consistency:	0.872863		

Cases with greater than 0.5 membership in term DM*DI*~TP: 6
(0.829,0.471),

1 (0.651,0.971), 8 (0.541,0.201), 15 (0.541,0.471),
31 (0.541,0.471), 33 (0.541,0.201), 41 (0.541,0.471)

Cases with greater than 0.5 membership in term ~DB*DI*TM*TH: 23
(0.739,0.971),

5 (0.599,0.971), 13 (0.599,0.471), 14 (0.599,0.971),
18 (0.571,0.971), 25 (0.571,0.471), 2 (0.541,0.971),
16 (0.541,0.471), 28 (0.541,0.471), 30 (0.541,0.471),
31 (0.541,0.471), 35 (0.541,0.471), 36 (0.541,0.471),
37 (0.541,0.971), 39 (0.541,0.971)

Cases with greater than 0.5 membership in term DM*DB*DI*TH: 3
(0.961,0.971),

9 (0.961,0.971), 11 (0.961,0.971), 24 (0.961,0.471),
6 (0.921,0.471), 4 (0.731,0.971), 7 (0.731,0.971),
27 (0.731,0.971), 1 (0.651,0.971), 22 (0.651,0.971),
12 (0.571,0.201), 45 (0.571,0.471), 10 (0.541,0.971),
15 (0.541,0.471), 17 (0.541,0.471), 32 (0.541,0.971),
34 (0.541,0.471), 38 (0.541,0.971), 40 (0.541,0.471),
41 (0.541,0.471)

Cases with greater than 0.5 membership in term DI*TP*TM*TH: 9
(0.961,0.971),

27 (0.961,0.971), 23 (0.921,0.971), 11 (0.871,0.971),
3 (0.861,0.971), 22 (0.861,0.971), 5 (0.841,0.971),
4 (0.571,0.971), 7 (0.571,0.971), 12 (0.571,0.201),

13 (0.571,0.471), 14 (0.571,0.971), 18 (0.571,0.971),
 24 (0.571,0.471), 25 (0.571,0.471), 29 (0.571,0.471),
 2 (0.541,0.971), 10 (0.541,0.971), 16 (0.541,0.471),
 17 (0.541,0.471)
 Cases with greater than 0.5 membership in term DP*~DB*DI*~TP*TM:
 20 (0.541,0.971),
 31 (0.541,0.471)
 Cases with greater than 0.5 membership in term DM*DB*~TP*TM*TH:
 1 (0.631,0.971),
 6 (0.631,0.471), 15 (0.571,0.471), 41 (0.571,0.471),
 46 (0.571,0.471)
 Cases with greater than 0.5 membership in term DP*DM*DB*DI*TM: 3
 (0.961,0.971),
 9 (0.961,0.971), 11 (0.871,0.971), 4 (0.731,0.971),
 27 (0.731,0.971), 19 (0.651,0.971), 22 (0.651,0.971),
 1 (0.631,0.971), 7 (0.631,0.971), 24 (0.631,0.471),
 10 (0.541,0.971), 17 (0.541,0.471), 32 (0.541,0.971),
 34 (0.541,0.471), 38 (0.541,0.971), 40 (0.541,0.471),
 41 (0.541,0.471), 42 (0.541,0.971), 43 (0.541,0.971),
 44 (0.541,0.971)