

# Investigating Online and Physical Retailing with the Perspective of Traditional Economic Geography in the COVID-19 Era

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## ABSTRACT

It is crucial to understand the needs of consumers, producers, and intermediaries (retailers) in the context of the rapid growth of companies and organizations. The use of a supply chain management system can greatly enhance the efficiency of order transmission and receipt. However, it is unfortunate that management systems, particularly supply chain management, have not fully capitalized on the opportunities offered by today's technology-driven and intelligent world. This presents an interesting challenge for management systems focusing on sustainable development goals, especially during times of crisis like the COVID-19 pandemic. The outbreak and global spread of the coronavirus has exposed the vulnerability of the global supply chain. From the initial stages of sourcing raw materials to the production and distribution of goods, every step is susceptible to disruption. In light of this, companies must proactively anticipate potential issues and implement measures to restore and improve their supply chains. To raise awareness about this critical issue, it is important to identify the challenges faced by companies and businesses. This will enable us to develop strategies for improvement and recovery, both in online and physical retail, from the perspective of traditional economic geography. Supply chain recovery is of utmost importance and goes beyond crisis management, as it involves overcoming numerous challenges during the recovery phase. The severity and adverse effects of the pandemic may vary, making it crucial for businesses to carefully navigate the long-term and destructive impacts on their supply chains. Subsequently, the recovery of the supply chain in the post-pandemic era requires a comprehensive approach that encompasses both online and physical retail, taking into account traditional economic geography. Therefore, in the midst of an epidemic, identifying potential challenges in the supply chain and understanding their impact on post-disaster recovery strategies play a vital role. This understanding will inform the development of appropriate strategies to address these challenges, both in online and physical retail, from a traditional geographic perspective.

## **1. Introduction**

- To prevent the spread of the coronavirus among the general population, all governments have decided that total quarantine is the best way to ensure limited interaction between people. No such existing model has ever experienced quarantine due to the Covid-19 pandemic. As a result, companies' supply chains have been significantly impacted during Covid-19. A well-designed supply chain system provides increased efficiency, quality control, increased interactions and customer service, shorter production cycles, lower production costs, and overall improvement in the company's financial performance. Due to global supply chain disruptions, manufacturers and distributors have had trouble repairing or replenishing their inventory, equipment or machinery. This has been due to the restrictions and slowing down of industrial activities of trading partners, sea ports (that is, the main route of international trade) have not been able to transfer bulk shipments of items from international borders. Players in the logistics, transportation and supply chain sectors must provide advanced distribution and inventory management strategies and develop strategic alliances with channel participants and partners across the value chain to mitigate the impact of Covid-19 on business operations. The global supply chain depends on the transportation sector, which is partially closed due to the quarantine (Mohanta et al., 2021) (Basu, 2020) (Barman et al., 2021). Retail, as the final and most important part of the supply chain and gateway to the final consumers (Koul & Jasrotia, 2019), has extraordinary importance in the economic and cultural dynamics of each country. In recent years, due to advances in technology, this industry has undergone significant changes, and therefore, retail management is no longer possible with traditional methods and requires synchronization with current scientific and modern management methods (Riazi et al., 2022). In this industry, deterioration is significant in the inventory model, because as the deterioration rate increases, the retailer's profit may decrease. Conversely, when the rate of deterioration decreases, the retailer's profit may increase. Therefore, the gain changes with the inverse decay rate. Therefore, the deterioration rate cannot be eliminated in an inventory model. Items that are subject to wear, damage, spoilage, evaporation, obsolescence, theft, loss of use, or loss of marginal value are perishable or obsolete items (Wee, 1993). Freshness is an essential quality factor for fresh products. Perishable goods constitute a significant part of the warehouse transported in practice (Balkhi, 1999). Weibull distribution is usually used to show the distribution of time until the item fails. Because of their practical applications in agriculture, chemicals, medical products, photojournalism, and blood bank management, many articles have focused on perishable inventory control. In conventional deterministic inventory models, demand is assumed to be constant or time-dependent. Degradation rates may affect the demand for perishable goods such as food and clothing. Researchers and marketing practitioners have noted that improving product shelf space generally has a positive effect on product sales.
- It has been observed that business owners are forced to purchase more than their storage capacity to take advantage of bulk purchase discounts, avoid ordering costs, etc. In these cases, businesses must rent a warehouse to store the excess purchased. Due to the increase in material preservation and storage costs, the maintenance costs per unit and the depreciation costs in the rental warehouse (RW) are often higher than in the owned warehouse, so things should be stored in the owned warehouse (OW) first and only inventory. Excess should be stored in a rented warehouse. As a result, to reduce the total inventory costs, it is necessary to finish the inventory in the rented warehouse first and then the inventory in the owned warehouse. The total cost of the system is also reduced due to the greater capacity of the warehouse under ownership. As a result, it is necessary to study a two-warehouse system in the design of inventory models. It has already been investigated that the concept of two warehouses assumes that the leased warehouse creates higher inventory holding costs than the owned warehouse. As a result, the goods in the rented warehouse are transferred to the owned warehouse until the inventory of the rented warehouse reaches zero, at this stage, the goods in the owned warehouse are used. Due to the lack of proper facilities in the warehouse, many authors claim that the store is forced to hire a rental warehouse to minimize the waste caused by failure with advanced storage facilities. The Weibull distribution is used in this model to represent decay (two parameters).
- The basic characteristics of the innovation of this research have been compared with previous methods available in this study. According to the research background, many researchers created models for deteriorating items without using the idea of demand disturbance. However, in the model of this research, it mainly focuses on the demand disruption that occurs due to the lock restrictions. This research assumes two scenarios: in scenario 1, the rented warehouse is

completely emptied after the lock-in period, and in scenario 2, the rented warehouse is completely emptied during the lock-in period. Here, a small-scale decrease in the demand rate is applied, which is caused by the quarantine restrictions, and a small-scale increase is caused by the panic buying tendencies of the customer after the relaxation of the quarantine. Since the maintenance cost of the rented warehouse is more than the owned warehouse, the LIFO policy based on the neural network is used in this research to reduce the overall maintenance cost of the system. The present research is about minimizing the total maintenance cost of two warehouse systems by using the LIFO principle, that is, the first use of the leased warehouse stock, after the complete emptying of the leased warehouse, the use of the owned warehouse stock due to the maintenance costs in the leased warehouse. O more than the cost in the warehouse. This paper also uses time-based demand and two-parameter Weibull distribution to explain the deterioration rate.

## 2. Literature Review

The comparison of the proposed work with the previously published works is summarized in Table (1) based on the deteriorating performance structure, demand, demand disturbance, storage equipment and objective function.

*Table (1), comparing the proposed work with previously published works*

|                            | Objective Function | Storage equipment | Disturbance in demand | demand                           | Declining performance              |
|----------------------------|--------------------|-------------------|-----------------------|----------------------------------|------------------------------------|
| (Jaggi et al., 2006)       | Cost minimization  | 1                 | No                    | Increase exponentially over time | Fixed                              |
| (Dey et al., 2008)         | Cost Maximization  | 2                 | No                    | It varies with time              | Fixed                              |
| (Zhang et al., 2014)       | Cost minimization  | 1                 | No                    | dependent on price               | Fixed                              |
| (Hung, 2011)               | Cost minimization  | 1                 | No                    | Related to time                  | Arbitrarily                        |
| (Prasad & Mukherjee, 2016) | Cost minimization  | 1                 | No                    | Related to stock and time        | Weiball two-parameter distribution |
| (Rastogi et al., 2017)     | Cost Maximization  | 2                 | No                    | dependent on price               | Fixed                              |
| (Tiwari et al., 2018)      | Cost Maximization  | 1                 | No                    | dependent on price               | time dependent                     |
| (Panda et al., 2019)       | Cost minimization  | 2                 | No                    | Related to stock and time        | Fixed                              |
| (Bishi et al., 2019)       | Cost minimization  | 2                 | No                    | Increase exponentially over time | non-instantaneous                  |

|                            |                   |   |     |                           |                                      |
|----------------------------|-------------------|---|-----|---------------------------|--------------------------------------|
| (Shaikh et al., 2019)      | Cost Maximization | 1 | No  | dependent on price        | Three-parameter Weibowl distribution |
| [16](Garg et al., 2020)    | Cost minimization | 2 | No  | Ramp type                 | Fixed                                |
| (Ahmad & Benkherouf, 2020) | Cost minimization | 1 | No  | Related to stock          | non-instantaneous                    |
| (Rout et al., 2021)        | Cost minimization | 1 | No  | dependent on backwardness | Fixed                                |
| (Kumar et al., 2022)       | Cost minimization | 2 | No  | Related to stock          | Fixed                                |
| Proposed Method            | Cost minimization | 2 | Yes | dependent on price        | Weibull two-parameter distribution   |

According to extensive research background studies, almost all recommended studies in this field are theoretical. But a theoretical idea is not enough without supporting evidence from a real scenario. As a result, it seems necessary to provide a mathematical model to help analyze supply chain disruptions caused by Covid-19. In this technique, time-dependent linear demand is considered and made more realistic by using a two-parameter Weibull distribution decay. A limited increase and decrease in demand is assumed, with this limited amount of demand disturbance derived from the production inventory model for single storage, i.e., a decrease in demand rate due to government lock-in and an increase in demand due to storage exceeding limit by people when the government eased the rules (horrible buying behavior of people has been observed). Their results are displayed visually to better understand how different parameters affect the results. To determine critical parameters, sensitivity analysis is performed.

### 3. Proposed Method

Currently, the supply chain is facing several challenges due to the COVID-19 pandemic. Among them, recovery challenges are the most important. Since the COVID-19 pandemic is a new and exceptional pandemic, therefore, the authors of this paper are conducting research to identify and analyze the supply chain recovery challenges in the RMG supply chain due to the COVID-19 pandemic. A survey has been provided for it, which is as follows:

Q1. Your name:

Q2. Your company name:

Q3: Number of years of experience:

Q4: Your area of work:

Q5: Please list the potential supply chain recovery challenges during or after a global pandemic, like COVID-19, below.

Q6: Please rate the recovery challenges using a 5-point Likert scale (1 means not important and 5 means most important).

*Table A1: Profiles of the ten RMG experts used in the Delphi method for data collection*

| Code for expert | Working experience | Area of working                            |
|-----------------|--------------------|--------------------------------------------|
| E1              | 5 years            | Planning & Business Development            |
| E2              | 10 years           | Supply Chain Management                    |
| E3              | 5 years            | Green Building Consultancy in RMG industry |
| E4              | 12 years           | Product Safety & Quality Assurance         |
| E5              | 14 years           | Logistics Management                       |
| E6              | 11 years           | Supply Chain & Business Management         |
| E7              | 16 years           | Quality Assurance                          |
| E8              | 20 years           | Supply Chain Management                    |
| E9              | 18 years           | Merchandizing                              |
| E10             | 22 years           | Production and Quality Management          |

*Table A2: Data obtained from the ten experts*

| Name of the recovery challenges                     | E-1 | E-2 | E-3 | E-4 | E-5 | E-6 | E-7 | E-8 | E-9 | E-10 |
|-----------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Global economic recession in longer term            | 5   | 4   | 3   | 5   | 4   | 4   | 4   | 4   | 4   | 4    |
| Pressure from buyers on reducing delivery lead time | 4   | 4   | 4   | 4   | 5   | 4   | 4   | 5   | 4   | 5    |
| Increase of bankruptcy of supply chain partners     | 5   | 3   | 4   | 5   | 5   | 4   | 5   | 3   | 4   | 4    |
| Complexities in real time forecasting               | 3   | 3   | 2   | 3   | 3   | 4   | 3   | 3   | 3   | 3    |
| Shortage of physical and financial resources        | 5   | 3   | 4   | 5   | 3   | 4   | 5   | 3   | 5   | 4    |
| Sharp fall of demand for a longer period            | 4   | 4   | 4   | 5   | 4   | 3   | 5   | 4   | 2   | 5    |
| High level of layoff of highly paid workers         | 4   | 4   | 2   | 4   | 4   | 4   | 5   | 4   | 4   | 5    |

|                                                               |   |   |   |   |   |   |   |   |   |   |
|---------------------------------------------------------------|---|---|---|---|---|---|---|---|---|---|
| Long time to make a recovery decision                         | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 5 | 5 |
| Closer of operations of supply chain partners                 | 3 | 4 | 3 | 4 | 5 | 4 | 4 | 4 | 4 | 5 |
| More sustainable demand from the employees                    | 3 | 3 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 3 |
| Changes in the distribution networks                          | 4 | 5 | 3 | 5 | 4 | 4 | 4 | 4 | 4 | 5 |
| Shortage of skill manpower                                    | 5 | 4 | 5 | 5 | 4 | 4 | 5 | 3 | 4 | 4 |
| A slow rise in productivity to normal levels                  | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 5 | 3 | 4 |
| Payment withholding from buyers                               | 4 | 4 | 4 | 3 | 5 | 4 | 4 | 4 | 5 | 5 |
| Complexities in production planning                           | 3 | 3 | 2 | 3 | 4 | 2 | 3 | 3 | 3 | 3 |
| Low level of preparedness                                     | 3 | 4 | 4 | 5 | 4 | 4 | 5 | 3 | 5 | 4 |
| Reduction in supply chain flexibility                         | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 3 | 4 |
| Difficulties in supply chain collaboration                    | 5 | 4 | 4 | 4 | 4 | 3 | 5 | 4 | 4 | 4 |
| Long-lasting impact on the activities of end-customers        | 5 | 4 | 2 | 4 | 3 | 5 | 4 | 5 | 4 | 4 |
| Reduction in sourcing options                                 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 4 |
| Lack of air transportation facility                           | 3 | 3 | 4 | 2 | 3 | 2 | 3 | 4 | 3 | 3 |
| Long time to recover                                          | 4 | 4 | 4 | 4 | 3 | 5 | 4 | 4 | 4 | 4 |
| Low level of financial flow in the market                     | 5 | 4 | 5 | 4 | 2 | 5 | 4 | 3 | 4 | 4 |
| Problem in rapid communication                                | 2 | 3 | 3 | 4 | 2 | 3 | 4 | 3 | 3 | 3 |
| Frequent order cancellation from buyers                       | 4 | 4 | 3 | 5 | 4 | 4 | 4 | 4 | 5 | 4 |
| Increase in price of raw materials                            | 4 | 4 | 5 | 3 | 5 | 4 | 3 | 4 | 4 | 4 |
| Pressure from buyers on using faster transportation mode      | 5 | 4 | 5 | 4 | 3 | 4 | 4 | 5 | 4 | 2 |
| Dilemma of 'survival vs. sustainability' in making a decision | 3 | 4 | 4 | 5 | 4 | 4 | 5 | 4 | 5 | 3 |

#### 4. Proposed Method

The characteristics of a simulation model are considered as an important and vital tool to explain how supply chain performance indicators react when faced with controllable factors and environmental factors. Simulation should be free of heavy mathematical operations and formulas as much as possible. In fact, reducing computational complexity is one of the most important goals of simulation in supply chain management. Since the nature of most supply chains is characterized by uncertainty, model parameters such as cost, production speed, demand, etc. are not really certain. Supply chain governance refers to the mechanism, including contractual and relational governance that governs transactions—both physical and digital—between supply chain members. Supply chain governance plays a vital role not only in reducing risk and uncertainty related to inter-company competitive relationships, but also in strengthening inter-company cooperation. However, significant supply chain disruptions in the global COVID-19 outbreak due to bilateral relationships

in geographically dispersed multi-layer supply chains and the lack of supply chain visibility and risk communication have prompted reflection on conventional supply chain governance mechanisms of this strategic need. It highlighted the digital transformation of supply chain governance to improve transparency, response time, efficiency, trust, honesty and reliability.

Information and communication technology has driven the digital transformation of supply chain governance and has played an increasing role in managing buyer-supplier relationships. However, the digital transformation of supply chain governance is still in its infancy, as buyer-supplier relationships are largely paper-based. Moreover, buyer-supplier relationships are mainly based on mutual trust at the dyadic level, and thus companies are wary of sharing data across their inter-company boundaries. Lack of trust and appropriate data governance models limits the expansion of supply chain governance beyond the binary level. Based on this, it is necessary to seek to change the governance of the traditional trust-based supply chain through a whole structure of chain transparency, and the purpose of this research is to provide a method for this purpose. The studied supply chain for online and physical retailing with the perspective of traditional economic geography of this research is based on reference (Paul et al., 2021).

Applied design begins with the identification of design requirements. The design requirements are guided by the supply chain design strategy based on online and physical retailing with the perspective of traditional economic geography (Paul et al., 2021), which aims to achieve a holistic supply chain governance with the aim of providing customers with a sense of security in pre-orders through transparency. The whole chain. Supply chain offerings (such as ERP and inventory management software) have been deployed to capture and transmit company-level data via PDF files and Excel spreadsheets), which challenges multifactor data integration. COVID-19 quarantines have led to additional governance challenges, as they have disrupted supply chain governance practices. To configure the supply chain to achieve the supply chain strategy for a holistic governance and a total transparency of the chain based on the neural-fuzzy network approach or ANFIS is introduced. The design of the multi-signature architecture maintains minimal disruption to existing supply chain operations by transferring the actions associated with a transaction (e.g., registration and verification). These basic assumptions are used to build the mathematical inventory model:

A Weibull distribution with a two-parameter decay rate is considered.

- The filling speed is infinite.
- Owned warehouse storage space is limited to store  $W$  units, while leased warehouse storage space is unlimited.
- When an owned warehouse is completely full, we can store products in a rented warehouse.
- Damaged goods cannot be repaired or replaced.
- Inventory systems only deal with one type of product.
- The LIFO dispatching strategy is applied when the leased warehouse storage is exhausted, which means that the first item in the leased warehouse is consumed before the last item in the owned warehouse.

We assume that the supplier has unlimited production capacity, operates in custom mode, and can always meet the retailer's requests. The supply chain can be managed using two different digital platforms, a traditional online marketplace or a LIFO. Our goal is to identify the conditions under which

implementation is operationally and economically convenient. Therefore, we define a traditional online market (O-game) and compare it with a setting (B-Game). In O-game, the firm's objective functions are defined by (1) and (2).

$$\pi_S^O = \max_{A^O} \left\{ Q^O(w - c_S) - \frac{c_A(A^O)^2}{2} - (\lambda_S Q^O + A^O)c_T \right\}$$

$$\pi_R^O = \max_{p^O, Q^O} \left\{ [aQ^O(1 - \gamma) - \beta p^O + \theta A^O(1 - \emptyset)](p^O - c_R) - Q^O(w + \lambda_R c_T) - \frac{c_Q(Q^O)^2}{2} \right\}$$

In this equation,  $w - c_S$  is the supplier's final income with  $c_S$  being the final cost of production.  $c_A$  is the online service investment made by the supplier, with  $c_A$  reflecting the marginal impact of these efforts on the firm's target performance. The special quadratic form of these efforts supports the concavity assumptions. Dividing by half allows for a lighter analytical development, while this effect can be controlled later using the  $c_A$  parameter.  $c_T$  is the marginal transaction cost that the supplier faces given the amount moved in the supply chain  $Q^O$  as well as the amount invested in online efforts  $A^O$ , which involves multiple interactions with stakeholders belonging to the supply chain. It should be noted that  $\lambda_S$  is a scaling parameter that allows  $Q$  to be expressed in economic terms and comparable to  $A^O$ .

This study used a single-item inventory with two warehouses, time-dependent linear demand and Weibull distribution to more accurately depict online and physical retailing with a traditional geo-economic perspective during the Covid-19 crisis. Action to control spoilage is determined, as it significantly affects the issue of perishable stock. To demonstrate the versatility and applicability of the Weibull distribution to the study of deterioration processes, we examine the variation of the Weibull parameter on the deterioration properties. The total cost of each cycle is presented for two scenarios using the proposed mathematical analysis. Since the lock-in period in scenario 2 is long, it has a higher total cost than scenario 1 in this model. Because of discounts offered for bulk orders and other conditions, the seller buys more than the warehouse can hold. Therefore, in this situation, the seller must store additional stock in any leased warehouse. This study has presented a significant conclusion that the additional cost of material storage etc. is reduced by using the proposed technique, considering that the cost of inventory, such as the cost of storage in rented, is more than owned warehouse. However, it will be more financially beneficial for businesses to hold goods in pre-owned warehouse and use inventory in pre-owned warehouse. This research comes to the conclusion that increasing the capacity of the warehouse will reduce the cost of the whole system. In addition, a sensitivity analysis on different system parameters is performed and an analytical example is presented.

## 5.Result

**Table B1: Grey relation matric constructed with the assistant of Expert-2**

| Expert<br>2 | RC<br>1  | RC<br>2  | RC<br>3  | RC<br>4  | RC<br>5  | RC<br>6  | RC<br>7  | RC<br>8  | RC<br>9  | RC1<br>0 | RC1<br>1 | RC1<br>2 | RC1<br>3 | RC1<br>4 | RC1<br>5 | RC1<br>6 | RC1<br>7 | RC1<br>8 | RC1<br>9 | RC2<br>0 | RC2<br>1 | RC2<br>2 | RC2<br>3 |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| RC1         | 0.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.75     | 0.50     | 0.50     | 0.25     | 0.50     | 0.50     | 0.75     | 0.25     | 0.75     | 0.50     | 0.25     | 0.25     | 0.50     | 0.25     |
|             | 0.0<br>0 | 1.0<br>0 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 1.00     | 0.75     | 0.75     | 0.50     | 0.75     | 0.75     | 1.00     | 0.50     | 1.00     | 0.75     | 0.50     | 0.50     | 0.75     | 0.50     |
| RC2         | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.50     | 0.25     | 0.25     | 0.25     | 0.25     | 0.50     | 0.50     | 0.25     | 0.00     | 0.25     | 0.00     | 0.25     | 0.50     | 0.25     |
|             | 0.5<br>0 | 0.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.75     | 0.50     | 0.50     | 0.50     | 0.50     | 0.75     | 0.75     | 0.50     | 0.25     | 0.50     | 0.25     | 0.50     | 0.75     | 0.50     |
| RC3         | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.0<br>0 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.25     | 0.50     | 0.75     | 0.25     | 0.75     | 0.25     | 0.50     | 0.00     | 0.00     | 0.50     | 0.25     | 0.25     | 0.25     | 0.25     |
|             | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.50     | 0.75     | 1.00     | 0.50     | 1.00     | 0.50     | 0.75     | 0.25     | 0.25     | 0.75     | 0.50     | 0.50     | 0.50     | 0.50     |
| RC4         | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.75     | 0.75     | 0.75     | 0.50     | 0.75     | 0.75     | 0.75     | 0.25     | 0.75     | 0.75     | 0.50     | 0.75     | 0.75     | 0.75     |
|             | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 1.00     | 1.00     | 1.00     | 0.75     | 1.00     | 1.00     | 1.00     | 0.50     | 1.00     | 1.00     | 0.75     | 1.00     | 1.00     | 1.00     |
| RC5         | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.0<br>0 | 0.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.50     | 0.75     | 0.50     | 0.25     | 0.50     | 0.75     | 0.75     | 0.50     | 0.50     | 0.25     | 0.50     | 0.50     | 0.75     | 0.50     |
|             | 1.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.75     | 1.00     | 0.75     | 0.50     | 0.75     | 1.00     | 1.00     | 0.75     | 0.75     | 0.50     | 0.75     | 0.75     | 1.00     | 0.75     |
| RC6         | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.50     | 0.50     | 0.25     | 0.25     | 0.50     | 0.25     | 0.25     | 0.00     | 0.50     | 0.25     | 0.25     | 0.50     | 0.25     | 0.25     |
|             | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 1.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.75     | 0.75     | 0.50     | 0.50     | 0.75     | 0.50     | 0.50     | 0.25     | 0.75     | 0.50     | 0.50     | 0.75     | 0.50     | 0.50     |
| RC7         | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.0<br>0 | 0.25     | 0.50     | 0.25     | 0.25     | 0.25     | 0.25     | 0.25     | 0.00     | 0.50     | 0.25     | 0.25     | 0.25     | 0.50     | 0.25     |
|             | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.50     | 0.75     | 0.50     | 0.50     | 0.50     | 0.50     | 0.50     | 0.25     | 0.75     | 0.50     | 0.50     | 0.50     | 0.75     | 0.50     |
| RC8         | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.25     | 0.00     | 0.25     | 0.25     | 0.50     | 0.25     | 0.25     | 0.00     | 0.50     | 0.25     | 0.25     | 0.25     | 0.50     | 0.00     |

|      |          |          |          |          |          |          |          |          |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|      | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.0<br>0 | 0.5<br>0 | 0.50 | 0.25 | 0.50 | 0.50 | 0.75 | 0.50 | 0.50 | 0.25 | 0.75 | 0.50 | 0.50 | 0.50 | 0.75 | 0.25 |
| RC9  | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.25 | 0.00 | 0.25 | 0.25 | 0.50 | 0.25 | 0.25 | 0.00 | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 | 0.50 |
|      | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.50 | 0.25 | 0.50 | 0.50 | 0.75 | 0.50 | 0.50 | 0.25 | 0.50 | 0.25 | 0.50 | 0.50 | 0.50 | 0.75 |
| RC10 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.00 | 0.50 | 0.25 | 0.25 | 0.50 | 0.25 | 0.00 | 0.00 | 0.25 | 0.50 | 0.25 | 0.00 | 0.00 | 0.50 |
|      | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.00 | 0.75 | 0.50 | 0.50 | 0.75 | 0.50 | 0.25 | 0.25 | 0.50 | 0.75 | 0.50 | 0.25 | 0.25 | 0.75 |
| RC11 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.25 | 0.00 | 0.50 | 0.25 | 0.25 | 0.00 | 0.25 | 0.00 | 0.50 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 |
|      | 1.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.50 | 0.00 | 0.75 | 0.50 | 0.50 | 0.25 | 0.50 | 0.25 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 | 0.25 |
| RC12 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.25 | 0.50 | 0.00 | 0.25 | 0.25 | 0.75 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 |
|      | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.50 | 0.75 | 0.00 | 0.50 | 0.50 | 1.00 | 0.50 | 0.50 | 0.50 | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 |
| RC13 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.00 | 0.25 | 0.50 | 0.00 | 0.25 | 0.50 | 0.25 | 0.00 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.00 |
|      | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.25 | 0.50 | 0.75 | 0.00 | 0.50 | 0.75 | 0.50 | 0.25 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.25 |
| RC14 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.25 | 0.25 | 0.25 | 0.50 | 0.00 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 | 0.00 | 0.00 |
|      | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.50 | 0.50 | 0.50 | 0.75 | 0.00 | 0.50 | 0.50 | 0.50 | 0.25 | 0.50 | 0.50 | 0.50 | 0.25 | 0.25 |
| RC15 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.50 | 0.25 | 0.25 | 0.25 | 0.50 | 0.00 | 0.50 | 0.25 | 0.25 | 0.00 | 0.50 | 0.25 | 0.25 | 0.25 |
|      | 0.7<br>5 | 1.0<br>0 | 0.7<br>5 | 0.2<br>5 | 1.0<br>0 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.75 | 0.50 | 0.50 | 0.50 | 0.75 | 0.00 | 0.75 | 0.50 | 0.50 | 0.25 | 0.75 | 0.50 | 0.50 | 0.50 |
| RC16 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.25 | 0.50 | 0.25 | 0.50 | 0.25 | 0.25 | 0.00 | 0.00 | 0.50 | 0.50 | 0.25 | 0.25 | 0.00 | 0.25 |
|      | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.50 | 0.75 | 0.50 | 0.75 | 0.50 | 0.50 | 0.00 | 0.25 | 0.75 | 0.75 | 0.50 | 0.50 | 0.25 | 0.50 |
| RC17 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.00 | 0.00 | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 | 0.00 | 0.50 | 0.25 | 0.25 | 0.50 | 0.75 | 0.50 |
|      | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.25 | 0.25 | 0.50 | 0.25 | 0.50 | 0.50 | 0.50 | 0.00 | 0.75 | 0.50 | 0.50 | 0.75 | 1.00 | 0.75 |
| RC18 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.25 | 0.25 | 0.25 | 0.50 | 0.25 | 0.50 | 0.50 | 0.25 | 0.00 | 0.50 | 0.25 | 0.25 | 0.25 | 0.25 |

|      |          |          |          |          |          |          |          |          |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|      | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.50 | 0.50 | 0.50 | 0.75 | 0.50 | 0.75 | 0.75 | 0.50 | 0.00 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 |
| RC19 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.50 | 0.25 | 0.25 | 0.75 | 0.25 | 0.25 | 0.50 | 0.25 | 0.50 | 0.00 | 0.00 | 0.25 | 0.25 | 0.25 |
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.75 | 0.50 | 0.50 | 1.00 | 0.50 | 0.50 | 0.75 | 0.50 | 0.75 | 0.00 | 0.25 | 0.50 | 0.50 | 0.50 |
| RC20 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.25 | 0.25 | 0.50 | 0.25 | 0.25 | 0.50 | 0.25 | 0.25 | 0.00 | 0.25 | 0.00 | 0.50 | 0.50 | 0.25 |
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.50 | 0.50 | 0.75 | 0.50 | 0.50 | 0.75 | 0.50 | 0.50 | 0.25 | 0.50 | 0.00 | 0.75 | 0.75 | 0.50 |
| RC21 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.25 | 0.50 | 0.75 | 0.50 | 0.25 | 0.25 | 0.25 | 0.50 | 0.25 | 0.50 | 0.75 | 0.00 | 0.00 | 0.00 |
|      | 1.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.50 | 0.75 | 1.00 | 0.75 | 0.50 | 0.50 | 0.50 | 0.75 | 0.50 | 0.75 | 1.00 | 0.00 | 0.25 | 0.25 |
| RC22 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.50 | 0.25 | 0.00 | 0.50 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.50 | 0.25 | 0.00 | 0.50 |
|      | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.75 | 0.50 | 0.25 | 0.75 | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.75 | 0.50 | 0.00 | 0.75 |
| RC23 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.25 | 0.50 | 0.25 | 0.75 | 0.50 | 0.25 | 0.00 | 0.50 | 0.25 | 0.50 | 0.25 | 0.25 | 0.50 | 0.00 |
|      | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.50 | 0.75 | 0.50 | 1.00 | 0.75 | 0.50 | 0.25 | 0.75 | 0.50 | 0.75 | 0.50 | 0.50 | 0.75 | 0.00 |

**Table B2: Grey relation matrix constructed with the assistant of Expert-4**

| Expert<br>4 | RC<br>1  | RC<br>2  | RC<br>3  | RC<br>4  | RC<br>5  | RC<br>6  | RC<br>7  | RC<br>8  | RC<br>9  | RC1<br>0 | RC1<br>1 | RC1<br>2 | RC1<br>3 | RC1<br>4 | RC1<br>5 | RC1<br>6 | RC1<br>7 | RC1<br>8 | RC1<br>9 | RC2<br>0 | RC2<br>1 | RC2<br>2 | RC2<br>3 |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| RC1         | 0.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.25     | 0.25     | 0.50     | 0.25     | 0.50     | 0.75     | 0.50     | 0.25     | 0.75     | 0.25     | 0.50     | 0.00     | 0.50     | 0.75     |
|             | 0.0<br>0 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.50     | 0.50     | 0.75     | 0.50     | 0.75     | 1.00     | 0.75     | 0.50     | 1.00     | 0.50     | 0.75     | 0.25     | 0.75     | 1.00     |
| RC2         | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.25     | 0.00     | 0.25     | 0.25     | 0.25     | 0.25     | 0.00     | 0.50     | 0.00     | 0.25     | 0.25     | 0.25     | 0.00     | 0.25     |
|             | 0.7<br>5 | 0.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.50     | 0.25     | 0.50     | 0.50     | 0.50     | 0.50     | 0.25     | 0.75     | 0.25     | 0.50     | 0.50     | 0.50     | 0.25     | 0.50     |
| RC3         | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.50     | 0.00     | 0.25     | 0.25     | 0.50     | 0.50     | 0.75     | 0.75     | 0.25     | 0.00     | 0.25     | 0.25     | 0.25     | 0.25     |

|      |          |          |          |          |          |          |          |          |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|      | 0.5<br>0 | 0.7<br>5 | 0.0<br>0 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 0.75 | 0.25 | 0.50 | 0.50 | 0.75 | 0.75 | 1.00 | 1.00 | 0.50 | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 |
| RC4  | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.75 | 0.25 | 0.25 | 0.25 | 0.50 | 0.75 | 0.50 | 0.50 | 0.75 |
|      | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 1.0<br>0 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 0.50 | 0.50 | 0.50 | 0.75 | 1.00 | 0.75 | 0.75 | 1.00 |
| RC5  | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.25 | 0.00 | 0.25 | 0.50 | 0.25 | 0.75 | 0.75 | 0.25 | 0.50 | 0.75 | 0.00 | 0.75 | 0.25 | 0.00 |
|      | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.50 | 0.25 | 0.50 | 0.75 | 0.50 | 1.00 | 1.00 | 0.50 | 0.75 | 1.00 | 0.25 | 1.00 | 0.50 | 0.25 |
| RC6  | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.0<br>0 | 0.25 | 0.50 | 0.50 | 0.25 | 0.75 | 0.75 | 0.75 | 0.25 | 0.75 | 0.50 | 0.50 | 0.25 | 0.25 | 0.50 |
|      | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 1.0<br>0 | 0.0<br>0 | 1.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.50 | 0.75 | 0.75 | 0.50 | 1.00 | 1.00 | 1.00 | 0.50 | 1.00 | 0.75 | 0.75 | 0.50 | 0.50 | 0.75 |
| RC7  | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.7<br>5 | 0.50 | 0.25 | 0.25 | 0.50 | 0.25 | 0.25 | 0.00 | 0.50 | 0.00 | 0.25 | 0.25 | 0.50 | 0.75 | 0.25 |
|      | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.75 | 0.50 | 0.50 | 0.75 | 0.50 | 0.50 | 0.25 | 0.75 | 0.25 | 0.50 | 0.50 | 0.75 | 1.00 | 0.50 |
| RC8  | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.25 | 0.25 | 0.25 | 0.25 | 0.50 | 0.25 | 0.25 | 0.00 | 0.50 | 0.25 | 0.25 | 0.00 | 0.50 | 0.00 |
|      | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.7<br>5 | 0.50 | 0.50 | 0.50 | 0.50 | 0.75 | 0.50 | 0.50 | 0.25 | 0.75 | 0.50 | 0.50 | 0.25 | 0.75 | 0.25 |
| RC9  | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.50 | 0.75 | 0.25 | 0.75 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 | 0.75 | 0.00 | 0.25 | 0.75 |
|      | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.0<br>0 | 0.75 | 1.00 | 0.50 | 1.00 | 0.50 | 0.50 | 0.50 | 0.25 | 0.50 | 0.50 | 1.00 | 0.25 | 0.50 | 1.00 |
| RC10 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.00 | 0.25 | 0.25 | 0.50 | 0.25 | 0.00 | 0.25 | 0.50 | 0.50 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.00 | 0.50 | 0.50 | 0.75 | 0.50 | 0.25 | 0.50 | 0.75 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| RC11 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.25 | 0.00 | 0.25 | 0.00 | 0.50 | 0.25 | 0.25 | 0.75 | 0.50 | 0.75 | 0.00 | 0.25 | 0.25 | 0.25 |
|      | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.50 | 0.00 | 0.50 | 0.25 | 0.75 | 0.50 | 0.50 | 1.00 | 0.75 | 1.00 | 0.25 | 0.50 | 0.50 | 0.50 |
| RC12 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.75 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.50 | 0.50 | 0.00 | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.25 | 0.50 |
| RC13 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.00 | 0.25 | 0.50 | 0.00 | 0.75 | 0.25 | 0.50 | 0.75 | 0.25 | 0.75 | 0.00 | 0.25 | 0.00 | 0.25 |

|      |          |          |          |          |          |          |          |          |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.25 | 0.50 | 0.75 | 0.00 | 1.00 | 0.50 | 0.75 | 1.00 | 0.50 | 1.00 | 0.25 | 0.50 | 0.25 | 0.50 |
| RC14 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.50 | 0.50 | 0.25 | 0.00 | 0.25 |
|      | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.50 | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.75 | 0.75 | 0.50 | 0.25 | 0.50 |
| RC15 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.50 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.50 | 0.00 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
|      | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 | 0.75 | 0.25 | 0.50 | 0.50 | 0.50 | 0.25 | 0.50 |
| RC16 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.0<br>0 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.50 | 0.00 | 0.50 | 0.50 | 0.25 | 0.75 | 0.25 | 0.25 | 0.25 |
|      | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.75 | 0.00 | 0.75 | 0.75 | 0.50 | 1.00 | 0.50 | 0.50 | 0.50 |
| RC17 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.25 | 0.75 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.00 | 0.50 | 0.25 | 0.25 | 0.50 |
|      | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.50 | 1.00 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 | 0.25 | 0.75 | 0.50 | 0.50 | 0.75 |
| RC18 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.00 | 0.50 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 |
|      | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.25 | 0.75 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.25 |
| RC19 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.25 | 0.25 | 0.00 | 0.25 | 0.50 | 0.25 | 0.50 | 0.50 | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 |
|      | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 1.0<br>0 | 0.50 | 0.50 | 0.25 | 0.50 | 0.75 | 0.50 | 0.75 | 0.75 | 0.50 | 0.00 | 0.50 | 0.50 | 0.50 | 0.50 |
| RC20 | 0.5<br>0 | 0.7<br>5 | 0.0<br>0 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.0<br>0 | 0.25 | 0.00 | 0.50 | 0.25 | 0.75 | 0.50 | 0.25 | 0.25 | 0.75 | 0.50 | 0.00 | 0.25 | 0.00 | 0.25 |
|      | 0.7<br>5 | 1.0<br>0 | 0.2<br>5 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.50 | 0.25 | 0.75 | 0.50 | 1.00 | 0.75 | 0.50 | 0.50 | 1.00 | 0.75 | 0.00 | 0.50 | 0.25 | 0.50 |
| RC21 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.25 | 0.25 | 0.00 | 0.00 | 0.25 | 0.00 | 0.25 | 0.00 | 0.00 | 0.50 | 0.00 | 0.00 | 0.25 | 0.25 |
|      | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.50 | 0.50 | 0.25 | 0.25 | 0.50 | 0.25 | 0.50 | 0.25 | 0.25 | 0.75 | 0.25 | 0.00 | 0.50 | 0.50 |
| RC22 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.50 | 0.25 | 0.00 | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.50 | 0.50 | 0.50 | 0.00 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.75 | 0.50 | 0.25 | 0.50 | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | 0.75 | 0.75 | 0.75 | 0.00 | 0.50 |
| RC23 | 0.2<br>5 | 0.7<br>5 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.75 | 0.00 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.50 | 0.25 | 0.25 | 0.50 | 0.25 | 0.00 |

|  |          |          |          |          |          |          |          |          |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|  | 0.5<br>0 | 1.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 1.00 | 0.25 | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | 0.25 | 0.75 | 0.50 | 0.50 | 0.75 | 0.50 | 0.00 |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|

Table B3: Grey relation matrix constructed with the assistant of Expert-5

| Expert<br>5 | RC<br>1  | RC<br>2  | RC<br>3  | RC<br>4  | RC<br>5  | RC<br>6  | RC<br>7  | RC<br>8  | RC<br>9  | RC1<br>0 | RC1<br>1 | RC1<br>2 | RC1<br>3 | RC1<br>4 | RC1<br>5 | RC1<br>6 | RC1<br>7 | RC1<br>8 | RC1<br>9 | RC2<br>0 | RC2<br>1 | RC2<br>2 | RC2<br>3 |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| RC1         | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.75     | 0.25     | 0.25     | 0.25     | 0.25     | 0.50     | 0.50     | 0.50     | 0.50     | 0.00     | 0.25     | 0.25     | 0.25     | 0.50     |
|             | 0.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 1.0<br>0 | 0.7<br>5 | 1.0<br>0 | 1.0<br>0 | 1.0<br>0 | 1.00     | 0.50     | 0.50     | 0.50     | 0.50     | 0.75     | 0.75     | 0.75     | 0.75     | 0.25     | 0.50     | 0.50     | 0.50     | 0.75     |
| RC2         | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.25     | 0.50     | 0.25     | 0.50     | 0.75     | 0.25     | 0.50     | 0.25     | 0.00     | 0.25     | 0.25     | 0.50     | 0.25     | 0.00     |
|             | 0.7<br>5 | 0.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.50     | 0.75     | 0.50     | 0.75     | 1.00     | 0.50     | 0.75     | 0.50     | 0.25     | 0.50     | 0.50     | 0.75     | 0.50     | 0.25     |
| RC3         | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.25     | 0.50     | 0.25     | 0.25     | 0.50     | 0.00     | 0.25     | 0.50     | 0.25     | 0.00     | 0.00     | 0.25     | 0.50     | 0.25     |
|             | 0.7<br>5 | 0.7<br>5 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.50     | 0.75     | 0.50     | 0.50     | 0.75     | 0.25     | 0.50     | 0.75     | 0.50     | 0.25     | 0.25     | 0.50     | 0.75     | 0.50     |
| RC4         | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.75     | 0.75     | 0.25     | 0.75     | 0.75     | 0.25     | 0.75     | 0.75     | 0.50     | 0.50     | 0.25     | 0.25     | 0.75     | 0.75     |
|             | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.0<br>0 | 1.0<br>0 | 1.0<br>0 | 0.7<br>5 | 1.0<br>0 | 0.7<br>5 | 1.00     | 1.00     | 0.50     | 1.00     | 1.00     | 0.50     | 1.00     | 1.00     | 0.75     | 0.75     | 0.50     | 0.50     | 1.00     | 1.00     |
| RC5         | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.50     | 0.50     | 0.50     | 0.50     | 0.50     | 0.50     | 0.50     | 0.50     | 0.50     | 0.25     | 0.50     | 0.50     | 0.50     | 0.50     |
|             | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.75     | 0.75     | 0.75     | 0.75     | 0.75     | 0.75     | 0.75     | 0.75     | 0.75     | 0.50     | 0.75     | 0.75     | 0.75     | 0.75     |
| RC6         | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.75     | 0.25     | 0.25     | 0.25     | 0.25     | 0.25     | 0.25     | 0.50     | 0.50     | 0.00     | 0.25     | 0.50     | 0.25     | 0.25     |
|             | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.0<br>0 | 1.0<br>0 | 1.0<br>0 | 1.0<br>0 | 1.00     | 0.50     | 0.50     | 0.50     | 0.50     | 0.50     | 0.50     | 0.75     | 0.75     | 0.25     | 0.50     | 0.75     | 0.50     | 0.50     |
| RC7         | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.00     | 0.50     | 0.00     | 0.50     | 0.25     | 0.50     | 0.25     | 0.00     | 0.50     | 0.50     | 0.25     | 0.25     | 0.25     | 0.00     |
|             | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.25     | 0.75     | 0.25     | 0.75     | 0.50     | 0.75     | 0.50     | 0.25     | 0.75     | 0.75     | 0.50     | 0.50     | 0.50     | 0.25     |
| RC8         | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.50     | 0.75     | 0.25     | 0.25     | 0.25     | 0.25     | 0.50     | 0.00     | 0.50     | 0.25     | 0.50     | 0.25     | 0.25     | 0.25     |

|      |          |          |          |          |          |          |          |          |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|      | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 1.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.0<br>0 | 0.7<br>5 | 0.75 | 1.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.75 | 0.25 | 0.75 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 |
| RC9  | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.75 | 0.25 | 0.25 | 0.50 | 0.75 | 0.25 | 0.25 | 0.75 | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 1.00 | 0.50 | 0.50 | 0.75 | 1.00 | 0.50 | 0.50 | 1.00 | 0.50 | 0.50 | 0.25 | 0.50 | 0.50 | 0.50 |
| RC10 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.00 | 0.75 | 0.50 | 0.00 | 0.50 | 0.00 | 0.75 | 0.25 | 0.50 | 0.50 | 0.25 | 0.00 | 0.75 | 0.75 |
|      | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.00 | 1.00 | 0.75 | 0.25 | 0.75 | 0.25 | 1.00 | 0.50 | 0.75 | 0.75 | 0.50 | 0.25 | 1.00 | 1.00 |
| RC11 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.25 | 0.00 | 0.25 | 0.50 | 0.25 | 0.50 | 0.50 | 0.00 | 0.50 | 0.00 | 0.25 | 0.25 | 0.50 | 0.25 |
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.50 | 0.00 | 0.50 | 0.75 | 0.50 | 0.75 | 0.75 | 0.25 | 0.75 | 0.25 | 0.50 | 0.50 | 0.75 | 0.50 |
| RC12 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.25 | 0.75 | 0.00 | 0.25 | 0.50 | 0.25 | 0.00 | 0.25 | 0.50 | 0.75 | 0.25 | 0.50 | 0.25 | 0.00 |
|      | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.50 | 1.00 | 0.00 | 0.50 | 0.75 | 0.50 | 0.25 | 0.50 | 0.75 | 1.00 | 0.50 | 0.75 | 0.50 | 0.25 |
| RC13 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.00 | 0.75 | 0.25 | 0.00 | 0.25 | 0.50 | 0.00 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.25 | 0.50 |
|      | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.25 | 1.00 | 0.50 | 0.00 | 0.50 | 0.75 | 0.25 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 | 0.75 |
| RC14 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.25 | 0.50 | 0.25 | 0.75 | 0.00 | 0.50 | 0.50 | 0.00 | 0.75 | 0.25 | 0.75 | 0.50 | 0.25 | 0.25 |
|      | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.50 | 0.75 | 0.50 | 1.00 | 0.00 | 0.75 | 0.75 | 0.25 | 1.00 | 0.50 | 1.00 | 0.75 | 0.50 | 0.50 |
| RC15 | 0.2<br>5 | 0.7<br>5 | 0.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.50 | 0.75 | 0.50 | 0.25 | 0.50 | 0.00 | 0.75 | 0.50 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
|      | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.75 | 0.50 | 0.75 | 1.00 | 0.75 | 0.00 | 0.00 | 0.50 | 0.75 | 0.25 | 0.50 | 0.50 | 1.00 | 0.75 |
| RC16 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.50 | 0.25 | 0.50 | 0.75 | 0.50 | 0.50 | 0.00 | 0.25 | 0.50 | 0.00 | 0.25 | 0.25 | 0.75 | 0.50 |
|      | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.75 | 0.50 | 0.75 | 1.00 | 0.75 | 0.75 | 0.00 | 0.50 | 0.75 | 0.25 | 0.50 | 0.50 | 1.00 | 0.75 |
| RC17 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.75 | 0.75 | 0.75 | 0.25 | 0.75 | 0.75 | 0.75 | 0.00 | 0.50 | 0.25 | 0.25 | 0.50 | 0.50 | 0.50 |
|      | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 0.2<br>5 | 1.0<br>0 | 0.7<br>5 | 1.00 | 1.00 | 1.00 | 0.50 | 1.00 | 1.00 | 1.00 | 0.00 | 0.75 | 0.50 | 0.50 | 0.75 | 0.75 | 0.75 |
| RC18 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.00 | 0.50 | 0.50 | 0.25 | 0.50 | 0.25 | 0.50 | 0.25 | 0.00 | 0.50 | 0.00 | 0.50 | 0.25 | 0.00 |

|      |          |          |          |          |          |          |          |          |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|      | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.25 | 0.75 | 0.75 | 0.50 | 0.75 | 0.50 | 0.75 | 0.50 | 0.00 | 0.75 | 0.25 | 0.75 | 0.50 | 0.25 |
| RC19 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.50 | 0.25 | 0.50 | 0.75 | 0.50 | 0.75 | 0.50 | 0.25 | 0.00 | 0.00 | 0.25 | 0.00 | 0.25 | 0.25 |
|      | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.75 | 0.50 | 0.75 | 1.00 | 0.75 | 1.00 | 0.75 | 0.50 | 0.25 | 0.00 | 0.50 | 0.25 | 0.50 | 0.50 |
| RC20 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.75 | 0.25 | 0.50 | 0.00 | 0.50 | 0.00 | 0.75 | 0.50 | 0.25 | 0.50 | 0.00 | 0.25 | 0.50 | 0.25 |
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 1.00 | 0.50 | 0.75 | 0.25 | 0.75 | 0.25 | 1.00 | 0.75 | 0.50 | 0.75 | 0.00 | 0.50 | 0.75 | 0.50 |
| RC21 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.50 | 0.00 | 0.50 | 0.00 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.00 | 0.50 | 0.00 | 0.25 | 0.25 |
|      | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.75 | 0.25 | 0.75 | 0.25 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.25 | 0.75 | 0.00 | 0.50 | 0.50 |
| RC22 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.25 | 0.25 | 0.25 | 0.00 | 0.50 | 0.50 | 0.25 | 0.50 | 0.25 | 0.25 | 0.00 | 0.25 | 0.00 | 0.75 |
|      | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.50 | 0.50 | 0.50 | 0.25 | 0.75 | 0.75 | 0.50 | 0.75 | 0.50 | 0.50 | 0.25 | 0.50 | 0.00 | 1.00 |
| RC23 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.50 | 0.25 | 0.25 | 0.25 | 0.25 | 0.75 | 0.25 | 0.25 | 0.50 | 0.00 | 0.25 | 0.25 | 0.50 | 0.00 |
|      | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 0.50 | 0.50 | 0.75 | 0.25 | 0.50 | 0.50 | 0.75 | 0.00 |

Table B4: Grey relation matrix constructed with the assistant of Expert-6

| Expert<br>6 | RC<br>1  | RC<br>2  | RC<br>3  | RC<br>4  | RC<br>5  | RC<br>6  | RC<br>7  | RC<br>8  | RC<br>9  | RC1<br>0 |  | RC1<br>1 | RC1<br>2 | RC1<br>3 | RC1<br>4 | RC1<br>5 | RC1<br>6 | RC1<br>7 | RC1<br>8 | RC1<br>9 | RC2<br>0 | RC2<br>1 | RC2<br>2 | RC2<br>3 |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| RC1         | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.25     |  | 0.75     | 0.25     | 0.50     | 0.25     | 0.75     | 0.50     | 0.25     | 0.75     | 0.25     | 0.50     | 0.25     | 0.75     | 0.50     |
|             | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 0.50     |  | 1.00     | 0.50     | 0.75     | 0.50     | 1.00     | 0.75     | 0.50     | 1.00     | 0.50     | 0.75     | 0.50     | 1.00     | 0.75     |
| RC2         | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.25     |  | 0.00     | 0.25     | 0.50     | 0.75     | 0.25     | 0.00     | 0.25     | 0.50     | 0.75     | 0.25     | 0.00     | 0.25     | 0.50     |
|             | 0.5<br>0 | 0.0<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.50     |  | 0.25     | 0.50     | 0.75     | 1.00     | 0.50     | 0.25     | 0.50     | 0.75     | 1.00     | 0.50     | 0.25     | 0.50     | 0.75     |

|      |          |          |          |          |          |          |          |          |          |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RC3  | 0.5<br>0 | 0.0<br>0 | 0.0<br>0 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.25 |  | 0.00 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.00 |
|      | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.50 |  | 0.25 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.25 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.25 |
| RC4  | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.75 |  | 0.25 | 0.50 | 0.75 | 0.25 | 0.25 | 0.75 | 0.25 | 0.50 | 0.75 | 0.25 | 0.25 | 0.75 | 0.25 |
|      | 1.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.0<br>0 | 1.0<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 1.00 |  | 0.50 | 0.75 | 1.00 | 0.50 | 0.50 | 1.00 | 0.50 | 0.75 | 1.00 | 0.50 | 0.50 | 1.00 | 0.50 |
| RC5  | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.25 |  | 0.25 | 0.75 | 0.50 | 0.50 | 0.75 | 0.25 | 0.50 | 0.75 | 0.50 | 0.50 | 0.75 | 0.25 | 0.25 |
|      | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.0<br>0 | 1.0<br>0 | 0.7<br>5 | 0.7<br>5 | 1.0<br>0 | 0.50 |  | 0.50 | 1.00 | 0.75 | 0.75 | 1.00 | 0.50 | 0.75 | 1.00 | 0.75 | 0.75 | 1.00 | 0.50 | 0.50 |
| RC6  | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.75 |  | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | 0.75 | 0.75 | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | 0.75 |
|      | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 1.0<br>0 | 0.0<br>0 | 0.7<br>5 | 0.7<br>5 | 1.0<br>0 | 1.00 |  | 0.50 | 0.75 | 0.75 | 0.75 | 0.75 | 1.00 | 1.00 | 0.50 | 0.75 | 0.75 | 0.75 | 0.75 | 1.00 |
| RC7  | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.25 |  | 0.00 | 0.25 | 0.50 | 0.75 | 0.75 | 0.50 | 0.25 | 0.75 | 0.25 | 0.50 | 0.25 | 0.75 | 0.50 |
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.50 |  | 0.25 | 0.50 | 0.75 | 1.00 | 1.00 | 0.75 | 0.50 | 1.00 | 0.50 | 0.75 | 0.50 | 1.00 | 0.75 |
| RC8  | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.75 |  | 0.25 | 0.25 | 0.50 | 0.25 | 0.25 | 0.00 | 0.25 | 0.50 | 0.75 | 0.25 | 0.00 | 0.25 | 0.50 |
|      | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.0<br>0 | 0.5<br>0 | 1.00 |  | 0.50 | 0.50 | 0.75 | 0.50 | 0.50 | 0.25 | 0.50 | 0.75 | 1.00 | 0.50 | 0.25 | 0.50 | 0.75 |
| RC9  | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.75 |  | 0.25 | 0.50 | 0.75 | 0.25 | 0.75 | 0.75 | 0.25 | 0.25 | 0.50 | 0.25 | 0.75 | 0.75 | 0.25 |
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 1.00 |  | 0.50 | 0.75 | 1.00 | 0.50 | 1.00 | 1.00 | 0.50 | 0.50 | 0.75 | 0.50 | 1.00 | 1.00 | 0.50 |
| RC10 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.00 |  | 0.25 | 0.75 | 0.50 | 0.50 | 0.50 | 0.75 | 0.75 | 0.50 | 0.25 | 0.50 | 0.25 | 0.75 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.00 |  | 0.50 | 1.00 | 0.75 | 0.75 | 0.75 | 1.00 | 1.00 | 0.75 | 0.50 | 0.75 | 0.50 | 1.00 | 0.50 |
| RC11 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.25 |  | 0.00 | 0.50 | 0.50 | 0.50 | 0.75 | 0.50 | 0.25 | 0.75 | 0.75 | 0.25 | 0.00 | 0.25 | 0.25 |
|      | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.50 |  | 0.00 | 0.75 | 0.75 | 0.75 | 1.00 | 0.75 | 0.50 | 1.00 | 1.00 | 0.50 | 0.25 | 0.50 | 0.50 |
| RC12 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.25 |  | 0.25 | 0.00 | 0.75 | 0.25 | 0.75 | 0.00 | 0.25 | 0.25 | 0.50 | 0.25 | 0.75 | 0.50 | 0.75 |
|      | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.50 |  | 0.50 | 0.00 | 1.00 | 0.50 | 1.00 | 0.25 | 0.50 | 0.50 | 0.75 | 0.50 | 1.00 | 0.75 | 1.00 |

|      |          |          |          |          |          |          |          |          |          |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RC13 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.50 |  | 0.50 | 0.50 | 0.00 | 0.25 | 0.50 | 0.75 | 0.25 | 0.25 | 0.25 | 0.50 | 0.25 | 0.75 | 0.50 |
|      | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.75 |  | 0.75 | 0.75 | 0.00 | 0.50 | 0.75 | 1.00 | 0.50 | 0.50 | 0.50 | 0.75 | 0.50 | 1.00 | 0.75 |
| RC14 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.75 |  | 0.75 | 0.75 | 0.25 | 0.00 | 0.75 | 0.50 | 0.25 | 0.50 | 0.25 | 0.50 | 0.25 | 0.75 | 0.50 |
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.7<br>5 | 1.0<br>0 | 1.00 |  | 1.00 | 1.00 | 0.50 | 0.00 | 1.00 | 0.75 | 0.50 | 0.75 | 0.50 | 0.75 | 0.50 | 1.00 | 0.75 |
| RC15 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.25 |  | 0.50 | 0.50 | 0.25 | 0.25 | 0.00 | 0.00 | 0.25 | 0.75 | 0.75 | 0.25 | 0.00 | 0.25 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.50 |  | 0.75 | 0.75 | 0.50 | 0.50 | 0.00 | 0.25 | 0.50 | 1.00 | 1.00 | 0.50 | 0.25 | 0.50 | 0.50 |
| RC16 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.50 |  | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 | 0.50 | 0.25 | 0.75 | 0.50 | 0.25 |
|      | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.75 |  | 0.50 | 0.50 | 0.25 | 0.50 | 0.50 | 0.00 | 0.50 | 0.50 | 0.75 | 0.50 | 1.00 | 0.75 | 0.50 |
| RC17 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.25 |  | 0.50 | 0.25 | 0.50 | 0.00 | 0.50 | 0.25 | 0.00 | 0.25 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.50 |  | 0.75 | 0.50 | 0.75 | 0.25 | 0.75 | 0.50 | 0.00 | 0.50 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 |
| RC18 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.75 |  | 0.75 | 0.25 | 0.25 | 0.25 | 0.75 | 0.25 | 0.50 | 0.00 | 0.25 | 0.50 | 0.00 | 0.50 | 0.75 |
|      | 1.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 1.00 |  | 1.00 | 0.50 | 0.50 | 0.50 | 1.00 | 0.50 | 0.75 | 0.00 | 0.50 | 0.75 | 0.25 | 0.75 | 1.00 |
| RC19 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.50 |  | 0.25 | 0.25 | 0.00 | 0.50 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.50 | 0.75 | 0.25 | 0.50 |
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.75 |  | 0.50 | 0.50 | 0.25 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 | 0.00 | 0.75 | 1.00 | 0.50 | 0.75 |
| RC20 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.75 |  | 0.50 | 0.50 | 0.25 | 0.75 | 0.50 | 0.50 | 0.75 | 0.50 | 0.50 | 0.00 | 0.25 | 0.50 | 0.50 |
|      | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 1.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 1.00 |  | 0.75 | 0.75 | 0.50 | 1.00 | 0.75 | 0.75 | 1.00 | 0.75 | 0.75 | 0.00 | 0.50 | 0.75 | 0.75 |
| RC21 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.25 |  | 0.25 | 0.75 | 0.25 | 0.25 | 0.25 | 0.75 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.75 |
|      | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.50 |  | 0.50 | 1.00 | 0.50 | 0.50 | 0.50 | 1.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 | 1.00 |
| RC22 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.25 |  | 0.50 | 0.50 | 0.00 | 0.25 | 0.50 | 0.50 | 0.00 | 0.25 | 0.50 | 0.25 | 0.50 | 0.00 | 0.50 |
|      | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.50 |  | 0.75 | 0.75 | 0.25 | 0.50 | 0.75 | 0.75 | 0.25 | 0.50 | 0.75 | 0.50 | 0.75 | 0.00 | 0.75 |

|      |          |          |          |          |          |          |          |          |          |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RC23 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.50 |  | 0.50 | 0.25 | 0.50 | 0.00 | 0.50 | 0.25 | 0.50 | 0.00 | 0.50 | 0.00 | 0.50 | 0.00 | 0.00 |
|      | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.75 |  | 0.75 | 0.50 | 0.75 | 0.25 | 0.75 | 0.50 | 0.75 | 0.25 | 0.75 | 0.25 | 0.75 | 0.25 | 0.00 |

Table B5: Grey relation matrix constructed with the assistant of Expert-7

| Expert<br>7 | RC<br>1  | RC<br>2  | RC<br>3  | RC<br>4  | RC<br>5  | RC<br>6  | RC<br>7  | RC<br>8  | RC<br>9  | RC1<br>0 | RC1<br>1 | RC1<br>2 | RC1<br>3 | RC1<br>4 | RC1<br>5 | RC1<br>6 | RC1<br>7 | RC1<br>8 | RC1<br>9 | RC2<br>0 | RC2<br>1 | RC2<br>2 | RC2<br>3 |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| RC1         | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.75     | 0.50     | 0.50     | 0.25     | 0.50     | 0.50     | 0.50     | 0.25     | 0.75     | 0.75     | 0.25     | 0.00     | 0.50     | 0.25     |
|             | 0.0<br>0 | 1.0<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 1.00     | 0.75     | 0.75     | 0.50     | 0.75     | 0.75     | 0.75     | 0.50     | 1.00     | 1.00     | 0.50     | 0.25     | 0.75     | 0.50     |
| RC2         | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.0<br>0 | 0.0<br>0 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.75     | 0.25     | 0.25     | 0.75     | 0.25     | 0.25     | 0.50     | 0.25     | 0.25     | 0.25     | 0.75     | 0.25     | 0.25     | 0.50     |
|             | 0.5<br>0 | 0.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 1.00     | 0.50     | 0.50     | 1.00     | 0.50     | 0.50     | 0.75     | 0.50     | 0.50     | 0.50     | 1.00     | 0.50     | 0.50     | 0.75     |
| RC3         | 0.0<br>0 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.50     | 0.25     | 0.50     | 0.50     | 0.25     | 0.00     | 0.75     | 0.25     | 0.00     | 0.50     | 0.50     | 0.25     | 0.00     | 0.75     |
|             | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 1.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.75     | 0.50     | 0.75     | 0.75     | 0.50     | 0.25     | 1.00     | 0.50     | 0.25     | 0.75     | 0.75     | 0.50     | 0.25     | 1.00     |
| RC4         | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.75     | 0.75     | 0.00     | 0.25     | 0.25     | 0.50     | 0.50     | 0.75     | 0.50     | 0.75     | 0.75     | 0.25     | 0.00     | 0.50     |
|             | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 1.00     | 1.00     | 0.25     | 0.50     | 0.50     | 0.75     | 0.75     | 1.00     | 0.75     | 1.00     | 1.00     | 0.50     | 0.25     | 0.75     |
| RC5         | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.25     | 0.75     | 0.25     | 0.50     | 0.75     | 0.75     | 0.00     | 0.25     | 0.25     | 0.50     | 0.50     | 0.75     | 0.25     | 0.25     |
|             | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.0<br>0 | 0.7<br>5 | 1.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.50     | 1.00     | 0.50     | 0.75     | 1.00     | 1.00     | 0.25     | 0.50     | 0.50     | 0.75     | 0.75     | 1.00     | 0.50     | 0.50     |
| RC6         | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.25     | 0.50     | 0.75     | 0.75     | 0.25     | 0.00     | 0.50     | 0.50     | 0.75     | 0.25     | 0.75     | 0.25     | 0.25     | 0.50     |
|             | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.50     | 0.75     | 1.00     | 1.00     | 0.50     | 0.25     | 0.75     | 0.75     | 1.00     | 0.50     | 1.00     | 0.50     | 0.50     | 0.75     |
| RC7         | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.50     | 0.25     | 0.50     | 0.00     | 0.50     | 0.25     | 0.00     | 0.25     | 0.50     | 0.75     | 0.50     | 0.25     | 0.00     | 0.75     |
|             | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.75     | 0.50     | 0.75     | 0.25     | 0.75     | 0.50     | 0.25     | 0.50     | 0.75     | 1.00     | 0.75     | 0.50     | 0.25     | 1.00     |

|      |          |          |          |          |          |          |          |          |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RC8  | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.00 | 0.75 | 0.25 | 0.50 | 0.25 | 0.00 | 0.50 | 0.00 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.25 |
|      | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 1.0<br>0 | 0.7<br>5 | 0.0<br>0 | 0.7<br>5 | 0.25 | 1.00 | 0.50 | 0.75 | 0.50 | 0.25 | 0.75 | 0.25 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 |
| RC9  | 0.0<br>0 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.25 | 0.50 | 0.75 | 0.25 | 0.25 | 0.25 | 0.75 | 0.75 | 0.50 | 0.75 | 0.50 | 0.25 | 0.00 | 0.50 |
|      | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.50 | 0.75 | 1.00 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 | 0.75 | 1.00 | 0.75 | 0.50 | 0.25 | 0.75 |
| RC10 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.00 | 0.25 | 0.25 | 0.50 | 0.75 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.75 | 0.25 | 0.25 |
|      | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.00 | 0.50 | 0.50 | 0.75 | 1.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.25 | 1.00 | 0.50 | 0.50 |
| RC11 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.25 | 0.00 | 0.50 | 0.25 | 0.50 | 0.00 | 0.50 | 0.50 | 0.75 | 0.50 | 0.75 | 0.25 | 0.25 | 0.50 |
|      | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.50 | 0.00 | 0.75 | 0.50 | 0.75 | 0.25 | 0.75 | 0.75 | 1.00 | 0.75 | 1.00 | 0.50 | 0.50 | 0.75 |
| RC12 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.7<br>5 | 0.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.50 | 0.75 | 0.00 | 0.50 | 0.75 | 0.25 | 0.75 | 0.75 | 0.50 | 0.25 | 0.50 | 0.00 | 0.00 | 0.25 |
|      | 1.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 1.0<br>0 | 0.2<br>5 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.75 | 1.00 | 0.00 | 0.75 | 1.00 | 0.50 | 1.00 | 1.00 | 0.75 | 0.50 | 0.75 | 0.25 | 0.25 | 0.50 |
| RC13 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.00 | 0.50 | 0.00 | 0.00 | 0.25 | 0.50 | 0.25 | 0.25 | 0.00 | 0.50 | 0.75 | 0.25 | 0.50 | 0.75 |
|      | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.25 | 0.75 | 0.25 | 0.00 | 0.50 | 0.75 | 0.50 | 0.50 | 0.25 | 0.75 | 1.00 | 0.50 | 0.75 | 1.00 |
| RC14 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.50 | 0.25 | 0.50 | 0.25 | 0.50 | 0.25 | 0.00 | 0.50 |
|      | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.50 | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 | 0.75 | 0.50 | 0.75 | 0.50 | 0.75 | 0.50 | 0.25 | 0.75 |
| RC15 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 | 0.75 | 0.25 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 | 0.25 | 0.50 | 0.50 | 0.50 | 1.00 | 0.50 | 0.50 |
| RC16 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.25 | 0.75 | 0.00 | 0.75 | 0.00 | 0.75 | 0.00 | 0.25 | 0.75 | 0.50 | 0.75 | 0.25 | 0.25 | 0.50 |
|      | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.50 | 1.00 | 0.25 | 1.00 | 0.25 | 1.00 | 0.00 | 0.50 | 1.00 | 0.75 | 1.00 | 0.50 | 0.50 | 0.75 |
| RC17 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.50 | 0.25 | 0.50 | 0.25 | 0.50 | 0.50 | 0.75 | 0.00 | 0.50 | 0.25 | 0.25 | 0.50 | 0.00 | 0.25 |
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.75 | 0.50 | 0.75 | 0.50 | 0.75 | 0.75 | 1.00 | 0.00 | 0.75 | 0.50 | 0.50 | 0.75 | 0.25 | 0.50 |

|      |          |          |          |          |          |          |          |          |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RC18 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.25 | 0.75 | 0.25 | 0.50 | 0.25 | 0.75 | 0.25 | 0.25 | 0.00 | 0.50 | 0.50 | 0.25 | 0.50 | 0.25 |
|      | 0.7<br>5 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.50 | 1.00 | 0.50 | 0.75 | 0.50 | 1.00 | 0.50 | 0.50 | 0.00 | 0.75 | 0.75 | 0.50 | 0.75 | 0.50 |
| RC19 | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.50 | 0.25 | 0.75 | 0.25 | 0.25 | 0.50 | 0.25 | 0.50 | 0.50 | 0.00 | 0.75 | 0.00 | 0.00 | 0.00 |
|      | 0.2<br>5 | 1.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.75 | 0.50 | 1.00 | 0.50 | 0.50 | 0.75 | 0.50 | 0.75 | 0.75 | 0.00 | 1.00 | 0.25 | 0.25 | 0.25 |
| RC20 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.75 | 0.50 | 0.50 | 0.25 | 0.25 | 0.25 | 0.50 | 0.75 | 0.00 | 0.50 | 0.00 | 0.25 | 0.75 | 0.50 |
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 1.00 | 0.75 | 0.75 | 0.50 | 0.50 | 0.50 | 0.75 | 1.00 | 0.25 | 0.75 | 0.00 | 0.50 | 1.00 | 0.75 |
| RC21 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.50 | 0.25 | 0.25 | 0.25 | 0.50 | 0.50 | 0.75 | 0.00 | 0.25 | 0.75 | 0.50 | 0.00 | 0.25 | 0.25 |
|      | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.75 | 0.50 | 0.50 | 0.50 | 0.75 | 0.75 | 1.00 | 0.25 | 0.50 | 1.00 | 0.75 | 0.00 | 0.50 | 0.50 |
| RC22 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.25 | 0.25 | 0.50 | 0.75 | 0.25 | 0.25 | 0.25 | 0.50 | 0.50 | 0.25 | 0.25 | 0.50 | 0.00 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.50 | 0.50 | 0.75 | 1.00 | 0.50 | 0.50 | 0.50 | 0.75 | 0.75 | 0.50 | 0.50 | 0.75 | 0.00 | 0.50 |
| RC23 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.00 | 0.50 | 0.75 | 0.25 | 0.75 | 0.25 | 0.00 | 0.75 | 0.25 | 0.25 | 0.50 | 0.25 | 0.25 | 0.00 |
|      | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.25 | 0.75 | 1.00 | 0.50 | 1.00 | 0.50 | 0.25 | 1.00 | 0.50 | 0.50 | 0.75 | 0.50 | 0.50 | 0.00 |

Table B6: Grey relation matrix constructed with the assistant of Expert-8

| Expert<br>8 | RC<br>1  | RC<br>2  | RC<br>3  | RC<br>4  | RC<br>5  | RC<br>6  | RC<br>7  | RC<br>8  | RC<br>9  | RC1<br>0 | RC1<br>1 | RC1<br>2 | RC1<br>3 | RC1<br>4 | RC1<br>5 | RC1<br>6 | RC1<br>7 | RC1<br>8 | RC1<br>9 | RC2<br>0 | RC2<br>1 | RC2<br>2 | RC2<br>3 |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| RC1         | 0.0<br>0 | 0.7<br>5 | 0.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.75     | 0.50     | 0.50     | 0.25     | 0.50     | 0.25     | 0.75     | 0.25     | 0.75     | 0.50     | 0.00     | 0.25     | 0.50     | 0.25     |
|             | 0.0<br>0 | 1.0<br>0 | 0.2<br>5 | 1.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 1.00     | 0.75     | 0.75     | 0.50     | 0.75     | 0.50     | 1.00     | 0.50     | 1.00     | 0.75     | 0.25     | 0.50     | 0.75     | 0.50     |
| RC2         | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.50     | 0.25     | 0.50     | 0.75     | 0.50     | 0.25     | 0.50     | 0.50     | 0.75     | 0.25     | 0.25     | 0.50     | 0.50     | 0.25     |
|             | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 1.0<br>0 | 0.75     | 0.50     | 0.75     | 1.00     | 0.75     | 0.50     | 0.75     | 0.75     | 1.00     | 0.50     | 0.50     | 0.75     | 0.75     | 0.50     |

|      |          |          |          |          |          |          |          |          |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RC3  | 0.0<br>0 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.25 | 0.25 | 0.75 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.50 | 0.25 | 0.75 | 0.00 | 0.25 | 0.00 |
|      | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.50 | 0.50 | 1.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.75 | 0.50 | 1.00 | 0.25 | 0.50 | 0.25 |
| RC4  | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.75 | 0.50 | 0.25 | 0.50 | 0.25 | 0.50 | 0.00 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.50 |
|      | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.0<br>0 | 1.0<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 1.00 | 0.75 | 0.50 | 0.75 | 0.50 | 0.75 | 0.25 | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | 0.25 | 0.75 |
| RC5  | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.50 | 0.25 | 0.50 | 0.75 | 0.50 | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | 0.25 | 0.50 | 0.50 | 0.25 |
|      | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.0<br>0 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.7<br>5 | 0.75 | 0.50 | 0.75 | 1.00 | 0.75 | 0.50 | 0.75 | 0.75 | 0.75 | 0.75 | 0.50 | 0.75 | 0.75 | 0.50 |
| RC6  | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.25 | 0.25 | 0.75 | 0.25 | 0.75 | 0.25 | 0.25 | 0.25 | 0.00 | 0.00 | 0.75 | 0.25 | 0.25 | 0.25 |
|      | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.50 | 0.50 | 1.00 | 0.50 | 1.00 | 0.50 | 0.50 | 0.50 | 0.25 | 0.25 | 1.00 | 0.50 | 0.50 | 0.50 |
| RC7  | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.25 | 0.50 | 0.25 | 0.00 | 0.25 | 0.50 | 0.75 | 0.25 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.25 |
|      | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.50 | 0.75 | 0.50 | 0.25 | 0.50 | 0.75 | 1.00 | 0.50 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 |
| RC8  | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.0<br>0 | 0.5<br>0 | 0.50 | 0.25 | 0.50 | 0.75 | 0.50 | 0.25 | 0.50 | 0.75 | 0.50 | 0.00 | 0.50 | 0.50 | 0.75 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 1.0<br>0 | 0.0<br>0 | 0.7<br>5 | 0.75 | 0.50 | 0.75 | 1.00 | 0.75 | 0.50 | 0.75 | 1.00 | 0.75 | 0.25 | 0.75 | 0.75 | 1.00 | 0.50 |
| RC9  | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.25 | 0.25 | 0.75 | 0.25 | 0.25 | 0.75 | 0.25 | 0.00 | 0.25 | 0.25 | 0.75 | 0.25 | 0.25 | 0.00 |
|      | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.0<br>0 | 0.50 | 0.50 | 1.00 | 0.50 | 0.50 | 1.00 | 0.50 | 0.25 | 0.50 | 0.50 | 1.00 | 0.50 | 0.50 | 0.25 |
| RC10 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.00 | 0.25 | 0.25 | 0.25 | 0.50 | 0.25 | 0.25 | 0.50 | 0.25 | 0.50 | 0.25 | 0.75 | 0.50 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.00 | 0.50 | 0.50 | 0.50 | 0.75 | 0.50 | 0.50 | 0.75 | 0.50 | 0.75 | 0.50 | 1.00 | 0.75 | 0.50 |
| RC11 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.50 | 0.00 | 0.50 | 0.00 | 0.25 | 0.25 | 0.50 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.50 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.75 | 0.00 | 0.75 | 0.25 | 0.50 | 0.50 | 0.75 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.75 | 0.50 |
| RC12 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.25 | 0.25 | 0.00 | 0.25 | 0.50 | 0.25 | 0.25 | 0.00 | 0.75 | 0.50 | 0.75 | 0.25 | 0.25 | 0.25 |
|      | 1.0<br>0 | 1.0<br>0 | 0.7<br>5 | 0.7<br>5 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.50 | 0.50 | 0.00 | 0.50 | 0.75 | 0.50 | 0.50 | 0.25 | 1.00 | 0.75 | 1.00 | 0.50 | 0.50 | 0.50 |

|      |          |          |          |          |          |          |          |          |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RC13 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.50 | 0.25 | 0.75 | 0.00 | 0.75 | 0.75 | 0.25 | 0.25 | 0.50 | 0.00 | 0.25 | 0.00 | 0.25 | 0.25 |
|      | 0.5<br>0 | 0.2<br>5 | 1.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.75 | 0.50 | 1.00 | 0.00 | 1.00 | 1.00 | 0.50 | 0.50 | 0.75 | 0.25 | 0.50 | 0.25 | 0.50 | 0.50 |
| RC14 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.25 | 0.50 | 0.25 | 0.50 | 0.00 | 0.25 | 0.50 | 0.25 | 0.25 | 0.50 | 0.50 | 0.50 | 0.25 | 0.75 |
|      | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.50 | 0.75 | 0.50 | 0.75 | 0.00 | 0.50 | 0.75 | 0.50 | 0.50 | 0.75 | 0.75 | 0.75 | 0.50 | 1.00 |
| RC15 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.75 | 0.25 | 0.50 | 0.25 | 0.25 | 0.00 | 0.25 | 0.75 | 0.75 | 0.25 | 0.75 | 0.00 | 0.50 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.2<br>5 | 1.0<br>0 | 0.50 | 0.50 | 1.00 | 1.00 | 0.50 | 0.00 | 0.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.25 | 0.50 |
| RC16 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.25 | 0.25 | 0.75 | 0.75 | 0.25 | 0.75 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.2<br>5 | 1.0<br>0 | 0.50 | 0.50 | 1.00 | 1.00 | 0.50 | 1.00 | 0.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.25 | 0.50 |
| RC17 | 0.2<br>5 | 0.7<br>5 | 0.0<br>0 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.25 | 0.50 | 0.25 | 0.50 | 0.50 | 0.25 | 0.25 | 0.00 | 0.50 | 0.25 | 0.50 | 0.75 | 0.25 | 0.50 |
|      | 0.5<br>0 | 1.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.50 | 0.75 | 0.50 | 0.75 | 0.75 | 0.50 | 0.50 | 0.00 | 0.75 | 0.50 | 0.75 | 1.00 | 0.50 | 0.75 |
| RC18 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.00 | 0.00 | 0.25 | 0.75 | 0.25 | 0.25 | 0.50 | 0.75 | 0.00 | 0.50 | 0.25 | 0.25 | 0.25 | 0.00 |
|      | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.25 | 0.25 | 0.50 | 1.00 | 0.50 | 0.50 | 0.75 | 1.00 | 0.00 | 0.75 | 0.50 | 0.50 | 0.50 | 0.25 |
| RC19 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.50 | 0.25 | 0.50 | 0.25 | 0.50 | 0.50 | 0.75 | 0.25 | 0.75 | 0.00 | 0.50 | 0.25 | 0.25 | 0.50 |
|      | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.75 | 0.50 | 0.75 | 0.50 | 0.75 | 0.75 | 1.00 | 0.50 | 1.00 | 0.00 | 0.75 | 0.50 | 0.50 | 0.75 |
| RC20 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.25 | 0.50 | 0.25 | 0.00 | 0.25 | 0.00 | 0.25 | 0.00 | 0.25 | 0.00 | 0.00 | 0.25 | 0.00 | 0.00 |
|      | 0.5<br>0 | 0.2<br>5 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.50 | 0.75 | 0.50 | 0.25 | 0.50 | 0.25 | 0.50 | 0.25 | 0.50 | 0.25 | 0.00 | 0.50 | 0.25 | 0.25 |
| RC21 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.25 | 0.00 | 0.25 | 0.50 | 0.75 | 0.25 | 0.00 | 0.75 | 0.25 | 0.50 | 0.50 | 0.00 | 0.25 | 0.50 |
|      | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.50 | 0.25 | 0.50 | 0.75 | 1.00 | 0.50 | 0.25 | 1.00 | 0.50 | 0.75 | 0.75 | 0.00 | 0.50 | 0.75 |
| RC22 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.50 | 0.25 | 0.50 | 0.25 | 0.50 | 0.25 | 0.50 | 0.25 | 0.75 | 0.25 | 0.25 | 0.25 | 0.00 | 0.75 |
|      | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 1.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.75 | 0.50 | 0.75 | 0.50 | 0.75 | 0.50 | 0.75 | 0.50 | 1.00 | 0.50 | 0.50 | 0.50 | 0.00 | 1.00 |

|      |          |          |          |          |          |          |          |          |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RC23 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.00 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.75 | 0.00 | 0.25 | 0.25 | 0.25 | 0.50 | 0.50 | 0.00 |
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.25 | 0.50 | 0.50 | 0.50 | 0.25 | 0.50 | 1.00 | 0.25 | 0.50 | 0.50 | 0.50 | 0.75 | 0.75 | 0.00 |

Table B7: Grey relation matrix constructed with the assistant of Expert-9

| Expert<br>9 | RC<br>1  | RC<br>2  | RC<br>3  | RC<br>4  | RC<br>5  | RC<br>6  | RC<br>7  | RC<br>8  | RC<br>9  | RC1<br>0 | RC1<br>1 | RC1<br>2 | RC1<br>3 | RC1<br>4 | RC1<br>5 | RC1<br>6 | RC1<br>7 | RC1<br>8 | RC1<br>9 | RC2<br>0 | RC2<br>1 | RC2<br>2 | RC2<br>3 |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| RC1         | 0.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.50     | 0.75     | 0.25     | 0.50     | 0.75     | 0.50     | 0.75     | 0.25     | 0.50     | 0.50     | 0.25     | 0.50     | 0.50     | 0.25     |
|             | 0.0<br>0 | 0.7<br>5 | 1.0<br>0 | 0.7<br>5 | 1.0<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.75     | 1.00     | 0.50     | 0.75     | 1.00     | 0.75     | 1.00     | 0.50     | 0.75     | 0.75     | 0.50     | 0.75     | 0.75     | 0.50     |
| RC2         | 0.2<br>5 | 0.0<br>0 | 0.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.25     | 0.25     | 0.25     | 0.25     | 0.50     | 0.75     | 0.25     | 0.25     | 0.00     | 0.75     | 0.50     | 0.75     | 0.25     | 0.25     |
|             | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 0.50     | 0.50     | 0.50     | 0.50     | 0.75     | 1.00     | 0.50     | 0.50     | 0.25     | 1.00     | 0.75     | 1.00     | 0.50     | 0.50     |
| RC3         | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.50     | 0.25     | 0.50     | 0.25     | 0.25     | 0.25     | 0.25     | 0.50     | 0.50     | 0.50     | 0.00     | 0.25     | 0.75     | 0.00     |
|             | 0.7<br>5 | 0.7<br>5 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.75     | 0.50     | 0.75     | 0.50     | 0.50     | 0.50     | 0.50     | 0.75     | 0.75     | 0.75     | 0.25     | 0.50     | 1.00     | 0.25     |
| RC4         | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.50     | 0.75     | 0.75     | 0.00     | 0.75     | 0.00     | 0.75     | 0.25     | 0.75     | 0.50     | 0.50     | 0.50     | 0.25     | 0.50     |
|             | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 1.0<br>0 | 1.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.75     | 1.00     | 1.00     | 0.25     | 1.00     | 0.25     | 1.00     | 0.50     | 1.00     | 0.75     | 0.75     | 0.75     | 0.50     | 0.75     |
| RC5         | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.50     | 0.50     | 0.25     | 0.25     | 0.25     | 0.25     | 0.25     | 0.75     | 0.25     | 0.25     | 0.00     | 0.25     | 0.25     | 0.25     |
|             | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.75     | 0.75     | 0.50     | 0.50     | 0.50     | 0.50     | 0.50     | 1.00     | 0.50     | 0.50     | 0.25     | 0.50     | 0.50     | 0.50     |
| RC6         | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.25     | 0.25     | 0.75     | 0.50     | 0.50     | 0.50     | 0.75     | 0.25     | 0.25     | 0.00     | 0.50     | 0.25     | 0.75     | 0.25     |
|             | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 1.0<br>0 | 0.7<br>5 | 1.0<br>0 | 0.50     | 0.50     | 1.00     | 0.75     | 0.75     | 0.75     | 1.00     | 0.50     | 0.50     | 0.25     | 0.75     | 0.50     | 1.00     | 0.50     |
| RC7         | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.25     | 0.50     | 0.50     | 0.25     | 0.75     | 0.25     | 0.25     | 0.25     | 0.00     | 0.25     | 0.25     | 0.75     | 0.25     | 0.00     |
|             | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.50     | 0.75     | 0.75     | 0.50     | 1.00     | 0.50     | 0.50     | 0.50     | 0.25     | 0.50     | 0.50     | 1.00     | 0.50     | 0.25     |

|      |          |          |          |          |          |          |          |          |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RC8  | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.25 | 0.00 | 0.25 | 0.50 | 0.50 | 0.75 | 0.75 | 0.25 | 0.75 | 0.50 | 0.25 | 0.00 | 0.00 | 0.50 |
|      | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.0<br>0 | 0.7<br>5 | 0.50 | 0.25 | 0.50 | 0.75 | 0.75 | 1.00 | 1.00 | 0.50 | 1.00 | 0.75 | 0.50 | 0.25 | 0.25 | 0.75 |
| RC9  | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.0<br>0 | 0.2<br>5 | 0.0<br>0 | 0.0<br>0 | 0.25 | 0.50 | 0.25 | 0.75 | 0.25 | 0.00 | 0.00 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.75 | 0.25 |
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.50 | 0.75 | 0.50 | 1.00 | 0.50 | 0.25 | 0.25 | 0.50 | 0.50 | 0.50 | 0.25 | 0.50 | 1.00 | 0.50 |
| RC10 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.00 | 0.75 | 0.25 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.50 | 0.75 | 0.50 | 0.25 | 0.25 | 0.25 |
|      | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.00 | 1.00 | 0.50 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.75 | 1.00 | 0.75 | 0.50 | 0.50 | 0.50 |
| RC11 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.50 | 0.00 | 0.50 | 0.25 | 0.25 | 0.25 | 0.25 | 0.75 | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 | 0.75 |
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.75 | 0.00 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 0.50 | 0.50 | 0.25 | 0.50 | 0.50 | 1.00 |
| RC12 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.25 | 0.25 | 0.00 | 0.00 | 0.00 | 0.50 | 0.25 | 0.25 | 0.25 | 0.75 | 0.50 | 0.75 | 0.25 | 0.25 |
|      | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.50 | 0.50 | 0.00 | 0.25 | 0.25 | 0.75 | 0.50 | 0.50 | 0.50 | 1.00 | 0.75 | 1.00 | 0.50 | 0.50 |
| RC13 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.50 | 0.25 | 0.50 | 0.00 | 0.25 | 0.25 | 0.00 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.75 | 0.00 |
|      | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 1.0<br>0 | 0.75 | 0.50 | 0.75 | 0.00 | 0.50 | 0.50 | 0.25 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 1.00 | 0.25 |
| RC14 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.00 | 0.25 | 0.00 | 0.75 | 0.00 | 0.00 | 0.25 | 0.25 | 0.75 | 0.25 | 0.00 | 0.00 | 0.25 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.25 | 0.50 | 0.25 | 1.00 | 0.00 | 0.25 | 0.50 | 0.50 | 1.00 | 0.50 | 0.25 | 0.25 | 0.50 | 0.50 |
| RC15 | 0.7<br>5 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.25 | 0.75 | 0.25 | 0.25 | 0.00 | 0.00 | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
|      | 1.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.50 | 1.00 | 0.50 | 0.50 | 0.25 | 0.00 | 0.50 | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| RC16 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.0<br>0 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.25 | 0.25 | 0.25 | 0.50 | 0.50 | 0.25 | 0.00 | 0.25 | 0.50 | 0.00 | 0.50 | 0.50 | 0.50 | 0.50 |
|      | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.2<br>5 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.50 | 0.50 | 0.50 | 0.75 | 0.75 | 0.50 | 0.00 | 0.50 | 0.75 | 0.25 | 0.75 | 0.75 | 0.75 | 0.75 |
| RC17 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.50 | 0.00 | 0.50 | 0.25 | 0.25 | 0.50 | 0.75 | 0.00 | 0.50 | 0.50 | 0.25 | 0.25 | 0.25 | 0.50 |
|      | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.75 | 0.25 | 0.75 | 0.50 | 0.50 | 0.75 | 1.00 | 0.00 | 0.75 | 0.75 | 0.50 | 0.50 | 0.50 | 0.75 |

|      |          |          |          |          |          |          |          |          |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RC18 | 0.2<br>5 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.25 | 0.25 | 0.75 | 0.25 | 0.75 | 0.25 | 0.50 | 0.50 | 0.00 | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 |
|      | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.50 | 0.50 | 1.00 | 0.50 | 1.00 | 0.50 | 0.75 | 0.75 | 0.00 | 0.50 | 0.50 | 0.25 | 0.50 | 0.50 |
| RC19 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.75 | 0.50 | 0.25 | 0.00 | 0.25 | 0.75 | 0.25 | 0.00 | 0.50 | 0.00 | 0.25 | 0.50 | 0.25 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 1.0<br>0 | 1.0<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 1.00 | 0.75 | 0.50 | 0.25 | 0.50 | 1.00 | 0.50 | 0.25 | 0.75 | 0.00 | 0.50 | 0.75 | 0.50 | 0.50 |
| RC20 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.25 | 0.25 | 0.00 | 0.25 | 0.00 | 0.25 | 0.50 | 0.25 | 0.75 | 0.25 | 0.00 | 0.00 | 0.00 | 0.00 |
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.50 | 0.50 | 0.25 | 0.50 | 0.25 | 0.50 | 0.75 | 0.50 | 1.00 | 0.50 | 0.00 | 0.25 | 0.25 | 0.25 |
| RC21 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 | 0.25 | 0.75 | 0.50 | 0.50 | 0.25 | 0.00 | 0.50 | 0.25 |
|      | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.75 | 1.00 | 0.75 | 0.75 | 0.75 | 0.75 | 0.50 | 1.00 | 0.75 | 0.75 | 0.50 | 0.00 | 0.75 | 0.50 |
| RC22 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.00 | 0.25 | 0.25 | 0.25 | 0.75 | 0.50 | 0.25 | 0.00 | 0.25 | 0.25 | 0.50 | 0.75 | 0.00 | 0.50 |
|      | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.25 | 0.50 | 0.50 | 0.50 | 1.00 | 0.75 | 0.50 | 0.25 | 0.50 | 0.50 | 0.75 | 1.00 | 0.00 | 0.75 |
| RC23 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.75 | 0.50 | 0.50 | 0.25 | 0.25 | 0.75 | 0.25 | 0.50 | 0.50 | 0.25 | 0.25 | 0.25 | 0.75 | 0.00 |
|      | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 1.00 | 0.75 | 0.75 | 0.50 | 0.50 | 1.00 | 0.50 | 0.75 | 0.75 | 0.50 | 0.50 | 0.50 | 1.00 | 0.00 |

Table B8: Grey relation matrix constructed with the assistant of Expert-10

| Expert<br>10 | RC<br>1  | RC<br>2  | RC<br>3  | RC<br>4  | RC<br>5  | RC<br>6  | RC<br>7  | RC<br>8  | RC<br>9  | RC1<br>0 | RC1<br>1 | RC1<br>2 | RC1<br>3 | RC1<br>4 | RC1<br>5 | RC1<br>6 | RC1<br>7 | RC1<br>8 | RC1<br>9 | RC2<br>0 | RC2<br>1 | RC2<br>2 | RC2<br>3 |
|--------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| RC1          | 0.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.50     | 0.25     | 0.50     | 0.75     | 0.50     | 0.25     | 0.50     | 0.00     | 0.25     | 0.75     | 0.50     | 0.25     | 0.25     | 0.50     |
|              | 0.0<br>0 | 0.7<br>5 | 0.2<br>5 | 1.0<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.75     | 0.50     | 0.75     | 1.00     | 0.75     | 0.50     | 0.75     | 0.25     | 0.50     | 1.00     | 0.75     | 0.50     | 0.50     | 0.75     |
| RC2          | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.25     | 0.50     | 0.25     | 0.25     | 0.25     | 0.25     | 0.25     | 0.25     | 0.25     | 0.50     | 0.25     | 0.25     | 0.50     | 0.75     |
|              | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.50     | 0.75     | 0.50     | 0.50     | 0.50     | 0.50     | 0.50     | 0.50     | 0.50     | 0.75     | 0.50     | 0.50     | 0.75     | 1.00     |

|      |          |          |          |          |          |          |          |          |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RC3  | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.75 | 0.25 | 0.75 | 0.25 | 0.25 | 0.75 | 0.25 | 0.25 | 0.75 | 0.25 | 0.50 | 0.50 | 0.50 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 0.0<br>0 | 1.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 1.00 | 0.50 | 1.00 | 0.50 | 0.50 | 1.00 | 0.50 | 0.50 | 1.00 | 0.50 | 0.75 | 0.75 | 0.75 | 0.50 |
| RC4  | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.75 | 0.75 | 0.25 | 0.75 | 0.25 | 0.50 | 0.25 | 0.50 | 0.25 | 0.50 | 0.75 | 0.75 | 0.25 | 0.50 |
|      | 1.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 1.00 | 1.00 | 0.50 | 1.00 | 0.50 | 0.75 | 0.50 | 0.75 | 0.50 | 0.75 | 1.00 | 1.00 | 0.50 | 0.75 |
| RC5  | 0.2<br>5 | 0.0<br>0 | 0.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.25 | 0.75 | 0.25 | 0.75 | 0.25 | 0.25 | 0.25 | 0.75 | 0.25 |
|      | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 | 1.00 | 0.50 | 1.00 | 0.50 | 0.50 | 0.50 | 1.00 | 0.50 |
| RC6  | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.00 | 0.25 | 0.75 | 0.25 | 0.00 | 0.75 | 0.25 | 0.25 | 0.25 | 0.75 | 0.00 | 0.25 | 0.25 | 0.00 |
|      | 1.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.25 | 0.50 | 1.00 | 0.50 | 0.25 | 1.00 | 0.50 | 0.50 | 0.50 | 1.00 | 0.25 | 0.50 | 0.50 | 0.25 |
| RC7  | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.0<br>0 | 0.2<br>5 | 0.50 | 0.00 | 0.25 | 0.50 | 0.75 | 0.25 | 0.00 | 0.75 | 0.00 | 0.25 | 0.50 | 0.25 | 0.00 | 0.75 |
|      | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.75 | 0.25 | 0.50 | 0.75 | 1.00 | 0.50 | 0.25 | 1.00 | 0.25 | 0.50 | 0.75 | 0.50 | 0.25 | 1.00 |
| RC8  | 0.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.25 | 0.25 | 0.00 | 0.25 | 0.50 | 0.00 | 0.25 | 0.50 | 0.25 | 0.50 | 0.25 | 0.75 | 0.25 | 0.25 |
|      | 0.2<br>5 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 1.0<br>0 | 0.7<br>5 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.50 | 0.50 | 0.25 | 0.50 | 0.75 | 0.25 | 0.50 | 0.75 | 0.50 | 0.75 | 0.50 | 1.00 | 0.50 | 0.50 |
| RC9  | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.0<br>0 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.50 | 0.25 | 0.25 | 0.75 | 0.25 | 0.75 | 0.50 | 0.50 | 0.50 |
|      | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.0<br>0 | 0.50 | 0.50 | 0.50 | 0.25 | 0.50 | 0.75 | 0.50 | 0.50 | 1.00 | 0.50 | 1.00 | 0.75 | 0.75 | 0.75 |
| RC10 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.00 | 0.50 | 0.25 | 0.50 | 0.50 | 0.25 | 0.25 | 0.50 | 0.25 | 0.50 | 0.25 | 0.25 | 0.50 | 0.00 |
|      | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.00 | 0.75 | 0.50 | 0.75 | 0.75 | 0.50 | 0.50 | 0.75 | 0.50 | 0.75 | 0.50 | 0.50 | 0.75 | 0.25 |
| RC11 | 0.5<br>0 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.7<br>5 | 0.25 | 0.00 | 0.25 | 0.75 | 0.25 | 0.25 | 0.25 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.50 | 0.25 |
|      | 0.7<br>5 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 1.0<br>0 | 0.50 | 0.00 | 0.50 | 1.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.75 | 0.50 |
| RC12 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.25 | 0.25 | 0.00 | 0.25 | 0.50 | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 | 0.00 | 0.25 | 0.00 | 0.25 |
|      | 0.7<br>5 | 0.7<br>5 | 1.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.50 | 0.50 | 0.00 | 0.50 | 0.75 | 0.50 | 0.50 | 0.25 | 0.50 | 0.50 | 0.25 | 0.50 | 0.25 | 0.50 |

|      |          |          |          |          |          |          |          |          |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RC13 | 0.7<br>5 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.00 | 0.50 | 0.25 | 0.00 | 0.75 | 0.00 | 0.00 | 0.50 | 0.50 | 0.00 | 0.50 | 0.00 | 0.25 | 0.25 |
|      | 1.0<br>0 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.25 | 0.75 | 0.50 | 0.00 | 1.00 | 0.25 | 0.25 | 0.75 | 0.75 | 0.25 | 0.75 | 0.25 | 0.50 | 0.50 |
| RC14 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.0<br>0 | 0.25 | 0.00 | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 | 0.00 | 0.50 | 0.25 | 0.25 | 0.25 | 0.50 |
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.50 | 0.25 | 0.50 | 0.50 | 0.00 | 0.50 | 0.50 | 0.50 | 0.25 | 0.75 | 0.50 | 0.50 | 0.50 | 0.75 |
| RC15 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.25 | 0.50 | 0.25 | 0.75 | 0.50 | 0.00 | 0.25 | 0.25 | 0.75 | 0.00 | 0.50 | 0.00 | 0.25 | 0.25 |
|      | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 0.2<br>5 | 1.00 | 0.50 | 0.75 | 0.50 | 0.50 | 0.00 | 0.75 | 0.25 | 0.75 | 0.50 | 0.50 | 0.75 | 0.50 |      |
| RC16 | 0.2<br>5 | 0.2<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.0<br>0 | 0.75 | 0.25 | 0.50 | 0.25 | 0.25 | 0.75 | 0.00 | 0.50 | 0.00 | 0.50 | 0.25 | 0.25 | 0.50 | 0.25 |
|      | 0.5<br>0 | 0.5<br>0 | 1.0<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 0.2<br>5 | 1.00 | 0.50 | 0.75 | 0.50 | 0.50 | 1.00 | 0.00 | 0.75 | 0.25 | 0.75 | 0.50 | 0.50 | 0.75 | 0.50 |
| RC17 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.0<br>0 | 0.0<br>0 | 0.2<br>5 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 | 0.75 | 0.25 | 0.50 | 0.50 |
|      | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 | 0.50 | 1.00 | 0.50 | 0.75 | 0.75 |
| RC18 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 | 0.50 | 0.50 | 0.50 | 0.00 | 0.25 | 0.50 | 0.25 | 0.50 | 0.00 |
|      | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.50 | 0.50 | 0.25 | 0.50 | 0.50 | 0.75 | 0.75 | 0.75 | 0.00 | 0.50 | 0.75 | 0.50 | 0.75 | 0.25 |
| RC19 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.7<br>5 | 0.5<br>0 | 0.7<br>5 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.50 | 0.25 | 0.25 | 0.25 | 0.75 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.50 | 0.25 | 0.75 |
|      | 1.0<br>0 | 1.0<br>0 | 0.5<br>0 | 1.0<br>0 | 0.7<br>5 | 1.0<br>0 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.75 | 0.50 | 0.50 | 0.50 | 1.00 | 0.50 | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 | 0.75 | 0.50 | 1.00 |
| RC20 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.50 | 0.25 | 0.50 | 0.50 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 |
|      | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.7<br>5 | 1.0<br>0 | 0.7<br>5 | 0.7<br>5 | 0.75 | 0.50 | 0.75 | 0.75 | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.00 | 0.50 | 0.50 | 0.50 |
| RC21 | 0.7<br>5 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.2<br>5 | 0.0<br>0 | 0.2<br>5 | 0.00 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 | 0.00 | 0.50 |
|      | 1.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.5<br>0 | 0.5<br>0 | 0.2<br>5 | 0.5<br>0 | 0.25 | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | 0.00 | 0.25 | 0.75 |
| RC22 | 0.2<br>5 | 0.5<br>0 | 0.5<br>0 | 0.5<br>0 | 0.0<br>0 | 0.2<br>5 | 0.5<br>0 | 0.2<br>5 | 0.7<br>5 | 0.25 | 0.25 | 0.00 | 0.50 | 0.25 | 0.75 | 0.50 | 0.25 | 0.50 | 0.25 | 0.75 | 0.25 | 0.00 | 0.25 |
|      | 0.5<br>0 | 0.7<br>5 | 0.7<br>5 | 0.7<br>5 | 0.2<br>5 | 0.5<br>0 | 0.7<br>5 | 0.5<br>0 | 1.0<br>0 | 0.50 | 0.50 | 0.25 | 0.75 | 0.50 | 1.00 | 0.75 | 0.50 | 0.75 | 0.50 | 1.00 | 0.50 | 0.00 | 0.50 |

|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RC23 | 0.25 | 0.50 | 0.25 | 0.75 | 0.25 | 0.75 | 0.75 | 0.25 | 0.25 | 0.25 | 0.50 | 0.50 | 0.25 | 0.25 | 0.25 | 0.25 | 0.50 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.00 |
|      | 0.50 | 0.75 | 0.50 | 1.00 | 0.50 | 1.00 | 1.00 | 0.50 | 0.50 | 0.50 | 0.75 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.00 |

Table B9: Average relationship matrix for recovery challenges

|     | RC1   | RC2   | RC3   | RC4   | RC5   | RC6   | RC7   | RC8   | RC9   | RC10  | RC11  | RC12  | RC13  | RC14  | RC15  | RC16  | RC17  | RC18  | RC19  | RC20  | RC21  | RC22  | RC23  |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| RC1 | 0.000 | 0.594 | 0.438 | 0.625 | 0.438 | 0.313 | 0.438 | 0.563 | 0.625 | 0.563 | 0.469 | 0.406 | 0.375 | 0.469 | 0.500 | 0.594 | 0.250 | 0.625 | 0.438 | 0.313 | 0.219 | 0.469 | 0.406 |
|     | 0.000 | 0.844 | 0.688 | 0.875 | 0.688 | 0.563 | 0.688 | 0.813 | 0.875 | 0.813 | 0.719 | 0.656 | 0.625 | 0.719 | 0.750 | 0.844 | 0.500 | 0.875 | 0.688 | 0.563 | 0.469 | 0.719 | 0.656 |
| RC2 | 0.313 | 0.000 | 0.313 | 0.406 | 0.219 | 0.188 | 0.313 | 0.469 | 0.406 | 0.375 | 0.250 | 0.281 | 0.438 | 0.438 | 0.344 | 0.313 | 0.313 | 0.219 | 0.406 | 0.313 | 0.344 | 0.313 | 0.344 |
|     | 0.563 | 0.000 | 0.563 | 0.656 | 0.469 | 0.438 | 0.563 | 0.719 | 0.656 | 0.625 | 0.500 | 0.531 | 0.688 | 0.688 | 0.594 | 0.563 | 0.563 | 0.469 | 0.656 | 0.563 | 0.594 | 0.563 | 0.594 |
| RC3 | 0.313 | 0.313 | 0.000 | 0.406 | 0.313 | 0.313 | 0.313 | 0.375 | 0.250 | 0.406 | 0.250 | 0.500 | 0.313 | 0.375 | 0.281 | 0.406 | 0.313 | 0.313 | 0.313 | 0.313 | 0.250 | 0.344 | 0.219 |
|     | 0.563 | 0.563 | 0.000 | 0.656 | 0.563 | 0.563 | 0.563 | 0.625 | 0.500 | 0.656 | 0.500 | 0.750 | 0.563 | 0.625 | 0.531 | 0.656 | 0.563 | 0.563 | 0.563 | 0.563 | 0.500 | 0.594 | 0.469 |
| RC4 | 0.563 | 0.500 | 0.406 | 0.000 | 0.500 | 0.500 | 0.500 | 0.531 | 0.469 | 0.656 | 0.594 | 0.375 | 0.469 | 0.438 | 0.438 | 0.500 | 0.375 | 0.469 | 0.563 | 0.500 | 0.438 | 0.406 | 0.563 |
|     | 0.813 | 0.750 | 0.656 | 0.000 | 0.750 | 0.750 | 0.750 | 0.781 | 0.719 | 0.906 | 0.844 | 0.625 | 0.719 | 0.688 | 0.688 | 0.750 | 0.625 | 0.719 | 0.813 | 0.750 | 0.688 | 0.656 | 0.813 |
| RC5 | 0.438 | 0.250 | 0.406 | 0.375 | 0.000 | 0.438 | 0.438 | 0.531 | 0.375 | 0.375 | 0.438 | 0.406 | 0.438 | 0.438 | 0.531 | 0.469 | 0.438 | 0.500 | 0.406 | 0.313 | 0.531 | 0.438 | 0.281 |
|     | 0.688 | 0.500 | 0.656 | 0.625 | 0.000 | 0.688 | 0.688 | 0.781 | 0.625 | 0.625 | 0.688 | 0.656 | 0.688 | 0.688 | 0.781 | 0.719 | 0.688 | 0.750 | 0.656 | 0.563 | 0.781 | 0.688 | 0.531 |
| RC6 | 0.438 | 0.531 | 0.313 | 0.500 | 0.438 | 0.000 | 0.469 | 0.375 | 0.438 | 0.375 | 0.344 | 0.563 | 0.375 | 0.438 | 0.406 | 0.469 | 0.344 | 0.406 | 0.281 | 0.438 | 0.344 | 0.344 | 0.344 |
|     | 0.688 | 0.781 | 0.563 | 0.750 | 0.688 | 0.000 | 0.719 | 0.625 | 0.688 | 0.625 | 0.594 | 0.813 | 0.625 | 0.688 | 0.656 | 0.719 | 0.594 | 0.656 | 0.531 | 0.688 | 0.594 | 0.594 | 0.594 |
| RC7 | 0.344 | 0.344 | 0.250 | 0.406 | 0.281 | 0.406 | 0.000 | 0.406 | 0.250 | 0.313 | 0.313 | 0.281 | 0.313 | 0.469 | 0.375 | 0.250 | 0.281 | 0.313 | 0.375 | 0.344 | 0.344 | 0.344 | 0.344 |
|     | 0.594 | 0.594 | 0.500 | 0.656 | 0.531 | 0.656 | 0.000 | 0.656 | 0.500 | 0.563 | 0.563 | 0.531 | 0.563 | 0.719 | 0.625 | 0.500 | 0.531 | 0.563 | 0.625 | 0.594 | 0.594 | 0.594 | 0.594 |

|      |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |       |           |           |           |           |           |           |           |
|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| RC8  | 0.37<br>5 | 0.34<br>4 | 0.31<br>3 | 0.43<br>8 | 0.46<br>9 | 0.43<br>8 | 0.46<br>9 | 0.00<br>0 | 0.40<br>6 | 0.34<br>4 | 0.31<br>3 | 0.25<br>0 | 0.40<br>6 | 0.40<br>6 | 0.25<br>0 | 0.375 | 0.21<br>9 | 0.46<br>9 | 0.37<br>5 | 0.31<br>3 | 0.25<br>0 | 0.34<br>4 | 0.25<br>0 |
|      | 0.62<br>5 | 0.59<br>4 | 0.56<br>3 | 0.68<br>8 | 0.71<br>9 | 0.68<br>8 | 0.71<br>9 | 0.00<br>0 | 0.65<br>6 | 0.59<br>4 | 0.56<br>3 | 0.50<br>0 | 0.65<br>6 | 0.65<br>6 | 0.50<br>0 | 0.625 | 0.46<br>9 | 0.71<br>9 | 0.62<br>5 | 0.56<br>3 | 0.50<br>0 | 0.59<br>4 | 0.50<br>0 |
| RC9  | 0.28<br>1 | 0.28<br>1 | 0.31<br>3 | 0.50<br>0 | 0.31<br>3 | 0.31<br>3 | 0.40<br>6 | 0.28<br>1 | 0.00<br>0 | 0.40<br>6 | 0.34<br>4 | 0.40<br>6 | 0.43<br>8 | 0.34<br>4 | 0.37<br>5 | 0.344 | 0.28<br>1 | 0.34<br>4 | 0.31<br>3 | 0.40<br>6 | 0.31<br>3 | 0.37<br>5 | 0.37<br>5 |
|      | 0.53<br>1 | 0.53<br>1 | 0.56<br>3 | 0.75<br>0 | 0.56<br>3 | 0.56<br>3 | 0.65<br>6 | 0.53<br>1 | 0.00<br>0 | 0.65<br>6 | 0.59<br>4 | 0.65<br>6 | 0.68<br>8 | 0.59<br>4 | 0.62<br>5 | 0.594 | 0.53<br>1 | 0.59<br>4 | 0.56<br>3 | 0.65<br>6 | 0.56<br>3 | 0.62<br>5 | 0.62<br>5 |
| RC10 | 0.40<br>6 | 0.28<br>1 | 0.46<br>9 | 0.34<br>4 | 0.34<br>4 | 0.46<br>9 | 0.34<br>4 | 0.28<br>1 | 0.34<br>4 | 0.00<br>0 | 0.43<br>8 | 0.34<br>4 | 0.34<br>4 | 0.50<br>0 | 0.21<br>9 | 0.344 | 0.37<br>5 | 0.37<br>5 | 0.43<br>8 | 0.28<br>1 | 0.31<br>3 | 0.40<br>6 | 0.31<br>3 |
|      | 0.65<br>6 | 0.53<br>1 | 0.71<br>9 | 0.59<br>4 | 0.59<br>4 | 0.71<br>9 | 0.59<br>4 | 0.53<br>1 | 0.59<br>4 | 0.00<br>0 | 0.68<br>8 | 0.59<br>4 | 0.59<br>4 | 0.75<br>0 | 0.46<br>9 | 0.594 | 0.62<br>5 | 0.62<br>5 | 0.68<br>8 | 0.53<br>1 | 0.56<br>3 | 0.65<br>6 | 0.56<br>3 |
| RC11 | 0.50<br>0 | 0.43<br>8 | 0.21<br>9 | 0.43<br>8 | 0.31<br>3 | 0.37<br>5 | 0.28<br>1 | 0.43<br>8 | 0.34<br>4 | 0.31<br>3 | 0.00<br>0 | 0.40<br>6 | 0.31<br>3 | 0.34<br>4 | 0.28<br>1 | 0.375 | 0.34<br>4 | 0.53<br>1 | 0.37<br>5 | 0.25<br>0 | 0.21<br>9 | 0.34<br>4 | 0.31<br>3 |
|      | 0.75<br>0 | 0.68<br>8 | 0.46<br>9 | 0.68<br>8 | 0.56<br>3 | 0.62<br>5 | 0.53<br>1 | 0.68<br>8 | 0.59<br>4 | 0.56<br>3 | 0.00<br>0 | 0.65<br>6 | 0.56<br>3 | 0.59<br>4 | 0.53<br>1 | 0.625 | 0.59<br>4 | 0.78<br>1 | 0.62<br>5 | 0.50<br>0 | 0.46<br>9 | 0.59<br>4 | 0.56<br>3 |
| RC12 | 0.56<br>3 | 0.37<br>5 | 0.53<br>1 | 0.31<br>3 | 0.56<br>3 | 0.25<br>0 | 0.46<br>9 | 0.34<br>4 | 0.40<br>6 | 0.28<br>1 | 0.40<br>6 | 0.00<br>0 | 0.31<br>3 | 0.37<br>5 | 0.40<br>6 | 0.250 | 0.31<br>3 | 0.37<br>5 | 0.40<br>6 | 0.34<br>4 | 0.37<br>5 | 0.18<br>8 | 0.28<br>1 |
|      | 0.81<br>3 | 0.62<br>5 | 0.78<br>1 | 0.56<br>3 | 0.81<br>3 | 0.50<br>0 | 0.71<br>9 | 0.59<br>4 | 0.65<br>6 | 0.53<br>1 | 0.65<br>6 | 0.00<br>0 | 0.56<br>3 | 0.62<br>5 | 0.65<br>6 | 0.500 | 0.56<br>3 | 0.62<br>5 | 0.65<br>6 | 0.59<br>4 | 0.62<br>5 | 0.43<br>8 | 0.53<br>1 |
| RC13 | 0.34<br>4 | 0.18<br>8 | 0.31<br>3 | 0.37<br>5 | 0.46<br>9 | 0.37<br>5 | 0.28<br>1 | 0.28<br>1 | 0.40<br>6 | 0.18<br>8 | 0.40<br>6 | 0.40<br>6 | 0.00<br>0 | 0.43<br>8 | 0.40<br>6 | 0.250 | 0.31<br>3 | 0.34<br>4 | 0.31<br>3 | 0.34<br>4 | 0.18<br>8 | 0.37<br>5 | 0.31<br>3 |
|      | 0.59<br>4 | 0.43<br>8 | 0.56<br>3 | 0.62<br>5 | 0.71<br>9 | 0.62<br>5 | 0.53<br>1 | 0.53<br>1 | 0.65<br>6 | 0.43<br>8 | 0.65<br>6 | 0.65<br>6 | 0.00<br>0 | 0.68<br>8 | 0.65<br>6 | 0.500 | 0.56<br>3 | 0.59<br>4 | 0.56<br>3 | 0.59<br>4 | 0.43<br>8 | 0.62<br>5 | 0.56<br>3 |
| RC14 | 0.40<br>6 | 0.28<br>1 | 0.37<br>5 | 0.34<br>4 | 0.31<br>3 | 0.40<br>6 | 0.53<br>1 | 0.31<br>3 | 0.34<br>4 | 0.28<br>1 | 0.34<br>4 | 0.28<br>1 | 0.43<br>8 | 0.00<br>0 | 0.31<br>3 | 0.375 | 0.21<br>9 | 0.37<br>5 | 0.34<br>4 | 0.40<br>6 | 0.28<br>1 | 0.21<br>9 | 0.37<br>5 |
|      | 0.65<br>6 | 0.53<br>1 | 0.62<br>5 | 0.59<br>4 | 0.56<br>3 | 0.65<br>6 | 0.78<br>1 | 0.56<br>3 | 0.59<br>4 | 0.53<br>1 | 0.59<br>4 | 0.53<br>1 | 0.68<br>8 | 0.00<br>0 | 0.56<br>3 | 0.625 | 0.46<br>9 | 0.62<br>5 | 0.59<br>4 | 0.65<br>6 | 0.53<br>1 | 0.46<br>9 | 0.62<br>5 |
| RC15 | 0.43<br>8 | 0.43<br>8 | 0.31<br>3 | 0.37<br>5 | 0.34<br>4 | 0.46<br>9 | 0.40<br>6 | 0.34<br>4 | 0.28<br>1 | 0.40<br>6 | 0.46<br>9 | 0.34<br>4 | 0.31<br>3 | 0.31<br>3 | 0.00<br>0 | 0.313 | 0.31<br>3 | 0.40<br>6 | 0.25<br>0 | 0.37<br>5 | 0.21<br>9 | 0.25<br>0 | 0.25<br>0 |
|      | 0.75<br>0 | 0.59<br>4 | 0.62<br>5 | 0.59<br>4 | 0.65<br>6 | 0.71<br>9 | 0.68<br>8 | 0.56<br>3 | 0.59<br>4 | 0.65<br>6 | 0.62<br>5 | 0.65<br>6 | 0.62<br>5 | 0.53<br>1 | 0.00<br>0 | 0.313 | 0.50<br>0 | 0.53<br>1 | 0.53<br>1 | 0.53<br>1 | 0.53<br>1 | 0.53<br>1 | 0.53<br>1 |
| RC16 | 0.43<br>8 | 0.37<br>5 | 0.34<br>4 | 0.40<br>6 | 0.40<br>6 | 0.53<br>1 | 0.43<br>8 | 0.28<br>1 | 0.34<br>4 | 0.37<br>5 | 0.34<br>4 | 0.34<br>4 | 0.46<br>9 | 0.28<br>1 | 0.50<br>0 | 0.000 | 0.28<br>1 | 0.40<br>6 | 0.31<br>3 | 0.40<br>6 | 0.34<br>4 | 0.34<br>4 | 0.34<br>4 |
|      | 0.68<br>8 | 0.62<br>5 | 0.59<br>4 | 0.65<br>6 | 0.65<br>6 | 0.78<br>1 | 0.68<br>8 | 0.53<br>1 | 0.59<br>4 | 0.62<br>5 | 0.59<br>4 | 0.59<br>4 | 0.71<br>9 | 0.53<br>1 | 0.75<br>0 | 0.000 | 0.53<br>1 | 0.65<br>6 | 0.56<br>3 | 0.65<br>6 | 0.59<br>4 | 0.59<br>4 | 0.59<br>4 |
| RC17 | 0.34<br>4 | 0.40<br>6 | 0.28<br>1 | 0.37<br>5 | 0.34<br>4 | 0.43<br>8 | 0.28<br>1 | 0.34<br>4 | 0.31<br>3 | 0.34<br>4 | 0.40<br>6 | 0.37<br>5 | 0.31<br>3 | 0.34<br>4 | 0.40<br>6 | 0.438 | 0.00<br>0 | 0.40<br>6 | 0.25<br>0 | 0.40<br>6 | 0.40<br>6 | 0.34<br>4 | 0.43<br>8 |
|      | 0.59<br>4 | 0.65<br>6 | 0.53<br>1 | 0.62<br>5 | 0.59<br>4 | 0.68<br>8 | 0.53<br>1 | 0.59<br>4 | 0.56<br>3 | 0.59<br>4 | 0.65<br>6 | 0.62<br>5 | 0.56<br>3 | 0.59<br>4 | 0.65<br>6 | 0.688 | 0.00<br>0 | 0.65<br>6 | 0.50<br>0 | 0.65<br>6 | 0.65<br>6 | 0.59<br>4 | 0.68<br>8 |

|          |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |       |           |           |           |           |           |           |           |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| RC1<br>8 | 0.46<br>9 | 0.34<br>4 | 0.40<br>6 | 0.34<br>4 | 0.43<br>8 | 0.43<br>8 | 0.43<br>8 | 0.40<br>6 | 0.40<br>6 | 0.21<br>9 | 0.40<br>6 | 0.31<br>3 | 0.40<br>6 | 0.34<br>4 | 0.43<br>8 | 0.406 | 0.40<br>6 | 0.00<br>0 | 0.37<br>5 | 0.31<br>3 | 0.21<br>9 | 0.34<br>4 | 0.18<br>8 |
|          | 0.71<br>9 | 0.59<br>4 | 0.65<br>6 | 0.59<br>4 | 0.68<br>8 | 0.68<br>8 | 0.68<br>8 | 0.65<br>6 | 0.65<br>6 | 0.46<br>9 | 0.65<br>6 | 0.56<br>3 | 0.65<br>6 | 0.59<br>4 | 0.68<br>8 | 0.656 | 0.65<br>6 | 0.00<br>0 | 0.62<br>5 | 0.56<br>3 | 0.46<br>9 | 0.59<br>4 | 0.43<br>8 |
| RC1<br>9 | 0.37<br>5 | 0.40<br>6 | 0.31<br>3 | 0.53<br>1 | 0.46<br>9 | 0.40<br>6 | 0.21<br>9 | 0.21<br>9 | 0.46<br>9 | 0.50<br>0 | 0.28<br>1 | 0.34<br>4 | 0.31<br>3 | 0.43<br>8 | 0.43<br>8 | 0.406 | 0.28<br>1 | 0.37<br>5 | 0.00<br>0 | 0.34<br>4 | 0.31<br>3 | 0.21<br>9 | 0.34<br>4 |
|          | 0.62<br>5 | 0.65<br>6 | 0.56<br>3 | 0.78<br>1 | 0.71<br>9 | 0.65<br>6 | 0.46<br>9 | 0.46<br>9 | 0.71<br>9 | 0.75<br>0 | 0.53<br>1 | 0.59<br>4 | 0.56<br>3 | 0.68<br>8 | 0.68<br>8 | 0.656 | 0.53<br>1 | 0.62<br>5 | 0.00<br>0 | 0.59<br>4 | 0.56<br>3 | 0.46<br>9 | 0.59<br>4 |
| RC2<br>0 | 0.31<br>3 | 0.28<br>1 | 0.37<br>5 | 0.34<br>4 | 0.50<br>0 | 0.31<br>3 | 0.37<br>5 | 0.34<br>4 | 0.25<br>0 | 0.46<br>9 | 0.31<br>3 | 0.40<br>6 | 0.21<br>9 | 0.34<br>4 | 0.28<br>1 | 0.406 | 0.37<br>5 | 0.34<br>4 | 0.34<br>4 | 0.00<br>0 | 0.25<br>0 | 0.31<br>3 | 0.25<br>0 |
|          | 0.56<br>3 | 0.53<br>1 | 0.62<br>5 | 0.59<br>4 | 0.75<br>0 | 0.56<br>3 | 0.62<br>5 | 0.59<br>4 | 0.50<br>0 | 0.71<br>9 | 0.56<br>3 | 0.65<br>6 | 0.46<br>9 | 0.59<br>4 | 0.53<br>1 | 0.656 | 0.62<br>5 | 0.59<br>4 | 0.59<br>4 | 0.00<br>0 | 0.50<br>0 | 0.56<br>3 | 0.50<br>0 |
| RC2<br>1 | 0.56<br>3 | 0.37<br>5 | 0.31<br>3 | 0.25<br>0 | 0.28<br>1 | 0.43<br>8 | 0.31<br>3 | 0.31<br>3 | 0.40<br>6 | 0.31<br>3 | 0.25<br>0 | 0.40<br>6 | 0.28<br>1 | 0.37<br>5 | 0.31<br>3 | 0.313 | 0.34<br>4 | 0.25<br>0 | 0.40<br>6 | 0.37<br>5 | 0.00<br>0 | 0.21<br>9 | 0.34<br>4 |
|          | 0.84<br>4 | 0.62<br>5 | 0.56<br>3 | 0.50<br>0 | 0.53<br>1 | 0.68<br>8 | 0.56<br>3 | 0.56<br>3 | 0.65<br>6 | 0.56<br>3 | 0.50<br>0 | 0.65<br>6 | 0.53<br>1 | 0.62<br>5 | 0.56<br>3 | 0.563 | 0.59<br>4 | 0.50<br>0 | 0.65<br>6 | 0.62<br>5 | 0.00<br>0 | 0.46<br>9 | 0.59<br>4 |
| RC2<br>2 | 0.50<br>0 | 0.31<br>3 | 0.40<br>6 | 0.43<br>8 | 0.28<br>1 | 0.28<br>1 | 0.37<br>5 | 0.21<br>9 | 0.40<br>6 | 0.31<br>3 | 0.28<br>1 | 0.25<br>0 | 0.31<br>3 | 0.31<br>3 | 0.40<br>6 | 0.344 | 0.25<br>0 | 0.37<br>5 | 0.31<br>3 | 0.37<br>5 | 0.40<br>6 | 0.00<br>0 | 0.46<br>9 |
|          | 0.75<br>0 | 0.56<br>3 | 0.65<br>6 | 0.68<br>8 | 0.53<br>1 | 0.53<br>1 | 0.62<br>5 | 0.46<br>9 | 0.65<br>6 | 0.56<br>3 | 0.53<br>1 | 0.50<br>0 | 0.56<br>3 | 0.56<br>3 | 0.65<br>6 | 0.594 | 0.50<br>0 | 0.62<br>5 | 0.56<br>3 | 0.62<br>5 | 0.65<br>6 | 0.00<br>0 | 0.71<br>9 |
| RC2<br>3 | 0.31<br>3 | 0.37<br>5 | 0.28<br>1 | 0.43<br>8 | 0.31<br>3 | 0.53<br>1 | 0.37<br>5 | 0.31<br>3 | 0.28<br>1 | 0.37<br>5 | 0.37<br>5 | 0.34<br>4 | 0.34<br>4 | 0.28<br>1 | 0.40<br>6 | 0.250 | 0.37<br>5 | 0.31<br>3 | 0.28<br>1 | 0.25<br>0 | 0.34<br>4 | 0.37<br>5 | 0.00<br>0 |
|          | 0.56<br>3 | 0.62<br>5 | 0.53<br>1 | 0.68<br>8 | 0.56<br>3 | 0.78<br>1 | 0.62<br>5 | 0.56<br>3 | 0.53<br>1 | 0.62<br>5 | 0.62<br>5 | 0.59<br>4 | 0.59<br>4 | 0.53<br>1 | 0.65<br>6 | 0.500 | 0.62<br>5 | 0.56<br>3 | 0.53<br>1 | 0.50<br>0 | 0.59<br>4 | 0.62<br>5 | 0.00<br>0 |

## 5. Conclusion

COVID-19 disrupted the lives of consumers across the globe, and the retail sector has been one of the hardest hits. Now that the effect of COVID-19 is abating, there is a need to consolidate the learnings during the lifecycle of COVID-19 and set the agenda for research post-COVID-19(Gupta et al., 2023). The shocks related to the COVID-19 pandemic have created an unexpected fluctuation in the evolution of online sales, making it difficult for retailers to cope with the sudden changes in demand that often occur. Drawing on a social and technical approach, this paper aims to 1) provide deeper insight into the driving forces of online sales during a pandemic in a supply chain by collecting data and questionnaires, and 2) examine whether pandemic-related

shocks accelerate long-run growth. Finally, using an intelligent method analysis based on Weibull's solution and queue system, it was shown that the pandemic has changed the level of the long-term growth trend of the online retail sector in most of the examined supply chain sectors.

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