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Supplier Selection in Hospitality Industry Using ANP

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ABSTRACT

Strategic supply chain management has gained more importance with the effect of globalization. In today's global market, well-managed supply chain is one of the most important requirements to be successful in the market. The main idea of the supply chain management is generation of good relationships between chain members to serve customers accurately. Indeed, the definitive operation levels between supply chain members determine the quality of final product/service in a supply chain. Since supply chain success highly depends on a strong collaboration between chain members, the supplier selection is a strategic decision making process which affects all supply chain performance. This strategic decision-making process involves evaluation of tangible and intangible criteria to select right suppliers with multiple objectives. Hence, supplier selection problem can be considered as a multi-criteria decision problem. In this study, the supplier selection problem is solved in a service supply chain by using one of the popular multi-criteria decision making method, analytical network process (ANP).

Keywords: Supplier selection; Service operations; Analytic network process (ANP); Decision making; Purchasing.

JEL Codes: **M10**

1. Introduction

Following technological developments in 1990s, having a successful supply chain management strategy has become a necessity for firms to survive in a competitive global market conditions. Firms realize that it is not enough to maintain an efficient management within an organization, in order to get a product or service to the right place, at the right time, at the right quantity, at the right quality and at the lowest cost (Li, Ragu-Nathan, Ragu-Nathan, & Rao, 2006). Strategic

supply chain management aims to integrate supply chain activities to obtain these corresponding specified goals. Supply chain is a complex network of organizations in which different companies carry out a group of interrelated activities, and those activities have to be organized accurately to achieve an overall satisfaction along the chain.

In other words, supply chain management success is simply achieved by ensuring timely and accurate flow of goods, information and funds. Ensuring the smooth flow of the goods along the supply chain requires intense collaboration among supply chain members. In a supply chain, seven main business processes: customer relationship management, order fulfillment, demand management, manufacturing flow management, product development, commercialization, customer service management and procurement are performed to satisfy customer needs in the most efficient way (Zhang, Song, & Huang, 2009). Since collaboration and coordination between supply chain members have a fatal effect on supply chain success, supplier selection is one of the most important activities in the supply chain management. Evaluation of the candidate supplier's performance and selection of some candidates as a strategic partner are critical processes that can affect all supply chain performance. That is to say, the key factor of a successful supply chain management is to maintain a long-term relationship with suppliers. Therefore, suppliers can be considered as the best intangible assets.

The main goal of the purchasing department is to select the proper source to minimize cost and maximize quality, customer satisfaction and market share. However, supplier selection is a multidimensional problem, which is complex to solve because of its intangible and tangible factors (Chan, Chan, Ip, & Lau, 2007). This problem has been considered in many studies for years, and a variety of criteria and solution methods are generated to solve this problem efficiently. In the literature, some of the researchers define some important criteria in the selection process. Dickson (1969) addresses 23 selection criteria as critical factors in the supplier selection problem. So he identifies quality, price and delivery as the most critical factors among these factors. Following to Dickson's work, Weber, Current, & Benton, (1991) review 76 articles published between 1966 and 1991 and they deduce that the net price of the product, quality and delivery time of the product are the most used criteria in the literature Cheraghi, Dadashzadeh, & Subramanian (2004) show that a significant change could be observed in the relative importance of various critical success factors with the increasing competition and globalization after 1990's. Furthermore, they state that reliability, flexibility, consistency, and long-term relationship are four new critical criteria considered in the supplier selection process. Sen, Basligil, Sen, & Baracli, (2008) propose a framework for defining the supplier selection criteria by examining possible quantitative and qualitative criteria addressed by earlier studies according to the company's strategies. They indicate that companies can show different purchasing behavior in different circumstances and determination of important supplier selection criteria for a company's purchasing strategy decreases the number of

comparisons and the related computational effort. Ho, Xu, & Dey (2010) rank the priority of the supplier selection criteria as follows: quality, delivery, price/cost, manufacturing capability, service, management, technology, research and development, finance, flexibility, reputation, relationship, risk and safety and environment. They point out that quality and delivery time have become more important than price and the traditional evaluation approach, which is a selection of a supplier based on only the lowest price, is not effective in today's competitive supply chain management. Beside the classical supplier evaluation criteria (price, quality and delivery time), there are other critical criteria such as operational performance, service quality, educational status of the personnel, technology, financial capacity, process control capability, after-sales service, and sustainability that may help to select competent suppliers. Table 1 summarizes the supplier evaluation criteria used in ANP based studies.

Table 1: Supplier evaluation criteria used in ANP-base studies

Cost	Machine capacity and capability
Quality	Appropriateness of the delivery date
On-time delivery	Handling and packaging capability
Flexibility	Appropriateness of the quantity
Culture	Appropriateness of the packaging standards
Technology	Quality system certificate of the supplier
Reliability	Archive of quality records
Price	Process control capability
Market share	Product identification
Personnel capability	Audit mechanism
Financial capability	Training
Number of working years	Performance history
Service capability	Reputation and Position in industry
Education status of the personnel	Environmental aspects
The last term profit	

It is possible to say that, the company's strategy forms the evaluation and selection process of suppliers. Hence, the purchase strategy is affected by company's strategy (Eshtehardian, Ghodousi, & Bejanpour, 2013). Different companies have different organizational structure, management strategy and primacy requirements depend on product or service and others. Consequently, the criteria for supplier selection change for an individual companies and industries (Deng, Hu, Deng, & Mahadevan, 2014). According to company's expectations and objectives, the performance of potential suppliers can be evaluated and selected as a strategic partner.

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Since, importance of the each supplier evaluation criteria varies from one company to another, company specific evaluation criteria list need to be determined with respect to primarily operational requirements and expectations of the company's industry. In this context, the expert judgments are needed to assess intangible factors in the supplier selection process. The experience of the expert determines the reliability and accuracy of the results (Chan et al., 2007).

Various decision-making methods are formulated to solve supplier selection problem, such as the analytical hierarchy process (AHP), data envelopment analysis (DEA), analytic network process (ANP), case-based reasoning (CBR), mathematical programming, and artificial intelligence (AI) techniques. The traditional cost-based solution methodologies are not as efficient as multi-criteria decision-making approaches since they are not capable of considering qualitative supplier selection criteria such as flexibility, reliability, culture, and service capability (Ho et al., 2010). ANP is one of the suitable methods to solve supplier selection problems because it considers the interdependencies between criteria and sub-criteria. Analytic network process (ANP) is used by Bayazit (2006) for the first time in order to solve supplier selection problem. In this study, ten decision criteria are selected to evaluate three suppliers. They show that the ANP gives more realistic results than traditional methods since it is capable of defining interdependencies among criteria and handle both quantitative and qualitative criteria when evaluating supplier's performance. Kasirian, Yusuff, & Ismail (2010) investigate supplier selection process in the automotive manufacturing company. The AHP and ANP methods are applied to select one supplier from four potential suppliers. The results indicate that ANP generates more accurate results when considering internal relations between criteria. Kuo & Lin (2012) propose an integrated supplier selection method using ANP and data envelopment analysis (DEA) to solve a supplier selection problem, which also considers environmental factors. They show that the integrated method has some advantages when solving large problems. DEA helps handling large data with little management effort while ANP provides more realistic importance weights for performance measures. Eshtehardian et al., (2013) study supplier selection for construction and civil engineering companies. They use Delphi method in order to determine the effective criteria on the supplier selection process in this industry. Afterward, the AHP and ANP methods are used to evaluate potential suppliers, and the performances of the methods are compared. Cho, Lee, Ahn, & Hwang (2012) present a framework of service supply chain performance measurement. They propose a solution method based on the extent fuzzy analytic hierarchy process (AHP) in order to measure the performance of the service supply chain. They apply the proposed measurement framework to the hotel supply chain.

Since there are usually interdependencies among decision-making criteria in real word cases, ANP is more applicable than traditional methods to evaluate candidate suppliers. In this study,

the supplier selection criteria are grouped under seven main criteria including: price-cost, quality, reliability, sustainability, service quality, communication and relations, technology. The ANP method is used to solve supplier selection problem in the hotel supply chain.

The remainder of the paper is organized as follows. In section 2, supplier selection in hospitality industry is considered. In section 3, Analytic network process (ANP) is defined. Section 4, illustrates use of ANP in supplier selection problem. The conclusion is considered in section 5, followed by the references.

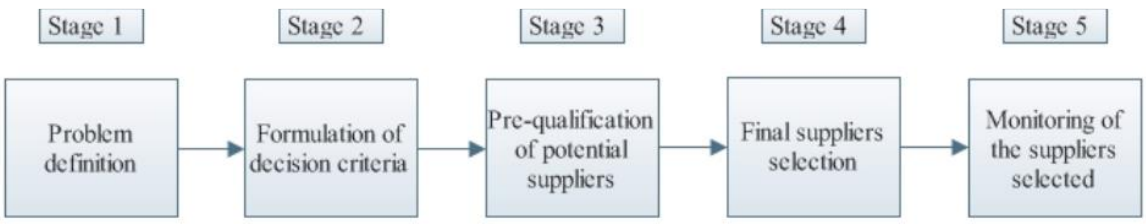
2. Supplier Selection in Hospitality Industry

There are three decision levels in supply chain management, which are strategic, tactical and operational. Strategic level decisions involve long-term issues such as demand planning, strategic alliances, outsourcing, supplier selection and pricing (Zhang et al., 2009). Supplier selection is a critical strategic decision process in the service supply chain, which affects customer's satisfaction directly. Supplier selection problem aims to determine the right suppliers for certain product or service. Since some qualitative and quantitative factors are decisive in the selection process, the decision maker has to determine these suitable factors at the first step (Silva, Nascimento, Ribeiro, & Belderrain, 2009).

As mentioned by Baltacioglu, Ada, Kaplan, Yurt, & Kaplan (2007), supplier evaluation and selection process has a great importance in service supply chain management in consequence of the characteristic of the service delivery process. In the service operations, suppliers have a significant impact on customer's satisfaction since they usually contact with customers directly and produce services. Thus, an inaccurate supplier selection decision simultaneously affects the service delivery performance. In order to establish a permanent customer satisfaction, reliable supplier relationship with suppliers is a necessity in the service supply chain (Cho et al., 2012). In this context, supplier selection problem gains more importance in the service supply chains.

Supplier selection problem is generally examined in the context of manufacturing supply chains, however, there is limited literature available on solving supplier selection problem in the service industry (e.g. O'Connell, Henchion, & Collins, 2006; Kim & Ellegaard, 2011; Lee et. al, 2009; Ordoobadi & Wang, 2011).

Figure 1: Framework for the supplier selection problem (Silva et al., 2009)



Generally, it is known that supply chain management strategies are effective for manufacturing companies, however it has a significant impact on the service companies like five star hotels and healthcare institutions. Since, from a customer's perspective, the accommodation service offered by a hotel can be easily substitutable, it is hard to differentiate the hotel from its competitors. A well-managed supplier relationship in the hotel industry can help to gain a competitive advantage with improved quality and service, and reduced costs (Odoom, 2012).

In the hotel service delivery process, suppliers may contribute directly to service delivery and usually come into contact with guests (customers), for this reason supplier relationship management has a significant importance in the hotel supply chain management. For example, suppliers may provide food and drink; materials using in the hotel or supporting services such as cleaning, laundry, facility and maintenance. That is to say, supplier relationship management is one of the core functions of the hotel supply chains (Cho et al., 2012).

Service operations differ from manufacturing based operations with some characteristic of services such as intangibility, inseparability product and consumption, heterogeneity and inapplicability of warehousing function. These characteristics need to be considered when the supplier selection criteria are determined in the service supplier selection process (Baltacioglu et al., 2007). In order for the supplier relationship management system to perform successfully in the service industry, service firms and their suppliers should collaboratively create and deliver services faster and at the lowest total cost (Cho et al., 2012). Price, quality and on-time delivery are the most considered three supplier selection criteria in the literature; however they are not enough to select strategic supplier in today's competitive environment. Reliability, technical capability, sustainability, flexibility, service quality and communication skills are some other factors which are need to be considered to develop a long-term supplier relationship (Muralidharan, Anantharaman, & Deshmukh, 2002).

3. Analytic Network Process

ANP proposed by T. L. Saaty (1996) is a general form of the Analytic Hierarchy Process (AHP). ANP is one of the multi criteria decision-making techniques, which consider the dependence among criteria and alternative. Therefore it offers several advantages over other multi criteria decision-making (MCDM) techniques. There are mainly six steps in ANP.

Step 1. Define decision problem

Step 2. Determine dependencies among clusters (outer dependence) and elements of the clusters (inner dependence)

Step 3. Pairwise comparisons of the elements and clusters

Step 4. Determine the supermatrix and weighted supermatrix

Step 5. Calculate the limit supermatrix.

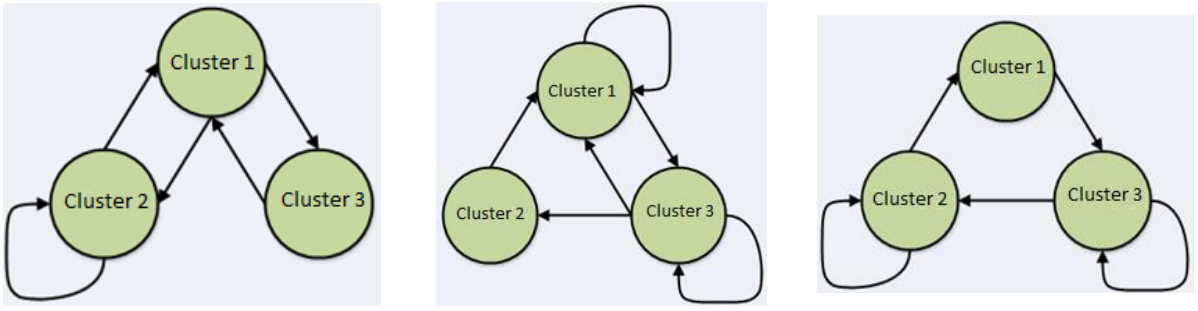
Step 6. Select the best alternative.

The general form of the supermatrix can be described as follows:

$$
W = \begin{array}{c} \\ C_1 \\ \\ \\ \\ C_2 \\ \\ \\ \\ C_m \\ \\ \end{array}
\begin{array}{c}
\begin{array}{cccccccccccc} C_1 & & & & C_2 & & & & C_m & & & \end{array} \\
\begin{array}{cccccccccccc} e_{11} & e_{12} & \cdots & e_{1n_1} & e_{21} & e_{22} & \cdots & e_{2n_2} & \cdots & e_{m1} & e_{m2} & \cdots & e_{mn_m} \end{array} \\
\begin{bmatrix}
W_{11} & & & W_{12} & & & \cdots & & W_{1m} \\
 & & & & & & & & \\
 & & & & & & & & \\
 & & & & & & & & \\
W_{21} & & & W_{22} & & & \cdots & & W_{2m} \\
 & & & & & & & & \\
 & & & & & & & & \\
\vdots & & & \vdots & & & \ddots & & \vdots \\
 & & & & & & & & \\
 & & & & & & & & \\
W_{m1} & & & W_{m2} & & & \cdots & & W_{mm}
\end{bmatrix}
\end{array}
$$

Where C_m denotes the m cluster, e_{mn} denotes the n^{th} element in the m^{th} cluster and W_{ij} is the principal eigenvector of the influence of the elements compared in j^{th} cluster to the i^{th} cluster. If the j^{th} cluster has no influence on the i^{th} cluster, then $W_{ij}=0$ (Tzeng & Huang, 2011). Three cases are shown in Figure 2 to demonstrate how to form the supermatrix based on the specific network structures.

Figure 2: Structure of three cases and their supermatrices respectively



$$W = \begin{array}{c} \\ C_1 \\ C_2 \\ C_3 \end{array} \begin{array}{c} \begin{array}{ccc} C_1 & C_2 & C_3 \end{array} \\ \begin{bmatrix} 0 & W_{12} & W_{13} \\ W_{21} & W_{22} & 0 \\ W_{31} & 0 & 0 \end{bmatrix} \end{array} \quad W = \begin{array}{c} \\ C_1 \\ C_2 \\ C_3 \end{array} \begin{array}{c} \begin{array}{ccc} C_1 & C_2 & C_3 \end{array} \\ \begin{bmatrix} W_{11} & W_{12} & W_{13} \\ 0 & 0 & W_{23} \\ W_{31} & 0 & W_{33} \end{bmatrix} \end{array} \quad W = \begin{array}{c} \\ C_1 \\ C_2 \\ C_3 \end{array} \begin{array}{c} \begin{array}{ccc} C_1 & C_2 & C_3 \end{array} \\ \begin{bmatrix} 0 & W_{12} & 0 \\ 0 & W_{22} & W_{23} \\ W_{31} & 0 & W_{33} \end{bmatrix} \end{array}$$

After forming the supermatrix, the weighted supermatrix is derived by transforming all column sums to unity exactly. This step is very similar to the concept of a Markov chain for ensuring the sum of these probabilities of all states is equal to 1 (Ishizaka & Nemery, 2013). Next, we raise the weighted supermatrix to limiting power such as equation below to get the global priority vectors.

$$\lim_{k\to\infty} W^k$$

4. Application and Findings

From a customer's perspective, the accommodation service offered by a hotel can be easily substitutable and it is hard to differentiate the hotel from its competitors. However, hotel managers need to diversify the hotel's services from its competitors to gain a competitive advantage. Depending on the departmental structure of the organization, the hotel service supply chain consists of the series of activities such as reception, housekeeping, food and beverage, maintenance and administration (Paraskevas, 2001). These activities are accompanied the logging that is the core service of a hotel from a service supply chain perspective. Hotel customers usually consider food and beverage services as a component of the hospitality service of the hotel. They believe that food and beverage services support the hotel's image and significantly affect the customer's general hotel experience (Hemmington & King, 2000). Customer expectations in hotel services usually depend on the guest type, for instance business guests are often looking for healthy items because they travel and dine out often.

In this study, the supplier selection problem is considered in a service supply chain concept and the proposed model of supplier selection is applied in a five-star business hotel in Istanbul. The hotel has 210 guest rooms and suites and fourteen meeting rooms that will accommodate from 12 people in a boardroom setting to 410 people for a banquet. The hotel features seven restaurant, cafés and lounges where guests can explore a variety of cuisines. Since the food and beverage service is one of the core customer products in the business hotel, we consider the selection of the fresh food supplier problem in this study. The aim of this study is to determine the important selection criteria in food supplier selection process and select the most suitable supplier for this hotel.

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Table 2: Clusters and Criteria of Supplier Selection Problem

Clusters	Nodes
A: Alternatives	A1: Supplier 1
	A2: Supplier 2
	A3: Supplier 3
B: Reliability	B1: The number of working years in this sector
	B2: Positive recommendations about supplier
	B3: Ability to meet delivery quantities
	B4: Ability to meet delivery due dates
	B5: Compliance with packaging requirements
	B6: Supplier's reputation in industry
	B7: Financial stability and staying power
C: Quality	C1: ISO certification (9001, etc.)
	C2: Process control capability
	C3: Corrective and preventive action system
	C4: Past quality experience with supplier
	C5: Compliance with delivery standards
D: Price-Cost	D1: Ordering cost
	D2: Transportation cost
	D3: Net price of the final product
	D4: Maintenance and repair cost
	D5: Flexible payment terms
E: Communication and Relations	E1: Sales force product knowledge
	E2: Ability to solve the quality problems
	E3: Flexible contract conditions
	E4: Communication capability
	E5: Order receiving system of the supplier
	E6: Past and current relationship with supplier
F: Sustainability	F1: Environmental policy of the supplier
	F2: ISO 14001 certification
	F3: Recycling policy of the supplier
	F4: Education status of the employee
	F5: Employee workplace safety and training
	F6: Social Responsibility
G: Service Quality	G1: Customer satisfaction
	G2: Product line diversity
	G3: Ability to respond to unexpected demand
	G4: After sales service
	G5: Technical support availability for the products
H: Technology	H1: Information systems
	H2: Storage systems
	H3: Transportation systems

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To apply proposed method a real world supplier selection problem was solved. In this problem there are 7 criteria, 37 sub criteria and three candidate suppliers. Interviews were performed with the purchasing department managers in order to identify weights of the criteria. Criteria to be considered in the selection of supplier are determined by literature review and purchasing department managers of the hotel. Past experience and the background of the experts are utilized in the determination of the criteria and 7 important criteria (clusters) to be used for supplier selection are established. These 7 clusters are as follows: “Reliability” (B), “Quality” (C), “Price-Cost” (D), “Communication and Relations” (E), “Sustainability” (F), “Service Quality” (G) and “Technology” (H). The list of clusters and nodes of the problem is shown in Table 2.

Table 3: Cluster Matrix

	A	B	C	D	E	F	G	H
A	0.0220	0.0234	0.0197	0.0236	0.0234	0.0937	0.0234	0.0428
B	0.1235	0.2256	0.2436	0.3318	0.1050	0.2689	0.1029	0.1006
C	0.3629	0.3551	0.3659	0.2312	0.3282	0.0000	0.1516	0.0000
D	0.2647	0.0687	0.0642	0.1065	0.0704	0.1460	0.0704	0.3825
E	0.0424	0.1023	0.1006	0.1538	0.2456	0.0000	0.3438	0.0000
F	0.0291	0.0325	0.0309	0.0337	0.0334	0.4914	0.0327	0.0641
G	0.0926	0.1447	0.1301	0.0714	0.1466	0.0000	0.2277	0.1596
H	0.0628	0.0477	0.0449	0.0479	0.0474	0.0000	0.0474	0.2504

Unweighted supermatrix, weighted supermatrix and limit supermatrix are all shown in the appendix part of this paper in Table 5, Table 6 and Table 7. Weighted supermatrix can be calculated by multiplying cells of cluster matrix shown in Table 3 and each corresponding cells of unweighted supermatrix. Weighted supermatrix is raised to powers for obtaining the limit supermatrix. Priorities for all the criteria and alternatives can be read from the limit supermatrix. All columns of the limit supermatrix are same. Therefore just the first column is shown with more decimal numbers.

The ANP structure is modeled in the network shown in Figure 3. In the network structure there are 8 clusters and 40 nodes. All criteria and their weights are given in Figure 4 by using limit supermatrix.

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Figure 3: ANP Model of Supplier Selection Problem (Super Decision)

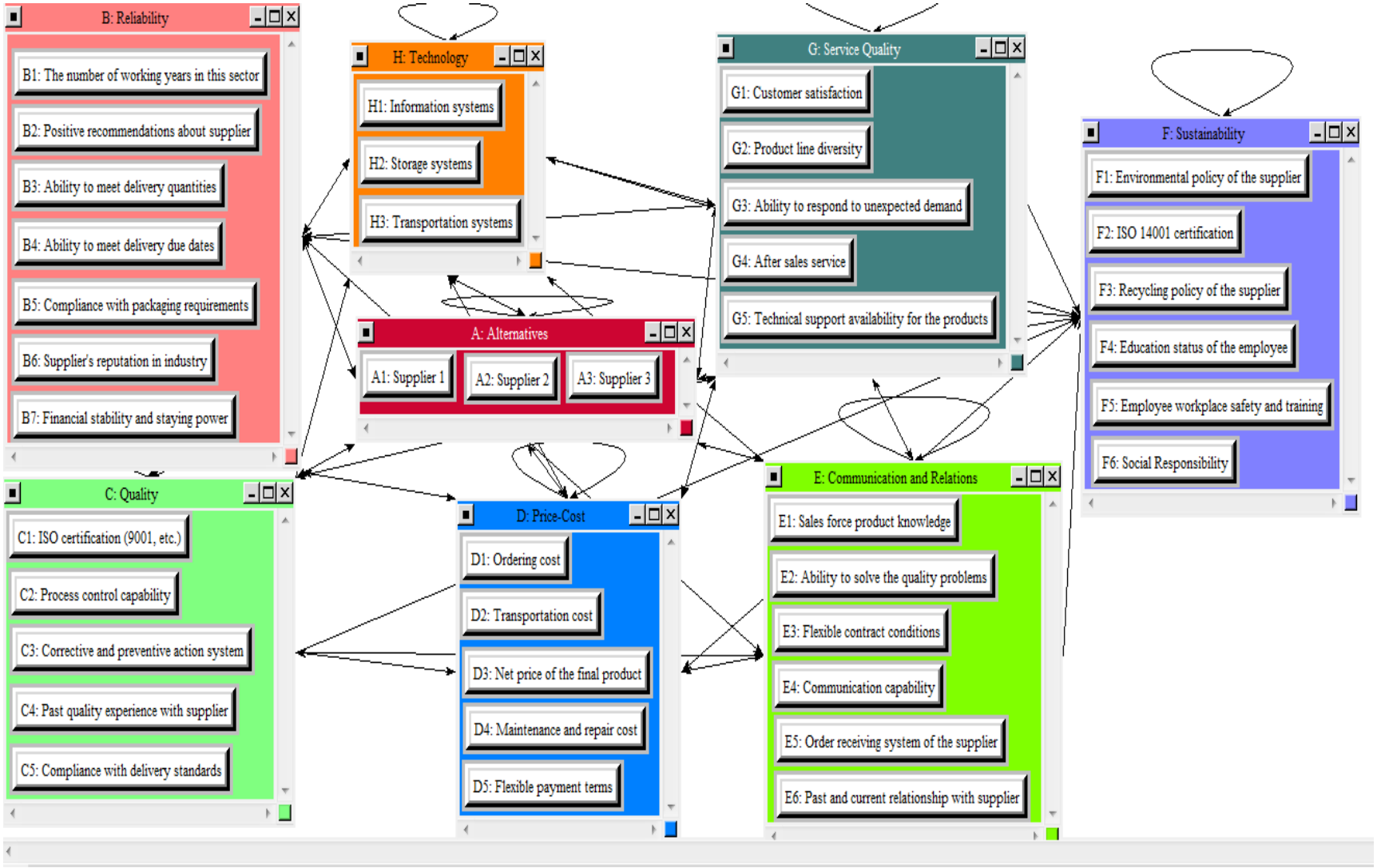
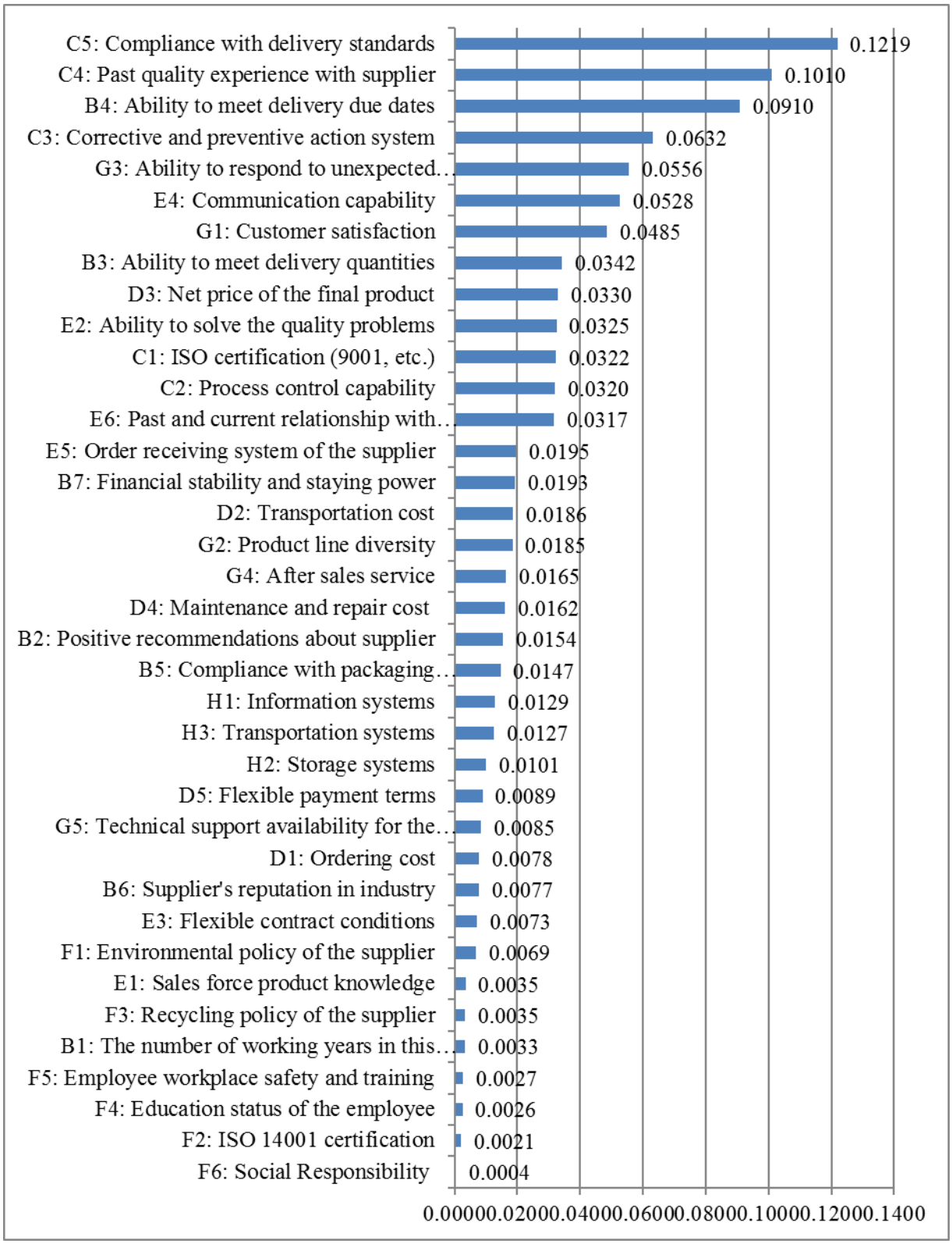


Figure 4: Priorities of criteria



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In this study "C5: Compliance with delivery standards" (0.1219), "C4: Past quality experience with supplier" (0.1010), "B4: Ability to meet delivery due dates" (0.0910) and "C3: Corrective and preventive action system" (0.0632) are determined as the four most important criteria in the supplier selection process by ANP. Other considerable criteria about supplier selection based criteria for experts are ranked as follows according to priority: "G3: Ability to respond to unexpected demand" (0.0556), "E4: Communication capability" (0.0528), "G1: Customer satisfaction" (0.0485) and "B3: Ability to meet delivery quantities" (0.0342). Consistency ratios of the all pair-wise comparison matrix are calculated less than 0.1. So the weights are shown to be consistent and they are used in the supplier selection process. The least important supplier selection criteria are "F6: Social Responsibility" (0.0004), "F2: ISO 14001 certification (0.0021), "F4: Education status of the employee" (0.0026) and "F5: Employee workplace safety and training" (0.0027).

Table 4. Ranks of the suppliers

Rank	Supplier	ANP Coefficient	Score (%)
1	A1	0.0119	38.758
2	A3	0.0093	30.929
3	A2	0.0095	30.313

Depends on the ANP coefficient values in limit supermatrix (Table 7), the ranking of the three alternatives from top to bottom order are A1, A3 and A2 as shown in Table 4. Proposed model results show that A1 is the best supplier alternative with 38.758% ANP score. Depends on the analysis the least suitable supplier is A2.

5. Conclusion

A successful supply chain management is a critical factor to gain a competitive advantage in today's global environment. The main idea of supply chain management is generation of good relationships between chain members to serve customers accurately. Indeed, definitive operational levels between supply chain members determine the quality of final product/service in a supply chain. Therefore, supplier selection process in the supply chain management has a significant impact on competitive advantage. Selecting the appropriate supplier is more than finding the supplier who offers the best price, especially in the upscale service companies. The quality of the product, on-time delivery and order accuracy are usually

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more important than the price. In the supplier relationship, generally long-term gain can be preferable to the short-term savings. In order to gain long-term savings, companies establish a satisfactory relationship with their suppliers. Hence, the supplier selection criteria list may include other factors such as communication and relations, reliability, service quality, culture, financial capability, education status of the employee and sustainability that ensure to develop a long-term supplier relationship.

In this study, supplier selection problem is considered as a multi criteria decision problem and a model is developed by using ANP. The evaluation criteria are identified according to the company's priority objectives and the proposed model is applied to a real life case study. Seven main supplier evaluation criteria (reliability, quality, price-cost, communication and relations, sustainability, service quality and technology) are determined as the main decisive criteria. Additionally to the classical supplier selection criteria, relatively new criteria such as sustainability, communication and relations and service quality are also been considered in the supplier selection process. The results show that, compliance with delivery standards, past quality experience with supplier, ability to meet delivery due dates are the most important criteria in the supplier selection process of the hotel. On the other hand, the sustainability criteria are considered as the least important supplier selection criteria by the purchasing department of the hotel. It demonstrates that sustainability is still neglected issue in the hotel's supplier selection process. Awareness of sustainability in supplier selection process needs to be improved in the future to gain a competitive advantage. Additionally to this, the proposed method is practicable for evaluating potential suppliers in terms of their accuracy with respect to multiple interdependence criteria. However, in future, an alternative decision making method can be developed to solve the supplier selection problem in a hotel supply chain and the results can be compared to assess the performance of the proposed method. Or, the proposed method can be applied to a different service supply chain.

References

Baltacioglu, T., Ada, E., Kaplan, M.D., Yurt, O., & Kaplan, Y.C. (2007). A new framework for service supply chains. *The Service Industries Journal, 27*(2), 105-124.

Bayazit, O. (2006). Use of Analytic Network Process in Vendor Selection Decisions. *Benchmarking: An International Journal, 13*(5), 566-579.

Chan, F.T.S., Chan, H.K., Ip, R.W., Lau, H.C. (2007). A decision support system for supplier selection in the airline industry. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 741-758.

Cheraghi, S.H., Dadashzadeh, M., & Subramanian, M. (2004). Critical success factors for supplier selection: an update. *Journal of Applied Business Research, 20*(2), 91-108.

Cho, D.W., Lee, Y.H., Ahn, S.H.,& Hwang, M.K. (2012). A framework for measuring the performance of service supply chain management. *Computers& Industrial Engineering, 62*(3), 801-818.

Deng, X., Hu, Y., Deng, Y., & Mahadevan, S. (2014). Supplier selection using AHP methodology extended by D numbers. *Expert Systems with Applications*, *41*(1), 156-167.

Dickson, G.W. (1966). An analysis of vendor selection systems and decisions. *Journal of Purchasing, 2*(1), 5-17.

Eshtehardian, E., Ghodousi, P., & Bejanpour A. (2013). Using ANP and AHP for the supplier selection in the construction and civil engineering companies; case study of Iranian company. *KSCE Journal of Civil Engineering*, *17*(2), 262-270.

Hemmington, N., & King, C. (2000). Key dimensions of outsourcing hotel food and beverage services. *International Journal of Contemporary Hospitality Management*, *12*(4), 256-261.

Ho, W., Xu, X., & Dey, P.K. (2010). Multi-criteria decision making approaches for supplier evaluation and selection: A literature review. *European Journal of Operational Research, 202*(1), 16-24.

Ishizaka, A., & Nemery, P. (2013). *Multi-criteria decision analysis: Methods and software*. John Wiley & Sons, Ltd., New Delhi, India

Kasirian, M.N., Yusuff, R.M., & Ismail, M.Y. (2010). Application of AHP and ANP in supplier selection process- A case in an automotive company. *International Journal of Management Science and Engineering Management, 5*(2), 125-135.

Kim,S.H., & Ellegaard, C. (2011). Supplier evaluation processes: The shaping and reshaping of supplier performance. *International Journal of Operations&Production Management, 31*(8), 888-910.

Kuo, R.J. & Lin, Y.J. (2012). Supplier selection using analytic network process and data envelopment analysis. *International Journal of Production Research*, *50*(11), 2852-2863.

Lee, A.H.I., Chang, H.J., & Lin, C.Y. (2009). An evaluation model of buyer-supplier relationships in high-tech industry- The case of an electronic components manufacturer in Taiwan. *Computers & Industrial Engineering, 57*(4), 1417-1430.

Li, S., Ragu-Nathan, B.,Ragu-Nathan, T.S., & Rao, S.S. (2006). The impact of supply chain management practices on competitive advantage and organizational performance. *International Journal of Management Science*, *34*(2), 107-124.

Muralidharan, C., Anantharaman, N., & Deshmukh, S.G. (2002). A multi-criteria group decision making model for supplier rating. *The Journal of Supply Chain Management*, *38*(4), 22-33.

O'Connell, S., Henchion, M., & Collins, A. (2006). Optimising the service mix for Irish hoteliers: The challenge for small food suppliers. *International Journal of Contemporary Hospitality Management*, *18*(3), 219-230.

Odoom, C.K. (2012). *Logistics and supply chain management in the hotel industry: Impact on hotel performance in service delivery*. UNLV Theses/Dissertations/Professional Papers/Capstones. Paper 1339.

Ordoobadi, S.M., & Wang, S. (2011). A multiple perspectives approach to supplier selection. *Industrial Management & Data Systems,111*(4), 626-648.

Paraskevas, A. (2001). Exploring hotel internal service chains: A theoretical approach. *International Journal of Contemporary Hospitality Management*, *13*(5), 251- 258.

Saaty, T.L., (1996). *Decision making with dependence and feedback: The analytic network process.* RWS Publications, Pittsburgh, PA.

Sen, S.,Basligil, H., Sen, C.G., & Baracli, H., (2008). A framework for defining both qualitative and quantitative supplier selection criteria considering the buyer-supplier integration strategies. *International Journal of Production Research*, *46*(7), 1825-1845.

Silva, A.S., Nascimento, L.P., Ribeiro, J.R., & Belderrain, M.C.N. (2009). ANP and ratings model applied to supplier selection problem. *Proceedings of the International Symposium on the Analytic Hierarchy Process.*

Tzeng, G. H., & Huang, J. J. (2011). *Multi attribute decision making: Methods and applications*. CRC Press, USA

Weber, C.A., Current, J.R., & Benton, W.C., (1991). Vendor selection criteria and methods. *European Journal of Purchasing and Materials Management*, *50*(1), 35-41.

Zhang, X., Song, H., & Huang, G.O. (2009). Tourism supply chain management: A new research agenda, *Tourism Management*, *30*(3), 345 -358.

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APPENDİX

Table 5: Supermatrix

		A			B							C					D					E						F						G					H		
		A1	A2	A3	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5	E1	E2	E3	E4	E5	E6	F1	F2	F3	F4	F5	F6	G1	G2	G3	G4	G5	H1	H2	H3
A	A1	0.00	0.50	0.50	0.54	0.50	0.33	0.33	0.50	0.33	0.33	0.60	0.33	0.33	0.43	0.60	0.33	0.33	0.30	0.33	0.33	0.43	0.33	0.33	0.33	0.33	0.56	0.33	0.33	0.33	0.33	0.33	0.33	0.40	0.33	0.25	0.33	0.33	0.54	0.54	0.33
	A2	0.50	0.00	0.50	0.30	0.25	0.33	0.33	0.25	0.33	0.33	0.20	0.33	0.33	0.43	0.20	0.33	0.33	0.16	0.33	0.33	0.14	0.33	0.33	0.33	0.33	0.32	0.33	0.33	0.33	0.33	0.33	0.33	0.20	0.33	0.25	0.33	0.33	0.16	0.30	0.33
	A3	0.50	0.50	0.00	0.16	0.25	0.33	0.33	0.25	0.33	0.33	0.20	0.33	0.33	0.14	0.20	0.33	0.33	0.54	0.33	0.33	0.43	0.33	0.33	0.33	0.33	0.12	0.33	0.33	0.33	0.33	0.33	0.33	0.40	0.33	0.50	0.33	0.33	0.30	0.16	0.33
B	B1	0.14	0.14	0.14	0.00	0.06	0.00	0.00	0.00	0.25	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00
	B2	0.14	0.14	0.14	0.49	0.00	0.00	0.00	0.00	0.38	0.54	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B3	0.14	0.14	0.14	0.12	0.24	0.00	0.00	0.00	0.16	0.00	0.30	0.33	0.00	0.28	0.30	0.29	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.20	0.00	0.00	0.00	0.00	0.00
	B4	0.14	0.14	0.14	0.00	0.16	0.00	0.00	0.00	0.10	0.00	0.54	0.67	1.00	0.47	0.54	0.57	0.75	0.00	0.00	0.00	0.00	1.00	0.00	0.67	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.00	0.80	0.00	0.00	0.00	0.00	0.00
	B5	0.14	0.14	0.14	0.00	0.10	0.00	0.00	0.00	0.04	0.00	0.16	0.00	0.00	0.16	0.16	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	1.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B6	0.14	0.14	0.14	0.31	0.40	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.63	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B7	0.14	0.14	0.14	0.08	0.04	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.33	0.24	0.00	0.75	0.00	0.00	0.00	1.00	1.00	1.00
C	C1	0.20	0.20	0.20	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.14	0.10	0.16	0.00	0.00	0.30	0.00	0.00	1.00	0.16	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	C2	0.20	0.20	0.20	0.00	0.00	0.16	0.12	0.14	0.00	0.00	0.54	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.10	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	C3	0.20	0.20	0.20	0.00	0.15	0.30	0.27	0.24	0.14	0.14	0.00	0.00	0.00	0.28	0.30	0.67	0.00	0.16	0.00	0.00	0.00	0.47	0.00	0.16	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	C4	0.20	0.20	0.20	0.75	0.51	0.00	0.00	0.00	0.57	0.63	0.16	0.57	0.57	0.00	0.54	0.00	0.00	0.54	0.50	0.00	0.00	0.10	0.00	0.28	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.67	0.33	0.00	0.00	0.00	0.00
	C5	0.20	0.20	0.20	0.25	0.24	0.54	0.61	0.63	0.29	0.24	0.30	0.29	0.29	0.47	0.00	0.33	1.00	0.00	0.50	0.00	0.00	0.00	0.00	0.47	0.67	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.00	0.33	0.67	0.00	0.00	0.00	0.00
D	D1	0.20	0.20	0.20	0.00	0.00	0.33	0.00	1.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	D2	0.20	0.20	0.20	0.00	0.00	0.67	1.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.67
	D3	0.20	0.20	0.20	0.00	0.54	0.00	0.00	0.00	0.67	0.47	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.33	0.00	0.00	0.75	1.00	0.00	0.00	0.00	1.00	1.00	0.51	0.00	0.00	0.33	1.00	1.00	1.00	0.33
	D4	0.20	0.20	0.20	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00
	D5	0.20	0.20	0.20	1.00	0.30	0.00	0.00	0.00	0.33	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.67	1.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	E1	0.17	0.17	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.12	0.00	0.00	0.00	0.00
	E2	0.17	0.17	0.17	0.30	0.33	0.16	0.16	0.00	0.28	0.30	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00	0.46	0.56	0.00	0.00	0.00	0.00
	E3	0.17	0.17	0.17	0.16	0.00	0.00	0.00	0.00	0.16	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.06	0.00	0.00	0.00	0.00	0.00
	E4	0.17	0.17	0.17	0.54	0.67	0.54	0.54	0.00	0.10	0.00	0.00	0.00	0.00	0.14	0.67	0.33	0.00	0.00	0.00	0.00	0.00	0.47	0.33	0.00	0.67	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.00	0.25	0.32	1.00	0.00	0.00	0.00
	E5	0.17	0.17	0.17	0.00	0.00	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.67	0.00	0.14	0.00	0.00	0.00	0.10	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00
	E6	0.17	0.17	0.17	0.00	0.00	0.00	0.00	0.00	0.47	0.54	0.00	0.00	0.00	0.57	0.00	0.00	0.00	0.57	0.00	0.67	0.00	0.28	0.67	0.54	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.09	0.00	0.00	0.00	0.00	0.00
F	F1	0.17	0.17	0.17	0.00	0.16	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.67	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.67	1.00
	F2	0.17	0.17	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	F3	0.17	0.17	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	F4	0.17	0.17	0.17	0.00	0.10	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.33	0.00
	F5	0.17	0.17	0.17	0.00	0.47	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00
	F6	0.17	0.17	0.17	0.00	0.28	0.00	0.00	0.00	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G	G1	0.20	0.20	0.20	0.54	0.48	0.00	0.00	0.00	0.44	0.42	1.00	0.00	0.00	0.47	0.00	1.00	0.67	0.54	0.00	0.00	0.00	0.00	0.00	0.10	0.33	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.67	0.75	0.67	0.67	0.00	0.00
	G2	0.20	0.20	0.20	0.00	0.09	0.00	0.00	0.00	0.09	0.10	0.00	0.00	0.00	0.10	0.00	0.00	0.33	0.16	0.00	0.00	0.00	0.30	0.00	0.16	0.67	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.33	0.00	0.00	0.33	1.00	0.00
	G3	0.20	0.20	0.20	0.30	0.27	1.00	1.00	0.00	0.26	0.26	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.25	0.00	0.00	0.00	0.00	0.00	0.00
	G4	0.20	0.20	0.20	0.16	0.16	0.00	0.00	0.00	0.16	0.16	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.16	0.00	0.47	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.33	0.00	0.00	0.00
	G5	0.20	0.20	0.20	0.00	0.00	0.00	0.00	0.00	0.06	0.06	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.25	0.00	0.00	0.00	0.00
H	H1	0.33	0.33	0.33	0.00	0.00	0.33	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.33	0.00	0.00	0.00	0.00	0.00	1.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	1.00	0.67
	H2	0.33	0.33	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.33	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.67	0.00	0.00	0.00	0.00	0.33
	H3	0.33	0.33	0.33	0.00	0.00	0.67	0.67	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.54	0.00	0.33	0.00	0.00	0.00	0.00	0.00

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Table 6: Weighted Supermatrix

		A			B							C					D					E						F						G					H		
		A1	A2	A3	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5	E1	E2	E3	E4	E5	E6	F1	F2	F3	F4	F5	F6	G1	G2	G3	G4	G5	H1	H2	H3
A	A1	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.03	0.04	0.05	0.05	0.06	0.06	0.01	0.02	0.01	0.01	0.01	0.03	0.02	0.02
	A2	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.02	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.03	0.04	0.05	0.05	0.06	0.06	0.00	0.02	0.01	0.01	0.01	0.01	0.01	0.02
	A3	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.02	0.01	0.01	0.00	0.03	0.04	0.05	0.05	0.06	0.06	0.01	0.02	0.01	0.01	0.01	0.02	0.01	0.02
B	B1	0.02	0.02	0.02	0.00	0.01	0.00	0.00	0.00	0.06	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
	B2	0.02	0.02	0.02	0.12	0.00	0.00	0.00	0.00	0.09	0.13	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B3	0.02	0.02	0.02	0.03	0.06	0.00	0.00	0.00	0.04	0.00	0.08	0.13	0.00	0.07	0.08	0.11	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.02	0.00	0.00	0.00	0.00	0.00
	B4	0.02	0.02	0.02	0.00	0.04	0.00	0.00	0.00	0.02	0.00	0.15	0.26	0.35	0.12	0.15	0.22	0.29	0.00	0.00	0.00	0.00	0.12	0.00	0.07	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.09	0.00	0.00	0.00	0.00	0.00
	B5	0.02	0.02	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.05	0.00	0.00	0.04	0.04	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.31	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B6	0.02	0.02	0.02	0.07	0.09	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B7	0.02	0.02	0.02	0.02	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65	0.00	0.00	0.24	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.18	0.13	0.00	0.22	0.00	0.00	0.00	0.15	0.10	0.12
C	C1	0.07	0.07	0.07	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.04	0.07	0.00	0.00	0.07	0.00	0.00	0.62	0.06	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	C2	0.07	0.07	0.07	0.00	0.00	0.08	0.06	0.10	0.00	0.00	0.23	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	C3	0.07	0.07	0.07	0.00	0.06	0.14	0.13	0.17	0.05	0.05	0.00	0.00	0.00	0.11	0.12	0.18	0.00	0.04	0.00	0.00	0.00	0.18	0.00	0.05	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	C4	0.07	0.07	0.07	0.29	0.19	0.00	0.00	0.00	0.21	0.24	0.07	0.33	0.30	0.00	0.22	0.00	0.00	0.12	0.32	0.00	0.00	0.04	0.00	0.09	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.11	0.06	0.00	0.00	0.00	0.00
	C5	0.07	0.07	0.07	0.10	0.09	0.26	0.29	0.45	0.11	0.09	0.13	0.17	0.15	0.19	0.00	0.09	0.27	0.00	0.32	0.00	0.00	0.00	0.00	0.16	0.25	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.06	0.12	0.00	0.00	0.00	0.00
D	D1	0.05	0.05	0.05	0.00	0.00	0.03	0.00	0.14	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	D2	0.05	0.05	0.05	0.00	0.00	0.06	0.09	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.30
	D3	0.05	0.05	0.05	0.00	0.04	0.00	0.00	0.00	0.05	0.03	0.08	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.29	0.00	0.00	0.00	0.05	0.00	0.00	0.06	0.15	0.00	0.00	0.00	0.29	0.29	0.04	0.00	0.00	0.03	0.10	0.56	0.38	0.15
	D4	0.05	0.05	0.05	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.07	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00
	D5	0.05	0.05	0.05	0.07	0.02	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.11	0.07	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	E1	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.05	0.00	0.00	0.00	0.00
	E2	0.01	0.01	0.01	0.03	0.04	0.02	0.02	0.00	0.03	0.03	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.18	0.24	0.00	0.00	0.00	0.00
	E3	0.01	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.02	0.00	0.00	0.00	0.00	0.00
	E4	0.01	0.01	0.01	0.06	0.07	0.07	0.07	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.07	0.06	0.00	0.00	0.00	0.00	0.00	0.14	0.18	0.00	0.19	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.10	0.13	0.49	0.00	0.00	0.00
	E5	0.01	0.01	0.01	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.12	0.00	0.02	0.00	0.00	0.00	0.03	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
	E6	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.06	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.09	0.00	0.20	0.00	0.08	0.37	0.14	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.03	0.00	0.00	0.00	0.00	0.00
F	F1	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.56	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.04	0.08
	F2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	F3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	F4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.02	0.00
	F5	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00
	F6	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G	G1	0.02	0.02	0.02	0.08	0.07	0.00	0.00	0.00	0.07	0.07	0.15	0.00	0.00	0.07	0.00	0.08	0.06	0.04	0.00	0.00	0.00	0.00	0.00	0.01	0.06	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.17	0.21	0.22	0.16	0.00	0.00
	G2	0.02	0.02	0.02	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.05	0.00	0.02	0.11	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.08	0.00	0.00	0.08	0.16	0.00
	G3	0.02	0.02	0.02	0.05	0.04	0.20	0.20	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.16	0.00	0.00	0.00	0.00	0.00	0.00
	G4	0.02	0.02	0.02	0.03	0.02	0.00	0.00	0.00	0.02	0.03	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.03	0.00	0.07	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.11	0.00	0.00	0.00
	G5	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.07	0.00	0.00	0.00	0.00
H	H1	0.02	0.02	0.02	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.25	0.20
	H2	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.00	0.00	0.00	0.00	0.10
	H3	0.02	0.02	0.02	0.00	0.00	0.04	0.04	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.02	0.00	0.00	0.00	0.00	0.00

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Table 7. Limit Supermatrix

		A			B							C					D					E						F						G					H		
		A1	A2	A3	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5	E1	E2	E3	E4	E5	E6	F1	F2	F3	F4	F5	F6	G1	G2	G3	G4	G5	H1	H2	H3
A	A1	0.0119	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	A2	0.0093	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	A3	0.0095	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
B	B1	0.0033	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B2	0.0154	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	B3	0.0342	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
	B4	0.0910	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
	B5	0.0147	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	B6	0.0077	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	B7	0.0193	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
C	C1	0.0322	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
	C2	0.0320	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
	C3	0.0632	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
	C4	0.1010	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	C5	0.1219	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
D	D1	0.0078	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	D2	0.0186	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	D3	0.0330	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
	D4	0.0162	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	D5	0.0089	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
E	E1	0.0035	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	E2	0.0325	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
	E3	0.0073	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	E4	0.0528	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	E5	0.0195	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	E6	0.0317	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
F	F1	0.0069	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	F2	0.0021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	F3	0.0035	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	F4	0.0026	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	F5	0.0027	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	F6	0.0004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G	G1	0.0485	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	G2	0.0185	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	G3	0.0556	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
	G4	0.0165	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	G5	0.0085	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
H	H1	0.0129	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	H2	0.0101	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	H3	0.0127	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

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