ASSESSMENT OF KNOWLEDGE SHARING FACTORS AMONG ACADEMIC STAFF IN NIGERIAN UNIVERSITIES

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ABSTRACT

As a core process to knowledge management that aids innovation and regeneration of knowledge among individuals within institutions, knowledge sharing cannot be overemphasized owing to its importance in gaining competitive edge and sustaining competitive advantage. Therefore, as citadel of learning, academic institutions need to measure the factors that influence knowledge sharing among its scholars using approved multi criteria model such as analytic network process (ANP) in order to formulate and implement research-driven strategies for sharing knowledge in a way that global competiveness will be enhanced. The research design is quantitative and analytical in nature through a survey of experts (Lecturers) with usage of pairwise comparison questionnaire. Sample was drawn through multi-stage sampling procedure and 102 copies of questionnaires were retrieved and found fit for analysis. In addition, Ardichvili's framework of factors contributing to knowledge sharing was adapted within the Nigerian cultural setting in order to widen the scope of knowledge. Data collected were model into clusters in line with ANP technique. The results show that respondents believe that institutional norms factors were better motivator for knowledge sharing of which institutional culture stand out. In spite of the available organizational barriers, academia believe that individual barriers are disastrous to knowledge sharing.

KEYWORDS

Knowledge, knowledge sharing, Analytic Network Process, pairwise comparison

HOW TO CITE

Highlights

- *The assessment of knowledge sharing factors via quantitative approach within the Nigerian academic setting depicts institutional norms as a significant drive to promoting knowledge sharing among academic staff.*
- *The depth of cultural differences amid study respondents significantly contribute to knowledge hoarding among staff making it a core barrier compare to its pairs.*
- *On the university mission, academic research and development was influenced more by measured knowledge sharing determinants compare to its pairs.*
- *To aid global competitiveness, policy makers are advised to necessitate the need for academic staff progress in career, intellectual benefits and financial rewards, and strong campaign against cultural differences, and high job politics, in order to improve the flow of knowledge among academics.*

INTRODUCTION

In this digital age, knowledge as an economic asset which is constantly generated within institutions has become a prominent resource utilized by progressive institutions in gaining a competitive edge and sustaining competitive advantage (Amayah, 2013; Drucker, 1995; Sandhu, Jain and Ahmad, 2011) over other institutions within and outside their industry. Therefore, universities need to impose the act of knowledge sharing and its management in order to aid the transformation of such institutions into global learning institutions that create and sustain competitive value (Sandhu, Jain and Ahmad, 2011; Senge, 1990). More

so, if properly shared, knowledge from diverse disciplines can help to aid development in economic, industrial, governmental and societal issues within the multifaceted and ever-changing environment such as Nigeria. However, the nature of knowledge (that is, the embedment of knowledge in individual's cognitive mind; which makes it difficult to share) and the voluntary dimension to knowledge sharing (Amayah, 2013) in line with varying indicators of knowledge sharing has significantly and negatively affected the basic importance and the diverse strategies inculcated by tertiary institution in their crux for effective dissemination of knowledge sharing.

In view of this, with the aid of multi-criteria decision analysis technique (such as Analytic Network Process), multiple and conflicting interests of academic staff will be effectively diagnosed. The Analytic Network Process (ANP) is an improved and generalized form of Analytic Hierarchy Process (AHP) proposed by Saaty (1996). It is a comprehensive multi-attribute decision-making technique that helps in modelling complex environmental situations involving risk and uncertainty and to incorporate both interaction and feedback within elements in a cluster (inner dependence) and between clusters (outer dependence) as perceived by decision-makers (Saaty, 1996). As an extension of AHP, it has been utilized for societal, governmental and corporate decisions problem analysis (Saaty, 2008). Thus, in order to evaluate the in-depth importance of knowledge sharing, its varying driving forces and barriers with the aim of gaining an overall intellectual ground on the subject matter particularly in institutions within the developing country like Nigeria, an analytical tool like ANP is crucial.

Research Objectives

The aim of this study is to measure views about the determinants of knowledge sharing within academic settings. The specific objectives are to:

1. examine the extent to which individual barriers to knowledge sharing hinders academia intention to share knowledge in the University of Lagos using Analytical Network Process model,
2. evaluate the extent to which motivating factors drives academia willingness to knowledge sharing in the University of Lagos using Analytical Network Process model,
3. ascertain how the determinants of knowledge sharing (motivators, and barriers) reflect on the university mission using Analytical Network Process model.

Knowledge and Knowledge Management

In accordance to the literature review and the present global information age, knowledge has been referred as valuable business resource which is vital for wealth generation (Cheng, Ho and Lau, 2011). It is individual credence based on justification (Nonaka, 1994), pertinent and central to continuous learning in institutions (Sandhu, Jain and Ahmad, 2011). Knowledge has been classified into two, tacit and explicit knowledge. Tacit knowledge is referred to as intangible and personal knowledge that is deep-rooted

in the cognitive minds of human, which makes it difficult to codify and eloquent (Polanyi, 1998; Sandhu, Jain and Ahmad,2011; Sun and Scott, 2018). Alternatively, explicit knowledge is a formal, logical, codified knowledge that is easily expressed into records (Polanyi, 1998; Amayah, 2013). Thus, explicit knowledge is an objective form of knowledge which can be easily communicated in visual formats, audio recording and printed papers for its reclaim and redesign among individuals for their intellectual growth and development (Awodoyin et al, 2016; Nonaka and Takeuchi, 1995; Sun and Scott, 2018). Despite their relevance, the embedment of knowledge in humans' mind and the voluntary aspect to knowledge sharing (Amayah, 2013) makes it difficult to share. In view of this, knowledge management has been conceived as a holistic effort in acquiring deeply rooted knowledge asset in cognitive minds of human for individual and organizational use in decision-making (Davenport andPrusak, 1998; Ghodsian et al, 2017). In other perspectives, knowledge management was coined as a business strategy that entails creation, accretion, sharing and deployment of new and potential knowledge to accomplish long term sustainable competitive advantage (Sarkindaji, Bin Hashim and Abdullateef, 2014). Therefore, being that knowledge is a competitive power; it is managerial process which enables individuals to create, share and utilize knowledge needs to be systematically driven at the right time for the right people in order to aid capacity building within and beyond the shores of educational institutions (Holm, 2001). Furthermore, universities are obliged to manage their available intellectual capital both tacit and explicit knowledge in order to support innovative acts by academic staff that sustains competitive advantage. Altogether, for efficiency in knowledge management, knowledge sharing needs to be highly emphasized (Davenport and Prusak, 1998; Luo, 2009; Nonaka, 1994; Sandhu, Jain and Ahmad, 2011).

Knowledge Sharing and Indicators of Knowledge Sharing

Knowledge sharing is the act of disseminating intellectual capital among individuals within an organisation. According to Lin (2007), knowledge sharing has been conceived as socially-oriented process that involves the exchange of intellectual asset, expertise and experiences among individuals within an institution. This is believed to be a switch of the logical capacity of employees among itself within an organisation. In addition, it entails the conversion of information into an easy communicable form that can be processed and used by others (Ipe, 2003) for their growth and the overall development of their institutions. Hence, it is expected that to promote the effectiveness of organizational performance, gain a competitive edge and sustain competitive advantage, organizations (such as academic institutions) need to enhance the effort of knowledge sharing and knowledge management in its systemic processes (Felin and Hesterly, 2007; Sandhu, Jain and Ahmad, 2011). Although, the fact that knowledge is ingrained in human minds hardens willingness to share

knowledge on the bases that individuals are subjected to their will to either share or not. Consequently, Nonaka (1994) opined that success in knowledge sharing is vested on the individuals and the commitment of organisation because technologies are only ascribed as enablers. Therefore, it is expected that institutions emphasize more on factors motivating and/or hindering the sharing of knowledge among individuals.

Regarding this, Bock et al (2005) observed factors influencing knowledge sharing intentions through the integration of Ajzen and Fishbein (1980) theory of Reasoned Action with extrinsic motivators, social-psychological forces and organizational climate factors. Therefore, with the field survey of managers from 27 Korean organizations, the study discovered that attitude towards knowledge sharing with the subjective norms and organizational climate had a significant influence on individual's willingness to knowledge sharing. In addition, expected reciprocal relationships were found to show a positive influence on attitudes towards knowledge sharing while the sense of self-worth and organizational climate influence subjective norms. Anticipated extrinsic rewards negatively influence knowledge sharing behaviour. Moreover, while adopting Ardichvili (2008) framework of determinants of knowledge sharing, Amayah (2013) investigated factors influencing knowledge sharing in a Public sector organisation. The study utilized a survey-based research design and finds out that community-related factor, normative factors and personal benefits were three motivators with the exclusive contribution to knowledge sharing. In addition, enablers like social interaction, rewards and organizational support were found to have a significant effect on knowledge sharing. Furthermore, it was observed that the degree of courage and degree of empathy were barriers that have a significant effect on knowledge sharing. While Sandhu, Jain and Ahmad (2011) used several factors to ascertain public sector employees' perspective towards the need to share knowledge. It also examined knowledge sharing barriers and initiatives that may promote knowledge sharing. The study was carried out through a survey based methodology with 60% response rate and the findings were that employees felt it is important to share knowledge in order to gain a competitive advantage. Moreover, they felt that use of email systems, information communication technology and the promotion of inter-agency activities with top management support are initiatives that can push knowledge sharing. Nevertheless, organizational barriers such as lack of information technology systems, rewards and recognition were identified as main barriers to knowledge sharing compare to individual barriers such as, lack of time, interaction and interpersonal skills.

Whereas, Ardichvili (2008) proposed that the following factors affect individuals' intention to knowledge sharing behaviour: motivational factors (personal benefits, community-related considerations and normative considerations); barriers (interpersonal, procedural, technological and cultural); and enablers (supportive corporate culture, trust and tools). In view of this, to enhance effectiveness in knowledge sharing; institutions such as universities need to investigate factors influencing knowledge sharing within their own context and culture.

In this study, Ardichvili (2008) framework to knowledge sharing which involves motivators and barriers as indicators of knowledge sharing is adapted.

Motivational Factors

Motivation has been observed as a necessity for the effective dissemination of knowledge (Amayah, 2013; Ardichvili, 2008).Thus, it is mandatory for progressive institutions to gain a better understanding of factors that encourage the act of knowledge sharing among its employees. In view of this, three categories of motivational factors were proposed to aid employees' willingness to share knowledge: Personal benefits; Team-related benefits; and Institutional Norm. Personal benefits are the direct return that individuals expect to gain from engaging in knowledge sharing (Amayah, 2013; Ardichvili, 2008; Chiu, Hsu and Wang, 2006) because humans' rationality makes them decide mostly when actions seem to be advantageous (Hall, 2001). This was further sub-divided based on the review of literature into:

1. Financial rewards;
2. Intellectual benefits;
3. Better professional reputation; and
4. Progress in Career.

Whereas, team-related benefits refer to individuals' moral obligation that sharing of knowledge will help in advancing the course of his or her team, network, or community. Hence, Ardichvili (2008) framework proposed three team-related benefits that may influence the individual's willingness to knowledge sharing:

1. Aid to building a stronger team;
2. Desire to build strong ties among team members; and
3. Desire to strengthen one's position within the team.

In addition, institutional norms refer to values, principles and cultural norms to which employees are expected to adhere in order to aid knowledge sharing among employees. These common values and shared vision among employees are expected to aid the huge flow of knowledge among individuals within an organisation (Amayah, 2013; Chiu, Hsu and Wang, 2006).

Barriers

Despite the perceived enabling environment created by institutions top management teams and the varying ascribed motivating factors to employees in order to aid and promote knowledge sharing, sometimes; employees tend to hoard knowledge for reasons best known to them. Review of literature has depicted that there are thousands of reasons for knowledge hoarding and most times they are due to several surrounding barriers (both individual and organizational) that have availed themselves to hindering knowledge sharing among people (Bock et al,2005; Riege, 2005; Sandhu, Jain and Ahmad,2011). Riege (2005) postulated three-dozens of factors comprising of individual, organizational and technological serving as a hindrance to knowledge sharing.

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The review serves as a discovery for senior managers in identifying bottlenecks to knowledge sharing and aid to inculcating improvement techniques to knowledge sharing. Likewise, Sandhu, Jain and Ahmad (2011) examined and found that factors such as, lack of information technology systems, rewards and recognition were main organizational barriers to knowledge sharing compare to individual barriers such as lack of time, interaction and interpersonal skills. Altogether, to aid effective dissemination of knowledge and its management, barriers such as lack of trust, rewards, recognition, among others need to be vastly prohibited.

In this study, barriers to knowledge sharing are categorized into both individual and organisational inclined factors. Individual factors entail knowledge sharing hindrances posit by individual employees of organisations. They include cultural differences, fear of loss of knowledge power, knowledge hoarding culture, lack of communication skills and lack of trust and time (Riege, 2005; Sandhu, Jain and Ahmad, 2011). Communication skills have been reviewed as one of the prominent ability needed by employees to aid knowledge sharing. It entails the ability to disseminate clear and concise information through verbal and non-verbal means in order to aid effective communication (Davenport and Prusak, 1998). Moreover, employees' personalities (introvert or extrovert) and their ability to interact with others also determined level of knowledge sharing (Riege, 2005). In addition, trust and time has also been highlighted by researchers as important factors to knowledge sharing. Trust implies a degree of belief in good intentions, benevolence, competence and reliability of members who share knowledge (Cheng and Hung, 2010).

Moreover, organizational barriers are hindrances instigated from the institutions. They include work politics, lack of knowledge sharing strategies, loose and weak institutional structure and unhealthy rivalry among institution's units which also affect knowledge sharing at a varying extent.

Analytic Network Process

The Analytic Network Process (ANP) is an improved and generalized form of Analytic Hierarchy Process (AHP) proposed in 1996 by Thomas Saaty. It is a comprehensive multi-attribute decision-making technique utilised for societal, governmental and corporate decisions problem analysis such as knowledge sharing determinants in academic institutions (Saaty, 2008). As an expansion to AHP, it helps in modelling complex environmental situations involving risk and uncertainty and to incorporates both interaction and feedback within elements in a cluster (inner dependence) and between clusters (outer dependence) as perceived by decision-makers (Saaty, 1996).

In view of this, ANP as a holistic method of decision analysis inculcates a network structure unlike AHP for flexible interaction of elements without major concern about priority order. It serves as a valuable aid for decision-making involving both tangible and intangible attributes. Furthermore, ANP is a coupling of two parts, of which the first consists of a control hierarchy or network of criteria and sub-criteria that controls the interactions, while the second part is a network of influences among the elements and clusters (Saaty, 2008). It utilizes a supermatrix approach that consists of a two-dimensional element by element matrix which helps in adjusting relative importance weights of individual pair-wise comparison matrices to a more improved overall supermatrix. The relative importance value is derived from the fundamental ratio scale proposed by Saaty (1996) which ranges from 1-9 with 1 representing equal importance and 9 representing extreme importance through pairwise comparison question of 'How much importance/influence does a criterion have compared to other criterion with respect to study's preference'.

ANP technique applications include knowledge management strategies selection, forest management, marketing, medical, political, social, forecasting, prediction, industrial management, asset valuation and many others. Besides, it has been used by Wu and Lee (2007), for knowledge management strategies selection; Cheng and Li (2007), for strategic partnering; Cheng and Li (2004), for contractor selection; Partovi (2006), for facility location problem; and Ravi, Shankar and Tiwari (2005), for end-of-life computers in reverse logistics. As an analytical technique, most of these studies (e.g. Banai, 2010; Ravi, Shankar and Tiwari, 2005) have indicated the effectiveness of the ANP method in their application areas as it allowed for interdependence and interrelationships among the factors and indicators used and further measured dependencies among them. ANP can be used as a tool for making predictions under uncertainty (Banai, 2010, Nekhay, Arriaza and Boerboom, 2009) and have been applied in conjunction with other mathematical modelling techniques (Yang et al, 2008).

MATERIALS AND METHODS

The study was conducted on academic staff within the main campus of the University of Lagos being one of the first generation university with mission and with the aid of Yamane's (1987) random sample size determination method, a sample size of 176 academic staff were generated for the study.

$$n = \frac{N}{\left(1 + N(e)^2\right)} \quad (1)$$

Where, n is the sample size, N is the population size (total number of faculty academia on main campus) and the e is the precision rate.

Therefore, at 7% precision rate and 1265 population size, the sample size can be obtained as:

$$n = \frac{1265}{\left(1 + 1265(0.07)^2\right)} = 175.7$$

In addition, multi stage sampling technique was utilized to allocate samples within academic staff designation in order to generalize representation. Hence, the sample composition is presented in the table 1.

Academic designation	Total number of elements (N_i)	Number of academia in the sample ($n_i = n \cdot \dfrac{N_i}{N}$), where n is 176, N_i is strata unit, and N is 1265.
Professor	178	25
Associate Professor	85	12
Senior lecturer	279	39
Lecturer I	182	25
Lecturer II	247	34
Assistant Lecturer	162	23
Graduate Assistant	132	18
Total	1265	176

Table 1: Sample composition of academic staff at the University of Lagos (Source: Author's complied, (2018) based on the University human resource management department staff data)

Thus, as the study adopts quantitative and analytical methods with the aid of structured questionnaires in addressing the research problem; the structured questionnaires were designed in ANP format of which each pairwise comparison was being carried out in line with the network structure of the goal, criteria and alternatives. This is to unravel reasons behind knowledge sharing and hoarding and derive scientific conclusions of academic staff judgments. Moreover, content validity of the instrument was conducted by consulting experts in the field such as senior academic staff who have vast experience on the usage of AHP and ANP models. They identified areas for which amendments were accommodated before the main administration of the questionnaires.

The questionnaire is sectionized into two parts, Section A comprising of respondent demographics and Section B containing the ANP based questions for evaluating indicators (motivators and barriers) of knowledge sharing among academic staff. It was designed in close-ended questions format with a response based on Saaty's (2001) fundamental ratio scale in order to identify preference level of elements and criteria in relation to the goal and the alternative from academic staff viewpoints. In addition, research questions were structure based on the available clusters in order to aid easier understanding of factors relationship and responding process.

Altogether, a total of 102 questionnaires were deem fit for analysis out of over 176 questionnaires distributed among the academic staff within the faculties at the University of Lagos. Excel solver (Microsoft excel software) and Super Decisions software (analytic network process model solver) aid the analysis of data. Specifically, the Excel solver was used in aggregating the entire questionnaires data into a unified questionnaire data through the performance of geometric mean. While, the main analytical tool that is, the Super Decisions software was utilized in organizing decision-makers' judgment of pairwise comparison questions to aid effective decisions making. As a multi-criteria decision-making solver, it helps in structuring complex decision problems with multiple conflicting interests into smaller solvable parts based on its flexible nature. In addition, decision problems can be represented in hierarchical and/or network structure and varying interaction among elements such as dependency (inner dependence and outer dependence) and feedback interaction can be fully actualized. This software also helps in checking the consistency of individual respondent judgment on determinants of knowledge sharing and how they reflect on the university missions.

The socio-demographic data gathered in the course of field survey indicated that out of the 102 respondents of the study, 74 of them were males which represent 72.5% of the respondents. In addition, respondents were mainly between the age group of 30-40 years of age which represent 36.3% of the respondents and 41-50 which represent 28.4% of the respondents. Hence, this depicts that most of the respondents are well informed about all the rudiments of knowledge sharing within the institution. While the study incorporates appropriate gender mix.

On the professional designation, there is 37.3% senior lecturer and above while, the remaining percentage is for lecturers below the level. To explicitly disseminate information and ease understanding about the depth of knowledge sharing among academic staff using ANP multi-criteria model, results are presented based on research objective in accordance with the ANP procedure.

According to Saaty (2001), the ANP model comprises the following steps:

1. Identifying the components and elements of the network and their relationships.
2. Conducting pairwise comparisons on the elements.
3. Placing the resulting relative importance weights (eigenvectors) in pairwise comparison matrices within the supermatrix (un-weighted supermatrix).
4. Conducting pairwise comparisons on the clusters.
5. Weighting the blocks of the un-weighted supermatrix, by the corresponding priorities of the clusters, so that it can be column-stochastic (weighted supermatrix).
6. Raising the weighted supermatrix to limiting powers until the weights converge and remain stable (limit supermatrix).
7. Synthesis to obtain final results.

Step I: ANP Model Construction

The model was constructed as a simple network structure which contains 4 clusters (goal cluster, criteria cluster, sub-criteria cluster and the alternative cluster), nodes/elements and links. The goal cluster contains the assessment of knowledge sharing determinants as the goal; the criteria cluster embodies constructs such as the barriers (B) and motivators (M); the primary sub-criteria clusters comprise of individual factors (IND. F.) and organizational factors (ORG. F.) under barriers and institutional norms (IN), personal benefits (PB), team-related benefits (TRB) under motivators.

The secondary sub-criteria cluster contains knowledge hoarding culture (KHC), fear of loss of knowledge power (FLKP), cultural differences (CD), lack of communication skills (LCS) and lack of trust and time (LTT) as components under individual barriers; job politics (JP), loose and weak institutional structure (LWIS), lack of knowledge sharing strategies (LKSS) and unhealthy rivalry among institution's units (URIU) under organizational barriers. For personal benefits, progress in academic career (PAC), peoples'

improved opinions about your expertise (PIOE), intellectual benefits (IB) and financial rewards (FR) are its elements; while, desire to strengthen one's position within the team (DSOPT), desire to build strong ties among academic staff (DBSTA) and aid to building stronger team (ABST) are components for team-related benefits; and factors such as institution's principles (IP), institution's culture (IC) and shared vision (SV) were under institutional norm. The observed connectivity within the secondary sub-criteria and the primary sub-criteria help in actualizing the first two research objectives of the study.

Moreover, the alternative clusters comprise of academic-industrial research and development excellence (A-IRDE), quality teaching service delivery (QTSD) and societal innovativeness and entrepreneurial engagement (SIEE). This cluster represents university missions. The study examines the relationship and the depth of influence between the criteria cluster and the alternative cluster thus, the two-headed arrow has shown in figure 1 signifies a feedback relationship between the two clusters as it helps in actualizing the third research objective.
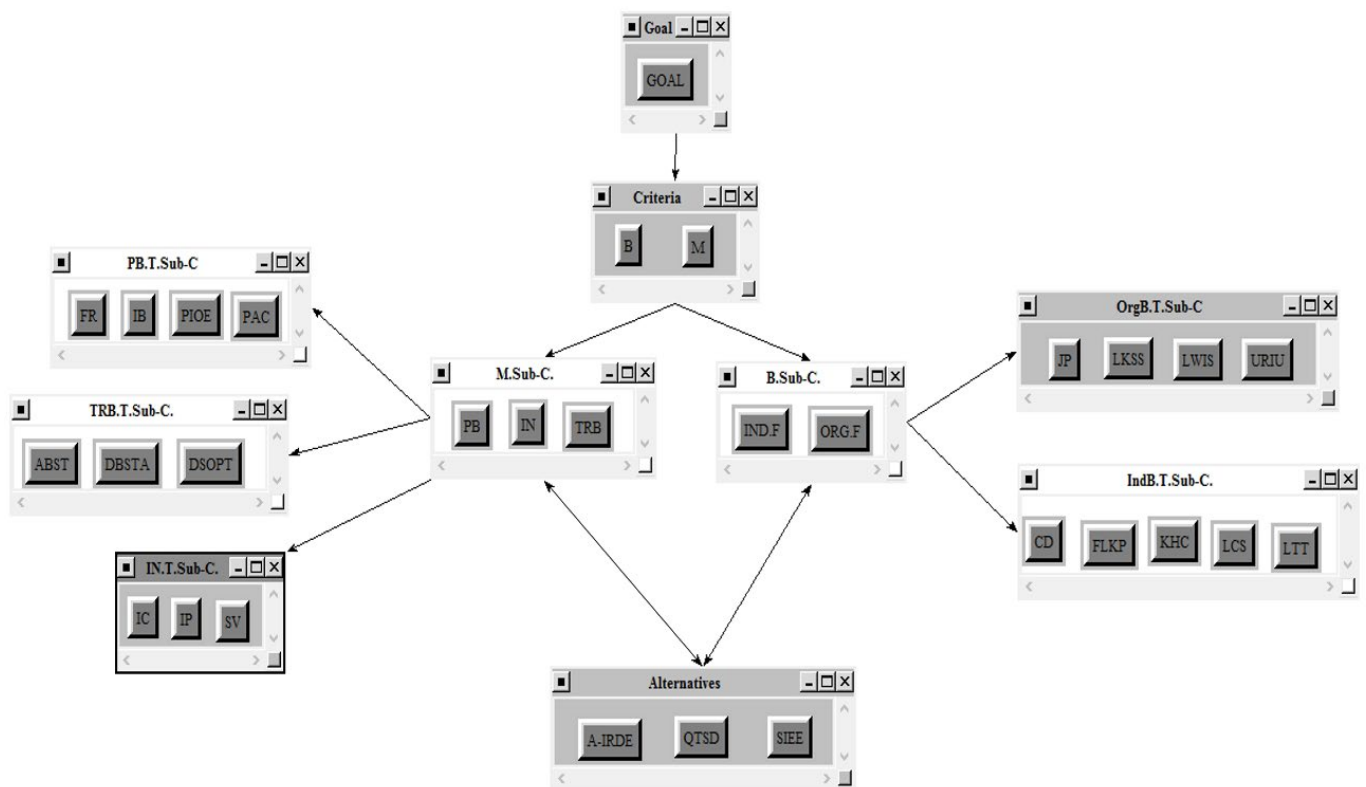

Figure1: ANP model for assessing indicators of knowledge sharing

Factor	Description	References
Barriers		
Individual Factors (IND F)		
Cultural Differences (CD)	Attributed set of values and practices shared by individuals that distinguish them from each other.	Riege (2005); Sandhu, Jain and Ahmad(2011)
Fear of Loss of Knowledge Power (FLKP)	The feelings of losing the attached power of being the sole custody of knowledge.	Ling et al(2007); Riege, (2005); Sandhu, Jain and Ahmad(2011)
Knowledge Hoarding Culture (KHC)	Individualistic attitude and act of being a monopoly of knowledge.	
Lack of Communication Skills (LCS)	Inability to disseminate information either verbally or in written form.	Jain, Sandhu and Sidhu (2007); Riege (2005); Sandhu, Jain and Ahmad(2011)
Lack of Trust and Time (LTT)	Time restriction to share knowledge due to work overload and inability to trust the credibility of people and the source of information	Fauziet al (2018); Jain et al(2007); Ling et al(2007); Riege (2005); Sandhu, Jain and Ahmad(2011)
Organizational Factors (ORG F)		
Job Politics (JP)	When the organizational environment encourages nepotism, slavery among its employees thereby making employees to see themselves has political dogs	
Lack of Knowledge Sharing Strategies (LKSS)	Low or no presence of formal and informal mechanisms to gear up the act of sharing of knowledge among employees	Reige(2005); Sandhu, Jain and Ahmad(2011)
Loose and Weak Institutional Structure (LWIS)	When the organizational structure is either too rigid or flexible and feeble and unfriendly to encourage knowledge sharing.	Amayah (2013); Reige(2005); Sandhu, Jain and Ahmad(2011)
Unhealthy Rivalry among Institution's Units (URIU)	Unwholesome competition amid units (negative organizational climate) within an organization	Riege(2005)
Motivators		
Personal Benefits		
Financial reward (FR)	Monetary reward associated with knowledge sharing amid colleagues	
Intellectual Benefits (IB)	Intellectual capacity building	
Peoples' Improved opinions about your expertise (PIOE)	Desire to share knowledge since it provides positive word of mouth from colleagues.	
Progress in Academic Career (PAC)	This relates to academic promotion and upgrade based on the act of knowledge sharing	
Team Related Benefits (TRB)		
Aid to building stronger team (ABST)	This entails dissemination of knowledge in order to build team intellectual capacity either on a project or not.	
Desire to build strong ties among academic staff (DBSTA)	This focuses on building interpersonal relationship amid a group of individuals	
Desire to strengthen one's position within the team (DSOPT)	This centres on the desire to share knowledge if and only if it builds one's individual desire and statue within the team	
Institutional Norm (IN)		
Institutional Principles (IP)	The act of sharing knowledge because the university obliged members to do so.	
Institution's culture (IC)	Sharing of knowledge as it parts and parcel of being an employee in such institution.	
Shared vision SV)	The act of knowledge sharing as its part of the core value of the institution.	

Table 2: Knowledge sharing determinants

Step II: Pairwise Comparison

Here, the academic staff was asked to respond to the series of pairwise comparison questions representing one criterion against another with respect to a control criterion. This is done to actualize the relative importance of criterion within subdivision of criteria and as determinants towards knowledge sharing. This comparison was done using Saaty's (2001) fundamental scale of 1-9 (see appendix 1) and the model comprises of 19 pairwise matrices for academic staff responses. The individual completed pairwise matrixes are grouped together through the computation of geometric mean across all matrices to derive a unified and centralized pairwise comparison matrix (see Table 4 as an example) for analysis. Afterward, the Super Decisions Software performs automatic consistency measure (see formula 2 and 3) on the pairwise matrix of which only a consistency ratio of less than or equal to 0.10 or 10% is acceptable as suggested by Saaty (2001) but, if Consistency Ratio (CR) is greater than 10%, there will be need to revise the pairwise comparisons either based on the suggestion of the software or the researcher's intuition.

$$CI = \frac{\lambda_{max} - n}{n - 1} \qquad (2)$$

$$CR = \frac{CI}{RI} \qquad (3)$$

Where:
CI is the Consistency Index, CR is the Consistency Ratio, λ_{max} is lambda maximum representing the average of the priority of the pair-wise comparison matrix, n is the number of classes and RI is the Random Index whose n-value is depicted in Table 1.

Order (n)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RI	0	0	0.52	0.89	1.11	1.25	1.35	1.40	1.45	1.49	1.52	1.54	1.56	1.58	1.59

Table 3: Random Index for different values of n (Source: Saaty (2008: 129)

From the Table 2, it can be seen that the relative importance of cultural differences (CD) when compared to lack of trust and time (LTT) with respect to individual barriers is approximately 0.88 and that CD has 0.21, the maximum influence in hindering knowledge sharing while Knowledge hoarding culture (KHC) has the minimum influence on knowledge sharing as a barrier. Moreover, the consistency ratio of 0.00442 is acceptable since it is lesser than 10%. Altogether, these pairwise values will be inputted into the Super Decisions software to yield the global priorities for each criterion as they affect knowledge sharing.

Individual Factors Sub-criteria	CD	FLKP	KHC	LCS	LTT	Weight	Consistency ratio
Cultural differences (CD)	1	1.19	1.10	1.03	0.88	0.21	0.00442
Fear of loss of knowledge power (FLKP)	0.84	1	1.08	1.03	0.88	0.19	
Knowledge hoarding culture (KHC)	0.91	0.92	1	1.15	1.06	0.20	
Lack of communication skills (LCS)	0.97	0.97	0.87	1	1.11	0.20	
Lack of trust and time (LTT)	1.14	1.14	0.94	0.90	1	0.20	
TOTAL	4.86	5.23	4.99	5.11	4.93	1.00	

Table 4:   Responses towards Individual Factors Sub-criteria (Source: Field survey, 2018)

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Step III: Supermatrix Formation

Finally, after obtaining the generic pairwise comparison matrix through the geometric mean computation of individual pairwise comparison matrix, the results are inputted into the matrix format on the Super Decisions software; afterwards the supermatrix (unweighted, weighted and limit) are constructed to yield the relative priority of components within the network system. As a two dimensional matrix of elements to elements, the supermatrix helps in denoting the influence priority of an element at the left corner of the matrix on the element at the top of the matrix with respect to a control criterion.

Therefore, using the Super Decisions software, the unweighted supermatrix (see appendix 2) which contains local weights is first generated after the overall pairwise comparison of the network has been done.

Progressively, the unweighted matrix is multiplied by the cluster matrix to yield weighted supermatrix (see appendix 3). This is to aid column stochastic (that is, each column sum is equal to one) and improvement of measurement.

The output from the weighted supermatrix is raised to powers based on equation (4) until it converges to derive the limit supermatrix (see appendix 4).

$$\lim_{k \to \infty} w^k \qquad (4)$$

The limit supermatrix denotes all available interaction within the network system. Then, the limit supermatrix is normalized to obtain the final priorities.

RESULTS

Findings on Barriers in relation to Knowledge Sharing

Among the selected components of the individual barriers, the result presented inTable 5 depicts a moderately and more equally distributed scores of 21%, 19%, 20%, 20%, 20% for cultural difference, fear of loss of knowledge power, knowledge hoarding culture, lack of communication skills and lack of trust and time respectively.

Individual Factors Sub-criteria	Normalized by Cluster	Limiting
Cultural differences (CD)	0.20681	0.014937
Fear of loss of knowledge power (FLKP)	0.19193	0.013862
Knowledge hoarding culture (KHC)	0.20099	0.014516
Lack of communication skills (LCS)	0.19631	0.014178
Lack of trust and time (LTT)	0.20396	0.014731
TOTAL	**1.00000**	**0.072224**

Table 5: Final Priorities for Individual Factors Sub-criteria (Source: Super Decisions software, 2018)

On the organizational barriers presented to academic staff, job politics possesses the highest hindrance capacity to knowledge sharing among academic staff with 33%, followed by unhealthy rivalry among institution units of 23%, with loose and weak institutional structure and lack of Knowledge Sharing

Strategies having 22% and 21% respectively as presented in Table 6.

From this, it can be seen that job politics have hazardous significantly to the intellectual ground of the academic institution. Therefore, job politics contribute negatively to factors promoting knowledge sharing in academic institutions.

Organisational Factors Sub-criteria	Normalized by Cluster	Limiting
Job Politics (JP)	0.32935	0.018489
Lack of Knowledge Strategies (LKSS)	0.21176	0.011888
Loose and weak Institutional Structure (LWIS)	0.22402	0.012576
Unhealthy Rivalry among Institution's Units (URIU)	0.23487	0.013185
TOTAL	**1.00000**	**0.056138**

Table 6: Final Priorities for Organisational Factors Sub-criteria (Source: Super Decisions software, 2018)

Generally, on the hindering factors, individual factors tend to promote academic staff negative behaviour towards sharing of knowledge with 57% compared to 43% of available organizational barriers as presented in Table 7.

Barriers	Normalized by Cluster	Limiting
Individual Factor	0.57295	0.147476
Organisational Factor	0.42705	0.109923
TOTAL	**1.00000**	**0.257399**

Table 7: Final Priorities for Barriers (Source: Super Decisions software, 2018)

Findings on Motivating Factors in relation to Knowledge Sharing

On institutional norm dimensions as presented by Table 8, it was noted that institutional culture was perceived as more importance compared to its pairs. Therefore, it can be said that the organizational culture needs to be strong because it has a stronger influence on the individual employee. While, in relation to personal benefits, the result depicts that peoples improved opinions about one's expertise with 31% tend to effectively drive academic staff willingness to sharing of knowledge compare to intellectual benefits, financial rewards and progress in academic career, whose influence rates are at the percentage of 29%, 22% and 17% respectively. Moreover, systematically it can be interpreted that monetary benefits influence knowledge sharing at 22% rate while non-monetary benefits are at 78%. Academic staff members are likely to share knowledge more where non-financial rewards are attached.

Furthermore, regarding the team related benefits dimension as shown by Table 8, academic staff believed that the aid to building stronger team moderately drives their willingness to sharing of knowledge with 46% compared to the other criterion like "desire to build strong ties among themselves" and "desire to strengthen one's position within the team" whose rates are 31% and 23% respectively. From this, it can be said that team interest dominated personal interest because team interest

possessed the accumulation of 77%. Thus, most academic staff agrees to the Taylors principles of general interest over personal interest which is in line with scientific principles.

Institutional Norm Dimensions	Normalized By Cluster	Limiting
Institution's Culture (IC)	0.37237	0.037696
Institution Principles (IP)	0.34656	0.035083
Shared Vision (SV)	0.28107	0.028454
TOTAL	1.00000	0.101233
Personal Benefits Dimensions	Normalized by Cluster	Limiting
Financial Rewards (FR)	0.22464	0.015890
Intellectual Benefits (IB)	0.28898	0.020441
Peoples Improved Opinions about your Expertise (PIOE)	0.31471	0.022261
Progress in Academic Career (PAC)	0.17167	0.012143
TOTAL	1.00000	0.070735
Team Related Benefit Dimensions	Normalized by Cluster	Limiting
Aid to Building Stronger Team (ABST)	0.45692	0.032273
Desire to Build Strong Ties among Academic staff (DBSTA)	0.31414	0.022188
Desire to Strengthen One's Position within the Team (DSOPT)	0.22894	0.01617
TOTAL	1.00000	0.070631

Table 8: Final Priorities for Institutional Norm Dimensions, Personal Benefits Dimensions and Team Related Benefits Dimension (Source: Super Decisions software, 2018)

Altogether, as presented in the Table 9, institution norms have the highest percentage of 42%, followed by personal benefits of 29% and team-related benefits of 29%. Thus, this means that academic staff intention to knowledge sharing is being driven better with the strong institutional norm. The academic institution should develop high ethical norms and guide it always to ensure succession among the generation of academic and promote knowledge sharing for sustaining institutional missions and vision. This does not know that other factors should be neglected since some minority respondents perceived them important but, on an average of 33% they are not that significant within the context of the study.

Motivators	Normalized By Cluster	Limiting
Institutional Norm (IN)	0.41728	0.101233
Personal Benefits (PB)	0.29157	0.070736
Team Related Benefits (TRB)	0.29114	0.070631
TOTAL	1.00000	0.242600

Table 9: Final Priorities for Motivators (Source: Super Decisions software, 2018)

Findings on Knowledge Sharing Determinants in relation to University Mission

Finally, the overall synthesis table (Table 10) depicts that

academic-industrial research and development excellence is more moderately influenced by the presence of determinants to knowledge sharing with 0.44 rating compared to quality teaching service delivery and societal innovativeness and entrepreneurial engagement whose rates are 31% and 25% respectively. That is, the academic-industrial research excellence of academic staff is influenced more irrespective of the observed indicators of knowledge sharing (motivators and or barriers) presence.

Name	Graphic	Ideals	Normals	Raw
A-IRDE		1.000000	0.435726	0.056225
QTSD		0.718962	0.313270	0.040424
SIEE		0.576060	0.251004	0.032389

Table 10: Overall synthesized priorities for the University Mission (Source: Super decision software, 2018)

DISCUSSION OF FINDINGS

The study employed an ANP model for evaluating knowledge sharing determinants among academic staff in the University of Lagos. The determinants comprise of barriers and motivators with varying sub dimensions.

From the data analysis, findings depict that academic staff perceived individual barriers to be more important and critical to knowledge sharing because it promotes negative behaviour towards knowledge sharing as moderate as 57% compared to organizational barriers. But, factors within individual barriers are seen to averagely and slightly preferable as core influential to the willingness to share knowledge. Thus, the prospect of factor such as lack of trust and time within the finding is supported by similar studies conducted in professional virtual communities; Malaysia higher learning institute and ophthalmology hospital where lack of trust was seen as a significant barrier (Ardichvili, 2008; Chen and Hung, 2010; Fauzi et al, 2018; Okoroji, Velu and Sekaran, 2013). Furthermore, the previous study conducted by Sandhu, Jain and Ahmad (2011) discovered that lack of trust was not a critical individual barrier for their respondents (public servants), as it has a lowest score. Contrary to previous studies which found that lack of communication skill and fear of loss of knowledge power were prominent and critical barrier (Riege, 2005; Sandhu, Jain and Ahmad, 2011), it was perceived moderately low with rating of 20% and 19% respectively. While on the organizational barriers, the main barrier is job politics as perceived by academic staff. In the contrary of this finding was a study conducted as comparative research between public and private universities where encouragement of knowledge sharing strategies was proposed due to junior academic staff fear to seek knowledge from senior academic staff (Chong, Yuen and Gan, 2014).

While on motivating dimensions to knowledge sharing, it was found that institutional norm was perceived more critical at 42% compared to personal benefits and team-related benefits. Thus, this means that academic staff intention to knowledge sharing can be better motivated through well-articulated principles, culture and vision statement. However, to improve positive behaviour towards knowledge sharing;

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peoples improved opinions about one's expertise, intellectual benefits, financial rewards and progress in academic career are better perceived as a prominent motivator. In support of this, studies conducted on professional virtual community, private university depict a positive relationship between personal benefits (or perceived relative advantage) and knowledge sharing (Ardichvili, 2008;Chong, Yuen and Gan, 2014; Cheng et al, 2008). However, a study conducted on civil servants depicts a negative relationship between personal benefits (intellectual benefits, better professional reputation, emotional benefits, status and career advancement and monetary reward) and knowledge sharing (Amayah, 2013).

While, within the team related benefit dimensions, aid to building stronger team is agreed on to be a critical motivator to influencing willingness to sharing of knowledge with 46% rating compared to the other criterion like "desire to build strong ties among academic staff" and "desire to strengthen one's position within the team" whose rates are 31% and 23% respectively. This result is supported by Amayah (2013) and Ardichvili (2008) studies on the civil servant and virtual communities behaviour towards knowledge sharing respectively. But, on the institutional norm, it was noted that institutional culture possesses a higher influence on knowledge sharing intention to about 37% compared to its pairs.

SUMMARY OF FINDINGS

From the systematic analysis of data, the following findings are highlighted from the study:

1. Among the motivator sub group, institutional norm was identified as an effective factor to drive willingness to knowledge sharing.
2. In addition, respondents believe that in spite of the presence of organizational barriers, individual possessed hindrances such as cultural difference, lack of trust and time, lack of communication skills and natural knowledge hoarding behaviour of academic staff tends to hinder willingness to knowledge sharing.
3. The study also depicts that among the personal benefits, peoples improved opinions about one's expertise and intellectual benefit aid effective drive to knowledge sharing with peoples improved opinions about one's expertise more influential. While, among team-related benefits, the aid to building a stronger team is expected to aid knowledge sharing more compare to other factors. Whereas, within the institutional norms institutional culture was perceived most influential.
4. Furthermore, the study shows that among the individual barriers, cultural differences hinder knowledge sharing slightly more compare to its pairs. Whereas, job politics significantly hinder knowledge sharing more among academic staff compare to its pairs in organizational barriers.
5. Lastly, the study depicts that academic-industrial research and development excellence is more moderately influenced by the determinants of knowledge sharing within the academic institutions.

CONCLUSION

After a rigorous and scientific execution of this study, it can be concluded that:

1. As a group of motivators' institutional norm influences academic staff willingness to knowledge sharing greatly while on a specific ground, the desire to build stronger ties among academic staff strongly drives their intention to share knowledge.
2. On barriers to knowledge sharing, the conclusion is that individual barriers are a stronger group of hindrances to knowledge sharing. While, much attention needs to be placed on cultural difference, lack of trust, time, knowledge sharing strategies and loose and weak institutional structure because they are the main individual barriers identified.
3. Finally, it can be said that to aid the university missions of academic-industrial research and development excellence, quality teaching service delivery and societal innovativeness and entrepreneurial engagement, highlighted motivating factors need to be made available with exception or reduction of hindering factors. Moreover, academic staff needs to be open-minded to knowledge sharing specifically the senior cadre academic staff that seems to be naturally knowledge hoarders and believe in exploitation of the junior cadre academic staff even to the level of filling the questionnaire.

RECOMMENDATIONS

Based on the findings, the following recommendations are proposed:

1. Academic staffs of universities are advised to be unbiased to knowledge sharing acts in order to aid scholarly research and societal development since knowledge hoarding is not the best strategy.
2. It is recommended that in spite of the importance depicted by non-monetary motivating factors like intellectual benefits, progress in the academic career, desire to build stronger ties among academic staff, policymakers need to provide financial rewards to aid knowledge sharing growth among academic staff.
3. Universities are encouraged to consciously and unambiguously minimize job politics, knowledge sharing strategies and associated activities in order to build the mindset of an average researcher, academic staff about the importance of their intellectual property and keeping to institutional mission.
4. Universities reward system should capture extent of knowledge sharing as it has greater influence on actualizing the mission and vision and enhances sustainable competitive advantage.
5. There is a need for an inverse trend in the level of job politics among academia in order to stimulate knowledge sharing that supports university living to its mission.

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APPENDIX

1. Scale for Pair-wise Comparison

Intensity of importance	Definition	Explanation
1	Equal importance	Two activities contribute equally to the objective
2	Weak or slight	
3	Moderate importance	Experience and judgment slightly favour one activity over another
4	Moderate plus	
5	Strong importance	Experience and judgment strongly favour one activity over another
6	Strong plus	
7	Very strong or demonstrated importance	An activity is favoured very strongly over another; its dominance demonstrated in practice
8	Very, very strong	
9	Extreme importance highest	The evidence favouring one activity over another is of the possible order of affirmation
Reciprocal of the above	If activity *j* as one of the above nonzero numbers assigned to it when compared with activity *j,* the *j* has the reciprocal value when compared with *i*.	A realistic assumption

Source: Saaty (2008: 125)

2. Unweighted supermatrix

		Alternatives			B. Sub-Criteria		Criteria		Goal	IN. Sub-Criteria			Ind. B. Sub-Criteria				
		A-IRDE	QTSD	SIEE	IND.F	ORG.F	B	M	GOAL	IC	IP	SV	CD	FLKP	KHC	LCS	LTT
Alternatives	A-IRDE				0.44	0.43											
	QTSD				0.32	0.31											
	SIEE				0.24	0.26											
B.Sub-C.	IND.F	0.58	0.57	0.56			0.48										
	ORG.F	0.42	0.43	0.44			0.52										
Criteria	B								0.51								
	M								0.49								
Goal	GOAL																
IN. Sub-C.	IC																
	IP																
	SV																
Ind. B Sub-Criteria	CD				0.21												
	FLKP				0.19												
	KHC				0.20												
	LCS				0.20												
	LTT				0.20												
M.Sub-C.	IN	0.41	0.46	0.39				0.39									
	PB	0.27	0.30	0.32				0.25									
	TRB	0.32	0.24	0.30				0.36									
Org. B. Sub-Criteria	JP					0.33											
	LKSS					0.21											
	LWIS					0.22											
	URIU					0.23											
PB.Sub-C	FR																
	IB																
	PAC																
	PIOE																
TRB. Sub-Criteria	ABST																
	DBSTA																
	DSOPT																

Continuation of unweighted supermatrix

		M. Sub-Criteria			OrgB.Sub-Criteria				PB. Sub-Criteria				TRB. Sub-Criteria		
		IN	PB	TRB	JP	LKSS	LWIS	URIU	FR	IB	PAC	PIOE	ABST	DBSTA	DSOPT
Alternatives	A-IRDE	0.41	0.37	0.46											
	QTSD	0.33	0.35	0.28											
	SIEE	0.26	0.28	0.26											
B.Sub-C.	IND.F														
	ORG.F														
Criteria	B														
	M														
Goal	GOAL														
IN. Sub-C.	IC	0.37													
	IP	0.35													
	SV	0.28													
Ind. B.Sub-Criteria	CD														
	FLKP														
	KHC														
	LCS														
	LTT														
M. Sub-Criteria	IN														
	PB														
	TRB														
Org.B.Sub-Criteria	JP														
	LKSS														
	LWIS														
	URIU														
PB. Sub-Criteria	FR		0.22												
	IB		0.29												
	PAC		0.17												
	PIOE		0.31												
TRB. Sub-Criteria	ABST			0.46											
	DBSTA			0.31											
	DSOPT			0.23											

Source: Super Decisions software (2018)

3. Weighted supermatrix

		Alternatives			B. Sub-Criteria		Criteria		Goal	IN. Sub-Criteria			Ind. B. Sub-Criteria				
		A-IRDE	QTSD	SIEE	IND.F	ORG.F	B	M	GOAL	IC	IP	SV	CD	FLKP	KHC	LCS	LTT
Alternatives	A-IRDE				0.22	0.21											
	QTSD				0.16	0.15											
	SIEE				0.12	0.13											
B.Sub-C.	IND.F	0.30	0.29	0.29			0.48										
	ORG.F	0.22	0.22	0.23			0.52										
Criteria	B								0.51								
	M								0.49								
Goal	GOAL																
IN. Sub-C.	IC																
	IP																
	SV																
Ind. B.Sub-Criteria	CD				0.10												
	FLKP				0.09												
	KHC				0.10												
	LCS				0.10												
	LTT				0.10												
M. Sub-Criteria	IN	0.20	0.22	0.19				0.39									
	PB	0.13	0.15	0.15				0.25									
	TRB	0.16	0.12	0.15				0.36									
Org.B.Sub-Criteria	JP					0.17											
	LKSS					0.10											
	LWIS					0.11											
	URIU					0.12											
PB. Sub-Criteria	FR																
	IB																
	PAC																
	PIOE																
TRB. Sub-Criteria	ABST																
	DBSTA																
	DSOPT																

Continuation of weighted supermatrix

		M. Sub-Criteria			OrgB.Sub-Criteria				PB. Sub-Criteria				TRB. Sub-Criteria		
		IN	PB	TRB	JP	LKSS	LWIS	URIU	FR	IB	PAC	PIOE	ABST	DBSTA	DSOPT
Alternatives	A-IRDE														
	QTSD														
	SIEE														
B.Sub-C.	IND.F														
	ORG.F														
Criteria	B														
	M														
Goal	GOAL														
	IC	0.37													
	IP	0.35													
	SV	0.28													
Ind. B.Sub-Criteria	CD														
	FLKP														
	KHC														
	LCS														
	LTT														
M. Sub-Criteria	IN														
	PB														
	TRB														
Org.B.Sub-Criteria	JP														
	LKSS														
	LWIS														
	URIU														
PB. Sub-Criteria	FR		0.22												
	IB		0.29												
	PAC		0.17												
	PIOE		0.31												
TRB. Sub-Criteria	ABST			0.46											
	DBSTA			0.31											
	DSOPT			0.23											

Source: Super Decisions software (2018)

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4. Limit supermatrix

		Alternatives			B. Sub-Criteria		Criteria		Goal	IN. Sub-Criteria			Ind. B. Sub-Criteria				
		A-IRDE	QTSD	SIEE	IND.F	ORG.F	B	M	GOAL	IC	IP	SV	CD	FLKP	KHC	LCS	LTT
Alternatives	A-IRDE	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06								
	QTSD	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04								
	SIEE	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03								
B.Sub-C.	IND.F	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15								
	ORG.F	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11								
Criteria	B																
	M																
	GOAL																
	IC	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04								
	IP	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04								
	SV	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03								
Ind. B.Sub-Criteria	CD	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01								
	FLKP	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01								
	KHC	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01								
	LCS	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01								
	LTT	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01								
M. Sub-Criteria	IN	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10								
	PB	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07								
	TRB	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07								
Org.B.Sub-Criteria	JP	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02								
	LKSS	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01								
	LWIS	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01								
	URIU	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01								
PB. Sub-Criteria	FR	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02								
	IB	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02								
	PAC	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01								
	PIOE	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02								
TRB. Sub-Criteria	ABST	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03								
	DBSTA	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02								
	DSOPT	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02								

Continuation of limit supermatrix

		M. Sub-Criteria			OrgB.Sub-Criteria				PB. Sub-Criteria				TRB. Sub-Criteria		
		IN	PB	TRB	JP	LKSS	LWIS	URIU	FR	IB	PAC	PIOE	ABST	DBSTA	DSOPT
Alternatives	A-IRDE	0.06	0.06	0.06											
	QTSD	0.04	0.04	0.04											
	SIEE	0.03	0.03	0.03											
B.Sub-C.	IND.F	0.15	0.15	0.15											
	ORG.F	0.11	0.11	0.11											
Criteria	B														
	M														
Goal	GOAL														
IN. Sub-C.	IC	0.04	0.04	0.04											
	IP	0.04	0.04	0.04											
	SV	0.03	0.03	0.03											
Ind. B.Sub-Criteria	CD	0.01	0.01	0.01											
	FLKP	0.01	0.01	0.01											
	KHC	0.01	0.01	0.01											
	LCS	0.01	0.01	0.01											
	LTT	0.01	0.01	0.01											
M. Sub-Criteria	IN	0.10	0.10	0.10											
	PB	0.07	0.07	0.07											
	TRB	0.07	0.07	0.07											
Org.B.Sub-Criteria	JP	0.02	0.02	0.02											
	LKSS	0.01	0.01	0.01											
	LWIS	0.01	0.01	0.01											
	URIU	0.01	0.01	0.01											
PB. Sub-Criteria	FR	0.02	0.02	0.02											
	IB	0.02	0.02	0.02											
	PAC	0.01	0.01	0.01											
	PIOE	0.02	0.02	0.02											
TRB. Sub-Criteria	ABST	0.03	0.03	0.03											
	DBSTA	0.02	0.02	0.02											
	DSOPT	0.02	0.02	0.02											

Source: Super Decisions software (2018)