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Knowledge Sharing Limitations among Academia: Analytic Network Process Approach

The importance of the continuous regeneration of value-resource that is knowledge cannot be overemphasized, especially owing to its strategic importance in promoting competitive edge within institutions. Therefore, universities being knowledge-based institutions need to understand that the bane to knowledge sharing amid its staffs is of great relevance. Thus, this study examined the multiple conflicting criteria influencing the will of an average academia to share knowledge within its environment through the utilization of an operations research model named analytical network process.

Keywords: knowledge sharing, knowledge sharing limitations, multi-criteria decision analysis, analytic network process, academia.

Nuolatinis vertės išteklių atsinaujinimas svarbus tuo, kad žinioms negali būti teikiama per didelė reikšmė, ypač dėl jų strateginės svarbos, skatinančios konkurencinį pranašumą institucijų viduje. Dėl to universitetai, būdami žiniomis paremtos institucijos, turi suvokti dalijimosi žiniomis tarp akademinės bendruomenės narių svarbą. Šiuo tikslu straipsnyje išnagrinėti keli prieštaringi kriterijai, veikiantys žinių pasidalijimą akademinėje aplinkoje, pasinaudojant veiklos tyrimo modeliu, kuris vadinamas analitiniu tinklo procesu.

Raktiniai žodžiai: žinių dalijimasis, žinių dalijimosi ribotumai, daugiakriterinė sprendimų analizė, analitinis tinklo procesas, akademinė aplinka.

Introduction

The need to provide an enhanced understanding of the bane to knowledge sharing within the academic settlings cannot be over emphasized, especially owing to the strategic importance of knowledge, knowledge sharing, and knowledge management to academic staff, the institutions and society at large in relation to each group living up to their missions effectively. Therefore, as a value-resource continuously generated within any knowledge-based settling, knowledge needs to be effectively shared and managed in order to expand its competitive value and leverage within this environment. However, in spite of the advocacy for knowledge management and the competitive benefits attached to knowledge

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sharing, knowledge hoarding as opposed to knowledge sharing has turn out to be one of the well-known issues within the 21st century industries (especially the education system) in Nigeria, and its intense increase affects the growth of such system and the nation at large. Hence, universities being referred to as citadel of knowledge are expected to help in building the knowledge capacity and support dissemination of knowledge through publications but, mostly the reverse as being the cases. Basically, this has being attributed to the several factors hindering academia willingness to share knowledge. Thus, assessing the barriers to knowledge sharing has becomes an issue that occupies individual researcher minds. Consequently, literature review has identified different factors such as a degree of courage and degree of empathy (Amayah, 2013); lack of reward, time, communication skills and recognition (Sandhu, Jain, Ahmad, 2011) has hindrance to knowledge sharing among members of several industries within different culture but, the dearth of such research works within the African continent continue to escalate the gap within knowledge sharing and knowledge hoarding especially among universities academia. Thus, with the aid of Multi Attribute Decision Making (MADM) technique (that is, Analytic Network Process (ANP)) which helps in transforming and improving subjective verdicts of decision makers into a more objective conclusion through its test for consistency and supermatrix process within the decision environment of risk and uncertainty (Sipahi, Timor, 2010), academia perspective on barriers to knowledge sharing was assessed and these views will be prioritized to ascertain the magnitude of such barriers on academia and the university mission. Additionally, this will help in reducing factors that negatively influence employees' willingness to share their wealth of knowledge and experience for example, senior employees' experience before they retire. In view of this, the study focuses on assessing academia views on associated barriers to knowledge sharing within University of Lagos. The result from such complex analysis guides policy maker in formulating appropriate knowledge management strategies for implementation towards administration of sustainable competitive academic institution.

The object of research: knowledge sharing limitation within academia.

The aim of research: The aim of this study is to measure academia views about the limitations of knowledge sharing within the academic settings.

Research methods. The study employed a quantitative approach in line with positivism tradition. Data was collected through an ANP-based self-administered questionnaire to academia on the pairwise comparison of clusters in the network (individual and organisational factors) and nodes (university missions). The sample for the study was drawn through three-stage multi-stage sampling procedures in order to capture different academic discipline across faculties and levels. The generated data was analysed through the ANP procedure using super decision software for generating the super matrix (unweighted, weighted, and limit) which finally yield the relative priority of components within the network system.

The objectives of research:

1. To examine the extent to which individual barriers to knowledge sharing hinders the academia intention to share

knowledge in the University of Lagos using the Analytical Network Process model.

2. To examine how the barriers of knowledge sharing reflect on the university mission using the Analytical Network Process model.

Literature review

Knowledge and knowledge sharing

Knowledge, an intellectual capital, can be described as a valuable resource possessed both at the individual and organizational level that helps to aid innovativeness, organizational functioning, and wealth generation (Cheng, Ho, Lau, 2011; Hu, Wen, Yan, 2015; Wong, Tan, Lee, Wong, 2014). It is an entity (individuals and organizations) belief based on rationalization (Nonaka, 1994), that can be either in form of tacit or explicit knowledge. Tacit knowledge comprises of intangible subjective form of knowledge embedded in human minds (Hu et al., 2015; Sandhu et al., 2011). While, explicit knowledge entails documented objective form of knowledge that is easily codify and communicated (Hu et al., 2015; Sandhu et al., 2011). Thus, to aid accessibility of knowledge among varying units and individuals comes knowledge sharing. Knowledge sharing involves the dissemination of technical know-how among individuals to aid ease to problem solving, creativity, and strategic implementation of research driven policies (Remy, 2018). In addition, it involves the exploitation of knowledge and its types with their effective utilization in providing solutions to decision problems within organizations in the face of varying dilemmas (Christensen, 2007). It is one of the critical element of knowledge management that entails the act of disseminating intellectual capital among individuals within institutions to gain competitive edge (Amayah, 2013; Al-kurdi, El-haddadeh, Eldabi, 2018), bridge organizational interdependencies (Christensen, 2007), and promote effectiveness in organizational performance (Sandhu et al., 2011). Moreover, to sustain competitive advantage, institutions need to mandate the act of knowledge sharing and knowledge management in its holistic system. According to M. Y. Cheng et al., (2011), knowledge sharing could take the form of a closed-network sharing model or an open-network sharing model. However, irrespective of the sharing means, the fact that knowledge is ingrained in human cognitive minds harden willingness to share knowledge on the bases that individuals are subjected to their will to either share or not. Thus, the dominance of the study of knowledge sharing among business organisations with the core aim of bridging knowledge stickiness and enhancing profit making within their general environment (Amayah, 2013). Hence, this necessitates its study among knowledge creating institutions. Therefore, as knowledge-based institutions, universities need to inculcate knowledge sharing acts in order to create, disseminate, and apply its ingrained intellectual capital for its societal innovativeness and entrepreneurial actualization. Moreover, the act of communicating knowledge asset within group of individuals, such as academic staff helps in promoting team performance (Salisbury, 2003); quality work and problem-solving efficacy (Yang, 2007). However, success in knowledge sharing is vested

on the individuals and the commitment of the organisation because technologies are ascribed only as enablers (Nonaka, 1994), Thus, it is expected that institutions emphasize more on factors motivating, enabling, and hindering the share of knowledge among individuals. Therefore, this study will emphasize more the factors limiting the act of knowledge sharing among academic staff.

Knowledge sharing limitations

Review of literature has depicted that there are thousands of reasons for knowledge hoarding and most times they are due to several surrounding barriers which can be grouped into individual and organizational ones that have avail themselves to hindering knowledge sharing among people. A. Riege (2005) postulated three-dozens of factors comprising of individual, organizational, and technological serving as hindrance to knowledge sharing. The review serves as a discovery for senior managers in identifying bottlenecks to knowledge sharing and an aid to inculcating improvement techniques to knowledge sharing. Likewise, C. W. Ling, M. S. Sandhu, and K. K. Jain (2007) examined and found that such factors as lack of formal and informal activities to knowledge sharing, lack of rewards and recognition were the main barriers to knowledge sharing compared to other barriers such as lack of trust and time. While W. C. Chin, Y. Y. Yee, and C. H. Geok (2014) in conducting a comparative study of knowledge sharing between private and public universities in Malaysia discovered that lack of rewards and recognition has the major barrier among academia within the public institutions compared to lack of time that was discovered as the major barrier within the private institutions. 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, knowledge sharing limitations are assessed through classification of these constraints both into individual and organizational inclined factors. Individual factors entail knowledge sharing hindrances possessed by individual employees of organizations. They include cultural differences, fear of loss of knowledge power, knowledge hoarding culture, lack of communication skills, and lack of trust and time (Ling et al., 2007; Riege, 2005; Sandhu et al., 2011). Communication skills have been reviewed as one of the prominent ability necessary for employees to aid knowledge sharing. It entails the ability to circulate clear and concise information through verbal and written system in order to aid effective communication (Davenport, Prusak, 1998). Moreover, employees' personalities (introvert or extrovert) and their ability to interact with others also determined the level of knowledge sharing (Riege, 2005). In addition, trust and time has also being highlighted by researchers has important factors to knowledge sharing. Trust implies a degree of belief in good intentions, benevolence, competence, and reliability of members who share knowledge (Cheng, Hung, 2010).

Thus, job politics, lack of knowledge sharing strategies, loose and weak institutional structure, and unhealthy rivalry among institution's units are organizational barriers (hindrances initiated from the institutions) studied within this research article.

Table 1. **Knowledge sharing limitations**

Factor	Description	References
Individual Factors (IND F)		
Cultural Differences (CD)	Attributed set of values and practices shared by individuals that distinguishes them from each other.	Riege, (2005); Sandhu et al., (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 et al., (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, & Sidhu (2007); Riege, (2005); Sandhu *et al.,* (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	Fauzi, Nya-Ling, Thurasamy, & Ojo, (2018); Jain et al., (2007); Ling et al., (2007); Riege, (2005); Sandhu et al., (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 et al., (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 et al., (2011)
Unhealthy Rivalry among Institution's Units (URIU)	Unwholesome competition amid units (negative organizational climate) within an organization	Riege, 2005

Analytic Network Process (ANP) model

ANP is a popular multi-criteria decision making analysis technique which replaces hierarchical structuring of decision problems with networks of clusters and nodes that makes structuring of decision problems more flexible (Bayazit, 2006; Ishizaka, Nemery, 2013; Satty, Vargas, 2006). As a decision model, ANP is a coupling of two parts (that is, the control hierarchy and the network of influences) that helps to deal with dependency and feedback relationship amid simple and complicated decision problem (Bayazit, 2006; Dabestani, Shahin, Saljoughian, 2017; Hu et al., 2015; Saaty, Vargas, 2006). Moreover, it helps in transforming and improving subjective verdicts

of decision makers into a more objective conclusion through its test for consistency and supermatrix process within the decision environment of risk and uncertainty (Sipahi, Timor, 2010). It comprises of clusters and nodes, with an optional additional loop over the cluster criteria which indicates an inner dependency that cannot be estimated in an analytical hierarchy process (Ishizaka, Nemery, 2013). Moreover, ANP methodology provides a more accurate modelling of complicated system settings and the observed interactions among elements within and among clusters are estimated based on pairwise comparisons and represented on a super matrix. The supermatrix concept employs a two-dimensional element-by-element matrix which adjusts the relative importance weights in individual pair-wise comparison matrices in order to build a new overall super matrix with the eigenvectors of the adjusted relative importance weights. The supermatrix is subdivided into three, namely; unweighted super matrix, weighted super matrix, and limit super matrix.

Method

This study was conducted at the University of Lagos analysing academic staff (Table 1) and was based on the T. Yamane's (1987) sampling method; an approximated sample size of 176 respondents was generated as a study sample. Additionally, the sampling technique of multi-stage was employed to allot samples based on the academic staff professional designation in order to ensure generalization (Table 2). Moreover, to unravel reasons behind knowledge hoarding, and derive holistic conclusions on respondents' verdicts the study adopts quantitative and analytical methods which with the aid of structured questionnaires that are designed in ANP format helps in providing answers to research questions. As the content validity of the research instrument was performed through experts' consultations, and acknowledged amendments were contained before the distribution of the main instrument.

The questionnaire comprises of two sections with Section A encompassing respondent demographics, and Section B comprising the ANP designed questions for evaluating indicators (barriers) of knowledge sharing with response based on T. L. Saaty's (2008) fundamental ratio scale (Table 3). This is to facilitate the identification of preference level for elements, and criteria in relation to the goal and the alternative from the academia viewpoints. In addition, questions were constructed from the criteria cluster to alternative cluster to ease the responding process and aid understanding of relationship within indicators.

On the whole, 102 questionnaires were reckoned fit for analysis, and with the aid of Statistical Packages for Social Sciences (SPSS) version 17.0, Excel Solver (Microsoft Excel software) and Super decision software (Analytic Network Process Model Solver), respondents' data were processed for interpretation. Specifically, SPSS was employed for the analysis of the respondents' demographics; and Excel solver was used in aggregating the whole questionnaires' data into a unified questionnaire data through the performance of geometric mean. Therefore, the core analytical tool, the super decision software, was utilized in organizing decision makers' judgment on

pairwise comparison questions to promote the effective decision making.

Results

In the process of analysis, Table 2 results depict that 74 of the respondents were males while 27.5% of the respondents were female. In addition, respondents were more of the young generation of age group 30–40 years and 41–50 years which represent 36.3% and 28.4% of the respondents respectively. While, on the professional designation, there was limited number of senior cadre respondents of 37.3% compare to 62.7% of junior cadre respondents.

Whereas, to plainly communicate information and ease understanding about

Table 2. **Respondents' socio-demographic data**

Variable	Response Label	Frequency	Percentage
Gender	Male	74	72.5
	Female	28	27.5
	Total	102	100
Age	Below 30	22	21.6
	30–40	37	36.3
	41–50	29	28.4
	51 and above	14	13.7
	Total	102	100
Professional Designation	Graduate Assistant	32	31.4
	Assistant Lecturer	15	14.7
	Lecturer II	17	16.7
	Lecturer I	15	14.7
	Senior Lecturer	17	16.7
	Associate Professor	2	2.0
	Professor	4	3.9
	Total	102	100
Faculty	Art	25	24.5
	Education	9	8.8
	Engineering	14	13.7
	Environmental Sciences	2	2.0
	Law	1	1.0
	Management Sciences	28	27.5
	Sciences	7	6.9
	Social Sciences	8	7.8
	Distance Learning Institute	8	7.8
	Total	102	100

Source: field survey.

the depth of knowledge sharing limitations among academic staff of ivory tower using ANP multi-criteria model, results are presented on the basis of research objectives in accordance to the ANP procedure:

Step I: ANP model construction

The model has been 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 hoarding indicators as the goal; the criteria cluster embodies constructs such as individual barriers and organizational barriers; and the sub-criteria cluster contains knowledge hoarding culture, fear of loss of knowledge power, cultural differences, lack of communication skills, and lack of trust and time as components under individual barriers; job politics, loose and weak institutional structure, lack of knowledge sharing strategies, and unhealthy rivalry among institution's units under organizational barriers. Whereas, the alternative cluster contain academic-industrial research and development excellence, quality teaching service delivery, and societal innovativeness and entrepreneurial engagement as its elements.

Step II: Pairwise comparison

Here, respondents were asked to react to series of pairwise comparison questions of one criterion against another with respect to a control criterion. This was

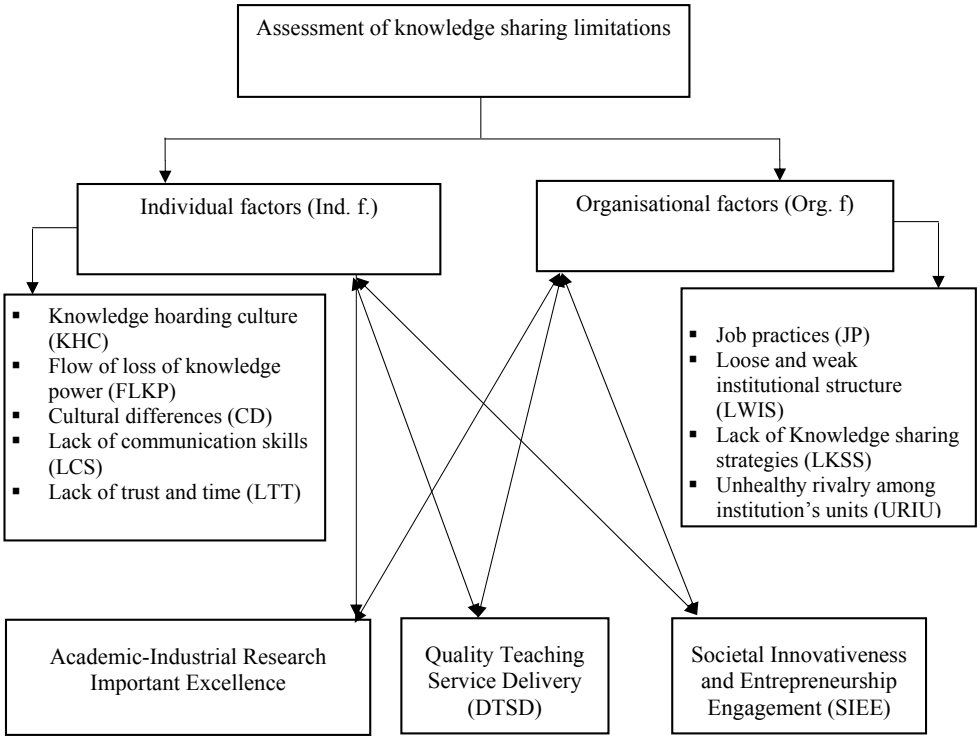

Fig. 1. **ANP model for assessing knowledge sharing limitations**

Source: the authors' own elaboration.

Table 3. **Unweighted super matrix**

		Alternatives			B.Sub-C.		Criteria	Goal	IndB.T.Sub-C.					OrgB.T.Sub-C			
		A-IRDE	QTSD	SIEE	IND.F	ORG.F	B	GOAL	CD	FLKP	KHC	LCS	LTT	JP	LKSS	LWIS	URIU
Alternatives	A-IRDE	0	0	0	0.440816	0.428604	0	0	0	0	0	0	0	0	0	0	0
	QTSD	0	0	0	0.315278	0.310462	0	0	0	0	0	0	0	0	0	0	0
	SIEE	0	0	0	0.243907	0.260934	0	0	0	0	0	0	0	0	0	0	0
B.Sub-C.	IND.F	0.582072	0.570457	0.560217	0	0	0.479035	0	0	0	0	0	0	0	0	0	0
	ORG.F	0.417928	0.429543	0.439783	0	0	0.520965	0	0	0	0	0	0	0	0	0	0
Criteria	B	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Goal	GOAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IndB.T.Sub-C.	CD	0	0	0	0.206815	0	0	0	0	0	0	0	0	0	0	0	0
	FLKP	0	0	0	0.191934	0	0	0	0	0	0	0	0	0	0	0	0
	KHC	0	0	0	0.200982	0	0	0	0	0	0	0	0	0	0	0	0
	LCS	0	0	0	0.196307	0	0	0	0	0	0	0	0	0	0	0	0
	LTT	0	0	0	0.203962	0	0	0	0	0	0	0	0	0	0	0	0
OrgB.T.Sub-C	JP	0	0	0	0	0.329344	0	0	0	0	0	0	0	0	0	0	0
	LKSS	0	0	0	0	0.211769	0	0	0	0	0	0	0	0	0	0	0
	LWIS	0	0	0	0	0.224015	0	0	0	0	0	0	0	0	0	0	0
	URIU	0	0	0	0	0.234872	0	0	0	0	0	0	0	0	0	0	0

Source: calculated using Super Decision Software.

done to actualize the preference level of criterion within subgroup of criteria and as indicators towards knowledge sharing. The comparison was done using T. L. Saaty's (2008) fundamental scale of 1-9, and the model comprising 8 pairwise matrices for academia responses. Additionally, individual completed pairwise matrix research instrument are accumulated together through geometric mean computation across all matrices to derive a unified pairwise comparison matrix for analysis.

Step III: Super matrix formation

Finally, the obtained generic pairwise comparison matrix values are inputted into the matrix format on the super decision software which afterward the super matrix (unweighted, weighted, and limit) are constructed to yield the relative priority of components within the network system and the consistency index. This help in denoting the influence priority of an element at the left corner of the matrix on element at the top of the matrix with respect to a control criterion. Therefore, using the Super Decisions software, the unweighted super matrix (Table 3) which contains local weights is first generated.

Gradually, the unweighted matrix is multiplied by the cluster matrix to yield weighted super matrix (Table 4). This is to aid column stochastic and improvement of measurement.

Then, the weighted super matrix is raised to powers based on equation (1)

Table 4. **Weighted super matrix**

		Alternatives			B.Sub-C.		Criteria	Goal	IndB.T.Sub-C.					OrgB.T.Sub-C			
		A-IRDE	QTSD	SIEE	IND.F	ORG.F	B	GOAL	CD	FLKP	KHC	LCS	LTT	JP	LKSS	LWIS	URIU
Alternatives	A-IRDE	0	0	0	0.224934	0.209713	0	0	0	0	0	0	0	0	0	0	0
	QTSD	0	0	0	0.160876	0.151907	0	0	0	0	0	0	0	0	0	0	0
	SIEE	0	0	0	0.124458	0.127673	0	0	0	0	0	0	0	0	0	0	0
B.Sub-C.	IND.F	0.582072	0.570457	0.560217	0	0	0.479035	0	0	0	0	0	0	0	0	0	0
	ORG.F	0.417928	0.429543	0.439783	0	0	0.520965	0	0	0	0	0	0	0	0	0	0
Criteria	B	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Goal	GOAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IndB.T.Sub-C.	CD	0	0	0	0.101284	0	0	0	0	0	0	0	0	0	0	0	0
	FLKP	0	0	0	0.093996	0	0	0	0	0	0	0	0	0	0	0	0
	KHC	0	0	0	0.098427	0	0	0	0	0	0	0	0	0	0	0	0
	LCS	0	0	0	0.096138	0	0	0	0	0	0	0	0	0	0	0	0
	LTT	0	0	0	0.099887	0	0	0	0	0	0	0	0	0	0	0	0
OrgB.T.Sub-C	JP	0	0	0	0	0.168198	0	0	0	0	0	0	0	0	0	0	0
	LKSS	0	0	0	0	0.108152	0	0	0	0	0	0	0	0	0	0	0
	LWIS	0	0	0	0	0.114406	0	0	0	0	0	0	0	0	0	0	0
	URIU	0	0	0	0	0.119951	0	0	0	0	0	0	0	0	0	0	0

Source: calculated using Super Decision Software.

until it converges to derive the limit super matrix.

$$\lim_{k \to \infty} w^k \qquad (1)$$

The limit super matrix (Table 5) denotes all existing interaction within the network system which is then normalized to obtain the final priorities.

Findings on Research Objectives

1.1 Findings on barriers in relation to knowledge sharing

Among the components of the individual barriers, the result presented on Table 6 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.

On the organizational barriers presented to academia, the strong depth of politics within the work place was moderately perceived as the most influencing hindrance to knowledge sharing among academia at the rate of 33%, followed by slight influential differences among the other influencing group of barriers which are 23.5%, 22.4%, 21.2% for unhealthy rivalry among institution units, loose and weak institutional structure, and lack of knowledge strategies respectively. It can

Table 5. **Limit super matrix**

		Alternatives			B.Sub-C.		Criteria	Goal	IndB.T.Sub-C.					OrgB.T.Sub-C			
		A-IRDE	QTSD	SIEE	IND.F	ORG.F	B	GOAL	CD	FLKP	KHC	LCS	LTT	JP	LKSS	LWIS	URIU
Alternatives	A-IRDE	0.109217	0.109217	0.109217	0.109217	0.109217	0.109217	0.109217	0	0	0	0	0	0	0	0	0
	QTSD	0.078523	0.078523	0.078523	0.078523	0.078523	0.078523	0.078523	0	0	0	0	0	0	0	0	0
	SIEE	0.062915	0.062915	0.062915	0.062915	0.062915	0.062915	0.062915	0	0	0	0	0	0	0	0	0
B.Sub-C.	IND.F	0.286474	0.286474	0.286474	0.286474	0.286474	0.286474	0.286474	0	0	0	0	0	0	0	0	0
	ORG.F	0.213526	0.213526	0.213526	0.213526	0.213526	0.213526	0.213526	0	0	0	0	0	0	0	0	0
Criteri	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Goal	GOAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IndB.T.Sub-C.	CD	0.029015	0.029015	0.029015	0.029015	0.029015	0.029015	0.029015	0	0	0	0	0	0	0	0	0
	FLKP	0.026927	0.026927	0.026927	0.026927	0.026927	0.026927	0.026927	0	0	0	0	0	0	0	0	0
	KHC	0.028197	0.028197	0.028197	0.028197	0.028197	0.028197	0.028197	0	0	0	0	0	0	0	0	0
	LCS	0.027541	0.027541	0.027541	0.027541	0.027541	0.027541	0.027541	0	0	0	0	0	0	0	0	0
	LTT	0.028615	0.028615	0.028615	0.028615	0.028615	0.028615	0.028615	0	0	0	0	0	0	0	0	0
OrgB.T.Sub-C	JP	0.035915	0.035915	0.035915	0.035915	0.035915	0.035915	0.035915	0	0	0	0	0	0	0	0	0
	LKSS	0.023093	0.023093	0.023093	0.023093	0.023093	0.023093	0.023093	0	0	0	0	0	0	0	0	0
	LWIS	0.024429	0.024429	0.024429	0.024429	0.024429	0.024429	0.024429	0	0	0	0	0	0	0	0	0
	URIU	0.025613	0.025613	0.025613	0.025613	0.025613	0.025613	0.025613	0	0	0	0	0	0	0	0	0

Source: calculated using Super Decision Software.

Table 6. **Final priorities for individual factors sub-criteria**

Individual Factors Sub-criteria	Normalized by Cluster	Limiting
Cultural differences (CD)	0.20681	0.029015
Fear of loss of knowledge power (FLKP)	0.19193	0.026927
Knowledge hoarding culture (KHC)	0.20098	0.028197
Lack of communication skills (LCS)	0.19631	0.027541
Lack of trust and time (LTT)	0.20396	0.028615
TOTAL	1.00000	0.140295

Source: calculated using Super Decision Software.

be seen that politics within the workplace can be a distortion to the scholastic intra-relationship and ground of the academic institution.

Generally, on the hindering factors, individual factors tend to promote the academia's negative behaviour towards sharing of knowledge with 57% compared

Table 7. **Final priorities for organisational factors sub-criteria**

Organisational Factors Sub-criteria	Normalized by Cluster	Limiting
Job Politics (JP)	0.32934	0.035915
Lack of Knowledge Strategies (LKSS)	0.21177	0.023093
Loose and weak Institutional Structure (LWIS)	0.22402	0.024429
Unhealthy Rivalry among Institution's Units (URIU)	0.23487	0.025613
TOTAL	1.0000	0.10905

Source: calculated using Super Decision Software.

Table 8. **Final priorities for barriers**

Barriers	Normalized by Cluster	Limiting
Individual Factor	0.57296	0.286481
Organisational Factor	0.42704	0.213519
TOTAL	1.00000	0.500000

Source: calculated using Super Decision Software.

to 43% of available organizational barriers as presented in Table 8.

1.2 Findings on knowledge sharing limitation determinants in relation to University mission

Finally, the overall synthesis results depict that the academic-industrial research and development excellence is more moderately influenced by the presence of determinants to knowledge sharing with 0.44 rating compared to the quality teaching service delivery, and societal innovativeness and entrepreneurial engagement whose rate is 31% and 25% respectively.

Discussion of findings

Exploring the data analysis of indicators of knowledge sharing limitations, the findings depict that respondents (academia) perceived individual barriers that were more severe and decisive to knowledge sharing limitation as high as 57% in spite of organizational barriers availability which is contrary to what M. S. Sandhu et al. (2011) found in their study. However, shockingly indicators within the individual group of barriers turn out to be slightly preferable against each other as major influential to knowledge sharing. Hence, the view towards factors such as lack of trust and time, lack of communication skills, and fear of knowledge power loss were supported by similar studies conducted in Malaysian public and private institutions, professional virtual communities, Malaysian Business School, and ophthalmology hospital where they were seen as significant barriers (Ardichvili, 2008; Chin et al., 2014; Jain et al., 2007; Fauzi et al., 2018; Okoroji et al., 2013). However, some studies discovered that lack of trust (Ling et al., 2007; Sandhu et al., 2011), lack of time

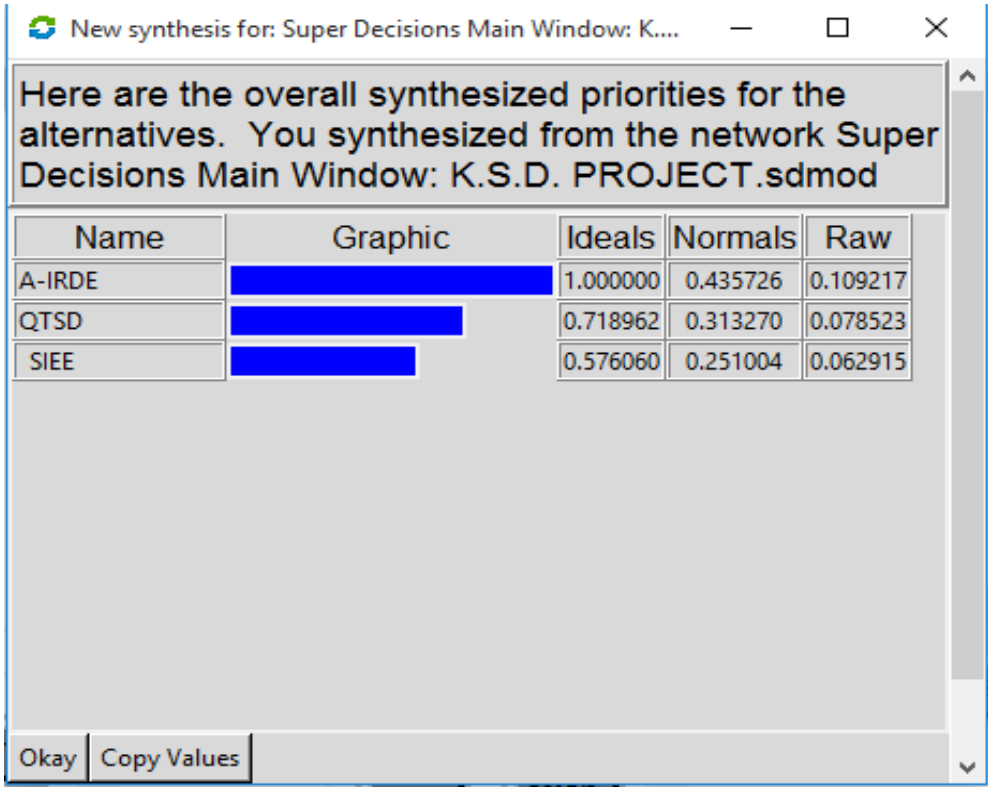

Fig. 2. **Overall synthesized priorities for the University mission**

Source: calculated using Super Decision Software.

(Ling et al., 2007), and lack of communication skills (Jain et al., 2007) were not significant individual barrier for their respondents, as they are ascribe a low score. Moreover, similar to other previous studies which found that lack of communication skill and fear of loss of knowledge power were prominent and critical barrier (Riege, 2005; Sandhu et al., 2011), it was perceived moderately low with the rating of 20% and 19% respectively. As for the organizational barriers, the main barrier is job politics as perceived by academia. In contrary to these findings, a study conducted as a comparative research between the public and private universities where encouragement of knowledge sharing strategies were proposed due to the junior academia fear to seek knowledge from the senior academia (Chin et al., 2014).

Summary of findings

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

i. 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 academia tends to hinder willingness to knowledge sharing.

ii. In addition, 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 academia compare to its pairs in organizational barriers.

iii. Lastly, the study depicts that academic-industrial research and development excellence is more moderately influence by the indicators of knowledge sharing limitations within the academic institutions.

Recommendations

Based on the findings, the following recommendations have been proposed:

i. Policymakers in the education sector should formulate and implement effective knowledge sharing strategies that would reverse negative influences of organizational and individual factors on knowledge sharing to stimulate productivity among academia.

ii. Academia is advised to be fair to knowledge sharing acts. This is because to promote the importance of their intellectual property, knowledge hoarding is not the best strategy.

iii. Moreover, to promote actualization of the university mission, universities are encouraged to consciously align and inculcate effective human resources processes and practices in manners where knowledge sharing as opposed to knowledge hoarding can be properly ingrained in its employees' cognitive minds.

iv. Lastly, knowledge hoarding acts such as job politics, lack of knowledge sharing strategies and other associated activities need to be explicitly managed in order to build the mindset of an average academia towards scholarly research and societal development.

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ŽINIŲ DALIJIMOSI RIBOTUMAI AKADEMINĖJE APLINKOJE: ANALITINIO TINKLO PROCESO METODAS

S a n t r a u k a

Šio darbo tikslas – įvertinti žinių dalijimosi ribotumų poveikį ir reikšmę akademinei aplinkai ir konkrečioms universiteto misijoms (moksliniai pramoniniai tyrimai, mokymo kokybė ir verslo įtraukimas). Šiuo tyrimu siekiama suprasti, kaip pritaikyti daugiakriterinę sprendimų analizę analitinio tinklo procese (ATP), įvertinant dalijimosi žiniomis ribotumą akademinėje aplinkoje ir parodant išsamų reitingavimą pagal balus. Tyrime buvo taikomas kiekybinis metodas, derinamas su pozityvizmo tradicija. Tyrimas atliktas Lagoso universiteto akademinėje bendruomenėje ir paremtas T. Yamane (1987) atrankos metodu. Apytikslis imties dydis – 176 respondentai – buvo pasirinktas šio tyrimo imtimi. Be to, siekiant užtikrinti apibendrinimą, buvo naudojamas daugiapakopis imties metodas, paskirstant imtis pagal akademinės bendruomenės darbuotojų profesinę kvalifikaciją. Taip pat norint atskleisti žinių kaupimo priežastis ir pateikti holistines išvadas apie respondentų nuomones, tyrime naudojami kiekybiniai ir analitiniai metodai, kurie su struktūruotų apklausų, sudarytų ATP formatu, pagalba padeda pateikti atsakymus į tyrimo klausimus. Tuo tarpu tyrimo instrumento turinio pagrįstumas buvo atliktas konsultuojantis su ekspertais, o reikiami pataisymai – prieš platinant pagrindinį instrumentą.

Apklausa sudaryta iš dviejų dalių: A dalis skirta surinkti respondentų demografinius duomenis, o B dalis apima ATP pagalba sudarytus klausimus, skirtus įvertinti žinių dalijimosi indikatorius (kliūtis), remiantis T. L. Saaty (2008) pagrindine santykių skale (3 lentelė). Tuo siekiama palengvinti elementų pirmenybių lygių identifikavimą ir kriterijų, susijusių su tikslais ir alternatyviu akademinės aplinkos požiūriu, nustatymą. Be to, klausimai buvo sudaryti pagal kriterijų klasterį, kad būtų palengvintas atsakinėjimo procesas ir suteikiama pagalba nustatant santykį tarp atskirų rodiklių.

Galiausiai 102 anketos buvo laikomos tinkamomis analizei, o pasitelkus Statistikos paketo socialiniams mokslams (angl. SPSS) 17.0 versiją, „Excel Solver“ („Microsoft Excel“ programinę įrangą) ir „Super decision“ programinę įrangą (analitinio tinklo proceso modelio sprendiklį), respondentų duomenys buvo apdoroti tolesnei duomenų interpretacijai. Konkretizuojant, SPSS buvo naudojama analizuojant respondentų demografinius duomenis, o „Excel solver“ – sujungiant anketų duomenis į apklausos duomenų visumą, apskaičiuojant geometrinį vidurkį. Tuo tarpu pagrindinis analitinis įrankis – „Super decision“ programinė įranga – buvo panaudotas siekiant susisteminti sprendimų priėmėjų nuomonę, lyginant klausimus poromis tam, kad būtų paskatintas efektyvesnis sprendimų priėmimas. Tyrimas atskleidžia, kad individualių ribotumų (kultūriniai skirtumai, baimė netekti žinių galios, žinių kaupimo kultūra, bendravimo įgūdžių ir pasitikėjimo bei laiko stoka) komponentai beveik panašiai veikia žinių dalijimosi ribotumus, nors stipri politikos įtaka darbo vietoje buvo suvokta kaip labiausiai veikianti žinių dalijimosi ribotumus akademinėje aplinkoje. Ši kliūtis užima didžiausią dalį – trečdalį (33 %) – tarp kitų organizacinių kliūčių. Skirtumai tarp kitų paveikių kliūčių grupių procentine išraiška pasiskirstė taip: 23,5 %, 22,4 % ir 21,2 %. Atitinkamai šios kliūtys yra nesveika konkurencija tarp institucijos skyrių, laisva ir silpna įstaigos struktūra bei žinių strategijų trūkumas. Atlikto tyrimo rezultatai padeda politikos formuotojui formuluoti ir įgyvendinti efektyvias žinių dalijimosi strategijas, galinčias pakeisti organizacinių ir individualių faktorių grėsmingą poveikį dėl bendro žinių kūrimo tam, kad būtų pagerintas akademikų produktyvumas vykdant universiteto misijas. Taigi, tyrimo pabaigoje pateikiami pasiūlymai ir įžvalgos padeda suprasti, kokiu mastu organizaciniai ir individualūs veiksniai trukdo dalytis žiniomis vykdant universiteto misijas.