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Relationship between Organizational Culture and Transfer of Knowledge in Higher Education Institutions

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ABSTRACT

The paper presents the results of the third study from the series of three sequential studies conducted for determining the relationship between organizational culture and transfer of knowledge in higher education institutions. The first study focused on the organizational culture of higher educational institutions (2020) whereas the second determined the performance status of higher education institutions (2022), both the studies were carried out from the transfer of knowledge (ToK) perspective. This study integrated the results of the aforementioned studies. Five hypotheses were tested using Pearson's correlation and Mann-Whitney U test. Based on the 5% significance value, clan, adhocracy, market, and hierarchy cultures had a positive significant relationship with a transfer of knowledge respectively. Whereas, Mann Whitney U test at 10% significance value showed that there is a difference between the scores of the clan and hierarchy culture in ToK categories, whereas there was no difference in the scores of the clan and market culture and scores of market and hierarchy cultures in ToK categories. The study suggests a revamping of the existing organizational cultures by introducing knowledge-based organizational cultural processes at organizational and managerial levels so HEIs can become a significant part of the envisioned knowledge economy.

INTRODUCTION

The primary objective of the study was to determine the relationship between organizational culture and the transfer of knowledge in higher education institutions. For this purpose, three sequential studies were carried out. Study-I focused on analyzing the organizational culture of HEIs in Khyber Pakhtunkhwa (KP) Province.

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Data from 10 public sector higher education institution was collected using Kim Cameron's (1999) organizational culture assessment instrument (OCAI). Total 555 questionnaires from faculty members (unit of observation) were collected, using two-layered stratified random sampling technique. 10 organizational culture profile for each of the sampled public sector HEIs were developed as the output of the study. The profiles discussed the organizational culture types, prevailing organizational culture orientation and the dominant characteristics of the prevailing organizational culture.

The study was subsequently published as "Organizational Culture Analysis of Khyber Pakhtunkhwa's Higher Educational Institutions, A Knowledge Culture Perspective", Gul and Jamal (2020).

The second study was divided into two sections. Firstly a transfer of knowledge index (ToK Index) was developed for measuring the performance of the sampled (study-I) KP-HEIs. The ToK ranking index consisted of seven dimensions sub-divided into 86 items. The index divides HEIs into three categories i-e High transfer of knowledge HEIs, Medium transfer of knowledge HEIs, and Low transfer of knowledge HEIs. The index development process and pilot testing were published as "From traditional ranking system to transfer of knowledge-based ranking index: introducing a fully automated transfer of knowledge ranking index for higher educational institutions", Gul and Jamal (2021). The second section of the study focused on measuring the performance of KP-HEIs using the newly developed ToK index. Secondary data from 17 public sectors (including the 10 KP-HEIs of study-I) was collected using the ToK Index, the unit of analysis and observation was higher education institution (contrary to faculty members in study-I). Following is the summary of both studies:

Table-1: *Findings of Study-I Organizational Culture of KP-HEIs*

- Organizational culture profiles of 10 public sector KP-HEIs out of the selected 17 HEI were developed (based on response rate)
- Clan Culture was the most frequently observed dominant organizational culture (08 HEIs)
- Hierarchy was observed as the dominant organizational culture in one HEIs
- Market culture was observed as the dominant organizational culture in one HEIs
- None of the surveyed KP-HEIs have adhocracy or create culture as dominant organizational Culture.
- 10 KP HEIs have internal focus or orientation, none have an external focus or orientation.
- 07 HEIs have flexible orientation with 03 HEIs focusing on stability and control

- 04 HEIs consider result orientation and getting job done as the dominant characteristics of their organizational culture, 03 HEIs considers personal space and extended family orientation as dominant characteristic whereas, the remaining 03 HEIs consider the dominant characteristic to be controlled structures and formal procedures. None of the HEIs consider innovation, entrepreneurship and risk taking as the dominant characteristic of their HEI's organizational culture.
- 05 HEIs consider their leadership concerned about smooth efficient running of functions, 04 HEIs consider the leadership more focused on mentoring, facilitating and nurturing whereas only 01 HEIs consider their leadership to be innovative and risk taking. None of the selected HEIs exemplify their leadership with aggressive result oriented style.
- 09 HEI consider the management style to be participatory based on team work and consensus, only one HEIs consider the management style to be characterized by security of employment and conformity. None of the selected HEIs characterized the HEIs management styles as competitive, high demands and achievement oriented.
- 06 HEIs considers mutual trust and loyalty as binding agent of their HEIs, 03 consider formal rules and policies as organizational glue whereas only 01 HEI consider innovation and development as the reason of tight knitting. None of the HEI perceive emphasis on common challenging goal as the glue that holds the organization together.
- 06 HEIs considers human development, trust and participation as strategic emphases of their HEIs whereas, 04 HEIs consider permanence, stability and smooth functioning as the strategic emphasize of their HEIs. None of the selected HEIs perceive acquisition of new resources, creating new challenges and exploration of new market space as the nucleus of their HEIs strategy.
- 07 HEIs define success on the basis of team work, commitment and concern for people, 02 HEIs define success on the basis of outpacing competition and winning market space whereas 01 HEIs define success via dependable delivery and smooth functioning. None of the HEIs defines success based on unique approaches adaptation and innovative ideas development.

Table-2: *Findings of Study-II Transfer of Knowledge in KP-HEIs*

- 17 public sector KP-HEIs were ranked on ToK index
- Ranking of KP-HEIs (Including no data items):
  - High Transfer of Knowledge HEIs = Zero
  - Medium Transfer of Knowledge HEIs = Eight (08)
  - Low Transfer of Knowledge HEIs = Nine (09)
- Ranking of KP-HEIs (Excluding no data items):
  - High Transfer of Knowledge HEIs = Zero
  - Medium Transfer of Knowledge HEIs = Eleven (11)
  - Low Transfer of Knowledge HEIs = Six (06)
- Overall Highest KT Dimension (Average Score)
  - Academic Activity

- Overall Lowest KT Dimensions (Average Score)
  - KT Through Technology
- Overall Highest Sub-Dimension (Average Score)
  - Academic Publications
- Overall Lowest Sub-Dimension (Average Score)
  - Entrepreneurship and Innovation

Methodology

The last stage of the study was designed to test the relationship between organizational culture and transfer of knowledge. This stage of the study utilized the outputs of stage-I and II i-e Organizational culture profiles and ranking based on transfer of knowledge index respectively. For the purpose of analyzing the relationship between organizational culture and transfer of knowledge following hypothesis were developed:

H_1: There is a relationship between clan culture and transfer of knowledge

H_2: There is a relationship between adhocracy culture and transfer of knowledge

H_3: There is a relationship between market culture and transfer of knowledge

H_4: There is a relationship between hierarchy culture and transfer of knowledge The aforementioned four hypothesis were designed to test the relationship between organizational culture types and transfer of knowledge respectively, whereas the fifth hypothesis (given below) on testing the association between organizational culture types in ranking categories of transfer of knowledge.

H_5: There is a difference between the scores of organizational culture types in transfer of knowledge categories

Analysis Technique

Pearson's correlation method was used to analyze H_1, H_2, H_3 and H_4 .The last hypothesis focused on testing the association between organizational culture types in ranking categories of transfer of knowledge, therefore Chi-square test was the first choice of analysis. But because of empty cells i-e cells with zero values (no values at all) it was not possible. Based on the analysis of data in stage-II and stage-II, the high transfer of knowledge category was empty as none of the sample HEIs qualified to be ranked as high transfer of knowledge institution. Similarly, there was no HEIs with hierarchy and market cultures in low transfer of knowledge category i-e there were HEIs in low transfer of knowledge category but none having hierarchy or market culture as dominant cultures.

As a result minimum expected count was violated. Thus, Mann-Whitney U test was opted for analyzing the last hypothesis. The test is used for comparing the differences between two independent groups where the dependent variable is measured at ordinal level and is not normally distributed (source: https://statistics.laerd.com). The study's data set (stage-III) satisfied the assumptions of Mann-Whitney test i-e, the dependent variable (transfer of knowledge) is measured at continuous level (using ToK Index), the independent variable organizational culture consisted of independent groups (types of culture) and the observations are independent in both the groups. Furthermore, Mann-Whitney U test was also preferred on the basis of small sample size i-e 10 HEIs (aligned with suggestions by Smalheiser, 2017).

Results and Interpretation

Table-3: Relationship between Organizational Culture and Transfer of knowledge

Organizational Culture Types	**Correlation (N=17)**	**Transfer of Knowledge**	**Hypothesis**	**Decision**
Clan Culture	Pearson Correlation	.490*	H_1: There is a relationship between clan culture and transfer of knowledge	H_1 Accepted
	Sig. (2-tailed)	.046		
Adhocracy Culture	Pearson Correlation	.496*	H_2: There is a relationship between adhocracy culture and transfer of knowledge	H_2 Accepted
	Sig. (2-tailed)	.043		
Market Culture	Pearson Correlation	.501*	H_3: There is a relationship between market culture and transfer of knowledge	H_3 Accepted
	Sig. (2-tailed)	.041		
Hierarchy Culture	Pearson Correlation	.498*	H_4: There is a relationship between hierarchy culture and transfer of knowledge	H_4 Accepted
	Sig. (2-tailed)	.042		

*. Correlation is significant at the 0.05 level (2-tailed).

Based on the 5% significance value, clan, adhocracy, market and hierarchy cultures have a positive significant relationship with transfer of knowledge respectively.

Table-4: *Mann-Whitney U*

Ranks					Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
Organizational Culture		N	Mean Rank	Sum of Ranks	1.000	29.000	-1.76	0.079
Transfer of Knowledge	Clan	7	4.14	29.00				
	Hierarchy	2	8.00	16.00				
	Clan	7	4.21	29.50	1.5	29.5	-0.88	0.380
	Market	1	6.50	6.50				
	Market	1	1.00	1.00	0	1	-1.22	0.221
	Hierarchy	2	2.50	5.00				

On the basis of Mann Whitney U test at 10% significance value it is concluded that there is a difference between the scores of clan and hierarchy culture in ToK categories, whereas there is no difference in the scores of clan and market culture and scores of market and hierarchy cultures in ToK categories.

Table-5: Comparison of KP-HEIs with Characteristics of Knowledge Based Cultures

HEIs	**Organizational Level Characteristics**					**Managerial Level**			
	Leadership Supports Risk Taking and innovation (D-2)	Knowledge Monitoring and governance strategy (D-5)	Knowledge leverage strategy (KT-D-5)	Knowledge based rewards and incentives (D-6)	Central data base for knowledge tracking and integration (KT-D-4)	KM based orientation & socialization policy (D-3)	Team Based job design (D-3)	Knowledge based staff development policy (KT-D-2)	Promotive Interaction opportunities (KT-D-2, 4 & 5)
HEI-1	×	×	×	×	×	×	✓	×	✓
HEI-2	✓	×	×	×	×	×	✓	×	✓
HEI-5	×	×	×	×	×	×	×	×	✓
HEI-6	×	×	×	×	×	×	✓	×	✓
HEI-7	×	×	×	×	×	×	✓	×	✓
HEI-10	×	×	×	✓	×	×	✓	×	✓
HEI-11	×	×	×	✓	×	×	✓	×	✓
HEI-14	×	×	×	×	×	×	✓	×	✓
HEI-16	×	×	×	×	×	×	✓	×	✓
HEI-17	×	×	×	×	×	×	✓	×	✓

i. OCAI Dimension: Dominant Characteristics (D-1), Organizational Leadership (D-2), Management of Employees (D-3), Strategic Emphasis (D-5) and Criteria of Success (D-6)

ii. ToK Dimensions: Knowledge transfer through trained people (D-2, sub-dimension: knowledge transfer through people) Knowledge Transfer through accessibility (D-4), Knowledge Transfer through Networking (D-5)

Discussion

Literature has shown a positive correlation between clan and market culture with transfer of knowledge (Biloslavo & Prevodnik, 2010). However it should be noted that the mentioned study limited the definition of transfer of knowledge to coaching and mentoring of young academics and studied it as component of overall knowledge management processes. Similarly, result oriented cultures, create cultures and entrepreneurial cultures have a positive correlation with transfer of knowledge (Al-Adaileh & Al-Atawi, 2011; Chang & Lin, 2015; Rahman et al., 2018). In all the mentioned studies ToK was limited to sharing of information and data within the organizational set-up for mutual benefits. Thus, the findings of the last section of study are independently discussed and compared and contrasted to theoretical baselines.

The results of the study show that clan culture has significant positive relationship with transfer of knowledge. These findings are aligned with Omerzel, Biloslavo and Trnavcevic's (2011), study, where clan culture had significant relationship with transfer of knowledge in HEI-1. Yet again transfer of knowledge was operationalized on training opportunities, coaching and mentoring and appreciation of research and development by management. The findings of this study are aligned with the characteristics of clan culture (explained in Stage-I). Clan culture is a family like culture, people operate like a tribe and are knitted together via trust and mutual relationships. Thus, information flow is via trusted relationships/networks, similarly sharing is done via trusted channels.

Adhocracy culture had a significant relationship with either transfer of knowledge. The findings are aligned with Omerzel, Biloslavo and Trnavcevic's (2011) study, where both the sampled HEIs had a relationship with transfer of knowledge. Adhocracy culture or create culture is about innovation and entrepreneurial ideas, thus on the basis of its characteristics, positive relationship with transfer of knowledge is not only aligned with literature but is also evident of the fact that if HEIs want to create value via innovation they should adapt adhocracy culture.

Market culture had a significant correlation with transfer of knowledge. In Omerzel, Biloslavo, and Trnavcevic's (2011) study HEI-1 had a significant positive relationship with market culture and an insignificant relationship was observed in HEI-2. Market culture is rooted in competition and capturing market share thus the positive correlation with KT through trained people and KT through accessibility is aligned with characteristics of market culture. Capturing market share requires trained people let that be faculty or graduates

similarly market capturing is subject to access to market thus on the basis of the characteristics of market culture, the results of the study are aligned with literature.

Hierarchy culture is about tight controls and formal procedures, results show a positive significant relationship with transfer of knowledge. Since, smooth functioning and efficient delivery is the aim of hierarchical cultures therefore networking's are essential.

Furthermore, clan culture being the dominant organizational culture is observed in both the low and medium categories of ToK, drawing a conclusion on the basis of such a division is difficult as the HEIs in medium categories qualified to become the part of the medium ToK categories on margin, meaning the scores were just above 50%. Thus concluding that clan cultures assist HEIs to become medium transfer of knowledge HEIs is difficult to assert, given the very low score of qualification to medium ToK category. At the same time there was only one HEI with market culture and one with hierarchy culture, both the HEIs were in medium ToK category but with scores less that 55% though above the threshold of 50% of becoming the medium ToK. The overall score of HEIs on ToK index are very low to develop a concise conclusive final word.

The organizational culture profiles were compared to the characteristics of knowledge-based cultures. None of the sampled HEIs had all the required characteristics. At organizational level, the sampled HEI were required to have unprecedented leadership support for risk taking and innovation, an organizational strategy for knowledge monitoring and governance, a supportive organizational strategy for knowledge leverage, provision of knowledge based reward and incentive systems and initiation, development and implementation of a centralized data base for knowledge tracking and storage. The boxes are ticked or crossed based on stage-I (primary data using OCAI) and Stage-II data (secondary data using ToK index, 86 items). Though the given results are mere matching of data, a more statistical rigorous method is required for a thorough analysis, yet the given table provides an insight into the sampled HEI cultures through the lens of knowledge based cultures view point. Davenport and Prusak (1998) focused on revisiting reward management systems of organization for creating knowledge based culture. A system that rewards activities like knowledge sharing, risk taking and innovative ideas initiation and implementation. So, if HEC wants to convert the HEI of Pakistan into knowledge creation and transformation centers in true spirit, at institutional level initiation and implementation of the aforementioned interventions are essential. HEI are required to include knowledge management strategy as an integral part of strategic planning process, the traditional incentives and reward system needs

to be revamped and redesigned as per knowledge management strategy of the higher educational intuition. Majority of HEI have learning management systems and or centralized management systems in place, additional knowledge tracking and storage facilities needs to be added to tick the centralized data base requirement of knowledge based cultures.

At managerial level, a knowledge based culture has a distinctive and comprehensive knowledge management based policy that spells out the organizational knowledge management procedures and protocols, team based jobs are designed and implemented, an independent policy for employees development based on knowledge management is implemented and interactive opportunities are promoted, so that existing knowledge can be transferred for creation of new knowledge.

Comparison of sampled HEI's data with that of these characteristics show that interactive opportunities are promoted in majority of the sampled HEIs. That is, HEIs in KP support and provide opportunities of interaction within and outside the HEIs to its faculty, whereby faculty can develop excellent networking and share knowledge. Interestingly, HEIs do not have an independent policy for such interactions or socialization. This problem of not formally recording events was highlighted in stage-II. HEIs in KP are involved in a number of knowledge management activities but due to lack of formal recording, they are unable to take full advantage of the on-ground activities e.g. a number of socialization activities take place in HEIs, socialization is considered as a pre-requisite of knowledge sharing, an idea supported by Cohen, (1998); Nonaka and Takeuchi (1995), yet such socialization activities are not formally recorded. Thus, a policy of socialization in HEIs will only document the strategic direction of such activities but at the same time will provide ample opportunity for formal recording. Faculty interacts with external environment (individual level) on regular basis but at managerial level there is no policy outlining the procedures and protocols for such interactions because of which at organizational level the HEIs is unable to take advantage of such interactions.

Another important aspect is the gap between what people know and what they actually do in organizations. Pfeffer and Sutton (2000) referred to this gap and recommended that organizations should create and provide a knowledge culture whereby, faculty members should convert their knowledge into actions, which will reduce the aforementioned gap. This can easily be achieved by revising the job designs, whereby weightage is given to planning and implementation at the same time. Though, majority of the sampled HEIs have team based jobs or tasks designed for faculty but the reward system remains to be the traditional one i-e individual performance based.

Thus, knowledge sharing along with the conversion of knowledge into actionable programs that are performed at an individual should be included in the incentivized performance indicators The given comparison show that majority of the sampled HEIs do not have a formal knowledge based faculty development policy.

Whereas, Bollinger and Smith (2001) focused on revamping the aim of training and development. In a knowledge management culture, training should be based on orienting and training employees on the use of knowledge, line supervisors should be trained in techniques that ensure knowledge sharing behaviors.

The aforementioned brief discussion, compared the results with the characteristics of clan, adhocracy, market and hierarchical culture to show the alignment of the results with available literature. However, if these results are looked at from the organizational culture theory perspective, it is evident from literature that HEIs organizational cultures have sub-cultures (Clark, 1970; Pettigrew, 1979; Mintzberg, 1980; Tierney, 1988; Harman, 1989; Sporn, 1996; Rogers, Scaife & Rizzo, 2005; Lee, 2007; Davies & Devlin, 2010; Yazici, 2015). Thus, clan, adhocracy, market and hierarchy cultures may be a respective singular dominant culture of an HEI but at the deeper level there are several sub-cultures at play within an HEI. Thus HEIs can use the identified dimensions of ToK and can developed required sub-cultures within the umbrella of a dominant culture.

Institutional theory adds more layers to the understanding of organizational culture of an HEI as it advocates that an organizational culture is shaped by the surrounding systems (Scott, 1995) e.g. political, legal and economic systems. Thus the claim of classical organizational theory (Max Weber and F.W. Taylor) that supports the rational role of actors and management driven interests are challenged by institutional theory, concluding that organizational structures and cultures are a reflection of institutional influences as well. Since, HEIs are formal institutions and thus are governed under formal laws and by laws (following institutional theory) as opposed to informal institutions that are governed by social laws and norms or people driven. Therefore, HEIs must adapt and react to their institutional environment by isomorphic process to gain legitimacy (Suchman, 1995). In case of HEIs in Pakistan the institutional environment is defined by HEC and is governed by HEC rules and regulations along with University act 2012. HEC, expects HEIs to have research culture backed by innovation and commercialization (i-e. market and adhocracy culture) whereas, the study show that majority of KP-HEIs have clan cultures. Clearly, sampled HEIs doesn't seem to be a reflecting institutional systems requirements. Clan cultures are the product of informal institutions that are governed by social laws and norms whereas, formal organizational

cultures require strict alignment with formal laws, rules and policies. This drift from institutional reflections to more cultural influences may be attributed to as one of the reason of insignificant correlations of the sampled organizational cultures with the dimensions of transfer of knowledge. The dimensions of transfer of knowledge are based on the formal institution's definition and requirements whereas the organizational culture of HEIs in KP are more related to informal institutional building blocks.

Concluding Remarks

The aim of the study was to examine the role of organizational culture in transfer of knowledge, it can be concluded that the organizational cultures of HEIs in KP are influenced by organizational theory i-e led by actors and management interests who are driven by social norms whereas the demanded performance i-e research, innovation and commercialization is an output of institutional theory (HEC vision is aligned with Govt. of Pakistan 2025 vision), clearly the organizational culture and transfer of knowledge activity in sampled KP-HEIs are not attuned as the sampled HEIs are not knowledge based cultures. This supports the study's basic premise that organizational culture can play a vital role in improving the transfer of knowledge performance of HEIs. That's why the relationship between organizational culture and transfer of knowledge examined in the study are all positive and significant. The study findings support Al-Kurdi , El-Haddadeh and Eldabi (2018) findings, where the authors concluded that that there are limited contributions in understanding the knowledge transfer dimensions in HEIs. This lack of understanding of ToK dimensions creates issues in designing a knowledge based culture. Furthermore, the low scores of HEIs on ToK index and insignificant relationships between organizational culture and ToK dimensions can be attributed to the non-knowledge based cultures of KP-HEIs. In the given context, the study conforms with the findings of literature (e.g. Pfeffer & Sutton, 2000 and Alavi & Leidner, 2001), whereby it is proved that in organizations there are instances where organizational members are knowledgeable and are willing to share their knowledge at the same time but they forbade to do so due to lack of incentives. Though the study did prove significant relationships between organizational culture and transfer of knowledge based on the reasons explained above, yet the study provides two direct outputs, first is has developed baseline data about the organizational cultures of HEIs which can used for strategic planning and interventions at HEIs and HEC level for converting the clan and internal focused KP-HEIs into knowledge based cultures. Second output is the ToK index, which will not only assist in measuring the transfer of knowledge activity of HEIs but will also help in understanding and exploring the impact of HEC interventions, planned and initiated based on the environed role

of HEIs in knowledge economy. The ToK ranking provided in the study can be used to refine, update and upgrade the ranking system initiated by HEC along with amendments in ORIC performance core card. There is, therefore, a definite need of implementation of ToK index at provincial and country level.

Recommendations

Based on the comprehensive analysis of KP-HEIs organizational cultures and ToK index ranking of KP-HEIs, the study puts forward the following recommendations:

i. KP-HEIs needs to revamp the existing organizational culture by introducing knowledge based culture processes at both, organizational and managerial levels.
i. At organizational levels, the current strategic emphasis can include knowledge management monitoring and governance strategy. Similarly, the academia-government-industry linkages policy can add knowledge leverage strategy with clear objectives and implementation plans.
ii. The leadership of HEIs requires knowledge management related trainings, so that the initiatives taken by HEIs are aligned with knowledge management processes.
iii. At managerial level, the existing policy of new faculty socialization can add knowledge management activities related orientations. Though, HEIs claim that they support team work but none of the HEIs rewards team performance. The reward management at HEIs are based on individual faculty contributions.
iv. HEIs and HEC arrange trainings for faculty, the study suggest to including training programs focusing on knowledge management activities, lessons learned and best practices designs and application.
v. The study during data collection observed lack of orientation of ORICs and QEC staff about the establishment, objectives and tasks of ORICs and QEC, therefore a capacity development program is suggested to improve the current knowledge of the concerned staff about knowledge management.
vi. The study suggests the implementation of ToK index for understanding the ambiguities in transfer of knowledge dimensions at HEIs as there is a clear lack of understanding between HEIs performance (generally presented in annual reports of HEIs) and Transfer of Knowledge activities at HEIs.
vii. HEI in collaboration with HEC needs to define and measure knowledge management activities for HEIs. The developed ToK index can assist in definition and measurement of transfer of knowledge activities (one dimension of Knowledge Management).

Future Research Insights

Based on the study following are the suggested future research directions:

i. Longitudinal studies in organizational culture influencing knowledge transfer in specific case studies to verify if the changes in the organizational culture have a positive or a negative effect on knowledge management.
ii. Research study/ies are suggested for establishing the dimensionality of transfer of knowledge in the context of HEIs.
iii. Development of a comprehensive index for knowledge Management at HEIs covering creation, transfer, storage and application of knowledge.
iv. Further research to replicate the developed ToK index for measuring transfer of knowledge at provincial and country level.

Limitations of the Study

Following limitations were faced during the study:

i. Lack of understanding of transfer of knowledge activity and jargons of knowledge management led to difficulties in data collection for ToK index. As a result few of the items were reported blank by HEIs. Though an effort were made to re-contact the HEIs and collect the data from additional sources.
ii. ToK index was designed with an understanding that HEIs collect data related to the items included in the ToK index, the same was ensured during content validation and pilot testing, however the final data set revealed that HEIs in KP vary in recording ToK activities. This variation in availability of data in HEIs created substantial issues in testing the completed ToK index. Though, the results were re-analyzed by removing the items with no data reported yet, the index require re-testing with a bigger data set (with complete entries on all items).
iii. This study has included ToK as the only enabler for transforming the organizational culture into that of knowledge based cultures. Whereas, a set of other variables can also play a vital role in transforming a traditional HEIs culture into a knowledge based culture.

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