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E-Government Development Index for Public-Sector HEI's of Pakistan

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ABSTRACT

E-governance is the process of application of Information and Communication Technology (ICT) to improve the efficiency and effectiveness of all the processes of any organization and thereby achieving the characteristics of *good governance*. Development of E-Governance at national level around the world is measured by many metrics and methods such as the United Nation's E-Government Development Index (EGDI). At present there is no scientific method for evaluating the E-Governance Development in Pakistan's Public Sector Universities. This research article proposes an innovative method for the measurement of E-Government Development in Pakistan's Public Sector Universities so as to create public awareness and competitive environment for improved adoption of ICT based strategies to achieve good governance in Higher Education Institutes (HEIs) of Pakistan.

Keywords:- *University, Governance, E-Governance, ICT*

I. INTRODUCTION

It is a fact that proper socio-economic development of any nation is based good higher education system. It is therefore, the governance of higher education system is required to be improved in order to reflect such improvement in the overall system of governance of any nation and country [4]. Like the sovereign countries, Universities around the world have autonomous style of governance which leads to many complicated intricacies. The degree of intricacies could be reduced with adoption of Information and Communication Technologies (ICT) in the overall governance mechanism of the Universities. The adoption of ICT in the governance is what is referred as E-Governance which leads towards good governance as it provides improved and effective services to all stakeholders. E-Governance based system ensures transparency and accountability, rule based consistent decision making and automated processing of all applications in the entire system [12-15].

The overall nature of processes/applications in any University could be categorized in two main classes: core processes/applications which include admission, academic, exams, affiliation etc., and enterprise resource processing applications such as finance, human resource, store and purchase, IT support and many other auxiliary services [17-20]. Automation of these processes/applications requires an information management system based on shared databases, dynamic websites, interactive mobile platforms capable of interacting and integration with external services, social media and other platforms.

In the context of University processes/applications an E-Governance system may consists of web servers, web applications, store data center, operational support services, system call center, fault tolerance, server management and other components. Users interacting

with E-Governance system in Universities may include faculty members, students, public, college management and university management. These users interact with the system through commonly used channels such as web, phone and email.

The overall aim of any E-governance system in universities is to provide automated file flow system, automated exam management system, automated financial transactions with internet banking, integrated platform for stakeholders, automated affiliation system,

information based decision making capability, automated academic activities management and automated modules for auxiliary services.

This article explores the status of E-Governance in Pakistani Higher Education Institutes (HEIs) based on the idea of United Nation's E-Government Development Index (EGDI) which measures and evaluations the status of E-Governance of all the countries around the world as illustrated in Figure 1.
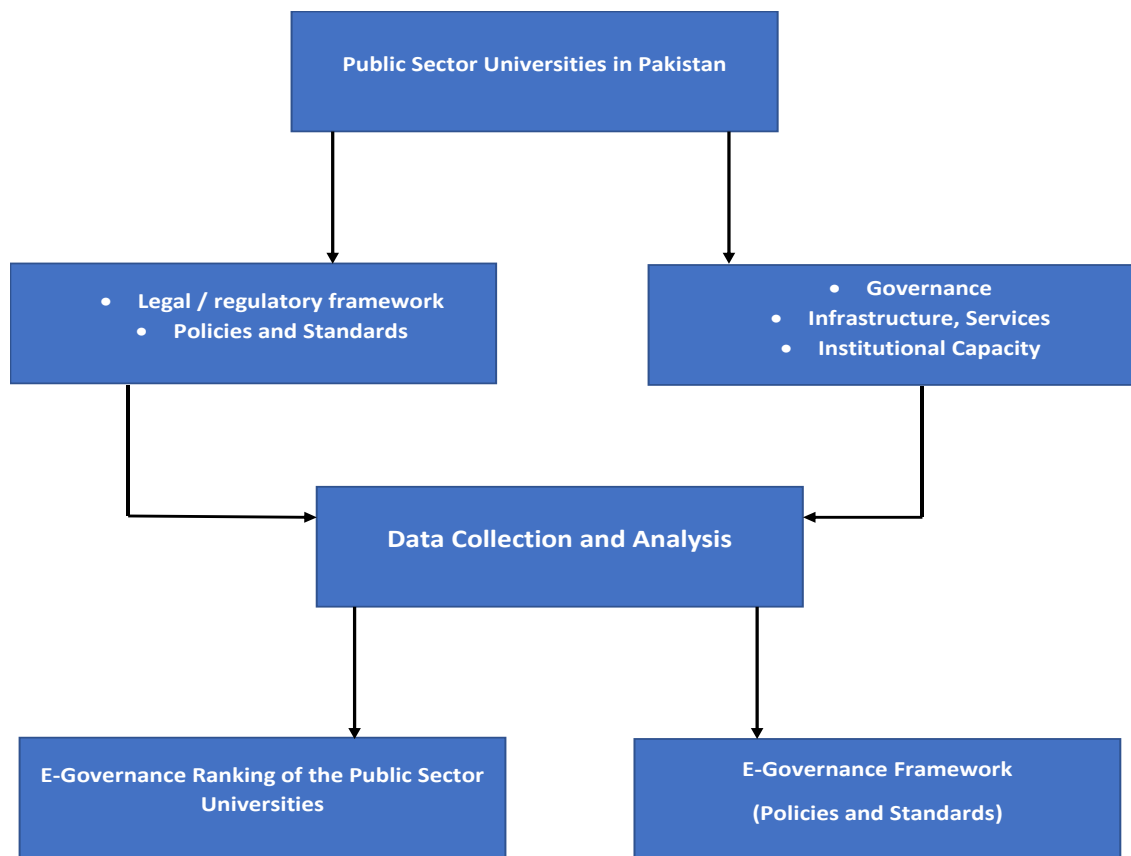

Figure 1: Block Diagram for E-Governance Development Index (EDGI) in Pakistani HEIs

The motive behind this initiative is to create public awareness and competitive environment for improved adoption of ICT based strategies in order to achieve good governance in Higher Education Institutes (HEIs) of Pakistan.

II. LITRATURE REVIEW

Status of University governance is depicted by values of key performance indicators (KPIs) as illustrated in Figure 2 [8]. The overall mission of any University is to broaden student's horizons. In order to achieve this mission, the Universities aim to develop strategies that take care of stake holders interests, create an environment for the best academic staff, cope with future challenges, improve internal services and build relationship with alumni.
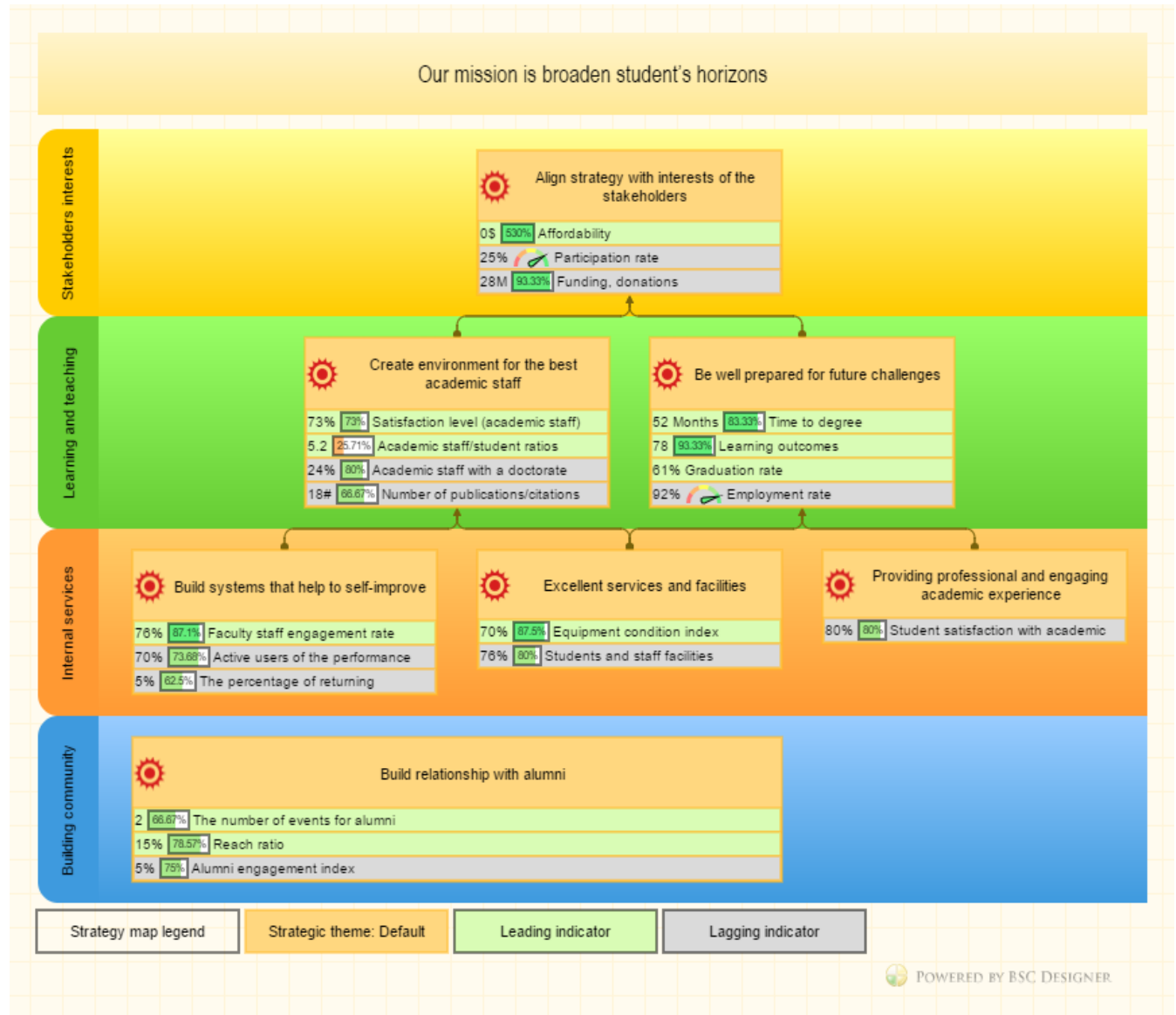

Figure 2: An Example of University Scorecard with Specific KPIs [8]

Many initiatives have been taken around the world for the implementation of E-Governance system in Universities in order to enhance quality of education and strengthen the overall higher education system. A succinct systematic description of these initiatives is provided in Table 1.

Study	Research Purpose	Methodology
Bianchi et al [1]	'IT Governance Mechanisms in Higher Education', Procedia Computer Science,	Quantitative survey using questionnaire distribution with 5-point Likert scale
Dhamuniya et al [2]	'E-Governance in Rajasthan State Universities: Impacts and Impediments', International Journal of Social Sciences and Management,	E-government is an instrument of reform and a tool to transform government. Examined the literature to define and illustrate the types, stages, advantages and barriers of e-government. E-government has many advantages to offer to all sectors of government.
Sursock et al [16]	Trends 2015: Learning and Teaching in European Universities, Eua Publications	Examination of e-government implementation and development E-government strategic planning framework.
Zaman et al [6]	'Quality guidelines for good governance in higher education across the globe', Pacific Science Review B: Humanities and Social Sciences. Elsevier Ltd,	The more useful the online consumers perceive E-Governance, the more they are likely to adopt it. Government should set up legislation that would ensure user and system security, in order to enhance trust and hence enhance ICT adoption. Effective and sustainable ICT strategies, which can satisfy the expectations of all stakeholders.
Ahmad et al [5]	'Funding Reforms in Malaysian Public Universities from the Perspective of Strategic Planning', Procedia - Social and Behavioral Sciences,	Empirical study on diffusion of E-Governance applications and plans
Usman [8]	'Governance and higher education in Pakistan: What roles do Boards of Governors play in ensuring the academic quality maintenance in public universities versus private universities in Pakistan?', International Journal of Higher Education,	Variety of services is the most significant variable influencing the adoption of E-Governance followed by Perceived enjoyment. whether the ICT services and applications are easy to use or not, it does not influence the users adoption decisions

Table 1: Description of E-Governance Initiatives in Universities

III. MATERIALS AND METHODS

This research is based on a mix set of methods for data collection and analysis. Both primary and secondary data collection methods along with quantitative and qualitative data analysis methods have been employed for proper

conduct of the research. Following set of E-Governance output indicators have been used for the preparation of E-Governance Development Index (EGDI) in Pakistani Universities:

- **Infrastructure:** Measure of improvement in connectivity and processing capacity.

- **Governance:** Evaluation of E-government management framework along with Policy and Regulatory Framework

- **Institutional capacity:** measure of business processes reengineered, trainings imparted and geographical reach

- **E-Governance impact**: measure of user satisfaction with service provider, access to everyone from everywhere, user orientation

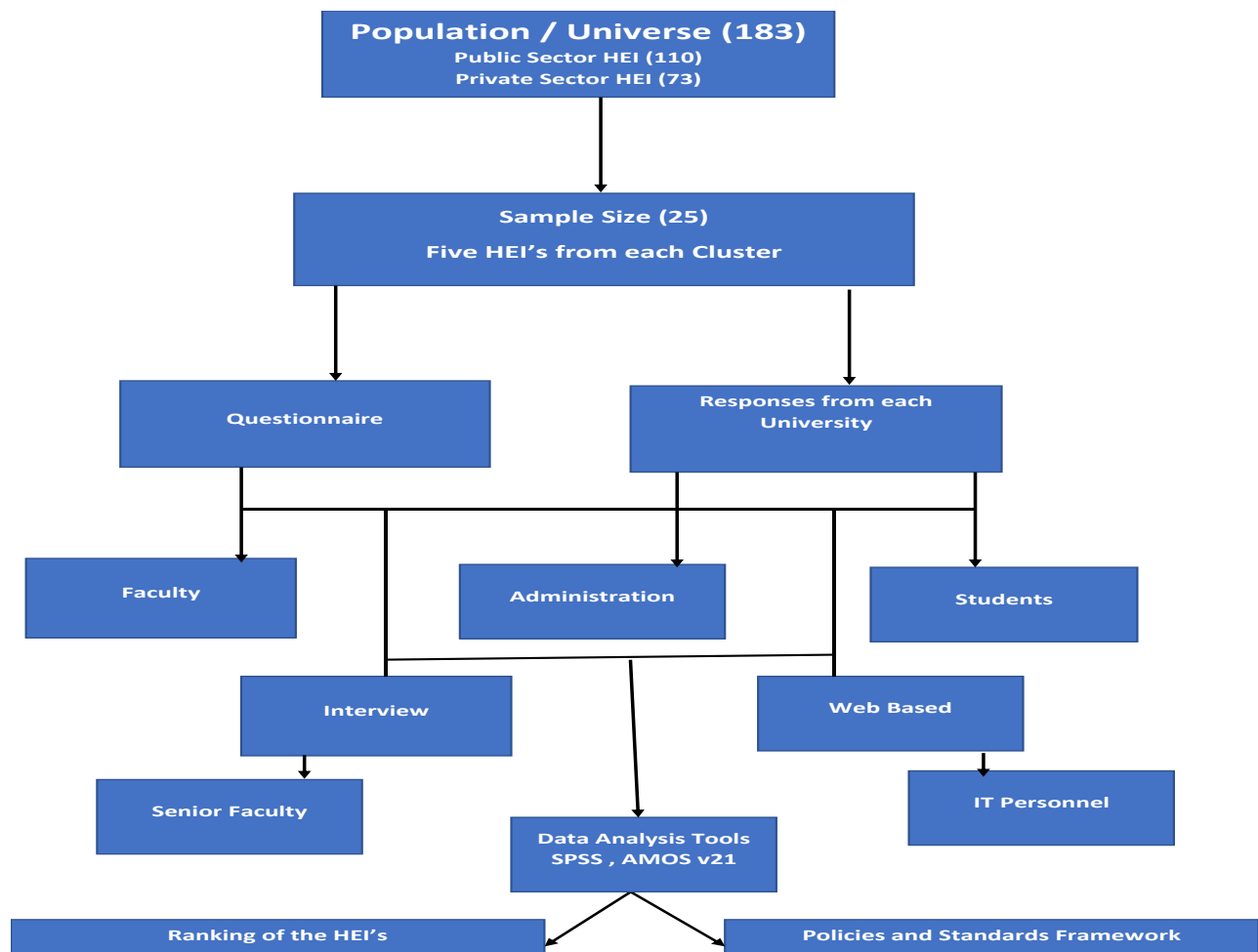Flowchart based on these indicators is illustrated in Figure 3.

Figure 3: Research Methodology for EDGI for Pakistani Universities

IV. RESULTS AND DISCUSSIONS

Initially a web based survey has been conducted for data collection regarding availability of Information Technology (IT) policy and IT Standard Operating Procedures (SOPs) in selected public sector Universities of Pakistan. Results of this survey are illustrated in Figures 4-6. This data shall be validated through other means of interaction with primary sources. Based on thorough analysis of IT Policies and SOPs, further data collection and analysis shall be conducted in the light f the proposed set of EDGI indicators.
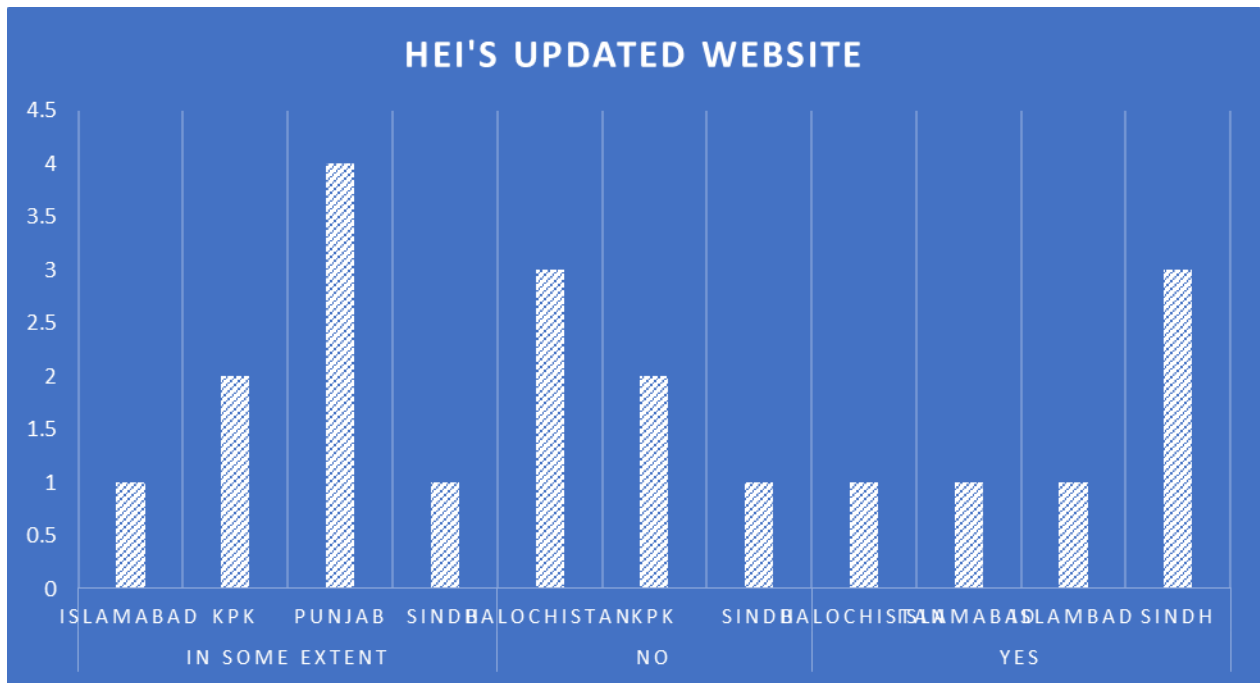

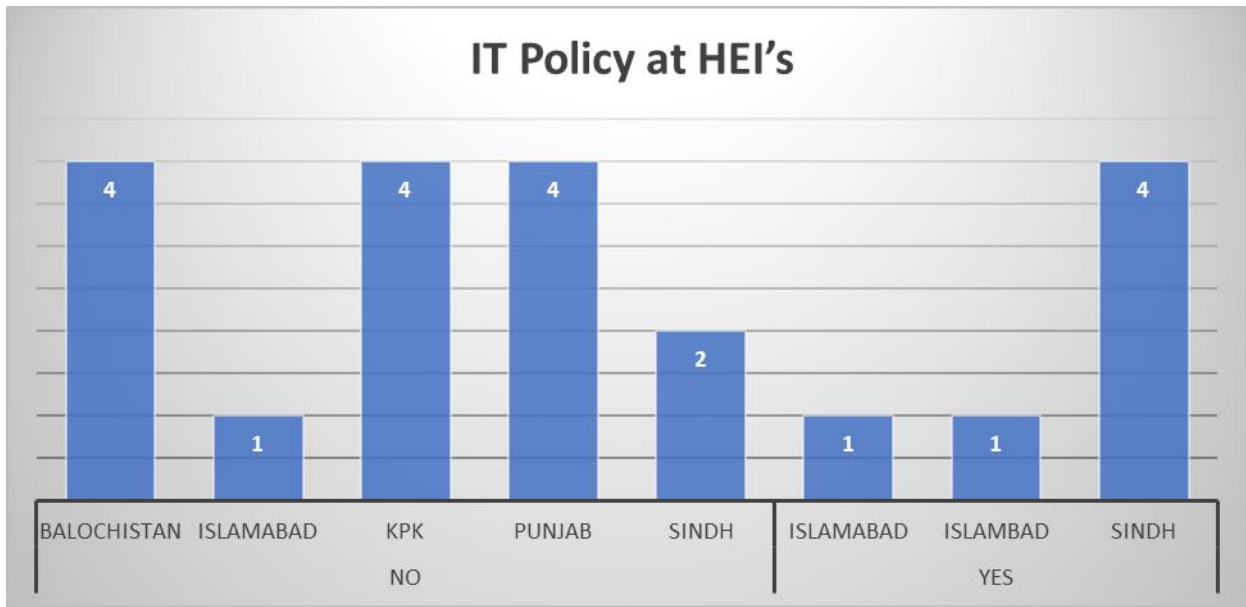**Figure 4**: Data analysis regarding updated websites of selected HEIs in Pakistan

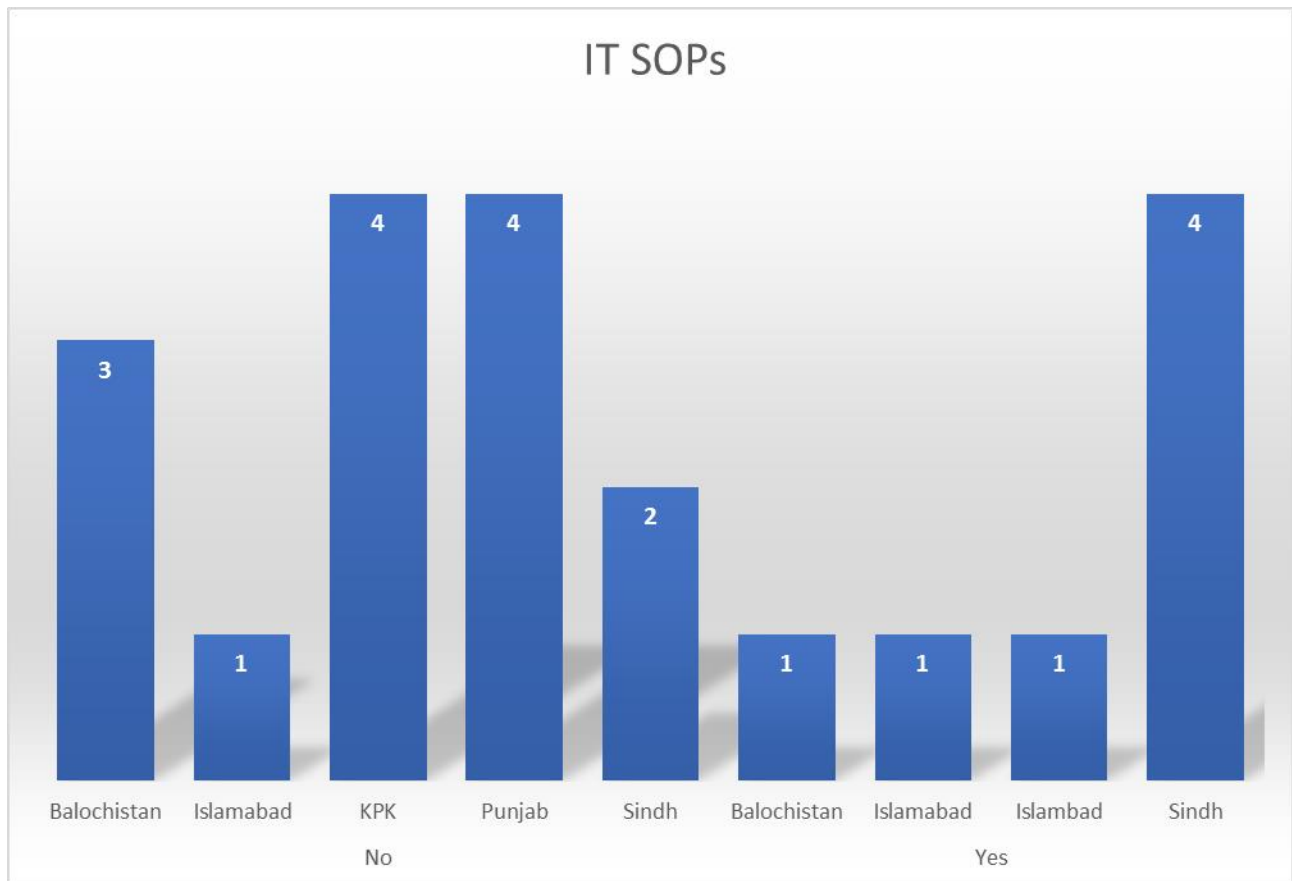**Figure 5**: Data analysis regarding IT policies of selected HEIs in Pakistan

Figure 6: Data analysis regarding IT SOPs of selected HEIs in Pakistan

V. CONCLUSIONS

E-Governance plays an important role in transforming the governance mechanism leading to improved efficiency, effectiveness, transparency and overall performance of the system. Initial data regarding current status of E-Governance in public sector universities of Pakistan indicates that so far a significant number of Pakistani Universities even lacks the availability of regularly updated websites, IT policies and SOPs at corresponding websites. Further studies would reveal the holistic comparative status of selected public sector universities with respect to their E-Governance Development. The index of E-Governance Development would help all the Universities to well prepare their strategic plans to improve adoption of ICT in overall processes and applications so as to achieve good governance leading to good higher education system in the country which is the main requirement for the overall socio-economic development of this nation.

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