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STI Policies in Turkey, Iran and Pakistan: The Application of Policy Implementation Cycle in Pakistan & Relevant Importance of Indicators

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Keywords:
STI policies, STI indicators, policy adoption, policy implementation, policy development, agenda setting

ABSTRACT

Together and alone, science, technology, and innovation have emerged as some of the most significant gauges of a nation's development. When it comes to the growth of their science, technology, and innovation sectors, Pakistan, Iran, and Turkey all work within unique strategic spheres. STI directly influences state-level growth across the board in every nation, and that every nation has its own indicators, cycles, strategies, and tactics for influencing development. The study used a quantitative methodology approach for ensuring better and satisfactory results. Data was called from a sample of 250 respondents which included managers, directors, leaders, and coordinators from the Pakistan Ministry of Planning, Development, and Reform, CUI, PCST, and Eco Science Foundation. The study came to the conclusion that policy development, adoption, and implementation are significant in Pakistan in particular. These are the areas that need to be prioritized if the nation is to see positive development and progress. The study also generates a broad list of ideas and recommendations, concluding that more research regarding STI policies and indicators for poor nations is required if more significant advancements are to be realized.

INTRODUCTION

After millennia of evolution and decades of progress, state-wide growth and economic expansion today depend on the on-going development and expansion of scientific and technological policies which are then linked to collective national ambitions. As a result of this evolution, the notion of STI policies—science, technology, and innovation policies—is currently growing and is relevant to and significant for nation-states in developed, developing, and underdeveloped nations (Kalliokoski et al., 2022) In a nutshell, STI policies are crucial for

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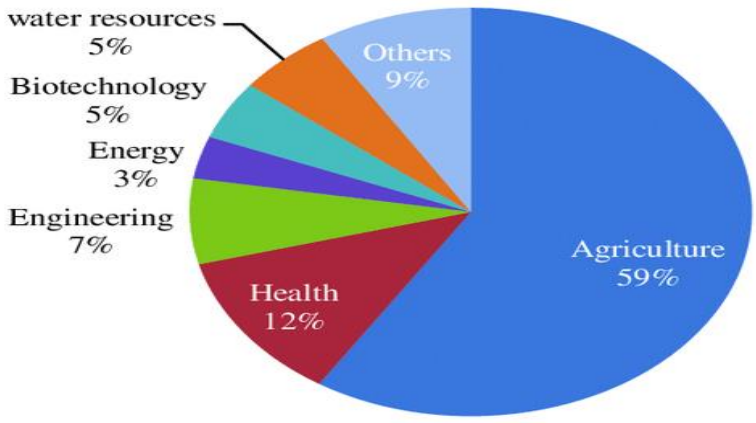
competing worldwide in terms of the development of the economy, society, technology, and finances.

The collective state-level growth of a nation is unintentionally linked to the STI policies that are implemented or created for the nation itself, claim (Lakhan et al., 2022). As a result, each nation's indicators, approaches, strategies, and cycles for science, technology, and innovation are specifically adapted to that nation. There is more to be investigated on how these metrics look for these countries, how the policies affect their strategic growth, and more because each country has its own indicators and policies. With a close examination of their existing and potential STI indicators, policies, strategies, and procedures, Turkey, Iran, and Pakistan—three countries with cultural and economic affinities—are the main focus of this study.(ODTÜ TEKPOL, 2021)

In terms of science, technology, and innovation, Pakistan is determined to be naturally falling behind the other two, which has also caused a social and cultural recession (Ullah et al., 2022) It is important to take into account the various ways that previous literature has directed towards STI policies and indicators in order to fully comprehend how these aspects interact and how science, technology, and innovation are influenced for Pakistan, Iran, and Turkey.(Koundouri et al., 2022)

Together and alone, science, technology, and innovation have emerged as some of the most significant gauges of a nation's development. Numerous studies have been conducted over the years to develop this concept and model, with a focus on identifying STI indicators and their implications comprehending the significance of STI for a variety of contexts choosing how to implement STI policies These research have primarily concentrated on settings outside of Pakistan. For illustration, numerous research on Central(Liu, 2022)

By sector the Major research and development institute in Pakistan



Each of these studies offers a foundational understanding of STI policies, their potential impact, tactics and techniques around STI, and more, even though they are practically not applicable to the setting of Pakistan. This contributes to the development of the various metrics and concepts used in this study for Pakistan, Iran, and Turkey. It is crucial to take into account both the individual and collective characteristics of the countries under discussion in order to completely comprehend the theoretical underpinnings and methodology of this study.(Robertson, 2020)

When it comes to the growth of their science, technology, and innovation sectors, Pakistan, Iran, and Turkey all work within unique strategic spheres. The National Council of Science and Technology is Pakistan's highest-ranking policy-making body (Ali et al., 2020). However, the government of Pakistan has been notably deficient in changing to a world where science and technology are the primary focus. When the Ministry of Science and Technology created a policy document in 2012, it was one of the few attempts the government made to incorporate STI policies acknowledge that the process of creating such policies has been delayed by a number of years. Iran, on the other hand, has improved steadily in terms of realising the significance of science and technology policy and has also moved toward an economic advancement that is centred on technology (Bagherinejad & Mood, 2020) Iran has concentrated on transforming into a knowledge- and innovation-based economy over the past 20 years or more It has also fostered a general commitment to the creation of a successful National Innovation System, or NIS for short.(Koundouri et al., 2022)

Iran now has a huge pool of trained, enthusiastic, and educated Iranians who are not only scientists but also skilled workers, entrepreneurs, and more thanks in large part to this commitment and a general understanding of the value of science, technology, and innovation These are Iranians who support the interests of their country not only domestically but also internationally by their employment and accreditation. In this respect, Iran has not kept to itself. Iran continues to increase its capacity for producing STI strategies at the national level by urging international collaborations. as a primary deal to exchange technology and knowledge first-hand as an intercultural attempt at progress as well. (Lakhan et al., 2022)

Many Iranians are still perplexed as to why American, European, and even Asian banks aren't making it clear that they are offering banking services in Iran, despite the fact that sanctions have been lifted and significant progress has been made.(Koundouri et al., 2022)

Iran was expected to perform better economically and hence produce more knowledge after the Iran Deal increased its access to international markets. Iran's professionals may contribute more to the world scientific community and Iranian start-up businesses can expand their market reach

the more engaged Iran is in international economic relations (Woolley & MacGregor, 2022). However, several significant political difficulties might still need to be resolved.

Iran has the biggest economy of the nations that have not ratified the World Trade Organization (WTO). Due to pressure from the United States and its veto power in the WTO Council, Iran has been stuck in observer status at the WTO since 2005.(Bellora & Fontagné, 2022) Small and medium-sized knowledge-based businesses' partnerships with giant enterprises, whether local or foreign, are essential to their success. By joining the WTO and international banks, Iran may be able to get the massive financial assistance it needs to upgrade its domestically significant companies and boost foreign investment inflows.(Hopewell, 2022)

The Iranian government is extremely concerned about the potential amount of manufacturing employment that huge corporations could generate. This is the only way to address the enormous problem of unemployment.(Le et al., 2022) The innovative measures Iran has put in place to support knowledge-based SMEs will have a lasting impact on the country's economy once large enterprises adopt SMRs' technological improvements and increase production efficiency.(Bagherinejad & Mood, 2020)

Iran may someday grow to be a regional hub for higher education now that the nuclear accord has offered Iran some political stability. Iran may be a desirable site for its neighbours due to its low commodity prices, huge admission capacity, and affordable tuition costs (Policies & Elimination, 2021). If Iranian S&T results are broadly disseminated among international students, their number of citations may increase. All of this is dependent on Iran forging friendly ties with its neighbours.

In terms of science, technology, and innovation, Turkey is the most complicated of the three nations under study (Uslu et al., 2021). The establishment, oversight, coordination, and implementation of science and technology policies were all taken into consideration when the Turkish Supreme Council for Science and Technology was established, especially in light of the country's objectives for social, security, and economic development(Policies & Elimination, 2021) The Council was established immediately underneath the Prime Minister and answers to them as well as carrying out significant functions like providing help to the government in formulating long-term policy.(Buyuktanir Karacan, 2021)

When it comes to market sophistication, Turkey performs better than the rest of the world in many areas, but when it comes to institutional sophistication, it lags far behind (Ozkaya et al., 2021) There have been significant innovations made to the justifications for policies and tactics on both the national and international levels, not only in Turkey but also in Iran and Pakistan.

However, there are numerous issues that afflict these nations in terms of science, technology, and innovation policy, even when considering these inventions and the development they brought with them. In developing and underdeveloped nations, which are currently competing for financial, social, economic, and technical growth, the idea of STI strategies is growing (Policy, 2021)There is an intrinsic requirement for advancement in terms of science, technology, and innovation to make these sectors flourish as well, even if a country's development and progress depend on a wide variety of sectors, including education, infrastructure, health, human resources, and more (Putera et al., 2022)

To put it simply, this means that STI directly influences state-level growth across the board in every nation, and that every nation has its own indicators, cycles, strategies, and tactics for influencing development. Pakistan falls short in these areas. This is the main reason why the general analysis of the study's findings focuses on identifying implications for Pakistan(Speakman et al., 2012).

In order to comprehend the significance and applicability for policy in the context of Pakistan, this research uses (Nasreen & Rafay, 2022)extensive model on the STI cycle and its resonant components. There is a strong emphasis on the STI policies of Iran and Turkey as well as the various ways in which Rehman's components fit with the various initiatives taken by each nation to advance science, technology, and innovation.(Lytras et al., 2022)

It is crucial to note that Pakistan has implemented a number of policies over the years, including but not limited to the National Science, Technology, and Innovation Policy from 2012–2013 and the National Science, Technology, and Innovation Policy from 2014–2018. (Shah et al., 2019)The most significant of these strategies is the one from 2014 to 2018 that agreed with Rehman's six suggested components and contained 12 individual development targets.

In comparison to Pakistan, the Islamic Republic of Iran's STI policies were significantly more extensive. From the nation's first industrial expansion phase, which lasted from 1900 to 1959, through its second, which lasted from 1960 to 1970, and its third, which lasted from 1980 to 1990, each phase had its own set of science and technology policies that were established and put into place (Maggor, 2020). Later, the policies relating to science, technology, and innovation were created in waves, with Wave 1 focusing on the advancement of higher education and the publication of scientific research, Wave 2 on the development of research and emerging technologies, and Wave 3 on the transition to innovation and a knowledge-based economy, which is still in place and only getting stronger. Iran has significantly advanced in this area and appears to be producing more and more value nationally.(Ali et al., 2020)

The STI policies for Turkey started before the 1960s, which is frequently how they are referred to. Between 1960 and 1980, when the primary framework of the policies was implemented toward government, the private sector, international partnerships, and more, a shift toward efficient science and technology policies occurred. Later, between 1980 and 1993, Turkish Science Policy was developed, with a focus on STI governance and development from 1983 to 2003.

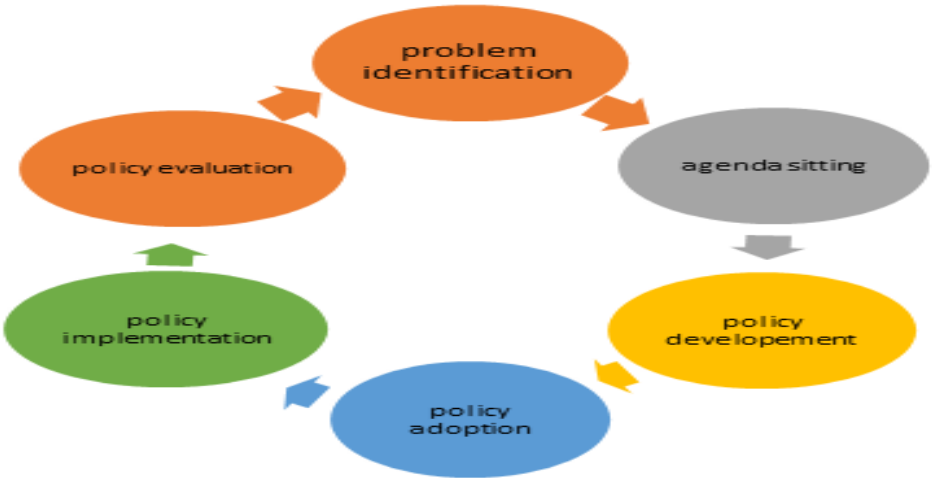
The National Science and Technology Policy came next, clearing the way for the 2003–2023 Strategy plans, which was centred on policy, government, the private sector, and community. All of these developed policies and strategies have laid the groundwork for Turkey's scientific and technology sector, which continues to expand annually. Between these two pieces of legislation, a guideline for the years 2013 to 2016 that built on the prior strategic course was also introduced.(Government of Pakistan, 2012)

PROBLEM, OBJECTIVES & HYPOTHESIS

Pakistan must work with the STI policy process cycle that has an impact on achieving its goals and improving its research and development competitiveness in relation to other nations. The reasoning behind debating whether or not these nations have effective STI policies is more deeply founded in the positive impact that can be made to their overall development(Lee et al., 2022). Comparing Pakistan's current strategy of promoting an experience and understanding economy through conventional investments in STI with the more recent and encouraging paradigm shift utilised by Turkey and Iran is instructive. Researching any prospective initiatives in Pakistan to bringing about such a change in thinking is one of the study's main goals.

It is being thought about if the elements of policy innovation are acceptable for Pakistan on a national level while keeping in mind the current policies, as well as the best tool for developing the finest STI policies. This study has advanced this reflection inside the adapted theoretical framework claims that the implementation approach for science, technology, and innovation development has been modified to incorporate (Dinu, 2022)

STI policy process cycle, six elements that might be applicable to developing nations like Pakistan.



There are 6 hypothesis statements based on the 6 components and are as follows:

H1: *Problem Identification is significant and applicable factor for STI policy in Pakistan's context.*

H2: *Agenda Setting is significant and applicable factor for STI policy in Pakistan's context.*

H3: *Policy Development/Formulation is significant and applicable factor for STI policy in Pakistan's context.*

H4: *Policy Adoption is significant and applicable factor for STI policy in Pakistan's context.*

H5: *Policy Implementation is significant and applicable factor for STI policy in Pakistan's context.*

H6: *Policy Evaluation is significant and applicable factor for STI policy in Pakistan's context.*

While each factor within the life cycle is crucial towards the development of STI policies and their effective implementation, it is possible that at a state-level, there are stages or factors that may be skipped or insignificant.

METHODOLOGY

The study adopted a positivist philosophical approach. Pugh (1983), argued that using positivist approach for research is the need for collection of data so generalized hypotheses are to be tested. furthermore (Bryman, 2007) stated that research role (quantitative approach) under the positivism philosophical approach is to provide materials for generalizable law and also to test theory. The study's sample is made up of those who fall within the range of decision-makers for science, technology, and innovation policy. From the population of 830 who were decision makers towards policy development. A sample of 250 was obtained for data collection as per 30 percent formula of Central Limit Theorem (CLT) and (Chang, Huang and Wu, 2006). All of the respondents were both subject matter experts and closely related to the study's topic.

Statistical Package for Social Sciences has been used to test the data that was obtained from the survey (Brymar and Carmer, 2012). Latent variables were thoroughly analysed using regression analysis, and conceptual/theoretical development was investigated (Bolt et al., 2016). Along with a reliability and regression analysis, frequency distribution and descriptive analysis were done to the data. Questionnaire was developed and consisted of 12 items. The pre test for validation of questionnaire were conducted and was found to be valid and reliable for further process.

RESULTS

Table 1: Reliability test

	Indicators/Variables	Cronbach's Alpha
1	Problem Identification	0.73
2	Agenda Setting	0.74
3	STI Policy Development	0.76
4	Policy Adoption	0.85
5	Policy Implementation	0.76
6	Policy Evaluation	0.70
7	STI in Pakistan	0.82

Table 1 represents Cronbach's alpha value, which measures reliability. The table indicates that all the value are above 0.7, indicating good reliable data and was used in this study and policy adoption, and STI in Pakistan value is 0.8, indicating excellent reliability. This clearly shows that the results obtained for any of these variables in the context of this study are accurate and dependable.

Table 2: ANOVAa

	SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.
REGRESSION	928.539	6	154.756	31.148	.000[b]
RESIDUAL	1207.321	243	4.968		
TOTAL	2135.860	249			

Here:

a. Dependent Variable: STI in Pakistan

b. Predictors: Policy Implementation, Policy Evaluation, Policy Development, Policy Adoption, Policy Identification, Agenda Setting

Usually, 5% or the 95% confidence interval is chosen as the study's significance level. Therefore, the p-value has to be less than 0.05. The result is important as a consequence. This further implies that all of the policy innovation cycle's variables have an impact on how the science, technology, and innovation policies of Pakistan are working and that these differences are all significant. A model summary has also been provided below.

In table 2 it is reflected that an enhancement in the variable's estimate after accounting for the model's inherent error. The F-ratio yield efficient model has a value that is greater than 1. The value in the table above, 31.1 is favorable in certain ways. The ANOVAa model's f value is significantly higher than 10, which shows that the model was significant and trustworthy.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.759[a]	.535	.521	3.22899

Here:

a. Predictors: Policy Implementation, Policy Evaluation, Policy Development, Policy Adoption, Policy Identification, Agenda Setting

A high degree of correlation is indicated by the R value, which is 0.759 and shows the simple correlation. The R2 value shows how much of the overall variance in the independent variable, it's good to see that in this instance, 0.535% is explained. Given that the difference between R square and adjusted R square is less than 10, which indicates the results' trustworthiness and relevance, the value of R is 0.759, R square is 0.535, and adjusted R square is 0.521. R is displaying a value of 0.759, which is interpreted to mean that there is a 75% correlation between the variables or indicators—a relationship that is typically thought to have a high degree of intensity.

Table 4: Coefficients

	UNSTANDARDIZED COEFFICIENTS		STANDARDIZED COEFFICIENTS		
MODEL	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(CONSTANT)	-1.444	0.876		-1.647	0.101
AGENDA SETTING	-0.272	0.261	-0.194	-1.042	0.298
POLICY DEVELOPMENT	0.300	0.032	0.479	9.442	0.000
POLICY ADOPTION	0.423	0.083	0.261	5.115	0.000
POLICY EVALUATION	0.299	0.153	0.233	1.946	0.053
PROBLEM IDENTIFICATION	0.187	0.197	0.131	0.950	0.343
POLICY IMPLEMENTATION	0.109	0.040	0.137	2.796	0.006

The p values of the data are interpreted in table 4 above. The null hypothesis for these variables cannot be rejected given the p values for Problem Identification, Policy Evaluation, and Agenda Setting (p = 0.343, 0.0.53, and 0.298, respectively > 0.05), indicating that these variables are not significant or applicable in the case of STI policy in Pakistan.

H1: *Problem Identification is significant and applicable factor for STI policy in Pakistan's context.*

H2: *Agenda Setting is significant and applicable factor for STI policy in Pakistan's context.*

H6: *Policy Evaluation is significant and applicable factor for STI policy in Pakistan's context.*

These three hypotheses have not been considerably altered and do not apply to Pakistan. Since Pakistan is a growing nation, similar to other Asian nations, it is necessary to take action to advance their research and development in the STI industry and to identify STI application strategy.

On the other hand, the p values for STI Policy Development, Policy Adoption, Policy Implementation (p = 0.000, 0.000 and 0.006 <0.05) indicate that these variables are significant and applicable in the case of STI policy in Pakistan ,means it must on work to enhance STI sectors research and development. Furthermore, the above table also implicates towards the equation of regression to be formed as:

H3: *Policy Development/Formulation is significant and applicable factor for STI policy in Pakistan's context.*

H4: *Policy Adoption is significant and applicable factor for STI policy in Pakistan's context.*

H5: *Policy Implementation is significant and applicable factor for STI policy in Pakistan's context.*

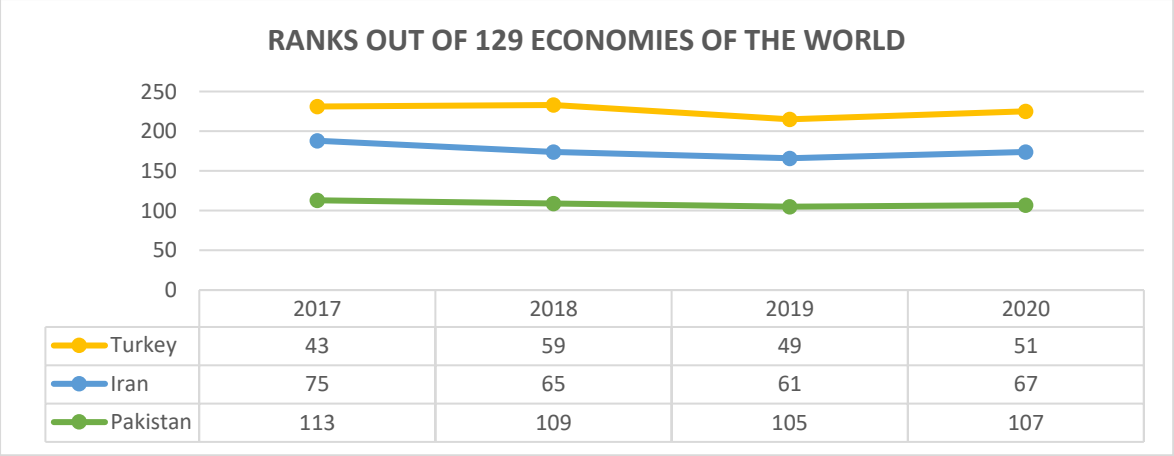
$$Y = a + bX1 + bX2 + bX3 + bX4 + bX5 + bX6$$

$$Y = -1.444 + (-0.272)(X1) + (0.300)(X2) + (0.423)(X3) + (0.229)(X4) + (0.187)(X5) + (0.109)(X6)$$

The positive values for b are indicating the increase in combination and positive indication while the negative values are indicative of negative intensity of the relationships.

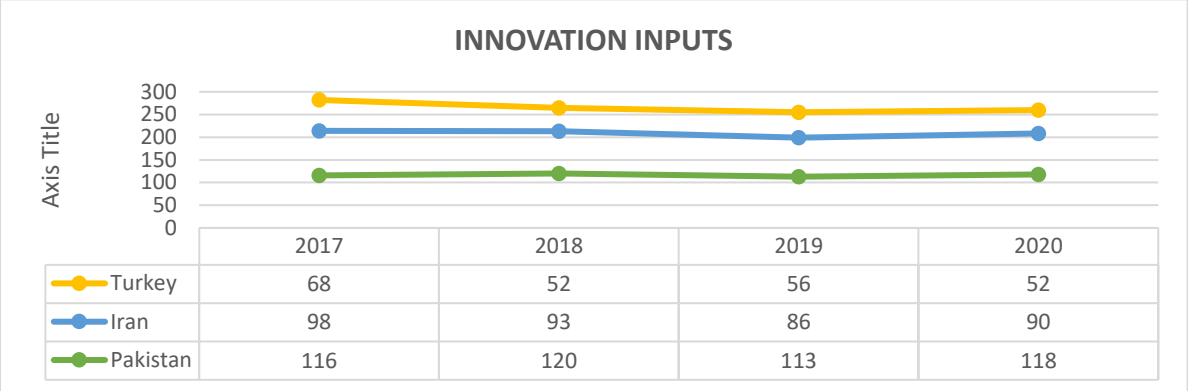
FINDING AND DISCUSSION

The matter of STI policies in countries such as Pakistan is convoluted and much too complex to simply be dissected based on one survey or one singular study. The context of this study, for instance, not only utilised a survey-based approach towards understanding the application of a policy lifecycle to Pakistan's approach to STI but also utilised existing knowledge on the STI policies of Iran and Turkey to come to informed insights on the matter. To provide clarity on the matter of STI policies across the countries, it is pertinent to also consider the realities of the STI policies for each country – these realities often come in the form of global indicators and rankings that determine the overall success and effectiveness of the STI policies as well.



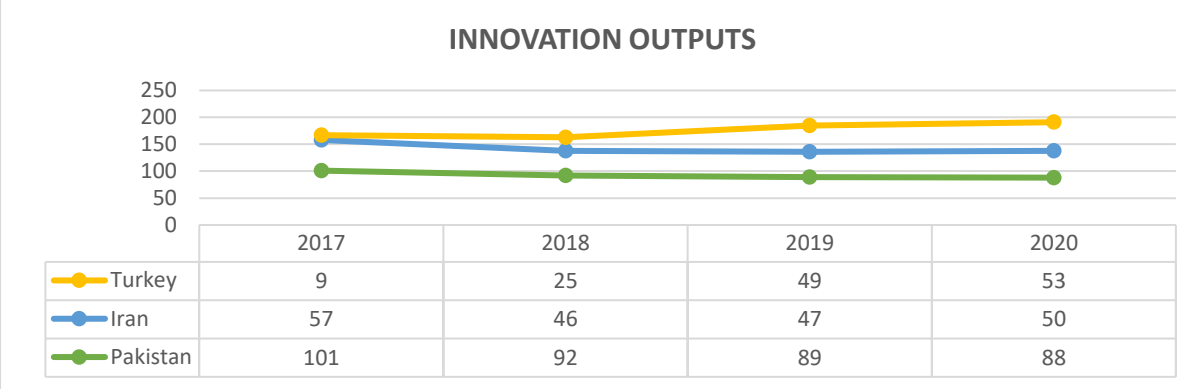
	2017	2018	2019	2020
Turkey	43	59	49	51
Iran	75	65	61	67
Pakistan	113	109	105	107

Pakistan placed 107 out of 129 economies in the world on the Global Innovation Index in 2020, 105 in 2019, 109 in 2018, and 113 in 2017. Iran, in contrast, came in at positions 67 in 2020, 61 in 2019, 65 in 2018, and 75 in 2017. The country of Turkey performed significantly better than the rest, placing 51 in 2020, 49 in 2019, 50 in 2018, and 43 in 2017. Pakistan is also struggling to progress and improve. Similar to the other two countries, Pakistan's economy has improved during the occurrence of numerous domestic issues.



	2017	2018	2019	2020
Turkey	68	52	56	52
Iran	98	93	86	90
Pakistan	116	120	113	118

Pakistan scored 118 in 2020, 113 in 2019, 120 in 2018, and 116 in 2017 in terms of innovation inputs. Iran was ranked 90, 86, 93, and 98 in this regard in 2020, 2019, 2018, and 2017, respectively. Turkey fared significantly better, and in 2020, 2019, 2018, and 2017 it was placed 52, 56, 62, and 68, respectively. Inputs for innovation were a challenge for Pakistan as well, as opposed to Turkey and Iran.



	2017	2018	2019	2020
Turkey	9	25	49	53
Iran	57	46	47	50
Pakistan	101	92	89	88

Pakistan was ranked 88, 89, 92, and 101 in terms of innovation outputs in 2020, 2019, 2018, and 2017, respectively, while Iran was placed 50, 47, 46, and 57. In 2020, 2019, 2018, and 2017, Turkey was rated 53, 49, 25, and 9, respectively. It should be noted that while each of these nations have steadily stabilised around the same numbers throughout the years, 2019 overall fared substantially better in terms of innovation. Turkey has performed better than Iran, which has performed better than Pakistan, according to the rankings. The following graphs

offer a comprehensive view to help visualise things and establish a comparison between these countries.

The study shows how important the idea of policy adoption is, especially in Pakistan. It is one of the measures that is essential to the development of STI policies in the nation and to the success of those policies. There is very little to no practical output from the process of formulating policies if they are not ultimately implemented. The process of putting policies into practise, which follows the adoption of new policies, is another component of policymaking in a nation. When evaluating the efficacy of the indicators for policy execution, it is crucial to align the STI policies with the nation's developmental objectives. There are indicators that, in the context of Pakistan's STI policy, did not prove to be significant, along with these major variables. These include problem identification, agenda setting, and policy evaluation. When making decisions at the state level, Pakistan does not adhere to the essential criteria for agenda setting or problem identification, as the former should come first if a systematic method is used to make policies for the advancement of STIs.

Iran and Turkey appear to be outpacing Pakistan in terms of general development, but there is also the issue of the results that were drawn from the survey questionnaire. In Pakistan, half of the six indicators in the innovation policy cycle were important and applicable, while the other half were negligible and not relevant, according to the study's findings.

The most significant one is probably the creation of policies. Pakistan has a general understanding of policy formulation, which has a direct impact on the overall advancements in science, technology, and innovation. The total process includes the creation and structuring of policies, as well as the identification of the critical institutions and financial resources required. These actions are currently far more critical in Pakistan's situation and being taken as well.

It is vital to keep in mind that this may be a direct result of how institutions and procedures are set up and implemented in the nation, partly as a result of a lack of resources or of developmental philosophies. For instance, fundamental investments in research and development on collective advancement for science, technology, and innovation are made in Turkey and Iran.

A significant amount of infrastructure is being developed, there are more educational institutions that focus on these policies, there is a general intake and development of research institutes, and human resources are also being developed. Additionally, there has been an expansion in their international partnerships, with an emphasis on the creation of innovation hubs, scientific patents, and other things. On the other hand, Pakistan is still developing in

relation to the most, if not all, of these metrics. The indicators of the policy lifecycle that the findings have determined to be significant or negligible serve as a clear example of this.

CONCLUSIONS AND RECOMMENDATIONS

To suggest that Pakistan has significant and expanding internal room for growth in the areas of science, technology, and innovation would be an understatement. It would be an understatement to suggest that Pakistan, like Turkey, has significant and ongoing potential for improvement on the internal front in the areas of science, technology, and innovation. In terms of economic tactics and reality, Pakistan is comparable to Turkey and Iran. However, Pakistan lags behind both countries in terms of channelling a vision for a better, more productive, and successful future that may emphasise the trends surrounding STI.

Given the study's findings, Pakistan's setting calls for numerous proposals and recommendations. The promotion of a knowledge-based economy, such to those in Turkey and Iran, which appear to be expanding significantly over time, must come first and foremost. In Pakistan, the advancement of science, technology, and innovation is supported by a knowledge-based economy.

Second, the government requires a model for interaction with all parties involved in science, technology, and innovation, much like Turkey and Iran, who have dedicated councils for STI cooperation with pertinent organisations and concerned agencies. Furthermore, there needs to be a promotion of scientific culture in the nation in order to support the knowledge-based economy and participation of stakeholders.

A focus on starting and maintaining worthwhile discussions on science and technology is necessary. Moving forward from that, there must also be innovation systems. These are really significant. Without institutions dedicated to the advancement of science, technology, and innovation, the nation cannot prosper. Along those lines, there must also be a strong emphasis on socioeconomic development resulting from STI.

Science, technology, and invention alone do not define or define progress. It is connected to other aspects of the nation's development, such as the economy, sociocultural progress, and more. Furthermore, given their importance in the policy lifecycle, the findings show that there needs to be more emphasis on the adoption, implementation, and evaluation of STI-related policies in Pakistan. No matter how haphazardly you practise the lifecycle at first, your baselines will get stronger with time, allowing the cycle to repeat itself more successfully.

However, keeping all of this in mind and how it relates to Pakistan, consideration must also be given to the study's limits and the vast amount of unexplored territory on the topic. Without

taking into account any potential effects Turkey, Iran, or Pakistan may have on one another, each country's own circumstances must be taken into account. There is room to analyse and comprehend how elements like culture, social values, economic recessions, COVID-19, and others have had or still have an impact on the national STI policies.

While the implications for Pakistan have been highlighted, it is also important to take into account internal and external factors that could serve as mediators in the model used in this study or serve as baselines for the influence on both the individual and collective countries. Additionally, it is important to take into account any potential overlap across nations' STI indicators and factors, as well as any areas of dissonance, especially when include both comparable and different countries within the same study.

While this was reasonable for the study's overall goal, it was a glaring limitation that can be further explored for comparative studies on the same topic in the future and give more insight into implications for each country, not just Pakistan. Another notable limitation of this study was the absence of respondents from Iran and Turkey.

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