

COMPARATIVE STUDY ON CONSTRUCTION PROJECT MANAGEMENT BETWEEN RESTIVE REGIONS OF PAKISTAN AND REMAINING PART OF COUNTRY

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ABSTRACT

Huge gap exists in infrastructure development between restive regions of Pakistan like Federally Administered Tribal Areas, Provincially Administrative Tribal Areas (FATA/ PATA) / hinterland of Baluchistan and remaining part of Pakistan. Government realized the importance of this under development in the aftermath of 9/11 and consequent unrest and trouble. Construction projects unleashed efforts to bring restive regions in line with rest of country. Project Managers running construction works in these areas face numerous challenges in the execution and decision-making. The important concerns include overstretched logistic support, insecure operating environment, difficult terrain, dearth of previously existing infrastructure, centuries old traditional cultural underpinnings, non-availability of skilled manpower / plant and machinery, non-acceptability of allied contractors, and larger operating distances of sites from base camps.

The paper identifies dynamics and variables in order of preference using multi-variant analysis for low productivity in restive regions. The author uses primary dataset and seeks feedback from the respondents through a comprehensive questionnaire containing twenty-six questions. Comparing circumstances and outcome of construction projects with remaining part of the country, the study finds that the cost of work in FATA / PATA and restive regions of Baluchistan is substantially high due to multiple factors and therefore recommends a construction model for creating ideal circumstances for expediting pace of development and assuring timely completion of projects. The author adopts methodology of quantitative analysis using SPSS for drawing important conclusion from research.

KEYWORDS: Construction Works, Restive Regions, FATA, PATA, Management¹ Problems, Time and Cost Overrun

INTRODUCTION

Despite lapse of 65 years of creation of Pakistan, the successive governments could not fill the development gaps between tribal regions and other under developed parts of country (Abbas, 2006). Realizing the importance of this very facet after incidents of 9/11, endeavor has been made by Pakistan to bring development and prosperity in these areas. The project managers at all levels are facing a lot of problems in undertaking construction projects. Their major concerns include extended logistic support, insecurity, rugged topography, non-existent infrastructure, orthodox norms and culture, non-availability of skilled HR, non availability of plant and machinery, hostile environment for allied contractors, availability of limited working hours, farther operating bases and so on (ul Haq et al., 2005).

The people of area are uninformed of the outside world. They make a close society and do not allow

intrusion of outside culture which may be detrimental to their perceived values (Marten et al., 2009). This has led to the seizure of development activities in the region since ages. The construction in settled areas is more prone to natural disasters. Circumstances described above poses greater risk to managers and contractors which inadvertently contributes towards overrunning project cost and time (Malik & Iqbal, 2010). Involvement of local population in development organizations and enhancing their stakes in the area help in overcoming overwhelming concerns.

Destruction of already constructed structures on existing roads primarily due to terrorist acts is major challenge (Ali, 2010). Re-construction and restoration of demolished structures becomes inevitable which is synonymous to overrunning time and cost. Discouraged from unpredictability, subcontractors abandon site and project which further makes unit contract and total price contract infeasible (Ejaz et al., 2013). There is a need to

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have cost plus reward method or guaranteed maximum price plus reward. This will give incentive to contractors which would add efficiency of contractors.

Employees, managers and daily wagers are required to be well conversant with risk identification / evaluation prior to mobilization of project. Potential risks need to be dealt immediately (Assaf et al., 1995). Members of company require adequate information and training to deal with the hostile situation. Quality Management System is organization based and difficult to implement in true letter and spirit (Kleindorfer & Saad, 2005). Construction supply chain is yet another problem which impedes the progress of projects. Stereotype supply chain is used not only in restive regions but also in remaining part of the country. Supply chain based on information is best suited for these projects (Nishtar, 2010).

Government has unleashed projects of worth more than US\$100 M in FATA which includes construction of roads, tracks, hospitals, water supply schemes and dug wells etcetera. These projects have suffered badly due to insecure environment. Since 2003 till 2015, total of 4530 bomb blasts and 322 suicide attacks occurred resulted in killing of 15630 people and 33215 injured (Jenkins, 2010). The paper is aimed to identify leading causes and remedial actions for uninterrupted continuum of ongoing development works.

LITERATURE REVIEW

The tribal areas of Pakistan are semi autonomous northwestern part of Pakistan which includes seven agencies and six Frontier Regions (Constitution, 1973). It is governed by Federal Government with special set of laws known as Frontier Crimes Regulations (FCRs). The head in agency is Political Agent (PA) who is representative of President of Pakistan and Governor of Khyber Pakhtunkhwa (KPK). Each agency has two or three Assistant political agents about three to ten Tehsildars and number of Naib Tehsildar with requisite staff. The projects are envisaged by Government Department with the consent of Political Agent who in consultation with tribal elders decides the requirement.

The people of tribal areas have their own code of honor and conduct. The code imposes three main obligations on them (Khattak et al., 2009) first is "Nanwati" (honor

bound to give refugee who asks for it), second is "Badal" (to get revenge) and last is "Melmastia" (hospitality to all). Managers and his team has to abide by these codes. Tribal areas are hub of gun and hashish market (Hilali, 2002). Tribesman mostly deals in making weapons and growing opium poppies.

The decisions affecting group of people are made in Jirgas (Tanguay-Renaud, 2002) comprising elders of the tribe. It affects manager's ability to take decision in isolation. People usually don't like development works in the area as every tribe is responsible for any crime transpired around Government infrastructure / building. In case of crime around or inside said structure, tribe has to pay heavy penalties (Acharya et al., 2009). Manager and his team must have negotiation and convincing skills to take onboard all stake holders including locals and Political Administration.

FATA Secretariat of Khyber Pakhtunkhwa is responsible for development works in Agencies. Civil Works department is directly under Political Administration to carryout development works. Political Agent has the powers to control tribal people under Frontier Crime Regulations and execute projects. Other funded projects have their own independent funds / Project teams which has little interaction with Political Agent (Cheema & Nuri, 2005), so very less help is extended from political administration. Resultantly, projects are delayed and planned / actual cost is increased.

RESEARCH OBJECTIVES

The research objectives are: -

- Identify main causes of developmental gaps in restive regions of FATA / PATA and Baluchistan from rest of the country.
- Suggesting a model to fill the gap using prudent approach by comparing variables for improving decision making of government, tribal administration and project managers / contractors.

RESEARCH METHODOLOGY

The author has used twenty-six variables which affects time and cost performance of project. These variables

were adopted after deliberate literature review and thereon included in the questionnaire for feedback and analysis. Questionnaire was prepared for seeking responses on Likert Scale starting from “Strongly Disagree” to “Strongly Agree” and was later verified / validated using Principal Component Analysis and Statistical Reliability (Norušis, 1986). Sample consisted of 216 individuals including representatives from consultant, client, contractors and local population. The data so received was processed through SPSS and weight of each variable was assessed. Cronbach test was applied to verify the reliability of data. Variables were identified through synthesis of literature review, formulation of objectives, technical input from the leading experts (Cronbach, 1951). The conceptual framework for development of variable is as under:-

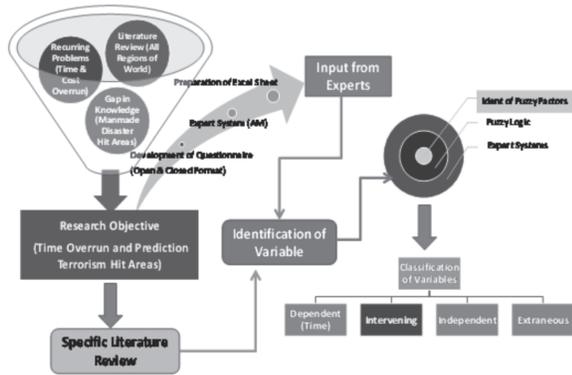


Figure 1: Framework for identification of variables

Structured interviews were conducted from two hundred and sixteen individuals comprising people from military management, civilian management, local population and political administration (Drever, 1995). Data so received was processed through SPSS for reliability, multicollinearity and correlations which is described in graphical form as under:-

The content / face validity (Haynes et al., 1995) of questionnaire was established by six academic / field experts. The construct validity was carried out through IBM SPSS-18 software package, through factor component analysis. The final reliability was checked through reliability analysis. Non-random sampling design basing upon judgmental sampling was used (sample was selected basing upon researcher judgment). Pakistan is terrorism effected country. Almost every region is

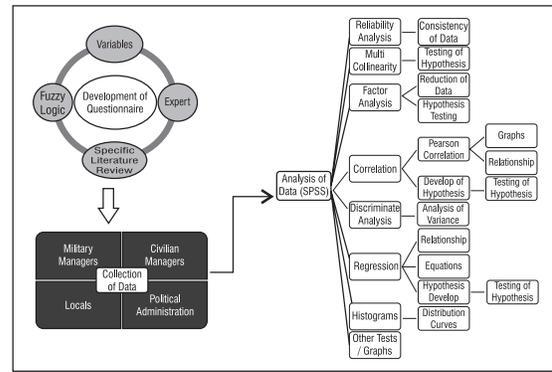


Figure 2: Research Methodology of data collection and multi-variant analysis

affected by insurgency / terrorism. However, sample was collected from two geographical regions, KPK and interior Baluchistan which are the most effected due to terrorism and extremism (Nawaz & de Borchgrave, 2009).

RESULTS AND DISCUSSION

This section covers significance of data analysis and conceptualizes expected outcome. The researcher has synthesized opinion of two hundred and sixteen respondents. The respondents provided mixed feedback on different variables. Under mentioned table covering data of last ten years on incidents of terrorism concludes that most the incidents took place Khyber Pakhtunkhwa, tribal regions and restive regions of Baluchistan.

Table 1: Year wise state of Suicide Attacks/ Bomb Blasts in Pakistan from year 2001-2011

Year	Sampling Regions				
	Punjab	Sind	Baluchistan	KPK	FATA
2006	12/3	½	214/1	10/4	36/1
2007	18/10	3/1	243/3	124/27	141/13
2008	17/12	1/1	242/1	221/32	92/13
2009	29/19	2/1	134/2	195/47	112/6
2010	20/6	9/1	101/4	137/26	190/12
2011	13/3	31/3	194/4	198/23	185/8
2012	12/4	29/3	185/5	185/21	175/7
2013	14/3	3/1	123/3	124/27	101/11
2014	18/5	1/1	200/1	201/34	90/13
2015	13/2	2/1	124/2	115/47	102/6

In order to extract dependent variables, data in terms of percentage of ten projects was extracted in a pivot table and stat pro. The inferences drawn from the dataset include following: -

A. Dependent Variables

Time Overrun. Completion time of all projects being executed in FATA areas of Pakistan is more than planned as shown in table 3. Any unforeseen situations are not catered for during execution phase thus, extension of time was required to be forwarded to the client to avoid penalties. Uncertainty in construction projects of tribal areas was more than rest of Pakistan, therefore, bids were given more during the tendering stage of project. The graph below shows difference of completion timelines between estimated and actual duration.

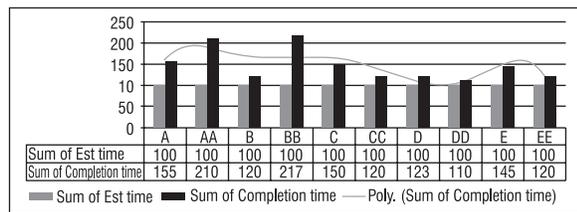


Figure 3: Estimated vs Completion Time of ten project

Cost Overrun. Completion cost of all projects is more than planned cost which means scope of work has increased in every project. Additional works to favour tribes are usually required to successfully accomplish the project. The difference between completion cost and actual cost is very less as shown in two trend lines given in figure 4. It indicates earnings of the project are far less than similar projects ongoing in rest of the country. Due to less earnings, sub-contractors are not ready to work in these areas. More completion cost with same rates does not suit to sub-contractors compounds the problem. The graph below shows estimated and completion cost of twelve projects for analysis.

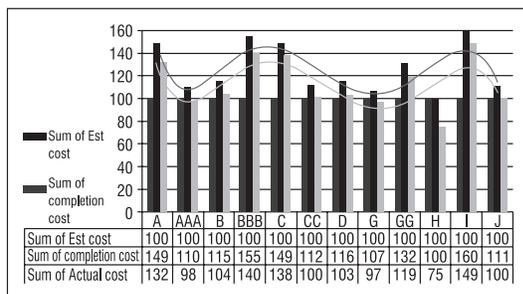


Figure 4: Estimated vs Completion cost of twelve project

B. Independent Variables

Occurrence of Incidents. The percentage of incident occurrences due to security issues (explosions, kidnapping of contractors and terrorist acts) on projects in FATA areas is much more, which not only impede the execution of projects but also make project uneconomical as shown in figure 5. Non-existence of Risk management plan may hamper the progress / performance of projects. Detailed contingency planning incorporating incidents at the time of tendering and bidding is essential for project performance both in terms of time and cost. The histogram below shows recurring incidents which need formulation of comprehensive risk assessment.

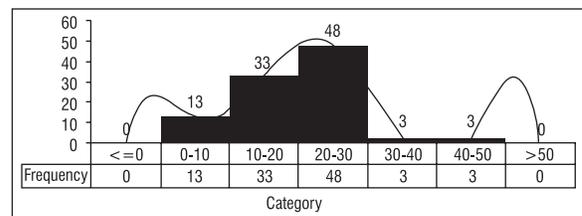


Figure 5: Histogram of incidents occurred on project site.

Abandoning of Site by Contractors In 79 out of 100 projects, 15-35 % contractors left the site, due to various reasons as illustrated in figure in figure 6. If issues of outsourced contractors are not resolved through political administration and Local Jirga, contractors may not be able to work comfortably. Histogram showing no of cases wherein contractors abandoned sites.

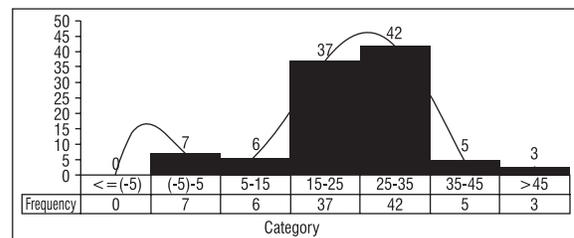


Figure 6: Graph showing contractors leaving site.

Lack of Support by Locals Statistical dataset in figure 7 shows that there is a strong correlation between working relationship of managers and locals. If political administration is not influential, then the progress of work would impede and projects would not meet the timeline. So managers need political backing, support of Jirga. The substantial increase in leaving the site due to law and order situation, re-contracts has to be concluded.

of structures / roads are destroyed by some miscreants of tribes. These destroyed parts are to be reconstructed by project teams which affects cost of project (Actual / Planned) and disturbs also time lines.

Involvement of Jirga. All local issues on project are decided in jirga held by elders of every tribe. Manager has to convince the tribe before taking any decision. Every activity of the project is decision bound by the local people. Liberty of action is limited with project manager. He is answerable to his company, consultant, and client and last but not the least to locals of the area.

Costs of Favor. Tribesmen are poor people and are always looking for unusual favors from allied contractors. Managers have to be very flexible in extending favors to locals. This cost also contributes in enhancing actual cost of the project.

Involvement of Political Administration. Close liaison with political administration is a key for successful completion of the project. Tribal people are governed by Frontier Crimes Regulations. Political Agent has vast powers to control tribesmen. So if construction work is hampered by any tribesman, Political Agent maintains authority to penalize them out-rightly. Manager has to be in close coordination with political administration

to resolve these project issues which ultimately wastes substantial time.

Availability of limited Working Hours. Due to security concerns, managers can't take risk of working during dark hours. Unlike projects of settled areas, very limited working hours are available. Survey and data analysis reveals that time required to complete projects in restive regions is 1.5 times more as compared to settled areas of Pakistan.

Collection and Processing of Data. To acquire knowledge, 26 factors were identified through literature review and data received from various sources (most prominent given above) and then questionnaire was developed. Questionnaire was validated by sending it to 60 people including client, consultant and contractors. The value of Cronbach Alpha comes to be .82 which means that variables have high internal consistency. The questionnaire was distributed to sample population of 300 people. Out of which 216 people responded. The data so received was processed through package (SPSS) using multivariant analysis. The value of pearson correlation (PC) of each variable was calculated. More PC means strong relationship between dependent variable (DV) and independent variable (IV). The prominent factors in order of importance is given in Table 2.

Table 2: Degree of prominence of each variable basing upon Pearson Correlation

Variables	PC	R	Variables	PC	R
Work Suspended due to terrorists acts	0.668	2	Interference by locals on project matters	0.499	14
Contractors kidnapping	0.660	3	Extended logistic support	0.445	16
Change of project site	0.288	25	Delayed delivery of machinery	0.602	5
Threats to contractors	0.560	10	Non-availability of plant	0.508	12
Re-contracts	0.504	13	Unavailability of skilled HR	0.602	6
Lack of support by locals	0.716	1	Use of obsolete equipment	0.470	15
Change of scope of work	0.580	8	Lack of capable project managers	0.395	19
Lack of timely decision	0.576	9	Limited choice of sublet contractors	0.350	22
Conflicts locals vs project teams	0.414	18	Inaccurate estimates	0.379	20
Change in specifications	0.336	21	Requirements of political administration	0.253	26
Reworks	0.652	4	Non-acceptance of Outsiders	0.57	7
Unavailability of skilled contractors	0.55	11	Lack of timely inspection	0.43	17
Unrealistic Planning	0.33	23	Lack of decision by Political Administration	0.31	24

First Five Prominent Factors

First five prominent factors after processing through SPSS are given as under:-

Order of Importance	Variables / Factors	Remarks
1	Lack of Local Support	
2	Security Issues	Work Suspended due to terrorists acts Contractors kidnapping
3	Re-works	
4	Lack of Logistic support	Delayed Delivery Of Machinery
5	Unavailability of skilled Human Resource	

CONCLUSIONS AND RECOMMENDATIONS

Risk Management. Continuous planning for risk management is vital. Percentage of Impromptu risks is much higher as compared to settled areas. Managers along with financial teams and other officers should ensure risk management on weekly/ monthly basis due to very fluid situations of the areas.

Security of Camp / Sites. Security of camps and construction sites is essential for successful execution of the projects. Availability of dedicated security officer is suggested to coordinate protection of camp / detachments through close liaison with political administration.

Creating Cultural Awareness. Understanding norms and culture of area will help in averting many issues of construction teams. Before commencing the project, labor and employees should be educated about culture / norms of locals. Preference be given to people from KPK or interior Baluchistan people during recruitment process besides competence.

Hiring Local Skilled Manpower. Endeavor to find maximum HR from local area should be made. Only permanent management team of the company at project site is recommended. It will not only reduce the cost of the project but also enhance capacity building of team to successfully.

Hiring of Plant and Machinery. Most of the owners of plants /machinery are not willing to send equipment to FATA/ interior Baluchistan even at lucrative cost. Contractors and subcontractors should look for equipment hiring in the surrounding areas of the region. At times, make shift arrangement is resorted to; with neighboring project teams. Hiring teams may need to attract owners of plants / machinery with lucrative offers.

Uninterrupted logistic Flow. To meet timelines of the project, uninterrupted flow of logistic is very important. Dedicated supply team is needed to ensure maintenance of logistic support without delay. Close coordination with political administration is required and obstructions should be resolved through elders of the tribe and Political administration.

Financial Team / Claims. Re-constructions and cost of additional works necessitates immediate processing of claims. Financial team should be efficient enough to convince consultant and client to approve such claims forthwith so that financial health of the project remains stable.

Insurance of Project / Equipment. Insurance of plants and projects is not considered as an essential aspect in Pakistan during mobilization of projects Due to uncertainty and fluid environments, there is a need to insure the entire project as well all pieces of equipment being inducted for project area.

Suggested Model of Project Team. Project is headed by project manager with six teams with provision to add three or four more. Each team comprises 2-3 members and figure varies in every project. Suggested model is as below.

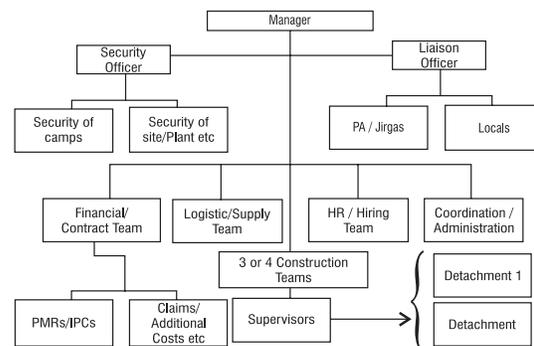


Figure 9: Suggested Model of Project Teams.

Decision Making of Project Managers. Since decisions of managers are affected by number of factors, therefore, input of other members plays a significant role. Input from all members may be collectively sought, synthesized and analyzed using different techniques and thereon, finally decision should be taken by Project Manager.

Project Management in FATA / PATA and other restive regions of country including hinterland of Baluchistan Areas of Pakistan is an arduous task. The problems of these areas are unique and managers need patience, perseverance and close liaison with locals and political administration. Understanding culture and dynamics of areas is also very important. Leadership qualities of managers including negotiation skills will help a lot in undertaking project in smooth manner. Planning that includes time lines and cost should be flexible and as per prevailing situation without any comparison with other parts of Pakistan and same may be disseminated to consultants and clients. Quality of project may not be expected the same as in other settled areas of Pakistan. making of managers is also affected by multiple factors and delays due to impromptu situations may be accepted. However, executing project successfully in such an environment and areas are do-able, if suggested way forward is adopted.

REFERENCES

1. Abbas, H., (2006), "Profiles of Pakistan's seven tribal agencies", *Terrorism Monitor*, 4(20): 1-5.
2. Acharya, A., Bukhari, S. A. A. S., and Sulaiman, S., (2009), "Making money in the Mayhem: Funding Taliban insurrection in the Tribal Areas of Pakistan", *Studies in Conflict & Terrorism*, 32(2): 95-108.
3. Ali, A., (2010), "Economic cost of terrorism: A case study of Pakistan", *Strategic Studies*.
4. Assaf, S. A., Al-Khalil, M., and Al-Hazmi, M., (1995), "Causes of delay in large building construction projects", *Journal of management in engineering*, 11(2): 45-50.
5. Cheema, P. I. and Nuri, M. H., (2005), "Tribal Areas of Pakistan: challenges and responses", Islamabad Policy Research Institute.
6. Cronbach, L. J., (1951), "Coefficient alpha and the internal structure of tests", *psychometrika* 16(3): 297-334.
7. Drever, E., (1995), *Using Semi-Structured Interviews in Small-Scale Research. A Teacher's Guide*, ERIC.
8. Ejaz, N., Ali, I., and Tahir, M. F., (2013), "Assessment of delays and cost overruns during construction projects in Pakistan".
9. Haynes, S. N., Richard, D., and Kubany, E. S., (1995), "Content validity in psychological assessment: A functional approach to concepts and methods", *Psychological assessment*, 7(3): 238.
10. Hilali, A. Z., (2002), "The costs and benefits of the Afghan War for Pakistan", *Contemporary South Asia*, 11(3): 291-310.
11. Jenkins, B. M., (2010), *Would-be warriors: Incidents of jihadist terrorist radicalization in the United States since September 11, 2001*, Rand Corporation.
12. Khattak, R. W. S., Mohammad, F., and Lee, R., (2009), "The Pashtun Code of Honour." *Research Journal of Area Study Centre, University of Peshawar-Pakistan*. http://www.asc-centralasia.edu.pk/Issue_65/01_The%20Pashtun_Code_of_Honour.html.
13. Kleindorfer, P. R., and Saad, G. H., (2005), "Managing disruption risks in supply chains." *Production and operations management*, 14(1): 53-68.
14. Malik, S., and Iqbal, Z., (2010), "Construction of Taliban image in Pakistan: Discourse analysis of editorials of Dawn and The News", *China Media Research Journal*, 7(2): 46-56.
15. Marten, K., Johnson, T. H., and Mason, M. C., (2009), "Misunderstanding Pakistan's Federally Administered Tribal Area?", *International Security*, 33(3): 180-189.

16. Nawaz, S., and de Borchgrave, A., (2009). "FATA—A most dangerous place", *Center for Strategic and International Studies*,: 15.
17. Nishtar, S., (2010), "Pakistan, politics and polio", *Bulletin of the World Health Organization*, 88(2): 159-160.
18. Norušis, M. J., (1986), *SPSS/PC+ for the IBM PC/XT/AT*, Spss.
19. Tanguay-Renaud, F., (2002), "Post-Colonial Pluralism, Human Rights & (and) the Administration of Criminal Justice in the Federally Administered Tribal Areas of Pakistan", *Sing. J. Int'l & Comp. L.*, 6: 541.
20. ul Haq, N., Khan, R. A., and Nuri, M. H., (2005). *Federally administered tribal areas of Pakistan*, Islamabad, Policy Research Institute.

