"Prospects of Bangladesh as a Leading Outsourcing Destination in IT Sector"

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Abstract:

IT industry is becoming popular for the workers who want to do perform offshore or freelance job in business. World's leading researchers have announced Bangladesh as a leading outsourcing destination. Bangladesh is prospecting with IT outsourcing in regard of human resources, financial and political stability, macro and micro level infrastructure and market positioning with a huge competition. Besides these factors, the scenario has changed a lot within the long history in Bangladesh's IT industry since 1964. On the other side outsourcing is being the most popular method of doing things in least expensive way. IT outsourcing has the largest share in regard of job quantity. Technology has changed the world, and Bangladesh has a larger stake to compete with other market within IT outsourcing industry.

Keywords

IT, Outsourcing, Macro Economy, Micro Economy, Bangladesh

1. Introduction:

IT industry and Computer technology is not the same. Most of the time people misinterprets between these two terms. IT has emerged in a very long way of operations. IT isn't just a topic of computer science only; it covers most of the areas of every business. It's the reformed communication technology. World's first Mainframe Computer was installed in Dhaka University in 1964 and since then Bangladesh has seen many phases of history of IT. Now a new era has begun through the outsourcing media and Bangladesh is also competing with other nations in the top list of outsourcing destination countries. From these recent happenings in international market, I've been interested in studying with the outsourcing market.

1.2 Objectives of this study:

The primary purpose of this study is –

- To determine the prospects of Bangladesh as IT outsourcing destination.
- Besides these some secondary objectives are also included –To evaluate the picture of different key variables for evaluating the picture of the prospect of Bangladesh's IT Outsourcing industry.
- To recommend for further development towards the industry development factors.

2: Literature Review and Conceptual Framework:

2.1 Outsourcing and IT Outsourcing:

Outsourcing has been one of the very delicious terms within various industries doing outperformance in their business. Bangladesh is a small country but within its limitations it has

also reached a scale of achievement as an outsourcing target. Especially IT industry in Bangladesh has been one of the most attractive targets to the foreign outsourcing organizations seeming for several years. According to Entrepreneur Magazine, outsourcing is "the practice of having certain job functions done outside a company instead of having an in-house department or employee handle them; functions can be outsourced to either a company or an individual". Outsourcing has very many options such as IT Outsourcing, Marketing Outsourcing, Services Outsourcing, Financial Outsourcing and many others. Among various options, IT outsourcing is the most widespread type of outsourcing we see among the industries. The reason behind this, IT outsourcing cost least direct contact, just delivery of product or service ends the contract and it needs less efforts to handle than the others. A research says that 28% of the outsourcing jobs are IT outsourcing among the outsourcing works and it has the most availability in case of both resources and work types (Chowdhury, 2011). This represents how big the market is which acquires more than one fourth of total outsourcing industry.

2.2 IT Outsourcing Area

IT Outsourcing works has a wide line of diversification. If you visit the site of freelancer.com or odesk.com there will be a long list of categories for the jobs to work within IT or ITES. Though there are some trends coming with major areas to concentrate more. According to The Outsourcing Institute information technology outsourcing has been the fastest growing area for outsourcing. According to their measurement major areas the companies are concentrating are – maintenance/repair, training application development, consultancy and reengineering, mainframe data centers. The Outsourcing Institute also found some coming up trends in outsourcing which are –client/server, networks, desktop systems, end-user support, full IT outsourcing (Mashroor, 2011).

2.3 IT Outsourcing Business:

IT outsourcing businesses may be classified into major two categories, one is service, another one is through product support though this also have a bit similarities with services. Services include information outsourcing, call center services, financial/accounting information outsourcing using IT, procurement outsourcing, data center outsourcing, research, marketing and human resources marketing. These are getting so much popularity day by day. Internet is being a gathering space through the social networks. And besides these product outsourcing intermediary and consultancy has a huge demand throughout the outsourcing market.

On the other hand, through software support contains application development which itself is the product, web development, data entry & analysis, survey etc. This requires more specified people than the service peoples regarding outsourcing. But this type of outsourcing makes organizations relax about their office spaces and work load. Both the categories are popular among the outsourcing market. Just the offshore workers need to be sure where they should start and which track of serving this industry will lead them to their target.

2.4 Global Market Situation:

Andrew (2010) mentioned two facets of outsourcing trends. First one is, declining value of US dollar will turn outsourcing industries back to invest for US software and services and this will be accelerating. Second one is, vertically oriented skills will be facing a huge demand where the outsourcing works will be more done for the next five years. In the same context Ravi (2010) mentioned that, green initiatives or cost effectiveness of their data centers through making green technologies will be the major concentration over the decade.

Most of the companies will try to get ERP solution platform to manage their operations and decisions. And this will create the high demanding situation in the outsourcing market just because of less effort and highest value delivery. Same is also supported by Mohammed (2010) who mentioned that most of the customers are investing huge on ERP because most of the advanced organizations are using ERP and many are coming. In statistical term if we want to

express, we will see the global outsourcing market has been increased at 16% over 5 years (Rahman, 2012). And it is counting. This represents how the global scenario of outsourcing market is going to be. Most of the industries will be dependable upon outsourcing industry within a few decades. Rahman (2012) also said that hybrid sourcing models and cloud sourcing are making a strong influence in the market.

2.5 Dominating Countries:

Stephanie (2010) says, in Asia, Indian region and China dominates as destinations in the outsourcing market. Besides this Sri Lanka and Philippines has also a strong influence in the market. Stephanie (2010) also mentioned that Central and Eastern Europe are also attractive destinations still fighting in the market. But the major role in off shoring IT business will be the making of strong delivery network (Karthik, 2010). Karthik (2010) also believes that India will be ahead of this point. From my point of view also I see south Asian region has the most potentiality to create a strong network of delivery chain. As Europe's decrease of expert skills and US's increasing debt will force both into long term economic crisis, it's time for the Asian's to capture the market in due time.

2.6 Outsourcing IT in Bangladesh:

The New York based global banking securities and investment management firm Goldman Sachs has included Bangladesh in 'Next Eleven' after BRIC (Brazil, Russia, India and China) nations. SMEs within IT industry are the top adopter through this high time of outsourcing market development. However, as the business and service delivery eco systems are changing across markets, SMEs are now more exposed to offshore outsourcing options. This is what discussed mostly in the seminars on outsourcing and off shoring during eASiA 2011. Bangladesh has placed itself within the top 30 outsourcing destinations as a research of Gartner Inc. (eASiA, 2011). This also represents the demand of Bangladesh's works among the outsourcing market. As it is mentioned Govt. is putting the maximum tax facilities in this industry and there outsourcers from abroad are making the benefit of spending less in any work from Bangladesh. Not only SMEs, individual offshore workers and freelancers are also getting benefitted with this. Currently more than 100 organizations are exporting software and outsourcing to more than 30 countries (Barkatullah, 2011) and many are coming into this industry. In the last five years Bangladesh faced an average rate of growth at about 40% in IT and ITES industry (Chowdhury, 2011). If we consider these situations Bangladesh has attracted a lot of audience who have been seeking outsourcing partner throughout the globe.

In aspect of these above, Bangladeshi freelancers are also performing well. In 2010, Bangladeshi freelancers have earned about US$7 million (Rahman, 2012). According to EPB, Govt. of Bangladesh (2012) total IT and ITES exports from Bangladesh has been increased about 24% from 2008 to 2011. This is a great sign to us that if we try to develop ourselves, we will be the top of the rankings as an outsourcing destination. Rahman (2012) thinks that when decision makers think, they judge costing, skills and manpower available at target location, both current and future, relationship building facilities etc. And in these areas Bangladesh scores well.

Almost most of the less complex IT outsourcing jobs can be done by the Bangladeshi workers as such institutions are also growing up and freelancers are getting trained from them. BCC and BASIS offers several courses to specialize the freelancers in different fields such as smartphone programming object oriented programming and web development courses. Besides them some private organizations like Genuity Systems or BASE Limited are working in the training fields for the IT industry people. There are some other organizations specialized to their respective fields such as ISPAB is working for ISP firms and BACCO is specialized for Call Center organizations and outsourcing.

Quality improvements in skill levels and delivery capabilities have been steady. Many of the Bangladeshi outsourcing vendors has achieved international certifications of CMM Level 3 and

a few also managed to achieve Level 5. Besides these many organizations have achieved quality certifications from ISO through ISO:27001 certifications (Rahman, 2012). Bangladesh is an increasing population country, and among these 15-34 age groups are now 34% or total population which is relatively higher within global demography (Rahman, 2012). This is more than perfect for an industry related with ITES-BPO.

2.8 Earlier Researches and Research Questions:

If we want to mention the bigger researches, we would mention at first the Gartner's research of top 30 destinations to outsource. This represented which countries are the toppers as outsourcing destination to the outsourcing market. Another large scale research was made by BASIS where we also directly participated as surveyor and organized all the graphical data. That research was not only meant for only outsourcing but also whole IT industry. We tried to see the compositions of industry trends, which type of jobs the companies are interested in, what types of skills we have available locally and which destinations are more influencing for us to export our services. This research was led by Fahim Mashroor, CEO, bdjobs.com also Senior Vice President of BASIS. In the decade of 2000, Dr. Muhammad Yunus delivered a keynote to a North American Conference which led UNDP Bangladesh to create a research named 'IT can be Bangladesh's Super Highway to Prosperity'. On that decade Dr. Jamilur Reza Choudhury also made a great research on information technologies in Bangladesh.

Within recent days, World IT Report 2010-2011 has represented various statistical information regarding Bangladesh's IT and ICT usage. With the help of their data, ITC also taken steps with CBI and KPMG to run a research on Bangladesh's IT Outsourcing which was organized by Rahman Huq in 2012.

This study has been made out with the discussions of nine subjects taken can be crucial for IT outsourcing industry. It has been tried to define some questions in respect of those subjects to make specific decisions on those subjects which are described below. But these are not the least, there are in total 60 variables made out of nine subjects to derive the result to get closer to actual scenario.

The base questions are – How are the industry Human Resources skills to meet future trends of Bangladesh's market of outsourcing? How we see Bangladesh as a leading outsourcing location? What are the basic infrastructures supporting IT Outsourcing Vendors? How is the market and how supporting industries are making this industry capable? Does law, order and security issues effects on this industry? Political stabilization is needed or not for this industry? What are the Macro and Micro Level Environment conditions for this industry? Are Educational Institutions capable enough to meet industry needs? Does Professional Degrees matters in this industry or not?

3. Research Design and data analysis:

Here we have chosen the easiest way to make research on the respective topic – survey and statistical analysis. In short time it has been a great tool to explore the result we are looking for. A structured questionnaire has been developed (see Appendix – Questionnaire Form) with the help of previous research works and other resources we had collected within availability. The survey was made out of nine subjects as it is discussed and there are several topic questions which have made through the research result are described below –

Studying IT outsourcing is a bit difficult while it needs to be expressed in numerical forms. But for the purpose of the study a survey is made and there were 60 questions on nine different subjects and aspects –Industry Human Resources, Bangladesh as an Outsourcing Location, Infrastructures, Market & Supporting Industries, Law, Order, & Security, Political Stability, Macro & Micro Environments, Educational Institutions and Professional Degrees. E-mail survey through online has been conducted and 210 questionnaires were spreaded form where 187

respondents have replied the responses. All 187 responses are brought into the calculation. Under the question subjects I had several questions to identify the right facts for the industry. We have assembled those answers and made statistical analysis by dividing all the information under each subjects and came with nine different aspect results. All the information is collected is ordinal data collection which is collected through Likert scale method. I have tried to explain my answers through two steps: Means and Standard Deviations of the facts which represent the prospect value in numeric way and Factored co-relation which resulted showing the most influencing facts among the information. I have used SPSS to disseminate all the data and figured my calculation with the help of that software. Through the analysis the study has been taken into four distinctive methods of expressing statistical data. With the help of SPSS software descriptive statistics, co-relation analysis and factor analysis which contains two measurements which measures variance and component matrix has been shown throughout the analysis and interpretation part to showcase different scopes of prospect fields for IT outsourcing industry.

4. Findings and Analysis:

4.1 Industry Human Resources:

Human resource is a key factor for the industry. Every organization needs people to run operating procedures. Any industry's whole operation environment is run by its human resources planning system. This is why human resources are a very good point to measure for IT outsourcing industry to keep an eye on its prospect. Eight topics were selected for the respondents to get measurements for necessary calculations. In table 4.1.1 (Appendix) is shown to describe the basic scenario of human resources within IT outsourcing industry. Here from the calculation mean value of all prospect topics has revealed at 2.89 out of 5.00 which is a very fair result seems for the industry. Standard deviation is calculated resulting 1.20 which is not that high which showcases the steadiness prospect rate of this industry in aspect of human resources. From the inner calculations derived by table 4.1.2 (Appendix) it seems that four components have the significant level of prospect value to all other components respectively. And from the cross evaluation by the component matrix low job turnover has the most positive co-relation with all the components which identifies this factor really very stable for the industry.

4.2 Bangladesh as an Outsourcing Location:

As it is discussed that Bangladesh is being one of the leading outsourcing destinations for years and it is continuing towards topper positions the six topics which has been discussed through survey responses deals with a great result to showcase. In the table 4.2.1 (Appendix) the mean comes up with the number of 2.82 which a bit lower than the result of previous subject but not at disappointing level. This detects that Bangladesh has obtained such potentiality though it needs improvement. Standard deviation of 1.09 also detects low variance of the result towards growth of the industry. Four major components have been derived from the table 4.2.2 (Appendix) show such significant variance levels. Through the matrix of the same table anyone can easily interpret that except competitive advantage all the other factors are having positive co-relations with the components in most cases. This reflects that Bangladesh's IT industry needs more concentration to be more specific in terms of competition.

4.3 Infrastructure:

Infrastructural support is crucial when any industry needs growth. Government and private organizations should provide input simultaneously to create a constant growth rate for an industry. IT outsourcing in Bangladesh is still in its early age. To make it mature, infrastructural improvement is so important which have been discussed through survey with six crucial topics for IT outsourcing industry. It's fair but not enough if the mean is 2.54 at this stage shown in table 4.3.1 (Appendix). Standard deviation at 1.06 is better than previous two, but a huge investment in infrastructure for supporting IT outsourcing is needed to provide this a steady growth. Table 4.3.2 (Appendix) tells that three out of six components are playing the major

roles. This table also generate a lead on flexible physical infrastructural system and a huge network of communication system throughout Bangladesh has a great impact on this industry. Better communication system is providing a very good support for IT outsourcing industry and it is improving.

4.4 Market & Supporting Industries:

Outsourcing market is so scattered though IT outsourcing variability has led Bangladesh's industry engaged in most of the markets because greater number of population comes with different skill sets and expertise. Representation in table 4.4.1 (Appendix) shows mean derived from eight topic responses is 2.76 which is a very fair one and standard deviation of 0.93 strengthen the result indicating very low amount of variance. Two major portions – competitive market and focus on SME are having greater value behind those. Table 4.4.2 (Appendix) indicates that three significant components having largest cumulative variance it leads to know that focus on SME and public call tenders are being more attractive for this industry to make the industry bigger. Most of the IT outsourcing calls comes online and bidding on those projects are easy than usual tender systems, people who wants less complexity in business become interested.

4.5 Law, Order, & Security:

Law, order, & security always control the country as well as the businesses. A county's strong law enforcement system provides all necessary environments to run an industry on its own way till growth. Seven topics have been discussed under this subject. In table 4.5.1 (Appendix), mean comes 2.51 and standard deviation 1.04 which is fair, but a bit variant in its nature. This indicated there are a lot of issues need to be taken care of in regard of law, order, & security. Table 4.5.2 (Appendix) shows that three major components are significant than the remaining others and within the topics rare fraud rate seems the most attractive point to attract investors to get into this industry.

4.6 Political Stability:

Politics and business run on the same way. Sometimes government want to control businesses, sometimes businesses can acquire power to corrupt government. So it has a big deal with the industry. And five important topics have been discussed while survey. Politically stable rate averages at 2.63 shown in the table in table 4.6.1 (Appendix) and the standard deviation is 1.07 which is also a fair sum to evaluate the mean. Table 4.6.2 (Appendix) represents two components shows the major significant levels where three topics has positive co-relations with two components in most cases.

4.7 Macro & Micro Environments:

Macro and micro level economy is already been created for the IT outsourcing industry in Bangladesh. It can be said that a very good cultural and economic pattern is being established within the industry now days. And for an industry which is making path to get maturity stage macro and micro level environments has great impacts on the industry itself. Ten topics were selected for the respondents to get measurements for necessary calculations. From table 4.7.1 (Appendix) it gives an implication that 2.62 is the mean in regard of the prospect of IT outsourcing. Besides this standard deviation is 1.20 which is relatively not that high, but not too low. It can be derived from the results that macro and micro level environments have created enough potentiality to provide every type of support to IT outsourcing industry. And the standard deviation tells that this is a stable rate, but there are chances of higher variances. But the mean is a moderate level fair result which shows that economy doesn't always impose everything on this industry in development stage, rather the industry itself has something to contribute to the economy. Factor analysis has been done in table 4.7.2 (Appendix). While total variances are explored micro and macro level environments have five components out of ten

shows large cumulative variance and while cross matrix is done in the later table, significance is majorly shown in the interest in having short term projects and entry & exit barrier. Both are important in practical life everywhere. In Bangladesh may be for IT outsourcing industry investment security is not that much needed or provided, but still people are interested in short term projects which ensures the security more than average in terms of investments. And entry & exit barrier for this industry is very easy. This is why it seems that very many people are getting engaged with this industry without having any proper business knowledge and guidance.

4.8 Educational Institutions:

May be people are engaging with this industry with a very potential growth rate but for the future market competition we need to have enough skilled labor forces which can be assured only with the educational institutions who makes graduates and skill sets for people. In table 4.8.1 (Appendix) mean resulted at 2.51 and standard deviation at 1.09 which is fair but not at satisfactory level. This means still education doesn't seem that necessary for the works are being performed within IT outsourcing industry in Bangladesh. But if educated people come up with ideas and innovation, there is a huge possibility to boost this industry at a very high rate. From table 4.8.2 (Appendix) we see two components have major significance out of all five components.

4.9 Professional Degrees:

Professional degrees have a great impact on the industry. People have demands on professional degrees in respect of IT outsourcing. And every industry runs by some professionals. This is why five topics are covered by the study under this subject. From table 4.9.1 (Appendix) mean comes 2.67 and standard deviation is at 1.15 which tells that prospect is in a moderate fair stage but variance level shows it needs development in a large scale. Table 4.9.2 (Appendix) explains that two major components are there having larger variance levels. Later it is derived that demands in international certifications in both coding and development has led local organizations to support the industry in several ways.

5. Implications and Policy Recommendation Framework:

Policy makers need to understand in this point that IT outsourcing industry is not anything standalone which should come up itself and run on its own way. This industry also needs environmental and macro level support to perform as a contributor to the economy. Unlike the other industries, this industry has also some limitations in Bangladesh. From the study taken in previous chapter, it is clear that Bangladesh's IT outsourcing industry is a huge potential, and if this can be nurtured through proper incubation and educational support, this industry will earn Bangladesh a lot of foreign currency than any other industry in Bangladesh. To me there are several issues to discuss with which we have pointed out here.

5. 1 Intellectual Property Rights is a very big Issue:

Intellectual property rights (IPR) maintenance and providing security for those properties should be maintained through government rules strictly, because fraud and piracy rate is at a very risky stage for any industry. Due to numerous incidents of software piracy made it still remaining the bad images of Bangladesh (Rahman, 2012). Govt. should take care of this soon under IT acts and rules.

5.2 Capability Planning:

Most of the times young entrepreneurs get into the line knowing no rules of operation which results in presenting something in very unprofessional manner which is also harmful for this industry. So, organizations should not only concentrate over their skills, also their communication power, abilities and interest matching also need to be taken care of. And the major problem is a worker cannot define in which area s/he would be expert of. This is why

guiding them into the right track is also a necessary thing. Or, the misunderstanding the scale of offerings may cause harms to many potential skillful workers.

5.3 Infrastructure:

Dhaka cannot be a destination for workers now days. It's been a stuck city. Govt. should take initiatives to find somewhere else to nourish the culture of IT and send IT troops there in. As govt. is planning to make IT parks it's a very good initiative, but we should plan something like Silicon-Valley.

5.4 Marketing Empowerment:

Though we are in leading position in outsourcing market, but we are not reaching at the highest level just because of having lack in marketing knowledge. So, our resource people should also acquire the power of marketing and this technical know-how will help them in their practical field while communicating. At least everyone tries to get quantitative jobs besides qualitative jobs.

5.5 Negative Perception Removal:

As we are a poor country, abroad people often takes misperception about the quality and skills of our people and there are some bodies outside Bangladesh are also active in anti-marketing against countries like us as they are also competing through global outsourcing arena. So, government should take initiatives to take steps against these types of propagandas so that Bangladesh gets rid of negative perceptions. Also our labor law should be revised in some terms to reach international class. There are some bad images of Bangladeshi politics and environment, Dhaka has been the 2nd unlivable city in the world and people won't take this as a very good example. But besides all these, Bangladeshi workers are doing really very well in their fields and I hope within 2020 Bangladesh will be within top 5 IT Outsourcing Destinations.

6. Conclusion:

The enterprises evaluating outsourcing destinations based on a number of factors – specially the quality of services and the costing (Rahman, 2012). Bangladesh can offer very low cost labor for any industrial production. And like a labor oriented industry, IT Outsourcing must have Bangladesh within one of their lucrative destinations. Now Bangladeshi people can access WiMAX and 4G network and easily get connected to the world. Through mobile phone a person can contact to any corner of the country and even worldwide. So we are not lagging behind of technologies, we just need the right track to walk with right choices of industry. Bangladesh is a country of huge potential. Everyday people are coming out with new ideas here and small businesses are growing up. Government has taken a great initiative through promoting 'Digital Bangladesh' among the people, especially the youth. Generations by generations are enjoying the excitement of technology, if we can put them into right bottle, they will bring us a huge amount of revenue through IT Outsourcing.

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Appendix:

Table 4. 1.1: Descriptive Statistics (Human Resource)

	N	Minimum	Maximum	Mean	Std. Deviation
Available Human Resource	187	1	5	2.92	1.375
Plenty of Training	187	1	5	2.99	1.236
Formal Agencies Availability	187	1	5	2.38	1.283
Workforce Professionalism	187	1	5	2.73	1.185
No Politics Advantage	187	1	5	3.56	1.117
Fair Payment	187	1	5	3.14	1.189
Sufficient Technical Expertise	187	1	5	2.94	1.254
Job Turnover Low	187	1	5	2.51	.958
Valid N (listwise)	187			**2.89**	**1.20**

Table 4.1.2: Total Variance Explained (Human Resource)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.353	16.907	16.907	1.353	16.907	16.907
2	1.252	15.649	32.556	1.252	15.649	32.556
3	1.103	13.791	46.347	1.103	13.791	46.347
4	1.040	13.005	59.352	1.040	13.005	59.352
5	.892	11.155	70.507			
6	.847	10.589	81.096			
7	.792	9.898	90.994			
8	.720	9.006	100.000			

Extraction Method: Principal Component Analysis.

Table 4.2.1: Descriptive Statistics (Bangladesh as an Outsourcing Location)

	N	Minimum	Maximum	Mean	Std. Deviation
Perfect Destination	187	1	5	3.19	1.151
Competitive Advantage than neighbors	187	1	5	2.97	1.233
Globally Accepted Work	187	1	5	3.14	.869
Fair International Ranking	187	1	5	2.61	1.151
Full Communication Facility	187	1	5	2.56	1.141
Friendly Setup	187	1	5	2.47	1.012
Valid N (listwise)	187			**2.82**	**1.09**

Table 4.2.2:Total Variance Explained (Bangladesh as an Outsourcing Location)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.260	21.004	21.004	1.260	21.004	21.004
2	1.156	19.270	40.274	1.156	19.270	40.274
3	1.036	17.260	57.534	1.036	17.260	57.534
4	1.007	16.786	74.320	1.007	16.786	74.320
5	.829	13.815	88.135			
6	.712	11.865	100.000			

Extraction Method: Principal Component Analysis.

Table 4.3.1: Descriptive Statistics (Infrastructure)

	N	Minimum	Maximum	Mean	Std. Deviation
Infrastructural Support can be Managed	187	1	5	2.51	1.161
Flexible Physical Infrastructure System	187	1	5	2.77	.970
Good Energy Supply	187	1	5	2.35	1.137
Enough Stable Communication	187	1	5	2.72	.841
Govt. Helps Updating Technologies	187	1	5	2.41	1.148
Authorities Help Bringing Unavailable Technology	187	1	5	2.47	1.099
Valid N (listwise)	187			**2.54**	**1.06**

Table 4.3.2:Total Variance Explained (Infrastructure)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.310	21.841	21.841	1.310	21.841	21.841
2	1.132	18.863	40.703	1.132	18.863	40.703
3	1.068	17.802	58.506	1.068	17.802	58.506
4	.934	15.559	74.065			
5	.844	14.070	88.134			
6	.712	11.866	100.000			

Extraction Method: Principal Component Analysis.

Table 4.4.1:Descriptive Statistics (Market & Supporting Industries)

	N	Minimum	Maximum	Mean	Std. Deviation
Market is Competitive	187	1	5	2.94	1.088
Consortium is a Regular	187	1	5	2.76	.926
Local Industries are Engaging IT	187	1	5	2.76	.944
New Comers are Getting Help	187	1	5	2.76	.810
SMEs get Focus	187	1	5	2.94	.971
Tenders go to Public Call	187	1	4	2.37	.933
Supporting Associations are Strong	187	1	5	2.74	.841
Developers Bringing Large Scale Jobs	187	1	5	2.79	.890
Valid N (listwise)	187			**2.76**	**0.93**

Table 4.4.2:Total Variance Explained (Market & Supporting Industries)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.441	18.012	18.012	1.441	18.012	18.012
2	1.178	14.729	32.740	1.178	14.729	32.740
3	1.072	13.404	46.144	1.072	13.404	46.144
4	.982	12.278	58.422			
5	.896	11.198	69.619			
6	.837	10.458	80.077			
7	.808	10.098	90.175			
8	.786	9.825	100.000			

Extraction Method: Principal Component Analysis.

Table 4.5.1:Descriptive Analysis (Law, Order, & Security)

	N	Minimum	Maximum	Mean	Std. Deviation
Protection Rights are Strict	187	1	5	2.79	.908
Frauds are Rare	187	1	5	2.42	1.144
Authorities Provide Securities and Safeguards	187	1	5	2.34	1.136
No Terrorism	187	1	5	2.50	1.152
Mafia and Terrorists doesn't Involve	187	1	5	2.48	1.049
Rules and Laws are Sufficient	187	1	5	2.11	.958
Sales Agreements goes with Govt. Rules	187	1	5	2.95	.963
Valid N (listwise)	187			**2.51**	**1.04**

Table 4.5.2:Total Variance Explained(Law, Order, & Security)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.294	18.480	18.480	1.294	18.480	18.480
2	1.161	16.589	35.069	1.161	16.589	35.069
3	1.063	15.190	50.259	1.063	15.190	50.259
4	.999	14.267	64.527			
5	.925	13.211	77.738			
6	.842	12.021	89.760			
7	.717	10.240	100.000			

Extraction Method: Principal Component Analysis.

Table 4.6.1:Descriptive Statistics (Political Stability)

	N	Minimum	Maximum	Mean	Std. Deviation
Politics Doesn't affect	187	1	5	2.48	.792
Cover from Political Dispute	187	1	5	2.55	1.206
Govt. is friendly	187	1	4	2.37	1.004
Govt. is Directly Involved	187	1	5	2.95	1.248
Govt. encourages Innovation	187	1	5	2.80	1.083
Valid N (listwise)	187			**2.63**	**1.07**

Table 4.6.2: Total Variance Explained (Political Stability)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.384	27.678	27.678	1.384	27.678	27.678
2	1.134	22.689	50.367	1.134	22.689	50.367
3	.995	19.901	70.269			
4	.801	16.022	86.291			
5	.685	13.709	100.000			

Extraction Method: Principal Component Analysis.

Table 4.7.1: Descriptive Statistics (Macro & Micro Environments)

	N	Minimum	Maximum	Mean	Std. Deviation
Too Many Jobs, Too Many Firms	187	1	5	2.90	.922
Innovative Ideas are Coming	187	1	5	2.63	1.299
Meets Global Experts	187	1	5	2.96	1.351
Doesn't Need Investment Security	187	1	5	1.92	.867
Market Interest Rate Doesn't Matter	187	1	5	2.55	1.258
Investments are Secured with Legal Terms	187	1	5	2.80	1.349
Investors are Interested in Short Term Projects	187	1	5	2.71	1.268
Entry and Exit is Very Easy	187	1	5	2.60	1.237
Foreign Exchange Rates Favor	187	1	5	2.63	1.235
Licensed Products Cost Less	187	1	5	2.56	1.253
Valid N (listwise)	187			**2.62**	**1.20**

Table 4.7.2: Total Variance Explained (Macro & Micro Environments)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.253	12.532	12.532	1.253	12.532	12.532
2	1.214	12.141	24.674	1.214	12.141	24.674
3	1.177	11.772	36.445	1.177	11.772	36.445
4	1.123	11.229	47.675	1.123	11.229	47.675
5	1.041	10.405	58.080	1.041	10.405	58.080
6	.960	9.602	67.681			
7	.914	9.145	76.826			
8	.813	8.125	84.951			
9	.798	7.984	92.935			
10	.706	7.065	100.000			

Extraction Method: Principal Component Analysis.

Table 4.8.1: Descriptive Statistics (Educational Institutions)

	N	Minimum	Maximum	Mean	Std. Deviation
Institutions are Sufficient	187	1	5	2.79	.982
Institutions are Highly Equipped	187	1	5	2.60	1.202
Industry Awareness Need to Be Grown Up	187	1	5	2.49	1.028

Graduates Have Entrepreneurial Skills	187	1	5	2.44	1.205
Graduates Have Industry Matching Experiences	187	1	5	2.25	1.040
Valid N (listwise)	187			**2.51**	**1.09**

Table 4.8.2: Total Variance Explained (Educational Institutions)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.237	24.742	24.742	1.237	24.742	24.742
2	1.150	22.990	47.732	1.150	22.990	47.732
3	.976	19.529	67.261			
4	.870	17.405	84.666			
5	.767	15.334	100.000			

Extraction Method: Principal Component Analysis.

Table 4.9.1 Descriptive Statistics (Professional Degrees)

	N	Minimum	Maximum	Mean	Std. Deviation
Enough People With Professional Degrees	187	1	5	2.78	1.113
Demands of International Certification	187	1	5	2.67	1.091
Interests in both Coding and Development Degrees	187	1	5	2.67	1.148
Plenty of Institutions Outside Universities	187	1	5	2.79	1.242
Local Organizations Support	187	1	5	2.57	1.168
Valid N (listwise)	187			**2.67**	**1.15**

Table 4.9.2: Total Variance Explained (Professional Degrees)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.306	26.129	26.129	1.306	26.129	26.129
2	1.037	20.745	46.873	1.037	20.745	46.873
3	.968	19.357	66.231			
4	.875	17.504	83.735			
5	.813	16.265	100.000			

Extraction Method: Principal Component Analysis.