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Strategies of Information Technology Outsourcing: A Vendor's Perspective

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Abstract
Cost savings and competition for profitability forces many businesses to implement joint service initiatives. Outsourcing is a strategic initiative for using foreign workers to carry out activities traditionally done by internal employees and resources. This research has concentrated to device outsourcing strategies on vendor's perspective as many emerging markets still find it difficult to mark their footprint in the international market. The success of the IT outsourcing depends upon the internal strength of the vendor, industry specific environmental factors and policies adopted by the country. A snowball sampling technique was used to select respondents and variables were selected from literature review and consulting the subject experts. Quantitative data was used in the study and survey was done in Kathmandu, Nepal. Respondents were outsourcing agencies, freelancers, outsourcing consultants and policy makers. The analysis included Structured Equation Modeling and identified six key strategic factors for emerging market: banking priority, growth capacity, Intellectual Property, country specific specialization, Foreign Direct Investment, and the HR Structure of the vendor.

Keywords: Critical success factors, outsourcing strategy, IT Outsourcing

Introduction
Outsourcing has become one of the major fields of study in various sectors in this rapidly shifting global environment and diverse market scenarios (Aslı, Eric, & Nursel, 2014). The idea of collaboration between companies enables companies to concentrate on their core operations and to assign non-critical jobs to other specialized partners. This process is called outsourcing. In other words, the usage of logistic services by third-party organizations is seen as outsourcing (Erturgut, 2012).

The outsourcing of information technology is an unavoidable part of modern enterprises (Bapna, Barua, Mani, & Mehra, 2010) which is growing at an average rate of 4.4% (Gartner, 2020). Studies show that the performance of the ITO is dependent on characteristics such as contracting, the degree of confidence between the parties and the nature of relationships, engagement, competence, information sharing and the extent of outsourcing (Lee, Miranda, & Kim, 2004) (Grover, Cheon, & Teng, 1996).

ICT is one of the fastest growing sectors in Nepal, including the Internet, telephone, mobile, ITeS and business process outsourcing (BPOs). ITES and BPO are one of the five targets for export potential services in the Nepal Trade Integration Strategy (Investment Board Nepal, 2017). ICT service exports in Nepal was reported at 28,76,93,389 USD in 2017 (Trading Economics BoP, 2020) which 18.04 % (Trading Economics Percentage, 2020) of the total export according to the World Bank collection of development indicators. This sector has a major role in driving socio-economic growth, as it contributes to each and every sector and generates a wide variety of jobs (MOCIT, 2019). Three types of businesses in the ITES-BPO industry are involved: local market-centered solutions providers; export-oriented suppliers (e.g. offshore stations) and hybrid (local and export-oriented) suppliers. Call centers, medical transcription services, geographical information systems, data mining services, animation services and back-office data processing firms compose companies working in this sector (Investment Board Nepal, 2017). Nepal offers distinct advantages for BPOs due to the reduced expenses and lower turnover of workers (MOCIT, 2019).

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Nepal has not been able to harness its growth potential on the borders of two of the world's fastest-growing economies, India and China, due to prolonged political instability and shortsightedness of the leadership. The lack of knowledge about outsourcing methods, lack of in-house literature has led us to begin research in order to support policymakers, practitioners and IT researchers. The main purpose of this article is to evaluate IT outsourcing strategies and to define study variables for emerging markets, particularly of Nepal, Nepal being a vendor to international community.

Research Methodology

This is an exploratory study based on quantitative data. IT outsourcing companies, freelancers, outsourcing experts and government officials were statistical analysis populations. The sample size was 385 and a questionnaire was used as an instrument. The strategic factors used in this study were extracted from the literature review and input of industry experts. Questionnaire was designed in 5-point Likert Scale starting from 5. Strongly Agree 4. Agree 3. Neutral 2. Disagree 1. Strongly Disagree. The questionnaire contained 31 variables selected to analyze the strategic factors, out of which 9 were internal, 7 external and 15 policy factors. The questionnaire was distributed to 10 subject experts for content validity.

Data Collection

The present study was carried out in 3 districts inside Kathmandu valley, the capital city of Nepal. In Nepal, companies are registered in the Office of the Company Registrar. IT companies are classified in the categories as per the internal industrial code e.g. software development and consultancy (industrial code:7220), database activities and distribution of electronic content (7240), Other IT activities (7290), hardware repair and maintenance (7250),

data processing (7230) and hardware consultancy (7210). However, there is no separate industrial code assigned for IT Outsourcing category and this made difficulty in identifying actual population. As per (Investment Board Nepal, 2017), there are over 6,000 BPO businesses, of which only 256 are legally registered in Nepal by 2017. Based on the above information, we used snowball sampling approach and reached to new respondents on recommendation of previous one. We also used the individual contacts and web searches to identify respondents. Structured questionnaire was designed in both English and Nepal languages.

Questionnaire was distributed by the researcher personally, by using invigilator and by email. Out of 590 questionnaires distributed, 403 questions were collected and upon removing missing and unusual records, 385 respondents were finally selected.

Data Validation

The data collected from respondents were checked for reliability. The software used for analysis is IBM SPSS version 26. Reliability was operational as internal consistency, which is the degree of inter correlation-ship among the items comprising a scale. Reliability coefficient, Cronbach α was used for checking the reliability of the data. Alpha is the average of the correlation coefficient of each item with every other item. The questionnaire consisted of 31 observed variables divided into 3 latent variables: internal strategic factors, external strategic factors and policy factors. Cronbach α was found to be 0.909 and the value suggests that instrument is reliable. Reliability of individual factors was also calculated. These values ranged from 0.688 to 0.894. Since the reliability coefficient of all the factors are above 0.6, it indicates the acceptable reliability.

Table 1: Result of Reliability, Adequacy and Sphericity Test

Category/Latent Variable	Reliability Statistics		
	Cronbach's Alpha	Alpha Based on Standardized Items	N
Internal Strategic Factors	.688	.715	9
External Strategic Factors	.832	.836	7
Policy Factors	.894	.896	15

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity was conducted for each latent variable. The latent variables have KMO values between .678 and .804 which is considered strong (>.6) for further study, and which supports the suitability to explore the underlying attributes by using factor analysis. The Bartlett's test of sphericity was highly significant (p=000), which rejects the null hypothesis and shows that the described attributes are correlated with in the population.

Table 2: Result of Adequacy and Sphericity Test

Latent Variables	KMO Measure of Sampling Adequacy	Bartlett's Test of Sphericity		
		Approx. Chi-Square	df	Sig
Internal Strategic Factors	.678	786.109	36	.000
External Strategic Factors	.804	1041.989	21	.000
Policy Factors	.784	3104.846	105	.000

Factor Analysis

The data was initially analyzed using exploratory factor analysis which is a procedure generally used for data reduction and summarization. In a research survey, when the number of variables are many, most of them may be correlated and factor analysis reduces factors to a manageable level for interpretation.

Principal Component Analysis initially extracted 29 Variables in 9 groups using Varimax Rotation.

Table 3: Rotated Component Matrix.

	Component								
	1	2	3	4	5	6	7	8	9
Own Intellectual Property			.824						
Increase Efficiency						.806			
Minimize production costs							.759		
HR Structure of the company			.634						
Build a strong sales team								.836	
IT Infrastructure								.631	
Product Expertise									
Capacity to Grow			.798						
Meet the Compliance			.582			.548			
Competitive marketplace		.737							
Global Image of the Country		.605							
Possibility of market penetration		.701							
Demographic Information and Trends		.520		.557					
Market Demand		.822							
Price sensitivity							.797		
Competition's Staying Power		.549							
Government Policies and Preferences	.809								
Adjustment of Taxes and Tariffs	.828								
More IT Colleges	.576								
FDI on IT Outsourcing	.589								
Training Centers as per Global Demand	.570								
Formulate Government Agency to Promote IT Outsourcing	.523								
Interaction program between IT outsourcing companies				.689					
Knowledge sharing activities between the countries				.814					
Cooperation and Collaboration with foreign companies									
Banking Priority to Outsourcing Sector	.667								
Country Specific Specialization				.576					
Recognition of Outsourcing Companies				.594					
Pool of IT Experts	.588								
Develop an Outsourcing Zone					.791				
Minimize Brain Drain									.784
Extraction Method: Principal Component Analysis.									
Rotation Method: Varimax with Kaiser Normalization.									
a. Rotation converged in 14 iterations.									

Variables with less than 0.3 factor loading, negative factor loadings and cross loadings were removed. As CFA utilizes maximum likelihood to extract variables, final extraction was further refined using Maximum Likelihood and Varimax Rotation that decreased the groups into 2. Internal factors had 5 observed variables while External and Policy Factors are merged in a single latent variable 'external factors' with 15 observed variables, as given in table 4.

Table 4: Rotated Factor Matrix reduced latent variables to 2.

	Factor	
	External Factors	Internal Factors
Own Intellectual Property		.730
HR Structure of the company		.600
Product Expertise		.449
Capacity to Grow		.774
Meet the Compliance		.562
Competitive marketplace	.639	
Possibility of market penetration	.460	
Government Policies and Preferences	.691	
Adjustment of Taxes and Tariffs	.604	
More IT Colleges	.617	
FDI on IT Outsourcing	.745	
Training Centers as per Global Demand	.622	
Formulate Government Agency to Promote IT Outsourcing	.725	
Interaction program between IT outsourcing companies	.636	
Knowledge sharing activities between the countries	.394	
Cooperation and Collaboration with foreign companies	.575	
Banking Priority to Outsourcing Sector	.815	
Country Specific Specialization	.724	
Recognition of Outsourcing Companies	.441	
Pool of IT Experts	.487	
Extraction Method: Maximum Likelihood.		

Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

Findings
The researcher has analyzed the primary data to identify the variables of strategic factors of IT outsourcing on vendor's point of view. It has used the factor analysis for the selection of indicators and has run EFA and CFA to develop the model. The data are presented under the following sub-headings:

Structural Equation Modeling for Strategic Factors and Model Fit
From a conceptual standpoint, Structural Equation Modeling (SEM) analysis typically follows a positivist epistemological belief. In this vein, SEM arises from the fusion of two traditions. On the one hand, a psychometric approach (linear regression models), on the other - factor analysis. SEM thus incorporates the use of latent (unobserved variables) describing theoretical principles and measure data (indicators or manifest variables used as inputs) for statistical analysis providing proof of the relationships between latent variables. SEM is especially useful in IS research, where many, if not most, main concepts cannot be directly observed. Indeed, in recent years, a significant part of IS research has mainly used SEM as an empirical methodology for theory testing (Roldán & Sánchez-Franco, 2012).

To further refine the factors, the variables from EFA were plotted in CFA using IBM SPSS AMOS 26. When the model was plotted and run, there were 230 distinct sample moments, 61 parameters to be estimated and 169 Degrees of Freedom. Chi-square value was 2161.539 and Probability level of 0.000.
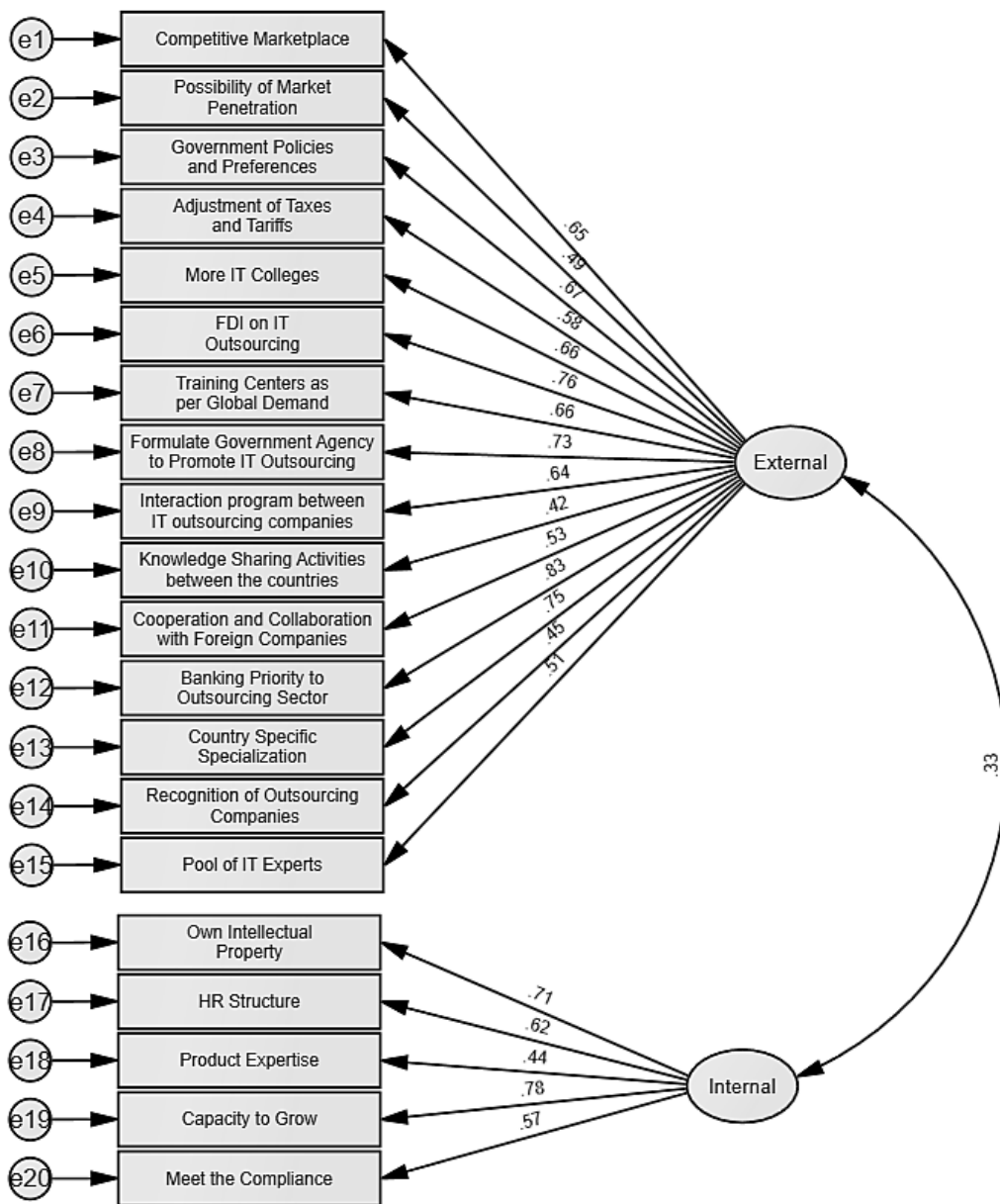

Fig. 1: Structural Equation Modeling for Strategic Factors

Observed variables with lower factor loadings were removed until the model fit was achieved. Covariance analysis was based on maximum likelihood with unbiased covariances supplied on input. The output computed were

standardized estimates, squared multiple correlations, sample moments, factor score weights, covariances and correlations. The resulting model has Chi-square value of 17.865, degrees of freedom 6 and probability level of 0.007 which was achieved by correcting the modification indices. As shown in figure 2, error levels e12 and e16 are correlated and error levels e13 and e19 are correlated. Also, the variables HR Structure and FDI has factor coefficients less than 0.7 but these variables were selected due to their correlations with other observed variables for best model fit.
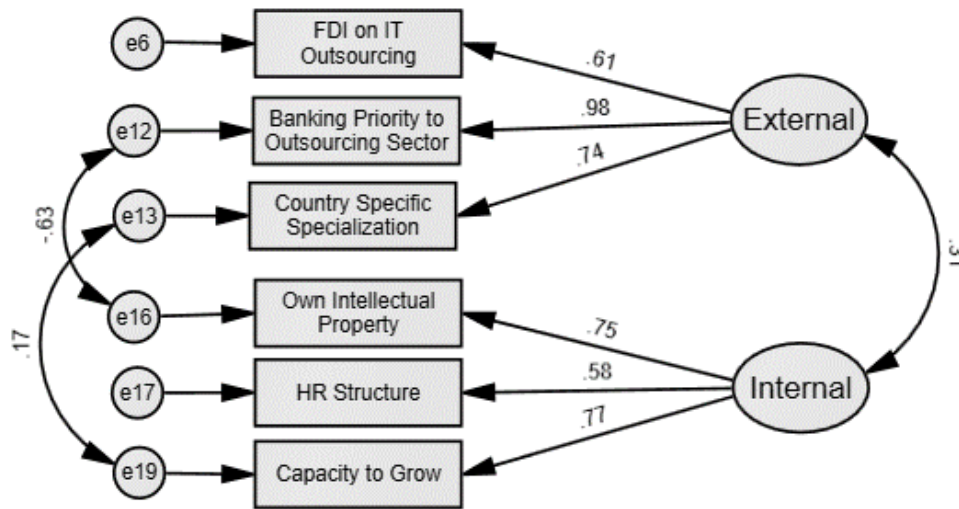

Fig 2: Fig: Structural Equation Modeling for Strategic Factors on Model Fit

The regression weight on table 5 shows that the estimates are less than 1 and each variable are significant to respective latent factors.

Table 5: Regression Weight and the significance level.

			Estimate	S.E.	C.R.	P	Label
FDI on IT Outsourcing	<---	ExternalFactors	.701	.062	11.282	***	par_1
Banking Priority to Outsourcing Sector	<---	ExternalFactors	1.000				
Country Specific Specialization	<---	ExternalFactors	.788	.060	13.241	***	par_2
Own Intellectual Property	<---	InternalFactors	.696	.071	9.847	***	par_3
HR Structure	<---	InternalFactors	.828	.088	9.407	***	par_4
Capacity to Grow	<---	InternalFactors	1.000				

Model Fit measures were evaluated, and the result is satisfactory. CMIN/DF has value of 2.978, CFI is 0.985, SRMR is 0.047, RMSEA is 0.072 and PClose 0.148. Below tables shows the interpretation of each measurement scales.

Table 6: Model Fit Measures.

Measure	Estimate	Threshold (Gaskin & Lim, 2016)	Interpretation
CMIN (Chi-square statistics)	17.865	--	--
DF (Degrees of Freedom)	6.000	--	--
CMIN/DF	2.978	Between 1 and 3	Excellent
CFI (Comparative Fit Index)	0.985	>0.95	Excellent
SRMR (Standardized Root Mean Residual)	0.047	<0.08	Excellent
RMSEA (Root Mean Square Error of Approximation)	0.072	<0.06	Acceptable
PClose (p value when RMSEA is > 0)	0.148	>0.05	Excellent

Similarly, the value of NFI (Normed Fit Index) is .977, RFI (Relative Fix Index) is .943, IFI (Incremental Fit Index) is .985, TLI (Tucker Lewis Index) .962 and the chi-square is not significant, thus the model is regarded as acceptable.

Validation Test
The values of CR, AVE, MSV and MarR (H) shows that the model is valid. AVE of the InternalFactors is 0.497 which is very near to the threshold of 0.5; value of CR, MSV and MaxR (H) are within the threshold and hence, the model is valid.

Table 7: Model Fit Measures.

Latent Variables	CR* (>0.7)	AVE* (>0.5>)	MSV* (<AVE)	MaxR(H)* (>0.7)	External Factors	Internal Factors
External Factors	0.829	0.627	0.097	0.962	0.792	
Internal Factors	0.745	0.497	0.097	0.765	0.312***	0.705

*** p < 0.001

*CR (Composite Reliability), AVE (Average Variance Extracted is used to test Convergent Validity), MSV (Maximum Shared Variance is used to test Discriminant Validity), MaxR(H): Maximal Reliability

Data of each factors were further imputed and tested the Pearson Correlation and the result shows that the correlation is significant at the 0.01 level.

Table 7: Correlation between the internal and external strategic factors.

Correlations		External Factors	Internal Factors
External Factors	Pearson Correlation	1	.388**
	Sig. (2-tailed)		.000
	N	385	385
Internal Factors	Pearson Correlation	.388**	1
	Sig. (2-tailed)	.000	
	N	385	385
**. Correlation is significant at the 0.01 level (2-tailed).			

Multivariate Regression Analysis show that value of R, which represents simple correlation, is .388. R-square indicates how much of the total variance in the dependent variable 'external factors' can be explained by independent variable. The R Square is .15 which indicates that the independent variables explain 15.0% of the variation in the dependent variable. The adjusted R Square value is .148 which means that the internal factors contributed by 14.8% in external factors of strategic factors. Falk & Miller (1992) proposed that the R2 values should be equal to or greater than 0.10 so that a certain endogenous building variance is considered acceptable.

Table 8: Model Validation: Value of R, R Square and Durbin-Watson.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.388[a]	.150	.148	.48485	2.134
a. Predictors: (Constant), Internal Factors					
b. Dependent Variable: External Factors					

Multicollinearity occurs when two or more predictors in the model are correlated and provide redundant information about the response. Multicollinearity was measured by variance inflation factors (VIF) and tolerance. If VIF value exceeding 4.0, or by tolerance less than 0.2 then there is a problem with multicollinearity (Hair, Tatham, & Anderson, 2010). In table 9, the tolerance and VIF value is 1.000 and this shows that the model is in good shape.

Table 9: Model Validation: Test of Collinearity.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	9.489E-17	.025		.000	1.000		
	Internal Factors	.651	.079	.388	8.229	.000	1.000	1.000
a. Dependent Variable: External Factors								

Discussion and Conclusion

1. Finance is the catalyst that helps shape new enterprises, allowing businesses to take advantage of opportunities to expand, generate more employment, and in turn fund other businesses. Strategic use of financial instruments, such as loans and investments, is key to success of IT Outsourcing Business. High interest rates, low value, inefficient and depleted banking, restrictive policies from central bank are toxic in emerging economies and IT Outsourcing needs special banking priority.

2. An IT outsourcing provider should have capacity to grow to next level as per the demand. Growth capacity includes financial capacity, production capacity, distribution capacity, HR capacity etc.

3. Own propriety software or solution, referred as Intellectual Property in IT sector, is vital to entrepreneurship. The more Intellectual Property a company has, the faster it grows.
   The world looks to China to manufacture hardware and India to build software. Country specific specialization allows emerging nations to attract more customers.

4. According to UNCTAD, FDI's growth in Asia was $474 billion in 2019, although the region remained a major FDI destination with over 30% of global FDI flows. Chinese inflows rose slightly to an all-time high of $141 billion. India's FDI has risen to $51 billion by 20 percent, helping the country's upward FDI trend. Emerging countries have also increased FDI, but the value is relatively low, as, for instance, FDI in Nepal recovered from a three-year low of $67 million in 2018 to $185 million in 2019. The bulk of investments have been made in the ICT sectors both in China and India (UNCTAD, 2020). Foreign Direct Investment should also be a strategy for shaping IT outsourcing into the next phase.

5. The center of the IT industry is the highly qualified human resource. Qualified workforce plays an important part in maintaining a strong relationship with customers. In addition, employee relationships with staff play a significant role in the performance of the outsourcing project. Therefore, human resources and their structure should be given a top priority.

6. This paper has a significant contribution to identify the strategic success factors of IT Outsourcing on the viewpoint of the vendor. It provides insight to the policy makers to adopt new strategies to mark their footprint in the global outsourcing industry. Implementation is a complex task that requires time and commitment; however, the payoffs can be

enormous. Similarly, this study will help researchers to expand their knowledge and use the variables in the future.

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