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Framework to assess Conference Outcome Assessment Tool (COAT) in educational institutions

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Abstract

The Science, Technology & Innovation (STI) Policy of India focuses to accelerate collaborative and interconnection translational research between the different stakeholders which enables addressing complex topics. To reach that level, conferences play an important role in the debate and exposure of these complex issues. HEIs spend lots of funds on organizing these conferences. However, the desired outcome assessment for sustainable impact is always lacking. The conference reports or proceedings ignore significant attributes of the stakeholders/ participants such as behavioural skills and motivational aspects such as attitude and ambition behind their participation in the conference. The objective of this paper is to identify parameters for conference outcome mapping and assessment which is useful to ascertain the translation of the discussions and presentations during conference in the prospects – career, research, outreach, etc., not only for participants but also for the organizing institutions. The Authors have developed the Conference Outcome Assessment Tool – COAT© to bring out the culture of Outcome and Quality enhancement in all aspects of research activities in HEIs with qualitative and quantitative assessments of their performance. To develop the Tool, the authors have identified various factors having a direct/indirect impact on all stakeholders throughout the conference. The Implementation of COAT© in HEIs will contribute to maintaining the overall research quality and provide the expected outcomes to researchers/scholars/scientists/industry. This will also boost the collaborations between academia and industry.

Subject Classification: *A20, A23.*

Keywords: *Higher education institutions, Outcome mapping, Conference outcome, Education activities, Conference assessment, Quality assessment, National Education Policy.*

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Introduction

India's higher education sector plays a crucial role in developing skilled human resources, with 1000+ universities, 40+ national institutions, 40,000+ colleges, and 11,000+ standalone institutions.

Conferences being one of the significant academic activities offer a platform for discussing contemporary issues, networking, and sharing ideas among experts, leading to new opportunities and knowledge gain in academia/industry (Kezar, 2005). The outcome assessment / mapping includes planning, monitoring, and evaluation the outcome in terms of initiative taken to analyse the post-event sustainable impact on and engagement of stakeholders (*Outcome Mapping: A Basic Introduction - Research to Action*, n.d.).

Various researchers have found that involvement in curricular and co-curricular activities at university level is exceptionally important for students, faculty members and the industry as directly or indirectly it will have a strong impact on them(Stuart et al., 2011).

Even, Indian Accreditation and Ranking institutions like UGC, NBA, NIRF, etc. have a robust policy for evaluating and monitoring the Quality Assurance of HEIs in India(*Analysis of NAAC Accreditation System Using ABCD Framework by P. S. Aithal, V. Shailashree, P. M. Kumar :: SSRN*, n.d.) Evaluating conference outcomes can identify areas for improvement and help define institutional rankings, aligning with modern higher education's focus on mapping objectives to learning outcomes. ((*EconPapers: Assessment of Learning Outcomes in Higher Education: A Comparative Review of Selected Practices*, n.d.)).

Scope of The Study

The universities and education institutions in India regularly organizes various extra and co-curricular activities on variety of areas of studies. To evaluate the impact of outcome of these conferences, for which the authors have developed the tool i.e. COAT©[1].

Objective of The Study

1) To find out qualitative and quantitative elements/attributes of the conference

[1] Conference Outcome Assessment Tool - COAT© (Kashyap, S. (2019), Copyright R.No. L-85103/2019. New Delhi: Copyright office Government of India.

2) To assess effectiveness of post-conference outcome with the suggested tool.
3) To suggest a tool for conference outcome and show its usefulness.

Conceptual Framework

COAT© is an extension of Event Calendar to map and evaluate the planned objective(s) and achieved outcome(s) of a conference. COAT© consists of twelve (12) parameters (Figure 1).

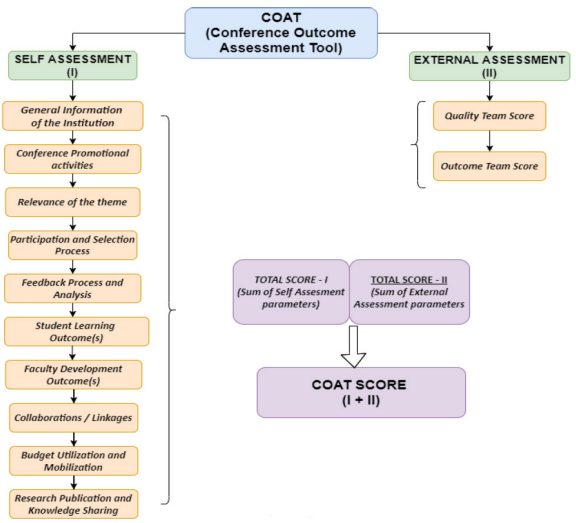


Figure 1

FLOWCHART- COAT (Conference OUTCOME Assessment Tool)

Research Methodology

The authors studied literature and conference reports using sampling and expert interviews. The sample was heterogeneous, and assessment parameters were defined based on these interviews and literature review. Around 500 conference reports from private universities in India were reviewed to identify key indicators for the COAT©.

The tool includes separate questionnaires for pre, during, and post-conference stages to measure the impact at different levels.

1. The conference convener fills in all key indicators in the questionnaire during the planning stage.

2. Broadcasting the event on the university's intranet increases participation from internal and external agencies.
3. The questionnaire enables qualitative analysis of conference topic/theme's relevance.
4. Participation and selection process analyzed using qualitative and quantitative analyses.
5. Feedback process involves collection, analysis, and action based on feedback from stakeholders.
6. Student Learning Outcome is an important parameter of any conference.
7. Faculty Development Outcome should be incorporated at the closing stage.
8. Collaboration and linkages are analyzed through quantitative analysis.
9. Budget utilization and mobilization analyzed using quantitative analysis.
10. Research publication and knowledge sharing analyzed through quantitative analysis.
11. Quality team score and outcome team score are important for maintaining accreditation rankings.
12. Outcome team assesses based on self-assessments by the department/institution, and evidence/records submitted in the Outcome Report.

To explore the research questions stated above the study has been performed using primary data. The pilot study was done to know the opinions of various stakeholders from different parts of the country. Inputs received from the pilot survey were integrated for the formulation of the final questionnaire. The reviewed questionnaire included 21 questions, out of which 13 were quantified and out of these 11 relevant questions were used for factor analysis in this research (*Exploratory and Confirmatory Factor Analysis: Understanding Concepts and Applications. - PsycNET*, n.d.). The following 11 variables used for the factor analysis and subsequently KMO & Bartlett's Test was done on the factors.

Table 1

Description of Variables used in the Study

S. No	Questions / Variables	Variable Code
1	Quality and Outcome Assessment for any academic conference is essential	Quality & Outcome Assessment
2	Defining the objectives and envisaged outcomes at the planning stage of the conference helps in realizing the maximum outcomes	objectives and envisaged outcomes
3	The Topic / Theme of the conference should be relevant to all stakeholders	Topic / Theme
4	The effective analyses of the feedback received from the participants and stakeholders of the conference have an impact on the post-conference Outcomes	feedback received
5	Outcome of the Conference must have an impact on Student / Scholar Learning Outcomes (SLOs)	SLOs
6	Outcome of the Conference must have an impact on Faculty Development Outcome(s) (FDOs)	FDOs
7	The Post-conference Outcomes help to develop the industry-Academia collaborations/ Linkages	Industry-Academia collaborations
8	The Post-conference Outcomes is correlated with the proper Utilisation and Mobilisation of the conference budget	Utilisation and Mobilisation of the budget
9	The Post-conference Outcomes is correlated with the number of Research Papers published in the indexed journals	Publication of Research papers
10	The promotional activities of the conference help to increase the diversified participation which leads to quality and outcomes of the conference	promotional activities
11	The effective Selection process for shortlisting the quality research paper during the planning stage helps in maintaining the quality of the presentations during the conference	Selection process

The Questionnaire for collecting the data was processed and collected from the total of 526 National Universities, Autonomous Institutions and 10 International Research & Development Organisations. The sample of the National Universities, Autonomous Institutions were selected on the basis of the data available on the UGC Website (*Welcome to UGC, New*

Delhi, India, n.d.). The data were gathered from March 26 to December 30 in 2022 through a self – administered survey mode (Altalhi, 2021)) and mostly the Convenor, Member of the organising Committee, Sponsor, Participants Volunteer etc. have responded to the survey. The demographic composition of the participants is summarised in Table 1 and State wise pictorial representation has been shown in Table 2.

Table 2

State wise Pictorial representation of National Universities, Autonomous Institutions and Various Public & Private Organizations.

STATES	NU	NSI	PPO	TOTAL
BIHAR	14	0	0	14
DELHI	20	12	13	45
GUJRAT	1	2	0	3
HARYANA	16	8	1	25
HP	2	0	0	2
TELANGANA	0	0	1	1
JHARKHAND	21	0	0	21
KARNATAKA	1	7	2	10
MAHARASHTRA	51	5	1	57
MP	4	63	0	67
ODISSA	1	1	0	2
PUNJAB	20	0	5	25
CHATTISGARH	12	0	0	12
RAJSTHAN	20	1	1	22
TAMIL NADU	2	2	0	4
UTTAR PRADESH	135	27	14	176
UTTRAKHAND	9	0	0	9
WEST BENGAL	21	0	0	21
TOTAL	**350**	**128**	**38**	**516**

(NU: National Universities, AI – Autonomous Institutions, PPO – Public & Private Organisations)

Hypothesis

Null hypothesis 1 (H01): The variables are NOT correlated and do not have an impact on the academic conferences.

Null hypothesis 2 (H02): Engagement of Stakeholders does NOT have an impact on the outcome of the academic conferences.

Measurement Instrument and Data Analysis

Both quantitative and qualitative data were collected; as a result, the author chose to use NVIVO Software for the analyses of the qualitative data and SPSS Software for the analyses of the quantitative data ((Scopus - Document Details - IMPACT AND OUTCOME COMMUNICATION OF ACADEMIC CONFERENCES IN HIGHER EDUCATION SECTOR - NEED, METHODS, AND TOOLS | Signed In, n.d.)).

The two portions made use of NVIVO Software. First, the responses were cleaned up by utilising an MS Word tool to suitably punch the sentences. The appropriate responses were then transferred into NVIVO software for additional data processing. In the second stage, nodes (variables) were created in accordance with the questionnaire, and the obtained replies were then positioned in accordance with the nodes. By announcing the Stop Words, which assisted in removing the content that was useful for the study, word clouds were created. Additionally, the Autocode tool was used to produce themes through thematic analysis.

By using factor analysis, which has a KMO index of sample adequacy above 0.60 and a Bartlett's test of sphericity of.000 (sig), which is significant at the 5% level, it is possible to determine the construct validity. To establish the accuracy and scientific validity of the data and method used for the study's goal, the author used Bartlett's test of sphericity and the KMO measure of sample adequacy. If the correlation matrix under evaluation is an identity matrix, then the variables selected for the study's aim are unrelated, according to Bartlett's test of sphericity. Values (less than 0.05) suggest that the selected variables most likely have significant associations.

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy as shown in Table 3 was **.876** which is above the acceptable limit of 0.5 and Bartlett's test of sphericity was significant which indicates rejection of null hypothesis of 'variable not found' (B. Thompson, 2006)

Table 3

KMO and Bartletts's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.876
Bartlett's Test of Sphericity	Approx. Chi-Square	1376.921
	df	55
	Sig.	.000

In order to determine how much variance a variable shares with other variables and how much of that variance is explained by common factors, communality is quantified (Tabachnick, B., & Fidell, L. (2013). Using Multivariate Statistics. Boston, MA). Scientific Research Publishing, References, Pearson Education Inc., n.d.

As can be seen in Table 4, all of the extract communality values for the items are reasonably high, which suggests that the factors can accurately forecast how each item will load on each factor. (2013) (Tabachnick, B., & Fidell, L. Making use of Multivariate Statistics. MA Boston Scientific Research Publishing, references, Pearson Education Inc., n.d.

Table 4
Communalities

	Initial	**Extraction**
Quality & Outcome Assessment	1.000	.605
objectives and envisaged outcomes	1.000	.531
Topic / Theme	1.000	.324
feedback received	1.000	.433
SLOs	1.000	.489
FDOs	1.000	.535
Industry-Academia collaborations	1.000	.496
Utilisation and Mobilisation of the budget	1.000	.671
Publication of Research papers	1.000	.546
promotional activities	1.000	.484
Selection process	1.000	.308
Extraction Method: Principal Component Analysis.		

In the given factor analysis, the first two factors recorded Eigen Value above 1 (4.380 and 1.043). Factors with Eigenvalues greater than 1 are considered important and therefore retained because they account for a significant amount of variance ((*Tabachnick, B., & Fidell, L. (2013). Using Multivariate Statistics. Boston, MA Pearson Education Inc. - References - Scientific Research Publishing*, n.d.)

Table 5
Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.380	39.820	39.820	4.380	39.820	39.820	3.060	27.816	27.816
2	1.043	9.478	49.298	1.043	9.478	49.298	2.363	21.482	49.298
3	.959	8.718	58.016						
4	.851	7.733	65.748						
5	.731	6.643	72.392						
6	.626	5.692	78.083						
7	.573	5.212	83.295						
8	.565	5.140	88.435						
9	.510	4.633	93.068						
10	.457	4.152	97.220						
11	.306	2.780	100.000						
Extraction Method: Principal Component Analysis.									

Extraction Method: Principal Component Analysis is used to explain total variance as shown in Table 5. The scree plot of the eigenvalues and factors visual supports that a two-factor structure is a reasonable estimate because the eigenvalues start descending below 1 after that point (see Figure 2).

Table 6 suggests that the first component seems to be related to assessment, objectives and outcomes, while the second component is related to feedback, collaborations and resource utilization.

Table 6
Related Component Matrixa

	Component	
	1	2
Quality & Outcome Assessment	.774	.076
objectives and envisaged outcomes	.723	.090
Topic / Theme	.504	.266

Contd...

feedback received	.439	.490
SLOs	.551	.431
FDOs	.603	.414
Industry-Academia collaborations	.322	.626
Utilisation and Mobilisation of the budget	.177	.800
Publication of Research papers	.078	.735
promotional activities	.636	.282
Selection process	.527	.175
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		
a. Rotation converged in 3 iterations.		

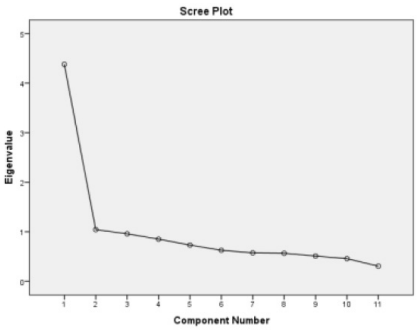


Figure 2

Screen plot of the eigenvalues and factors.

The component transformation matrix as in Table 7 also shows positive relationship with Component 1 with respect to both the variables, while component 2 shows negative relationship with Variable 1 & positive relationship in correspondence with Variable 2.

Table 7

Component Transformation Matrix

Component	1	2
1	.777	.629
2	-.629	.777
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		

Table 8 shown below interprets the Component 1 represent a broad measure of the overall effectiveness, planning and execution of the Conference, whereas Component 2 represent that aspects related to feedback, execution and financial/resource utilization affects the outcome of the Conference.

Table 8

Component Matrix -Principal Component Analysis

	Component	
	1	**2**
Quality & Outcome Assessment	.649	-.428
objectives and envisaged outcomes	.619	-.385
Topic / Theme	.559	-.110
feedback received	.649	.105
SLOs	.699	-.011
FDOs	.729	-.058
Industry-Academia collaborations	.644	.284
Utilisation and Mobilisation of the budget	.640	.511
Publication of Research papers	.523	.522
promotional activities	.672	-.181
Selection process	.520	-.196
Extraction Method: Principal Component Analysis.		
a. 2 components extracted.		

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