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Students' Readiness and Perceptions towards Outcome-Based Education Implementation in Higher Education Institutions

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Abstract

The new education policy in India proposes a paradigm shift to mold graduates who meet the latest industry requirements. Outcome-Based Education (OBE), a key principle of this policy, ensures the attainment of essential skills, measurable learning outcomes, and global competitiveness. OBE provides a framework for developing program and course outcomes, and accreditation systems require institutions to adopt this model. With many universities and higher education institutions in India implementing OBE, it is essential to analyze students' experiences in this process. This study explores the factors contributing to OBE implementation in Higher Education Institutions in Kerala. A quantitative, cross-sectional survey was conducted with 369 students from engineering and management programs in central Kerala. Constructs such as student readiness, motivation, faculty engagement, perception, perceived outcomes, and management support were examined. Smart PLS software was used to evaluate construct validity and model fitness. Results showed a significant positive impact of student perception and perceived outcome on readiness. However, management support had an insignificant moderating role. These findings suggest that strengthening management support may enhance OBE implementation effectiveness.

Keywords: outcome-based education, management support, perceived outcome, student engagement, students' perception

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Disposição e percepção dos estudantes em relação à implementação da Educação Baseada em Resultados nas instituições de Ensino Superior

Resumo

A nova política educacional da Índia propõe uma mudança de paradigma para formar graduados que atendam aos mais recentes requisitos da indústria. A Educação Baseada em Resultados (EBR), um princípio fundamental dessa política, garante a aquisição de competências essenciais, resultados de aprendizagem mensuráveis e competitividade global. A EBR fornece um marco para o desenvolvimento dos resultados de programas e cursos, e os sistemas de acreditação exigem que as instituições adotem esse modelo. Considerando que diversas universidades e instituições de ensino superior na Índia estão adotando a EBR, torna-se essencial analisar as experiências dos estudantes nesse processo. Este estudo investiga os fatores que influenciam a implementação da EBR nas instituições de ensino superior de Kerala. Para tanto, foi realizada uma pesquisa quantitativa transversal com 369 estudantes dos cursos de engenharia e gestão na região central de Kerala. Foram analisados aspectos como disposição dos estudantes, motivação, engajamento do corpo docente, percepção, resultados percebidos e apoio da administração. O software Smart PLS foi utilizado para avaliar a validade dos construtos e a adequação do modelo. Os resultados mostraram um impacto positivo significativo da percepção dos estudantes e dos resultados percebidos na preparação. Entretanto, o papel moderador do apoio da administração revelou-se insignificante. Esses achados sugerem que fortalecer o suporte da gestão pode melhorar a eficácia da implementação da EBR.

Palvras-chave: educação baseada em resultados, apoio da administração, resultado percebido, engajamento estudantil, percepção dos estudantes

Disposición y Percepción de los Estudiantes respecto a la Implementación de la Educación basada en Resultados en las Instituciones de Enseñanza Superior

Resumen

La nueva política educativa de la India propone un cambio de paradigma para moldear graduados que cumplan los últimos requisitos de la industria. La Educación Basada en Resultados (EFR), un principio clave de esta política, garantiza la obtención de competencias esenciales, resultados de aprendizaje mensurables y competitividad global. La EFC proporciona un marco para desarrollar los resultados de programas y cursos, y los sistemas de acreditación exigen a las instituciones que adopten este modelo. Dado que muchas universidades e instituciones de enseñanza superior de la India están aplicando la EFC, es esencial analizar las experiencias de los estudiantes en este proceso. Este estudio explora los factores que contribuyen a la implantación de la EFC en las instituciones de enseñanza superior de Kerala. Se llevó a cabo una encuesta cuantitativa transversal con 369 estudiantes de programas de ingeniería y gestión en el centro de Kerala. Se examinaron constructos como la disposición de los estudiantes, la motivación, el compromiso del profesorado, la percepción, los resultados percibidos y el apoyo de la dirección. Se utilizó el software Smart PLS para evaluar la validez de constructo y la adecuación del modelo. Los resultados mostraron un impacto positivo significativo de la percepción de los estudiantes y los resultados percibidos en la preparación. Sin embargo, el apoyo de la dirección desempeñó un papel moderador insignificante. Estos resultados sugieren que reforzar el apoyo a la gestión puede mejorar la eficacia de la implantación de la EFC.

Palabras clave: educación basada en resultados, apoyo directivo, resultado percibido, compromiso estudiantil,

percepción de los estudiantes

Introducción

The Fourth Industrial Revolution and the evolving Fifth Industrial Revolution that are driven by modern technologies, including artificial intelligence, digital twin, big data, robotics, augmented reality, and metaverse, have created growing concerns over how the developing economies will face the challenges arising out of these innovative technologies (Bloem et al., 2014). The implications of these technologies are extensive in the education sector, as highlighted by their transformative effects on higher education systems, demanding substantial changes in teaching methods and curricula (Chaka, 2022). This existing gap between available human capital and industry expectations can be categorized into three key domains: i) the demand for a blend of technical, cognitive, and non-cognitive skills; ii) the necessity for upgraded skills, attitudes, and knowledge due to novel practices; and iii) the need for enhanced human skills to perform customer-centric job-related tasks (Suleman, 2018). To address these challenges, higher education institutions in the country must effectively form graduates capable of meeting the evolving industry skill requirements (Treve, 2021; Zusman, 2005). To attain this noble aim, higher education institutions need to restructure their curriculum and teaching pedagogy to be capable of meeting the industry skill set requirements.

Outcome-based Education is a teaching-based learning process that focuses on the attainment of predetermined measurable objectives. The objectives, process of attainment, and measurement tools of this result-based method are disseminated to the aspirants in advance (Kanmani & Babu, 2015; Spady, 1994; Tungpalan & Antalan, 2021). OBE provides flexibility to incorporate the industry-required skill sets and value additions in curriculum design, which enables the students to work with changing technologies and innovations (Kumbhar, 2020). In order to produce graduates with industry-demanded skill sets, it is imperative for higher education institutions to shift to Outcome-Based Education (Bouslama et al., 2003). Higher education institutions in the country offer myriad courses that require meshing of attitudes, innovation, knowledge and skills. OBE provides a platform to ascertain the competencies that are expected to be attained by graduates from universities and higher education institutions (Harmanani, 2017). The accreditation systems followed in the country also entail that the institutions shall follow the OBE model for their programs offered. Outcome Based Education provides a basic framework for developing the Program outcomes and Course Outcomes for the programs and courses offered by the institutions (Sharma, 2023). Students graduating from accredited institutions will get global recognition for their degrees obtained, which will entitle the students to pursue higher studies in institutions of global repute and to explore better employment opportunities in different parts of the world.

Recognizing the benefits that the OBE model can contribute to the education system, developed countries have already implemented this contemporary model in various programs offered by higher education institutions (Mahmood et al., 2015; Zheng et al., 2023). Developing countries, including India, have also initiated measures to include the Outcome-Based Education model in higher education institutions. In the National Education Policy 2020, the key principle of OBE has been embedded to ensure the attainment of skill sets, learning

outcomes, continuous improvement, and global competitiveness (Kanmani & Babu, 2015; Patra et al., 2021). However, educational institutions often face various impediments in the implementation of Outcome-Based Education (Muzychuk & Bychkova, 2019). It is crucial to address these challenges to align graduates with the skill sets demanded by industries powered by Fourth and Fifth Industrial Revolution technologies. Research highlights the need for systemic transformation in education, with educators having to rethink and adapt teaching and learning experiences to meet future job market demands (Mulyani et al., 2021).

Literature reviews reveal that educational institutions face various impediments in the implementation of Outcome Based Education (Harmanani, 2017). Since many universities and higher education institutions in the country are in the stage of implementation of OBE, it is imperative to conduct research to analyze the experiences of the students in the implementation of this outcome-based model. It is expected that this study can provide suggestions to overcome any challenge that may arise, leading to a successful implementation of OBE in various higher education institutions in the country (Mangali et al., 2019).

The objective of the present research is to investigate the students' perception of the execution of Outcome Based Education. This study explores the relationship between the readiness of students towards the implementation of OBE and other contributing factors: student readiness, motivation and self-efficacy, faculty engagement, student perception, perceived outcome, and management support. This study contributes to the existing literature by providing empirical evidence on the factors affecting students' readiness for OBE in Kerala, India, an area that has been underexplored. By examining these factors, the research aims to offer insights that can aid institutions in overcoming challenges associated with OBE implementation, thereby enhancing educational outcomes.

The article's structure is as follows: Section 2 reviews relevant literature on student readiness, faculty engagement, student perception, perceived outcomes, and management support. Section 3 details the research methodology, including data collection and analysis. Section 4 presents the findings and their interpretation, while Section 5 discusses the implications of the results and offers recommendations for future research. Finally, Section 6 concludes the paper by summarizing key findings and their relevance to the field of higher education.

2. Literature Review

2.1 Student's Readiness

OBE implementation is becoming inevitable across the globe due to its research orientation and sustainability implementation interest. Therefore, in-depth attention is needed regarding the students' readiness to adopt the OBE system. Learner readiness refers to students' ability to become aware and demonstrate behavioral changes that enhance the effectiveness of learning outcomes. Evidence from recent studies demonstrates that learners' readiness is a critical factor in optimizing the effectiveness of educational interventions (Aguilar & Kim, 2019; Bozkurt & Arslan, 2018; Hsieh & Hsieh, 2019; Kartal & Balçikanli, 2019).

2.2 Faculty Engagement

To effectively execute the system of Outcome-based Education, it is essential that faculties remain highly engaged. Comparative studies between Western Universities and Indian Universities concluded that much of the faculty engagement practices have been used by the former, whereas the latter is still falling behind. Recently the psychological functioning of teachers has also gained much importance as the emotional and motivational aspects may seriously impact their performance in classrooms. Highly engaged faculties prove to be an asset for the institution (Wilson, 2009) and can bring revolutionary transformations to the academic settings, while disengaged faculty members remain a liability. Increasing trends of absenteeism, high turnover intention, and low research interest are all indicators of disengaged faculty members (Macey & Schneider, 2008).

Kahn (1990) defines Employee Engagement as "the harnessing of organization members' selves to their work roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances" . Employee engagement is the degree to which an employee applies willful efforts to his or her job besides the normal time, energy, and intellect (Devi, 2009). To provide quality education to students, the Indian education system must meet five essential prerequisites: quality faculty, an effective syllabus, strong character development, robust research, and thorough evaluation (Arya, 2006). Task identity, autonomy, skill variety, and job challenges are a few factors that act as catalysts for faculty engagement (Winter et al., 2000).

H1: Faculty Engagement has a significant positive effect on the perception of students in implementing OBE.

2.3 Students' Perception

Students' Perception plays a key factor in determining the student's ability to identify their role and actively engage in their assigned tasks and learning environment. OBE Facilitation is greatly influenced by the information dissemination to the students regarding the curriculum and course content (Armenakis et al., 1993). OBE implementation becomes worthy of acceptance when the students understand the ways of achieving the Course Outcome and Program Outcome thoroughly. This would help in promoting positivism in attitude and motivation, thereby accelerating the successful implementation of the new curriculum (Chu & Tsai, 2009).

H2: Students' Perception has a significant effect on the readiness of students to adopt OBE practices.

2.4 Perceived Outcome

OBE implementation intends to develop learners' active participation, creativity, innovation, reasoning, and critical thinking. However, the question is whether students find it easy to understand the ways to attain the OBE outcome. The major challenges faced in OBE implementation by the faculty is with regard to bringing parity between instructional design and learning outcome whereas for students, it is the passive stance and lack of orientation on

new curriculum and learning outcome (Bolander et al., 2006; Morcke & Eika, 2009).

H3: Outcomes perceived by the students have a significant effect on the readiness of students to adopt OBE practices.

2.5 Management Support

To effectively accomplish the desired changes through the implementation of a new system in general and OBE in particular, management support is a crucial factor (Damit et al., 2021). When necessary resources and institutional support are provided to the students, their motivation and self-efficacy are likely to get accelerated. Earlier studies have indicated the moderating role of management support in students' readiness for OBE implementation (Al Mamun et al., 2022). Further, the moderating effect of management support was identified on various determining factors such as students' attitude and social entrepreneurship intention, faculty commitment, students' perceived easiness, and students' awareness in adopting the new system.

H4: Management support has a significant moderating effect on faculty engagement and readiness of students towards OBE implementation.

H5: Management support has a significant moderating effect on the perception and readiness of students towards OBE implementation.

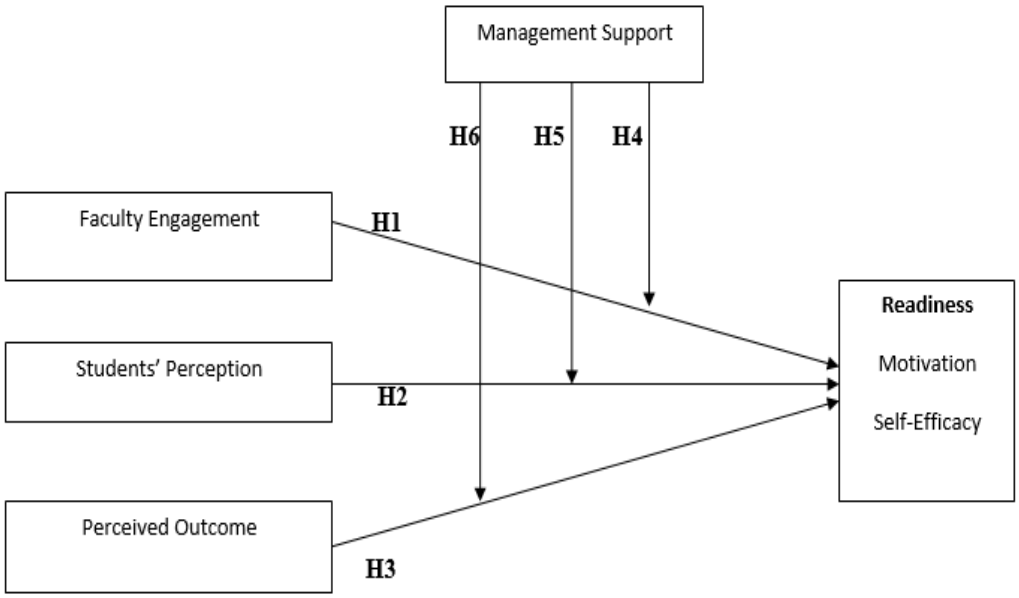
H6: Management support has a significant moderating effect on students' perceived outcome and readiness for OBE implementation.

2.6 Student Motivation and SelfEfficacy

Motivation and Self Efficacy have been utilized in several studies as an indicator of students' readiness for OBE implementation (Naji et al., 2020). To achieve the specific learning outcomes and to evaluate students' readiness for transition to a new system, motivation and self efficacy can be considered as the key constructs. It has been reported in various studies that motivation and self-efficacy are critical to understanding the achievement of learning outcomes and are strongly associated with perception, perceived outcome, management support, and faculty engagement (Holt & Vardaman, 2013).

Figure 1 showcases the theoretical model for examining determinants for the Successful adoption of the Outcome-Based Education model in higher education institutions.

Figure 1. Theoretical Model



Source: own elaboration

3.0 Research Methodology

In this empirical study, the chosen research philosophy is the positivist paradigm, which involves scientifically exploring facts through critical observation and measurement. A structured questionnaire was prepared and administered to the sample to understand the perception and readiness of students in higher education institutions in the state of Kerala towards OBE implementation. To understand the progress in the implementation of OBE in higher educational institutions in central Kerala a quantitative approach with cross-sectional survey design was employed in this research. In the first phase, an appropriate research instrument was developed, validated, and applied to the sample to test the model proposed with the intent of exploring the readiness of students towards the execution of the OBE model as to understand the related significant factors affecting the readiness of students in the implementation of this model. During the second phase the instrument was administered through google forms to the selected engineering and management institutions in central Kerala currently implementing OBE. Out of the total 525 questionnaires distributed, only 369 valid responses were used for quantitative data analysis.

Six constructs were found to be fit for the present study and have been included in the research instrument. The constructs included were students' readiness, motivation and self-efficacy, faculty engagement, student perception, perceived outcome, and management support (Akhmadeeva et al., 2013; Akramy, 2021; Chowdhury et al., 2022; Khan et al., 2023; Patra et al., 2021; Rhaffor et al., 2017). For the pilot study, the questionnaires were distributed to 93 respondents, and appropriate modifications were incorporated in the instrument. The Cronbach's coefficient of Alpha for the instrument was greater than 0.88, which means that the framed instrument was fit for data collection. The respondents' agreement or disagreement to

the statements were marked using the seven-point Likert scale, 1 being strongly disagree and 7 being strongly agree.

3.1 Questionnaire Design, Participant Selection, and Ethical Considerations

The structured questionnaire developed for this study, assessed a number of constructs on students' readiness to embrace and perceive the OBE model. It consisted of sections, with each section measuring a different construct. First, one section was devoted to assessing students' readiness in terms of their preparedness about the principles of OBE and understanding the curriculum apart from how well they can adapt to new learning methods. The second part covers motivation and self-efficacy. It measures the intrinsic motivation of learners for learning and the belief of students in their capabilities to succeed within the OBE framework. The third section covers faculty engagement and captures the perceptions of students about faculty engagement and support during the implementation phase of the OBE. The fourth part is centered on students' perceptions and tries to measure learners' attitudes toward the OBE model and the visibility of the expected outcomes. The fifth section covers perceived outcomes, where students are asked to express their views on the advantages and efficiency of the OBE approach in enhancing learning experiences and career prospects. The sixth part is related to the way management support the way students express their perception about how institutional resources are available to support the implementation process of the OBE model.

Each item in the questionnaire was phrased on a seven-point Likert scale, ranging from 1 for strongly disagreeing to 7 for strongly agreeing. This action was meant to present the chance for the respondents to give their extent of agreement to certain statements. The items sourced from the wide literature review were done to make varied statements appropriate for the aims of this study. Following a pilot test on 93 respondents, some modifications were made to the questionnaire to ensure that it was clear and effective. From the pre-test results, it became apparent that a few items were ambiguous or too complex. As such, the following corrections have been made: ambiguous questions needed rewriting, items that showed low-recorded interest or unclear responses from contacts were deleted to shorten the questionnaire, and specific examples were added to most of the questions to provide context so they could be easily understood.

Institution selection was done using a systematic process based on targeting engineering and management institutions in central Kerala that were already implementing OBE. Target selection was thus based on readiness to adopt the OBE framework and willingness to collaborate with the researcher. Initial outreach was made through the institutional websites and some official communication in order to find a suitable target. This was important to ensure that the institutions selected were representative of the present situation of OBE implementation in higher education within the region. In this respect, participants were selected from the pool of students at the selected institutions. Overall, 525 questionnaires were distributed through Google Forms, with special emphasis on variation among samples across different academic years and disciplines. 369 valid responses were collected from the questionnaires and used for quantitative data analysis. Thus, these will offer a robust dataset that will potentially help determine students' readiness towards the adoption of OBE and their perceptions about OBE.

Special attention was given to ensuring that the research process was carried out with integrity regarding bioethical aspects: All participants gave informed consent for their participation in the current research, being fully aware of the purpose of this study and the freedom to withdraw from it at any moment, which will not generate any type of consequence. The anonymity of all participants during the investigation was guaranteed, confidentiality about any data expressed, and data processing in accordance with the ethical requirements of treatment. These steps further enhance the overall validity and ethical benchmark of the study.

3.2 Data Analysis and Procedure

A quantitative data analysis was conducted using Smart PLS 3.2.9 software to develop the structural equation model (SEM). Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed for this analysis. Both the Measurement Model Specification and the Structural Model Assessment were executed using PLS-SEM. Initially, the measurement of the constructs involved assessing factor loadings and establishing the validity of Composite Reliability (CR), as well as Discriminant and Convergent Validity within the Measurement Model. Subsequently, the Structural Model Assessment was conducted to evaluate path coefficients and test the significance of the path effects.

4.0 Data Analysis and Interpretation

The results of the Measurement Model Assessment are presented in Table 1.

Table 1. Reliability Coefficients and Factor Loadings

Constructs	Items	Factor Loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Management Support	MS-1	0.81	0.91	0.93	0.63
	MS-2	0.76			
	MS-3	0.74			
	MS-4	0.80			
	MS-5	0.76			
	MS-6	0.88			
	MS-7	0.89			
Perceived Outcome	PO-1	0.81	0.88	0.91	0.64
	PO-2	0.85			
	PO-3	0.82			
	PO-6	0.79			
	PO-7	0.74			

Student Perception	SP-1	0.56	0.90	0.92	0.63
	SP-2	0.84			
	SP-3	0.86			
	SP-4	0.85			
	SP-5	0.88			
	SP-6	0.86			
	SP-7	0.65			
Self Efficacy	SE-1	0.88	0.92	0.94	0.72
	SE-3	0.85			
	SE-4	0.84			
	SE-5	0.89			
	SE-6	0.77			
	SE-7	0.85			
Student Motivation	SM-2	0.92	0.90	0.92	0.80
	SM-3	0.90			
	SM-4	0.91			
	SM-5	0.87			
	SM-6	0.90			
	SM-7	0.83			
Faculty Engagement	FE-1	0.85	0.96	0.97	0.65}+´pop´++´+}
	FE-2	0.88			
	FE-3	0.85			
	FE-4	0.88			
	FE-5	0.88			
	FE-6	0.84			
	FE-7	0.79			

Source: Primary Data

4.1 Reliability Co-efficient and Factor Loadings

Factor loadings have been assessed in accordance with the threshold value recommended (0.50), and constructs having threshold values less than the minimum threshold value were removed. Hence, SP8 from Students' Perception, PO4 & PO5 from Perceived Outcome, MS8 and MS9 from Management Support and SM1 from Students' Motivation were removed. The reliability test was conducted using Composite Reliability (CR) and Cronbach's Alpha. Values

of Cronbach's Alpha for all items ranging from 0.88 to 0.90 and Composite Reliability ranging from 0.91 to 0.97 indicated that values of all constructs were greater than the minimum threshold value of 0.7, and hence the constructs were acceptable. Table No.1 shows the values of Factor Loadings, Cronbach's Alpha, and Composite Reliability of all constructs.

4.2 Discriminant and Convergent Validity

To measure Convergent Validity, Average Variance Extracted (AVE) has been employed. The threshold value of AVE is 0.5. The convergent validity of this study showed that all constructs achieved values greater than the threshold value of 0.5. The AVE values of each construct are illustrated in Table 1. For validation of discriminant validity, Heterotrait-Monotrait Ratio and Fornell and Larcker Criterion were used. The results of the Fornell and Larcker method showed that values of the square root of AVE were greater than their correlation with any other construct. Table 2 depicts the values of discriminant validity using the Forner and Larcker Criterion. The recommended HTMT value should be less than 0.9, and in this study, the HTMT value for all the constructs falls below the recommended value, as depicted in Table 3. Hence, discriminant validity using both methods was confirmed.

Table 2. Discriminant Validity –Fornell and Larcker Criterion

Constructs	MS	PO	SP	SE	SM	FE
MS	0.77					
PO	0.76	0.82				
SP	0.53	0.62	0.77			
SE	0.73	0.80	0.58	0.87		
SM	0.73	0.80	0.51	0.83	0.93	
FE	0.71	0.76	0.66	0.66	0.63	0.86

Source: Primary Data

Table 3. Discriminant Validity –HTMT Ratio

Constructs	MS	PO	SP	SE	SM	FE
MS						
PO	0.83					
SP	0.56	0.73				
SE	0.81	0.88	0.65			
SM	0.77	0.83	0.54	0.87		
FE	0.78	0.81	0.73	0.75	0.66	

Source: Primary Data

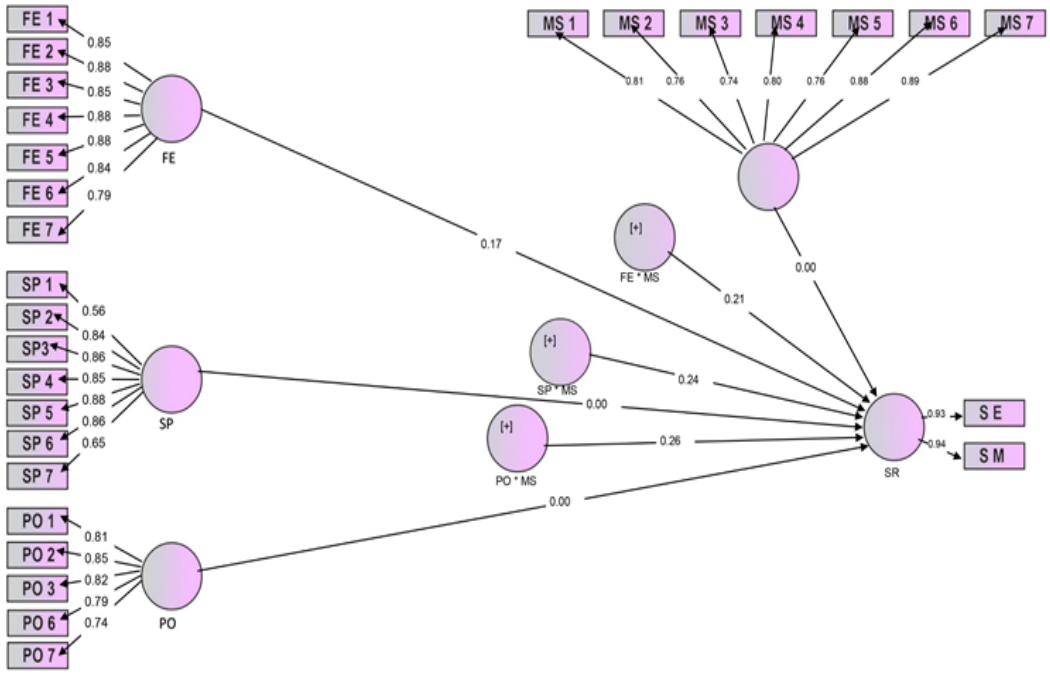
4.3 Goodness of fit criterion

Goodness of Fit (GoF),according to PLS path modeling, ranges from 0 to 1. The value of GoF in this study is 0.695, which indicates that the model achieved a good fit.

4.4 Evaluation of a structural model

Figure 2 is the structural equation model used in this study. To evaluate the hypothesized relationships and validate the proposed hypothesis, an assessment of the structural model was performed. The analysis was initiated by measuring the R^2-coefficient of determination which indicates how an outcome can be statistically predicted effectively. The study results indicated $R^2 = 0.737$ for the outcome variable Student Readiness (SR), that is greater than the value recommended (0.10). To observe the change in R^2 when a specified exogenous construct is excluded from the model, an Effect size (f^2) was calculated. The results of the Effect sizes (f^2) revealed that all exogenous variables predicted SR (MS, PO, SP) except for the influence of FE on SR, where low significant effects were noticed. Table No.4 shows the values of R^2 and f^2.

Figure 2. Structural Equation Model



Source: own elaboration

Further, to assess the multicollinearity, VIF was also measured. According to (Hair et.al., 2010), multicollinearity may be ruled out if VIF value is less than 4.0. The obtained VIF values fall below the threshold value,which is depicted in Table No 4. The predictability of the proposed model has been evaluated by assessing predictive relevance (Q^2). The range of Q^2 value is from 0 and 1. Only for reflective outcome variable SR, Q^2 was calculated. Q^2 values of 35 % and above are considered to have strong predictive relevance. The value of Q^2 in this study was 0.773, indicating that 77.3% variance in the endogenous variable has been explained using

predictor variables. Table No. 4 shows the value of Q^2, and Table No. 5 depicts the results of the moderation analysis.

4.5 Hypothesis Testing (Direct Effect Analysis)

The statistical significance of the relationship between two variables can be determined by measuring the significance of a direct path. Bootstrap Resampling Technique was used to measure the significance of direct paths and estimate standard errors. The analysis of the collected data indicates that there is no significant positive influence of Faculty Engagement (FE) on Readiness of students (SR) (β=-0.04, t=0.764, p>0.05), indicating the non-acceptance of H1.

A significant positive influence of Perception of students (SP) on Readiness of students (SR) (β=0.157, t=3.593, p<0.05) was observed, which implies the acceptance of H2. From the analysis it was inferred that there is a significant positive influence of Outcome Perceived (PO) on Readiness of students (SR) (β=0.531, t=6.772, p<0.05), which means H3 is accepted. The direct effect analysis results are depicted in Table 4.

Table 4. Structural Model Path Coefficient

Hypothesis	Relationship	β	SD	t-value	p-value	Hypothesis Result
H1	FE SR	0.04	0.05	0.76	0.17	
H2	SP SR	0.16	0.03	3.593	0.00	***
H3	PO SR	0.53	0.05	6.772	0.00	***
	R^2		f^2	VIF	Q^2	
SR	R^2=0.737	MS SR	f^2=0.17	2.64	0.77	
		PO SR	f^2=0.24	3.29		
		SP SR	f^2=0.04	1.87		
		FE	f^2=0.00	2.89		

Source: Primary Data *** *Significant*

4.6 Hypothesis Testing (Moderation Analysis)

Moderation Analysis is done to find whether Management Support (MS) has a significant moderating influence on Faculty Engagement (FE) and Students' Readiness (SR), or not. From the analysis, it was inferred that there is no moderating effect of MS on FE and SR which shows H4 is not accepted (β=-0.074, t= 1.271, p>0.05).

H5 analyses whether Management Support (MS) has a significantly moderating effect on Students' Perception (SP) and Students' Readiness (SR) or not. The analysis indicated no significant moderating effect of MS on SP and SR (β=0.063, t=1.158, p>0.05), implying the non-acceptance of H5.

Analysis was also done to ascertain the significant moderating effect of Management

Support (MS) on Perceived Outcome (PO) and Students' Readiness (SR). No significant moderating effect of MS was observed on PO and SR (β=0.071, t=1.148, p>0.05). The results of the moderation analysis are shown in Table 5.

Table 5. Moderation Analysis

Hypothesis	Relationship	β	SD	t-value	p-value	Hypothesis Results	Moderation Effect
H4	FE*MS SR	-0.07	0.05	1.27	0.21	Not Accepted	No
H5	SP*MS SR	0.06	0.04	1.16	0.24	Not Accepted	No
H6	PO*MS SR	0.07	0.05	1.14	0.26	Not Accepted	No

Source: Primary Data

Results, Discussion and Implications

This research investigates the factors contributing to the effective implementation of Outcome-Based Education in Higher Education Institutions in Kerala. Based on the conceptual model developed, the present study explores the effect of faculty engagement, students' perception, and perceived outcome on the readiness of students with management support as the moderating variable. Analysis of the collected data reflected that the readiness of students towards OBE implementation was moderately low, highlighting the need for tailored strategies to enhance this readiness. Measures to enhance the motivation of students include improving the awareness among the students regarding the OBE model, proper training, support and supervision, and the accessibility to required resources.

The study model conceived the direct effect of faculty engagement, students' perception, and perceived outcome on the readiness of students toward OBE implementation. The present study reveals that faculty engagement does not influence the students' readiness towards OBE implementation. This finding contrasts with previous studies that concluded teachers' engagement is essential for the effective implementation of OBE (Kiiskilä et al., 2022; Razak et al., 2009). It is important to analyze the variability in study designs and cultural contexts that may lead to these differing conclusions. For example, cultural factors may influence how students perceive faculty engagement and its impact on their learning experiences, which can vary significantly across different educational settings. Previous studies also suggested that there is a significant association between teachers' commitment and students' self-efficacy and achievement (Aliakbari & Amoli, 2016). Many factors, including sample profile, design of the study, and analytical tools applied in the present study might have contributed to this contradiction. Also, the students' experiences, expectations, and perceptions regarding their teachers' involvement may vary depending on the students' grade.

The second hypothesis set for the study was that students' perception have a positive impact on their readiness to practice of the Outcome-Based Model. The analysis of collected data exhibits students' perception has a positive influence on their readiness to adopt OBE. This finding aligns with previous studies indicating that students believe their faculty make significant efforts to help them achieve the course outcomes of OBE (Rhaffor et al., 2017). Further analysis of how cultural differences in student expectations may affect this perception could provide additional insights. For instance, cultural norms surrounding education may dictate how students view their roles and the perceived involvement of faculty in their learning

process. This finding also corroborated the previous finding that students have a positive perception towards the way in which the learning outcomes are communicated to them in OBE (Thuy, 2022).

The study confirmed the third hypothesis that the perceived outcome has a significant impact on the student's readiness toward OBE. This result supports the observation that for the acquisition of knowledge, learning, skills, attitudes, and values the implementation of OBE is a must in educational institutions (Wu et al., 2022). This result is also consistent with the observation that the key principle of OBE is the focused outcomes which enables the aspirants to attain better career prospects. Enhanced career opportunities, improved expectations, and focus are the key principles in which OBE is built (Brandt, 1993; Tshai et al., 2014).

The present study also establishes a non-significant moderating impact of management support on the association between the variables faculty engagement, students' perception, perceived outcome, and readiness of students towards OBE implementation. This result contradicts the findings of Kortegast & Davis that the effective implementation of OBE in educational institutions needs to restructure the teaching pedagogy and system in accordance with the predetermined learning outcomes (Kortegast & Davis, 2017). The lack of significant moderating effects may be influenced by the specific cultural context of the institutions studied, which could vary in terms of administrative support and resource allocation. Future research could further examine these cultural factors to provide a more nuanced understanding of their impact on OBE implementation. All the stakeholders are expected to contribute together to identifying, defining, and achieving the stated outcomes of OBE. Previous literature also pointed out that institutional support is a contributing factor in determining the student's readiness to adopt OBE (Er et al., 2021; Evardo, 2020; Lukman et al., 2021). This contradiction might be due to the lack of students' accessibility to the facilitating resources provided by the school staff. The differences in the administrative styles in the selected population and the cultural variation in the chosen samples might have also contributed to the contradictory outcomes.

In the highly demanding era of industrial revolution, graduates are expected to gain exposure to the latest technological and human skills. To provide a better orientation towards the contemporary teaching-learning models, an outcome-oriented education system shall be practiced from the secondary level of education. Additionally, the importance of considering cultural context when designing educational interventions cannot be overstated. Different cultural backgrounds may necessitate diverse approaches to engagement and readiness. Despite developing a positive attitude toward outcome-oriented learning all the stakeholders should be provided with proper training for the execution of an outcome-based education. Also, the industries should update the universities and higher education institutions regarding the latest human skill requirements. Industry immersion programs and collaborative models with business establishments can help educational institutions to identify the latest skill requirements of the industries. Collaborative models with industries can also help in the dissemination of practical skills among the students in educational institutions.

Conclusion

In today's dynamic global context, the potential of Outcome-Based Education is immense. To remain competent in the demanding industry scenario higher education institutions are expected to produce graduates with the latest industry skill requirements. OBE provides a platform for educational institutions to redefine their curriculum and teaching pedagogy by incorporating all the stakeholders. As the course outcomes and program outcomes are predefined and disseminated to the aspirants in advance, the students can identify their learning objectives and prepare to pursue the course as per the standards prescribed. Recognizing that perception is a major contributing factor to the adoption of OBE, as this study investigates students' perceptions regarding its implementation in higher education institutions. There are, however, limitations to this study, since the sample size was limited to institutions in central Kerala, arguably affecting generalization. The information obtained in this study was self-reported and may, therefore, have a bias. Increasing the sample size and inclusion of diversity may thus improve the applicability of the research outputs. Finally, longitudinal studies may give more details on changes in student outcomes over time.

The result of the empirical study establishes that students have a moderately low level of readiness towards OBE implementation and faculty engagement does not influence the students' readiness towards OBE implementation. The analysis of the collected data exhibits that students' perception has a positive impact on their readiness to adopt OBE. The study confirmed that the perceived outcome has a significant impact on the students' readiness towards OBE. The present study also establishes non-significant moderating impact of management support on the association between the variables faculty engagement, students' perception, perceived outcome, and readiness of students towards OBE implementation. It is anticipated that by deploying proper training and enhancing the understanding of the OBE model, students' readiness for OBE adoption can be improved. To ensure the effective execution of this contemporary educational model and create a world-class teaching and learning system, universities and higher education institutions must enhance the dedication and commitment of all stakeholders, including top management, faculty, students, and industry experts. Future studies should explore the evolving role of technology in OBE implementation and its impact on student engagement and learning outcomes.

Final Statements

Authors' contribution. Subin Thomas and Jeena Joseph collaboratively conceptualized the study, designed the research, and drafted the manuscript. They were also responsible for data collection, analysis, and the interpretation of results. Anuja C.S and Anitha S.M provided additional contributions to the data collection and analysis. All authors reviewed and approved the final manuscript.

Conflicts of interest. The authors declare that there is no conflicts of interest related to this study

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