

“Employability Skills Of Engineering Students And Perceived Employability - Mediating Role Of Entrepreneurial Initiative And Problem Solving”

Sachin Halwasiya¹, Dr. Pooja Jain², Dr. Manish Mittal³

¹Ph.d Scholar IMS,Sage University, Indore Madhya Pradesh, India Pin: 452020

Email: Sachin.halwasiya@gmail.com

²Associate Professor IMS, Sage University, Indore Madhya Pradesh, India Pin: 452020

Email: drpoojajain19@gmail.com

³HoD and Professor IMS, Sage University, Indore Madhya Pradesh, India Pin:452020

Email: manmittal_1969@rediffmail.com

ABSTRACT

Employability skills are the prime topic of discussion among the academicians, corporate and training providers in this domain. Many engineering institutes are channelizing their focus in enhancing the employability skills of their students to raise the quality of placements in their campus. Beside, employability skills can also be considered as an alternate approach to resolve the unemployment issues in the emerging economies like India. The present study analyses the association of employability skills of engineering students on their perceived employability. Built on the employability skills framework of Jackson (2012) and perceived employability scale proposed by Roothwell et al.(2008), the study empirically validate these two constructs on a sample of engineering students from India. Confirmatory factor analysis validated the applicability of the constructs. The associations between employability skills and perceived employability have been found positive. Further, the role of entrepreneurial initiative and problem solving were assessed as a mediator between employability skills and

perceived employability using structure equation modeling. The results of the study matches with the findings of previous studies and also look at the dimension of entrepreneurial initiative and problem solving as mediators in the relation between employability skills and perceived employability of the engineering students. The study confirm the association of previously identified factors of employability skills with that of perceived employability of fresh graduates and highlights the importance of entrepreneurial initiative and problem solving as a mediator in the existing model. Engineering institutes can channelize their training efforts to improve the problem solving skills and entrepreneurial orientation of the students that inculcate the intrapreneur trait in their personality. This will indirectly improve their employability skills. Students can also get benefits by acquiring entrepreneurial initiative and problem solving skills to strengthen their employability skills set.

Keywords: Employability skills, Perceived employability, Entrepreneurial initiative and employability skills, problem solving and employability skills. Employability skills - SEM approach.

INTRODUCTION

School and college education is considered as the best investment in the human resource development for the economic growth of the nation (Kingdom and Soderblom, 2007). Most of the education system in the developing nations are recognized as a knowledge driven system largely based on the theoretical concepts and class room teaching, the skills based learning system has started but the gap is much more than required employability rate in the country. Data shows that more than 55% of the young people (below 25 years) are unemployed in the developing nations (ILO, 2014). A recent report published at the Centre for Sustainable Employment, Azim Premji University shed the light on the unemployment scenario among the educated youth in India. The report states that number of well-educated but unemployment youth is three times more than the national average (Basole, 2019).

One of the most cited studies of Jackson (2012) in assessing the employability skills separate the set of these skills in the 10 dimensions which has been adapted in the present study for validation. Out of these 10 dimensions, two of the dimensions namely entrepreneurial initiative and problem solving skills are rated on high on priority by the corporate employers in our pre-qualitative test. Based on their rating and feedback, we assessed these two dimensions as the mediator between employability skills and perceived employability. It has been rightly argued that “entrepreneurship can be defined as a special form of employability” (Moreland ‘2006). Further we consolidated the study of Calvo and Garcia (2020) which is also based on the study of Jackson (2012) and identified dimensions of entrepreneurial initiative as a mediator. This directed our understanding about the importance of entrepreneurial drive in the students as one of the crucial dimensions of employability skills for the employment perspective. As the role of entrepreneur is not to start a business but he is the core driver for the expansion and profitable growth of the existing business. Also the elements of creativity and initiative are one among the essential skills employer looks in the candidates now a day which is largely associated with the entrepreneurial orientation.

Similarly extended literature review provided reasonable consideration for assessing problem solving as a parallel mediator in the model. Subsequently, several research scholars have documented by in their findings that employer from the industry prefer the graduates who possess problem solving skills and can demonstrate this in the real work scenario (Aliu and Aigbavboa, 2021). Also, the present study follows the work of Calvo and Garcia (2020) by extending the model by analyzing entrepreneurial initiative and problem solving skill dimension as mediator between employability skills and perceived employability.

The structure of this study analyze the literature of adopted studies followed by research methodology and discussion of the results. The implications and limitations are discussed in the last section.

LITERATURE REVIEW

Employability skills are basic skills require for acquiring and sustaining the job in a competitive environment (Robinson, 2000, 2006). Employability skills are considered as the skills which can be acquired and transferable, are functional and composed of knowledge and right attitude to perform the given job (Overtoom, 2000). In the context of fresh graduates, employability skills are seen in the form of attributes by the employers in the college graduates willing to opt for a professional growth and learning at the workplace (Miller, Biggart and Newton, 2013). Different researchers have defined employability skills as per the outlook and need of employers in their empirical studies.

Ramlee (2002) assess the employability skills of engineering graduates against their technical skills and emphasize the employer's view in terms of motivational, communication, interpersonal, critical thinking, entrepreneurial and problem solving skills as major skill sets in acquiring the desired job. The study of Blom and Saeki (2011) is one of the most cited in the assessments of the employability skills and measure this in the three clusters namely - Management skills (12 items), technical skills (8 items) and communication skills (4 items). A total of 24 items in three factors has been widely used in the subsequent studies (Such as Jeswani, 2006).

Olivier et al. (2014) undertook and analyse the employer's views on the employability skills of graduates and identified the five clusters of skills which are related to basic skills, teamwork and interpersonal proficiency, domain - specific and technical skills along with the capability specific.

The conference board, Canada (2000) proposed the employability profile built in three sections which are termed as - Fundamental skills (consists of communication, numerical proficiency, problem solving and information management), Personal management skills (Attitude and behaviour, being responsible and adaptable and learning proficiency) and Team work skills (Work in a team and participate actively in the project works as an efficient team mate). These dimensions were studied in many previous researches.

PERCEIVED EMPLOYABILITY

Employability as defined by the Yorke (2006) is a skill set embedded with the personal attributes that support a candidate to secure the chosen job and succeed in it. Fugate et al. (2004) added career identification, human and social capital and adaptability in the definition of the employability to bring the professional and management aspects in it. In the same vein, Rothwell and Arnold (2007) conceptualize the term with the capacity of the person to deal with the challenges arises at work place. While these definitions have the common outlook for individual, the context of the employability for college students differs in the study of various authors. Jackson and Wilton (2017) directed the focus toward the perceived employability.

Perceived employability concerns the perception of job seeker about the available job opportunities (Rothwell & Arnold, 2007). Based on the literature review, Álvarez-González et al (2017) define perceived employability as “A person’s subjective perception about his capability for acquiring and retaining desired job in the available job market (adopted from Kim et al., 2015).

The existing scales on perceived employability have been designed to examine university student’s self-perceptions and expectations about the employability with the available jobs in the market. The scale has been used in the various studies such as Vargas et al, (2018) who validated the scale among 1508 Spanish students through CFA. In the same vein Lodi et al (2020) validated the scale and extended the work by including career adaptability and well-being in the model

RESEARCH GAP

Most of the previous studies on perceived employability are theoretical (Dacre et al., 2014). While many of these studies (Such as Chou and Shen, 2012; Rothwell et al., 2008; Rothwell et al., 2009) employed exploratory factor analysis, validation of scale in terms of convergent and discriminate validity is not performed in many studies (Finch et al, 2013). The relation between the employability skills and perceived employability have been assessed but the role of entrepreneurial initiative and problem solving has not been

assessed in the model. These hypotheses have not been tested on the engineering students in India. To bridge this gap, the author in the present study investigated the role of these entrepreneurial initiative and problem solving as the mediator between employability skills and perceived employability.

CONCEPTUAL FRAMEWORK & PROPOSED HYPOTHESES

Employability Skills and Perceived employability:

Perceived employability can be measured in various ways, in this study; we are using dimensions identified by Roothwell (2008) as a suitable measure for engineering students studying in the final year. Since, the employability skills have been identified as clusters of specific skills (Working efficiently, Communicating effectively, Self - awareness, Critical thinking, Data Analysis, Self -management, Social responsibility and Professional development), we propose the second order modeling with hypothesis as below:

H - 1: The employability skills at second order (higher level) construct composed of eight determinants will be associated with the perceived employability of the students.

Employability Skills and Entrepreneurial Initiatives:

Moreland (2006) is credited to draw research attention toward the relationship between employability, entrepreneurship, and higher education through his study which analyse the dimensions of entrepreneurship observed among the students who founded and raised their business start-ups during their academic life.

Pardo-Garcia and Barac (2020) emphasized on the role of entrepreneurial orientation among students as a necessary part of academic. They stated that - Not all students would become entrepreneur in future, yet acquiring these skills can boost their learning experience and may improve their entire perspectives toward employability. They will not act merely as an employee but will try to be act like entrepreneurs. Based on the above discussions, we propose the following hypothesis -

H - 2: The Employability Skills is associated with the capability of the Entrepreneurial Initiatives of the engineering students

Entrepreneurial Initiatives and Perceived employability:

Many employers agree that students or candidates (apply for white collar jobs) who are good at taking initiative and creative by approach reflect comparatively better perceived employability than those with less drive for entrepreneurial initiative/intention (Bacigalupo et al, 2016). The following hypotheses have been developed -

H - 3: The capability of entrepreneurial Initiatives influence the perceived employability

H -4: The entrepreneurial Initiatives mediate the relationship between Employability Skills and perceived employability of the engineering students.

Employability Skills and Problem solving (Aptitude) skills

Problem-solving includes thinking outside the box, identifying and applying alternate solutions feasible to problems occurs (Reid and Anderson 2012). The present business world is uncertain and requires prompt actions that expect the engineering graduates to be proactive and thinking critically to solve the frequently occurred problems in day to day corporate world (Jackson and Chapman, 2012)

Some of the prominent techniques used in the problem solving that can be used in the higher education as training tools are brainstorming (Michinov et al. 2015); Root Cause Analysis (Okes 2019), Pareto charts (Arnold, 2015).

It has been documented by several research scholars in their findings that employer from the industry prefer the graduates who possess problem solving skills and can demonstrate in practical situations. Since, the problems arising in the industries in the routine task are many times unexpected and require fresh outlook (Aliu and Aigbavboa, 2021). On the basis of the results of this studies, we propose the following studies -

H - 5: The employability Skills is associated with the level problem solving capability of the engineering students

Problem solving (Aptitude) and perceived employability

Zaharim et al (2009) conducted a four country survey including Malaysia, Japan, Singapore and Hong Kong to analyze the employability skills for engineering students. Despite the variations in the list of employability skills in the four countries, problem solving is one among the common identified skills in all the four countries. Their framework (Study) is entitled as “Engineering Employability Skills Required by Employers in Asia”. Asian nations have been assumed to fall in the identified skills set.

H - 6: Problem solving (Aptitude) ability is associated with the perceived employability of the engineering students

H - 7: Problem solving (Aptitude) ability mediate the relationship between the employability Skills and perceived employability of the engineering students

Proposed conceptual model - Figure - 1 represents the proposed research model for the study.

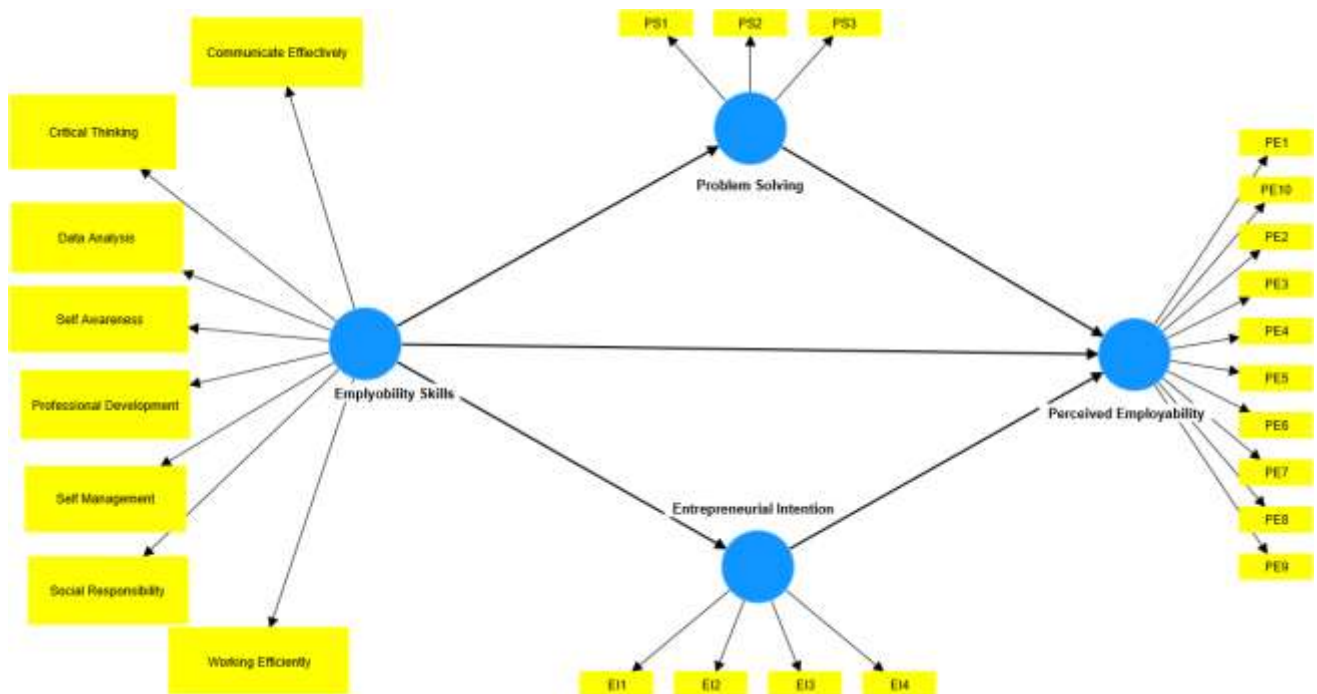


Figure-1 - Conceptual Model for the study

RESEARCH DESIGN

In approach to successfully conduct and test the hypotheses, it is important to operationalised the concept of employability skills as an empirical research variable with a scale more specifically measuring the different dimensions of employability skills applied by the targeted respondents in their routine practice related to academic and personal work life, thereby subsequent hypotheses could demonstrate the high level of validity with respect to the identified results in the study.

Following the same line of agreements, the research design of present empirical study involves the validation of the constructs used in the study with the application of confirmation factor analysis (CFA) and testing of hypotheses based on the relations between the factors of employability skills with the perceived employability

Questionnaire

Section - 1: This section asks the respondents to provide information about their city of education and stream of engineering they are studying.

Section - 2: - **Employability Skills** were assessed by adopting the scale proposed by Jackson (2012) which consists of 10 dimensions of employability skills in total of 39 items. These 10 dimensions have been described below -

Working efficiently with the people - This dimension includes the items related to collaborative work and communication skills, planning and discussing with the colleagues.

Communicating effectively - As the name suggest, this dimension measures the communication skills of the graduates be it written and verbal, feedback loop in terms of receiving and providing comments.

Self - awareness - This consists three items of self assessments of personal behavior, strength and weakness at working organizations.

Critical thinking - Critical thinking measures with two items of recognizing the steps to be taken in the form of actions and analyze the unpredictable or unseen situation in the given work context

Data Analysis - This factor is the accumulation of three variables related to analyzing the numbers and data, interpreting the information and results and decoding the complexity of information for decision making.

Problem - solving - The aptitude of the candidates whether quantitative or reasoning is assessed with their problem solving skills which ensure the same applicability at the work place. This has been measured with the skills related to analyzing the facts and diagnoses the problem.

Entrepreneurial initiative - Taking initiative with creative bent of mind is seen as an integral and essential part of employability skills set. Further, the entrepreneurial drive in the fresh graduate brings the energy in the work team and keeps the spirit growing.

Managing - self - Self management is the psychological check list about the self in terms of behavior in the challenging situations, consistency and integrity at work place is measured by self introspections.

Social responsibility - This is measure with the four items related to showing and performing responsibility toward the society.

Professional development - This includes five items related or management skills with professional bent of minds that check for the prioritizing the task, making realistic plans and to set and achieve the objectives with the professional approach.

Section - 3: **Perceived employability** - These were measured by following the scale developed and validated by Roothwell (2008). 10 items were used to assess the

perceived employability of the students. The dimensions consists of the reputation of the engineering institute, the demand in the job market of the stream of engineering they are pursuing and their competitiveness, the job market scenario and their own commitment for their study and results. Beside the academic, the confidence in their abilities and skills as required by employers was also assessed. The scale as proposed here by Roothwell (2008) had shown the robust composite reliability with a value of 0.89 in our assessment.

Both the constructs were measured using Likert scale on a scale of 1 to 5 with 1 strongly agree and 5 strongly disagree. Students were asked to rate their perceived skills in the given statements.

SAMPLE DESIGN

Target Population: We followed the process as suggested by Zikmund (2010) to select the target population which fit to research objectives as per the defined construct and the questionnaire; the population was selected to approach for data collection. Sampling units are selected from the four cities of Madhya Pradesh (Central state of India) namely Indore, Ujjain, Gwalior and Bhopal. These cities were selected on the basis of the feedback received from the employers and parents of the students about the quality of the engineering studies, reputation of the institutes and the track record of the placements of the students which is comparatively better in the state of Madhya Pradesh.

Sampling Method/Technique: Purposive and judgmental sampling under non - probability sampling method is found to be most suitable and so is designated. Snow ball sampling is also followed in certain cases. Based on the researcher's judgment about the past records of the placements, duration of the institutes (existence time) and the feedback of the employers (Acquired through secondary data sources) were applied. Further, based on the purpose of the study (research objectives); students were selected from the engineering institutes known for good placements in the state of Madhya Pradesh.

Also, for a better relevance to study, the respondents were selected on the basis of following criteria:

Criteria for sample selection: Following criteria were adopted while collecting the response from the engineering students -

- Engineering students who are willing to acquire a job in the corporate sector through college placements process. Students looking for higher studies or self employed/family business were requested not to participate in the response process.
- Students have fair understanding about the basic procedures about the placements process (Aptitude test, technical test, group discussion and interviews) and have put considerable efforts in acquiring these skills.
- Students are keen to understand the questionnaire first for a clear understanding of terms used in the survey, purpose and outcome of the study. Further they are keen to participate in the survey and are open to ask questions if not clear to them as asked in the questionnaire.

These criteria were mentioned in the begging (first page) of the questionnaire.

DATA COLLECTION

The questionnaire was circulated by conducting field surveys at the premises, classrooms or in the hostels of the selected engineering institutes in the mentioned cities. Personal meeting with the students allowed us to explain the scope of the study or to clear their doubts if any related to the questions asked in the questionnaire. Students were asked to read and understand the questionnaire first. A brief description of the questionnaire was provided to them before answering the survey. Also they were encouraged to ask the doubts if any. The class room survey was conducted with the help of college staff whenever possible. In case where personal visit could not be met, online survey was conducted with the support of institute staff, and the

classmates (snow ball sampling). The entire data were collected in the duration of July November 2022 to March 2023.

Data Cleaning:

Around 547 responses were collected through institute/field survey of various engineering institutes; while 159 responses were collected through online mode, this makes a total of 706. After the data cleaning, 678 responses were found to be fit for the study as these were error free.

SAMPLE SIZE - The finalize sample size for the data is 678 which is acceptable for conducting the CFA and SEM as per the guidelines of Hinkin (2005). As this is more than 10 times the number of questions/item in the questionnaire.

DATA ANALYSIS

Data were analysed with SMART PLS -4.0 for confirming the validity and reliability of the constructs (CFA) and subsequently for the testing of the hypotheses (Structure equation modeling or SEM).

Following the recommendations by Hair et al (2019), the latent constructs of employability skills, entrepreneurial initiative, problem solving and perceived employability were validated. Once the constructs were found reliable and validated in the context of the study, the full structural model was estimated. The structural equation model was applied in order to analyse the data as it allows the examination of multiple regression simultaneously.

Table -1: Demographic Profile of the candidates

Variable	Options	Frequency	Percentage
City	Indore	387	57.08
	Bhopal	158	23.40
	Gwalior	88	12.98
	Ujjain	45	6.64
	Computer Science (CS)	189	27.87

Engineering Stream	Mechanical Engineering (ME)	210	30.98
	Information Technology	55	8.12
	Civil Engineering	143	21.09
	Other	81	11.94

Source: Author's compilation

TEST OF MEASUREMENT MODEL - (CONFIRMATORY FACTOR ANALYSIS)

As per the guidelines provided by Hair et al (2019), the first order measurement model was assessed. These were assessed by observing the indicator reliability (for reliability assessment) of the model and validity assessment by observing the convergent and discriminant validity indicators.

Internal Consistency Reliability

The value of ρ (Rho) is observed for assessing the internal consistency reliability of the all the constructs as this (Rho) represents the ratio of the square of the sum of loadings to that of the sum of the errors due to variance in the constructs. A ρ value greater than 0.7 ($\rho > 0.7$) implies that the variance of construct under study is able to explain 70 % of the variance in the given relationship of the model. Use of composite reliability (CR) is also suggested instead of using the Cronbach's alpha value (Hair et al., 2022). The obtained values of Cronbach alpha and CR were found to be acceptable as it is recorded above the threshold value i.e. 0.7 (Nunnally & Bernstein, 1994).

Average Variance Extracted (AVE)

Convergent validity which assures that the item of the respective constructs load on the construct and does not interferes or load on the other constructs in the given model. Convergent validity in the PLS is measured through average variance extracted (AVE) values (Fullerton and Wempe, 2009). In the present assessments, all the values of AVE were observed above the acceptable threshold value of 0.5 which confirm the evidence that constructs fall under the convergent validity criteria. (Table - 2)

Table - 2 - Reliability and Validity Indicators of Constructs

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
CE	0.917	0.919	0.938	0.75
CT	0.825	0.828	0.92	0.851
DAT	0.95	0.95	0.968	0.909
Employability Skills	0.852	0.855	0.856	0.507
Entrep. Intention	0.936	0.946	0.954	0.838
PD	0.889	0.887	0.921	0.702
Perceived Employ.	0.896	0.897	0.914	0.517
Problem Solving	0.842	0.838	0.896	0.684
SA	0.905	0.909	0.941	0.841
SFM	0.934	0.934	0.953	0.835
SR	0.94	0.942	0.957	0.848
WEF	0.877	0.888	0.909	0.627

Source: Output from the PLS - 4.0.

As, can be infer from the table - 2 that all the values of reliability indicator (Cronbach's alpha and Composite reliability) are above 0.70 and values of AVE is above 0.5, which confirm the reliability of the constructs.

Discriminant Validity

The Discriminant validity of all the constructs of first order measurement model was assessed by HTMT ratio values of correlations among the construct. It indicates all the constructs are discrete or independent of each - other. The critical values of HTMT ratio below 0.85 confirm the discriminant nature of the constructs in the model (Henseler et. al., 2015) - See table - 3 below-

Table - 3 - Discriminant validity of the construct

	CE	CT	DAT	Empl. Skills	Entrep. Intention	PD	Perceived Empl.	Problem Solving	SA	SFM	SR

CE											
CT	0.56										
DAT	0.725	0.462									
Employability Skills	0.753	0.796	0.747								
Entrepreneurial Intention	0.331	0.342	0.384	0.482							
PD	0.472	0.718	0.485	0.854	0.353						
Perceived Employability	0.467	0.619	0.563	0.828	0.584	0.703					
Problem Solving	0.395	0.589	0.496	0.751	0.63	0.607	0.861				
SA	0.322	0.481	0.436	0.6	0.621	0.47	0.751	1.101			
SFM	0.375	0.643	0.395	0.777	0.273	0.633	0.67	0.554	0.391		
SR	0.398	0.607	0.414	0.812	0.335	0.681	0.714	0.737	0.488	0.783	
WEF	0.376	0.451	0.405	0.761	0.466	0.487	0.619	0.59	0.536	0.367	0.451

Note : CE- Communicating effectively, SA -Self - awareness, CT - Critical thinking, DAT - Data Analysis, SFM - Self - management, SR - Social responsibility, PD - Professional development WEF - Working efficiently,

STRUCTURAL MODEL ASSESSMENT

Structural model assessment in the current study follows the suggestions as recommended by Hair et al. (2022). As the measurement model has been assessed with all the critical values under acceptable range, the assessment of structural model is taken out. The first step in the process involves assessing the collinearity issues by analyzing the variance inflation factor (VIF) values. Most of the VIF values of the items were recorded below 3 with few values under the liberal permissible values of 5 is acceptable under the guidelines as suggested by Hair, Ringle and Sarstedt (2011).

Assessing the relevance and significance of the structural model - In the structural model, the relationship between the latent variables is indicated by the path coefficients (β). PLS - 4 software provides a graphical output which indicate

the values of path - coefficients and p-values between the various constructs (See Figure -1)

Structure equation modeling imply sub - sampling via bootstrapping to get the values of path coefficients. Once the algorithm calculated with the 5000 sub - samples created by random selections, the construct scores are recorded to estimate each partial regression model in the path. Path Coefficients values represents the hypothesized relationships among various constructs. The path coefficients with standardized coefficients value (between + 1 and - 1) indicate the strength of the relationships between the constructs and confirm that constructs are statistically significant. (Table -4)

Table - 4: Structure Model Assessment Results: Path coefficient, Hypotheses and effect size

Hypothesis	Relationships	Path Coefficients (β)	P values	Class Interval		f ² value
				2.5%	97.5%	
H - 1	Employability Skills -> Perceived Employability	0.551	0	0.495	0.608	
H - 2	Employability Skills -> Entrep. Intention	0.453	0	0.382	0.526	
H - 3	Entrep. Intention -> Perceived Employability	0.116	0	0.052	0.18	
H - 5	Employability Skills -> Problem Solving	0.561	0	0.507	0.616	
H - 6	Problem Solving -> Perceived Employability	0.302	0	0.226	0.375	
Total Indirect effects						
	Employability Skills -> Perceived Employability	0.222	0	0.184	0.262	
Specific Indirect effects						
H - 4	EmPLY. Skills -> Entrep. Intention -> Perceived EmPLY.	0.052	0.001	0.024	0.084	
H - 7	EmPLY. Skills -> Problem Solving -> Perceived EmPLY.	0.17	0	0.127	0.212	
Total Effects	Employability Skills -> Perceived Employability	0.773	0	0.738	0.808	

Source: Output from Smart PLS -4.0, CI = 95% bootstrap confidence interval. Compiled by the author

Table - 4 provides the summary of the results of the structure model assessment which indicate the significance and size effect of the path coefficients values of the constructs relationship in the presented model. Tabulated of resulted data are presented in line with the recommendation of Buitrage et al (2018). As, it can be noted that all the values of path coefficients (β) have been found to be significant at 5 % level ($p < 0.005$) and also f^2 values with low effect size implying the moderate effect. Figure - 2 exhibit the relations between the constructs and the confirmation of the accepted hypotheses with applicable values of path coefficients and p - values.

Coefficient of Determinations - (R^2)

The most widely used measure to evaluate the strength of the structural model is through observing the value of coefficient of determination (R^2). It represents that how well exogenous latent variables are associated with the endogenous latent variable. The value of R^2 indicates the amount of variance in the explained by all exogenous construct linked to endogenous variable.

Table - 5 - Coefficient of Determinations - (R^2) values

	R-square	R-square adjusted
Perceived Employability	0.694	0.693
Entrepreneurial Intention	0.205	0.204
Problem Solving	0.315	0.314

Source: Output from the PLS - 4.0

From the table, the value of R^2 is 0.694 which is quite substantiate as recommended for a substantiate model while value between 0.50 to 0.75 is considered as moderate (Hair, Ringel & Sarstedt, 2015; Hensler et al., 2015).

Model fit Indices - SRMR: Standardized root mean square residual or SRMR value assess and reflects the goodness of the model if the same study is applied for a different set of sample selected from different population. Following the

recommendations by Hair et al (2021), the threshold value of SRMR should be less than 0.08, while a value up to 0.10 is also acceptable as a liberal approach. SRMR is the estimate of approximate fit. While NFI - Normative fit index value should be less or nearer to 0.9 for a recommended fitness. It can be observed from the table -5 that the values of SRMR and NFI in the present model fall under the suggested criteria.

Table - 5 - Model Fit Assessment - SRMR value

	Saturated model	Estimated model
SRMR	0.091	0.092
d_ ULS	1.824	1.856
d_ G	0.495	0.499
Chi-square	1034.62	1041.92
NFI	0.609	0.6

Source: Output from the PLS

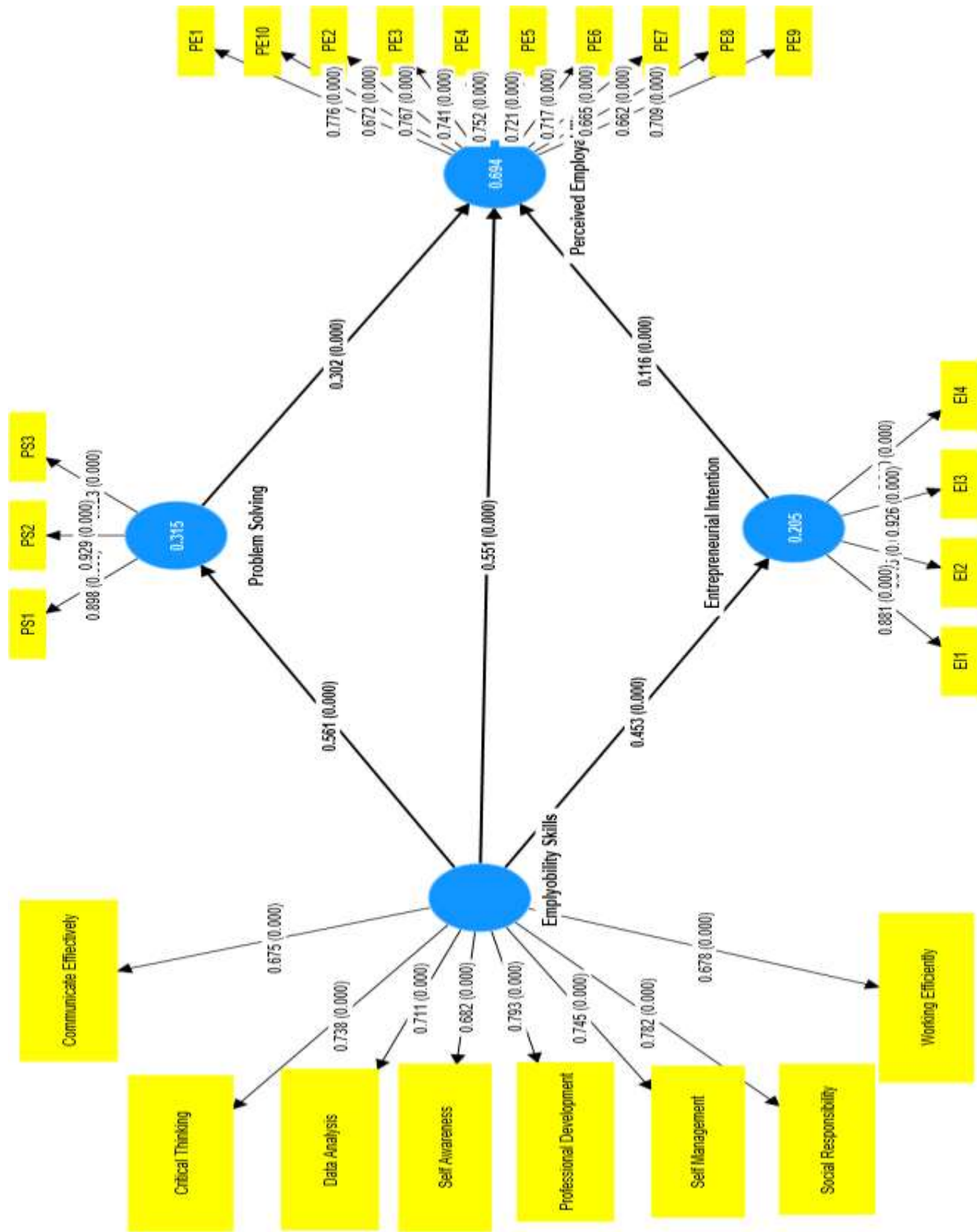


Figure -2: Structure Model with the values of path coefficients & p values

Table - 6: RESULTS OF HYPOTHESES

Hypothesis	Statements	Results
H-1	The employability skills at higher level of the engineering students are associated with their perceived employability.	Accepted
H-2	The employability skills of the engineering students are associated with their level of entrepreneurial initiative.	Accepted
H-3	The level of entrepreneurial initiative of the engineering students influences their perceived employability.	Accepted
H-4	The entrepreneurial initiative of the engineering students mediates the relationship between employability skills and perceived employability.	Accepted
H-5	The employability skills of the engineering students are associated with their level of problem solving.	Accepted
H-6	The level of problem solving of the engineering students influences their perceived employability.	Accepted
H-7	The problem solving of the engineering students mediates the relationship between employability skills and perceived employability...	Accepted

As can be inferred from the table - All the hypotheses fall in the acceptable criteria, supporting the associations of the variables in the model.

DISCUSSION

Employability skills of the college students are of prime concern among the educationist and researchers, previous studies analysed the associations between employability skills and perceived employability of the students. The present study adopted the frameworks and scale developed by Jackson (2012) and Roothwell (2008) to assess the associations. The findings of the results validate the model for the students in India. The growing demand for entrepreneurial initiative and problem solving skills encouraged us to assess the direct as well as the indirect influence of these two variables as a mediator in the model. The result of the analysis confirms the role of problem solving and entrepreneurial initiative skills as a direct

influencer as well as mediator is significant in the relations between employability skills and perceived employability. Reviewing problem solving and entrepreneurial initiative as a key employability skill for engineering students.

The results of our mediation analysis support the views of Neubert et al. (2015) who started their analysis on the same by stating the assumption that most of the future jobs will largely involve non routine tasks. Also, our results matches with the framework developed and suggested by De De Fruyt et al (2015) in their study “the employability in the 21st century” and emphasizes on the importance of EI and PS in the same line of agreement.

One of the recent studies conducted by Caballero et al (2022) analyzed the perceived employability among students surveying 1088 confirms that self confidence and networking with peers as among the important factors measuring the perceived employability of students. These two aspects are largely associated with the entrepreneurial drives that lead students to build a successful start up (Bacigalupo et al, 2016).

Aliu and Aigbavboa (2021) in their review paper on the problem solving skills as a key skill for employability have suggested the possible ways to foster the problem solving skills in the higher education institutes. The study conclude that these skills can be developed in the class room settings among students by applying student centric approach via case based, project assignments and exposure to practical problems. The results confirm that university student networks, labour market and self-confidence in job searching and university are the most important factors in graduates’ perception of employability.

IMPLICATIONS

Theoretical Implications: the revised model will add value to the existing literature on employability skills specific to emerging economies where the challenges related to employment differ compare to the developed economies. The mediating variables as identified in the present study

can support the extended work in the future researches in this area.

Practical Implications: The present business scenario is highly turbulent, the hiring professional (HR) of corporate are demanding agile and action oriented candidates (workers) who can operate as an intrapreneurs at the workplace. This demand for the enhanced employability skills with more focus on the entrepreneurial initiative and problem solving skills. Students can themselves train or can acquire training that support to improve their entrepreneurial initiative and problem solving skills as a mediating tool to indirectly enhance their employability skills. The ability to grow the business from a start up to a multi-national can inculcate the intrapreneurs in their personality which employer will appreciate.

CONCLUSION

Limitations and Future Directions: The study is administered in a cross sectional, single way that do not verify the test - retest reliability. A longitudinal study can be conducted in future for deeper insights. Limited number of demographic variables has been included to maintain the timely response of the questionnaire.

A comparative study between male and female students can be conducted to identify the gender based discriminations if any occurs in the employability skills or self perceived employability between the male and female students. Similarly a comparative study among various engineering stream can also be the concern for future research.

The present work is the replica of the previous studies using the same scale in different geography and cultural settings, all the results obtained in the study proves the robustness of the construct and scale in a different job market. It can be concluded that the Employability and Self-perceived Employability Scale can be used for assessing employability as a general measure in the future research.

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