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Information Literacy as a Catalyst for Educational Innovation and Entrepreneurship Development in Higher Education

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Abstract

The motivation of this study is to gauge the effect of the information literacy educational innovations and entrepreneurship development among the higher educational institutions. The measurement of educational innovation comprises of teaching-related innovations and administration-related innovations among the similar institutions. A structural questionnaire covering the measurement of the variables was designed using the past studies after slight modifications (maximum of 30% of each item) which also comprises of demographic variables like academic rank/position, working experience, disciplinary field/department, level of education and technological efficiency. After careful cleansing procedure, it was found that 236 responses are valid for the statistical analysis. The study applies descriptive measures to check the data trends and normality, whereas two step approach named measurement model and structural model were also applied using the Smart PLS. According to the findings, positive and significant linkages exist between the information literacy, entrepreneurship development and two dimensions of educational innovations. According to the study findings, it is suggested that higher educational institutions should implement the training programs in terms of information literacy for their faculty members along with focus on digital tools and innovation strategies. Moreover, information literacy needs to be incorporated into regular faculty development programs to promote the teaching effectiveness and engagement with the students. Additionally, institutions must ensure that students have access to these programs, as they support entrepreneurial thinking by enabling students to analyze market data and identify business opportunities.

Keywords: Information Literacy, Entrepreneurship Development, Educational Innovation, Higher Education.

Introduction

Entrepreneurship development (END) is a process of helping and assisting the individuals or groups for building the skills, knowledge, and resources so start their own business ventures (Madli et al., 2023). It mainly focuses on developing some important entrepreneurial abilities while encouraging the dimensions like creativity and innovation. Additionally, it also promote the risk taking abilities and provide support for the successful launching of successful business (Madli et al., 2023). It is also utilized as a key technique in order to promote the self-employment, innovation and economic self-sufficiency. However, the role of formal education is quite evident where the entrepreneurial orientation indicates that early life experience aims to shape both the cognitive and non-cognitive abilities of the

individuals (Sajjad and Talat, 2024). Meanwhile, END is a key technique which help in nurturing entrepreneurial competencies like the creativity, innovations, and resilience which are significantly important for starting and running a business (Kuratko et al., 2021). Hisrich et al. (2017) put the stress on fostering the entrepreneurial mindset which further encourages the problem solving and value creation. Therefore, it is important to note that END is not only about to launch a new business venture rather than it also connects with creating an environment that can support the creativity, growth, sustainability and innovation over a longer time. Since it emergence by Zurkowski (1974), information literacy (INF) has been receiving significant theoretical attention. The author has described it as the ability to apply the information resources in an effective manner for the purpose of problem solving. In the beginning, INF has been regarded as a set of discrete skills which are mainly connected with the usage of library (Behrens, 1994). However, with the passage of time, the concept of INF has been evolved based on more comprehensive definition (Yu, 2025). The historical review indicates that back in 1989, the American Library Association or ALA has explained the concept of INF as the ability to recognize the information need, evaluate, locate along with effective usage.

The same definition was further utilized where the INF tends to include the components like problem solving and communication (Yu, 2025). Moreover, as per the competency standards for the higher education, the standards outlines dive different competencies where the objective is to treat the INF as the universal and measurable set of skills as applicable to different disciplines (Kapitzke, 2003). Education innovation indicates the adoption and introduction some new ways of doing the things which help in improving the education (Tubin, 2010). Therefore, these set of innovation include the new practices, ideas, products and services which ultimately transform the education system (Carrier, 2017). It occurs in different dimensions and forms specifically in the form of how the educational institutions are managing to the teaching methods along with the delivery system (Serdyukov, 2017). Moreover, the educational innovation can also comprise of making the structural changes, new products and services in education and improving the learning process and teaching methods. However, this type of improvement is at educational level like in learning processes and in the classrooms (Lubienski and Perry, 2019). A detailed investigation of the available studies state that there are three main categories of educational innovations entitled as administration-related innovations, teaching related innovations, and process innovation, respectively (Bouranta and Psomas, 2024). Specifically, the administration related innovations encompass the introduction of new elements into the system design of the organization (Rupietta et al., 2021). On the other side, teaching related innovations focuses on introducing new or improved services which aims to increase the level of satisfaction among the students (Mahmutaj et al., 2021). Finally, the idea of process innovation has a core objective to reduce the delivery cost, enhancing the service and its quality (Mahmutaj et al., 2021).

Literature Review

Information literacy and development and success dynamics of entrepreneurship has been under the observation of the researchers and policymakers. Bosman et al. (2022) claim that there are several barriers that can restrict the access to the entrepreneurial education. This issue has been addressed by the authors through integrating the concepts of entrepreneurship into different aviation courses by using the activities related to information literacy. Five online discussions were created along with the survey covering the learning outcomes and level of satisfaction. It is found that information learning exercises like online discussion, student-based presentations and article critiques are helping substantially in developing the entrepreneurial mindset among the students.

Nikou et al. (2020) aim to explore the significance of the information literacy from the context of the social media which is defined as the cognitive skill necessary not only for evaluating but also for the usage of the information in an educated way. Moreover, it is argued that such type of information is evident for reducing the uncertainty among the entrepreneurs. Keshavarz (2021) view that in an academic environment, there is a wide range of factors having their impact on the entrepreneurial thinking. The study has examined the role of the information literacy towards the entrepreneurial capabilities of the students among two set of universities. The authors have applied the structural equation modelling technique along with the factor analysis where the findings show that information literacy is a significant indicator in reflecting a positive change in the entrepreneurial capabilities where there is no difference in terms of

gender. Heimann (2023) has focused on the University of California, Irvine who have innovation and Entrepreneurship Librarian partnered with the new venture competition while conducting a workshop on the information literacy. The findings show that teams receiving such type of training facilities are performing well in the form of concept paper. It is suggested that in order to boost the performance of th team, there is a need to incorporate the information literacy into the entrepreneurship competition.

The nexus between the information literacy and innovation has also been under the attention of the researchers, yet in the domain of higher education, the theoretical and empirical contributions are not sufficient. For instance, Hernández-Serrano and Jones (2010) examine the relationship between innovation, information literacy and lifelong learning. Author view that with the passage of time, there is a strong dependency of the knowledge on the digital information, therefore, there is need to develop a culture of lifelong learning. Moreover, both the technologies and digital tools are providing new ways of learning. Gong (2023) have focused on the role of college's information literacy dynamics towards promoting the innovative ways of teaching in China. Data was collected from 280 teachers by using the survey questionnaire for which the results confirm that information literacy through information knowledge and capability has its significantly positive impact on the innovative teaching methods. Chaliha et al. (2024) focus on the innovative approaches of information literacy with the core purpose of enhance the skills in the digital era. It is believed that with the rise in the diverse platforms of information, several challenges exist. The study primarily explains how the inquiry-based learning and artificial intelligence tends to increase the skills related to information literacy. Ahmad et al. (2020) investigate the relationship between information literacy and innovation among the small and medium enterprises. The authors claim that this relationship is widely neglected in the literature. For this purpose, a structural equation modelling analysis for the data of 184 companies have been applied. The results show that there is a significant and positive impact of the information literacy on both the exploratory and exploitative type of innovations among the given firms. Odularu and Bokwe (2025) have conducted a systematic review of the literature for analyzing the role of information literacy in higher education institutions of Africa. It is believed that digitalization has reshaped the sharing of information and its access. The study considers the technology acceptance model to examine the challenges and innovations related to information literacy. The results confirm the presence of the critical gap while combining the digital practices with the traditional knowledge sharing practices. The study recommends strengthening digital literacy, fostering cross-continental collaboration, and creating a resilient IL foundation to meet global educational demands while maintaining traditional methods alongside digital solutions.

Overall, the literature review confirms that the relationship between information literacy, entrepreneurship development and educational innovations has been under very little observations both in theoretical and empirical grounds. Moreover, the literature also highlights the need for exploring such relationship specifically from the context of the higher educational institutions. Additionally, the quantitative data investigation for providing some fruitful policy implications and recommendations for the higher education institutions to boos the information literacy, entrepreneurship development and educational innovation has also been found as missing part in the literature till date. These gaps are truly addressed by the current study through exploring the Catalytic role of information literacy towards entrepreneurship development and educational innovation. Another major contribution of this study is that it has taken two major factors entitled teaching related innovations and administrative related innovations to measure the trends in educational innovations which indeed a meaningful addition in the modern literature. The rest of the paper has been organized in the following manners: Section 3 focuses on research methods and key respondents being focused. Section 4 explores the empirical estimations, whereas Section 5 concludes the study through policy recommendations.

Research Methods and Respondents

The methodological approach of this study is quantitative based on the primary data collection with the help of survey questionnaire. The study variables are information literacy as key independent variable followed by educational innovations and entrepreneurship development at higher education. A detailed observation of the available literature helps in finalizing the research questionnaire for these variables along with the most important demographic factors (see Table 2). As reported in Table 1, the items have been considered after slight modification in the

original statements (maximum up to 30% of each) in order to improve the contextual understanding of the respondents. The sample items for the information literacy covers "I can help students become more aware of information, such as developing a strong understanding of its importance, I can enhance students' foundational knowledge of information management, including basic data processing techniques, and I can help students apply and innovate information usage, such as leveraging technology to handle data, etc.". on the other side, the variable entitled entrepreneurship development has been measured through five items with the statements like "Showing interest in engaging with new experiences and activities, taking advantage of available opportunities for growth, and Contributing positively to the community and societal well-being, etc." The variable like innovation has two factors entitled educational and teaching related innovations, respectively. The questionnaire has been well gone through both the process like pretesting and pilot testing. The scores for the pilot testing have been well covered in Table 1 below, showing that all the variables have well achieved the desired level of reliability as alpha scores are above 0.70.

Subsequently, a total sample of 300 questionnaires were distributed physically out of which the researchers were able to collect a final and valid response of 236 questionnaires, covering a response rate of 78.67%.

Table 1(a): Variables' Measurements.

Variable Name	Abbreviation	Items' Adapted	Alpha Values
Information Literacy	INFL1	I can help students become more aware of information, such as developing a strong understanding of its importance.	0.871
	INFL2	I can enhance students' foundational knowledge of information management, including basic data processing techniques.	
	INFL3	I can help students apply and innovate information usage, such as leveraging technology to handle data.	
	INFL4	I can educate students about the ethical use of information, including understanding relevant laws and policies.	
ENT Development	END1	Showing interest in engaging with new experiences and activities.	0.804
	END2	Taking advantage of available opportunities for growth.	
	END3	Contributing positively to the community and societal well-being.	
	END4	Enhancing one's reputation or social standing.	
	END5	Fostering innovation in various areas.	
Teaching Related Innovations	TRI1	Introducing modern and creative teaching methods along with updated course content.	0.772
	TRI2	Offering professional development programs for faculty on contemporary teaching methods and course design.	
	TRI3	Allocating necessary time and resources for faculty to create innovative teaching approaches and curriculum.	
	TRI4	Exploring or integrating new teaching methods and curriculum adopted by other institutions.	
	TRI5	Adapting and revising existing teaching methods to meet the evolving needs of students.	
	TRI6	Introducing cutting-edge knowledge and technological tools to improve teaching methods and curriculum development.	
	TRI7	Maintaining and upgrading the teaching tools and resources used in academic instruction.	
	TRI8	Engaging in collaborative interdisciplinary projects and innovative educational initiatives involving technology.	

Table 1(b): Variables' Measurements.

Variable Name	Abbreviation	Items' Adapted	Alpha Values
Administrative Related Innovation	ARI1	Identifying potential areas for innovation adoption within administrative and organizational processes.	0.884
	ARI2	Tracking technological progress that can enhance administrative functions or improve organizational performance.	
	ARI3	Integrating new administrative and organizational practices to increase efficiency and effectiveness.	
	ARI4	Selecting qualified faculty who can promote and implement innovative administrative processes and changes.	
	ARI5	Developing new and innovative structures for administrative processes and organizational management.	
	ARI6	Promoting the university's achievements, activities, and student success through innovative communication strategies.	

The reported demographic factors include the academic rank of the faculty members in different higher educational institutions. As the distribution shows, out of total valid sample of 236 respondents 112 were teaching assistants, 52 were ranked as associate and full professors, whereas only 20 respondents belonged to the sub-category of lecturers in their relevant departments. In terms of years of experience, the results show that 112 respondents have got an experience of between 0-5 years, whereas 84 respondents admit that they have the relevant experience of between 6-10 years. Additionally, only 45 respondents have their experience level of above 10 years.

In terms of field/department, we have 117 respondents having business/entrepreneurial departmental backgrounds, followed by 52 respondents as linked with the information technology, 38 with the education and 29 with the social sciences, respectively. This reveals a significant diversification in terms of disciplinary field of the respondents. The level of education reveals that none of the respondents have Master degree yet there are 20 with MPhil degrees, and 216 as PhDs. This distribution is well presented using the bar charts in Figure 1.

Table 2: Demographic Factors.

Demographic Factor	Sub-Category 1	Sub-Category 2	Sub-Category 3	Sub-Category 4	Total
Academic Rank/Position	Teaching Assistant	Associate Professor	Professor	Lecturer	
Respondents	112	52	52	20	236
Years of Experience	0-5 years	6-10 years	10+ years	0	
Respondents	107	84	45	--	236
Disciplinary Field/Department	Business/Entrepreneurship	Information Technology	Education	Social Sciences	
Respondents	117	52	38	29	236
Level of Education	Master's	M.Phil.	PhD	Other	
Respondents	0	20	216	0	236

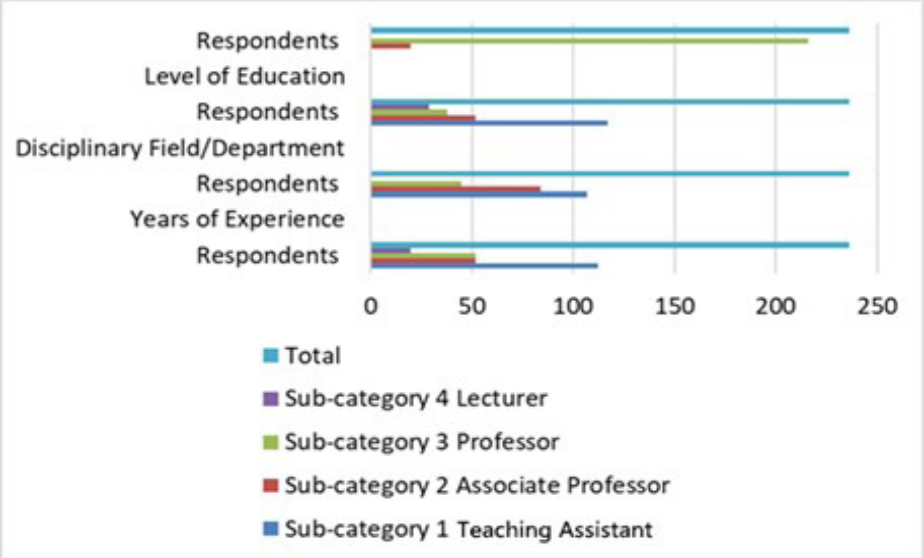

Figure 1: Demographic Profile of the Respondents.

Results and Discussion

The distribution of the data is well covered using the descriptive scores generated using the Smart PLS 4.0. As it shows, the items for the information literacy or INFL are reflecting the fact that they are moving towards the fourth point of the scale which is "agreed" except for the INFL2 which has a mean value of less than 3.50. However, all of these items have their relative standard deviation as above 1. Moving towards the Cramér-von Mises p value, it is inferred that all of these items are significantly deviating from the nor-distribution. The descriptive trends for the second variable's items named entrepreneurial development have been reflected through five items ranging from END1 to END5, respectively. However, out of five, two items named END1 and END2

cover the mean values as less than 3 but above 2.50, indicating that respondents are more likely to cover the neutral point on the likert scale. However, END3 shows the highest mean value of 4.163.

For the educational innovation, the study considers the two main factors entitled teaching related innovation and administration related innovations. The items for the teaching related innovations (TRI), the average scores are the average scores are observed as 2.620, 4.547, 3.896, 4.150, 3.767, 4.015, and 4.121. As per these findings, it is found that most of the items for the teaching related innovations show that respondents are reaching to fourth point or above. Moreover, regarding the administrative related innovations, the findings also confirm that on average, respondents are agreed to the given items. The individual test for the given items in terms of normal/nonnormal distribution confirms that data is not normally distributed (Table 3).

The measurement model path diagram has been presented in Figure 2 showing both explanatory and outcome variables. It represents that for the information literacy, the study considers four items, and for the entrepreneurship development, teaching related innovations and education related innovations, there are five items, eight items and six items, respectively. Factor loadings of the items show that some items like END4, END5, TRI4, TRI5, and ERI2 have their lowest loadings as compared to the rest of the items. Consequently, these lower loadings are adversely affecting the reliability and validity of the given model, hence removed from the measurement model input diagram. As a result, the model was again run in Smart PLS, and a new and revised output diagram has been generated as shown in Figure 3.

Table 3: Descriptive Output and Normality Testing.

Name	Mean	STD	Kurtosis	Skewness	Cramér-Von Mises P Value
INFl1	4.15	1.05	-0.846	-0.057	0.000
INFL2	3.321	1.107	-0.831	-0.338	0.000
INFl3	3.789	1.124	-0.722	-0.393	0.000
INFl4	3.529	1.158	-1.064	-0.169	0.000
END1	2.761	0.869	-0.623	0.21	0.000
END2	2.859	0.979	-0.552	0.369	0.000
END3	4.163	0.969	-1.125	0.164	0.000
END4	3.691	1.026	0.255	-0.86	0.000
END5	3.766	1.188	-0.575	-0.457	0.000
TRI1	2.620	1.052	-0.556	0.345	0.000
TRI2	4.547	1.094	-0.641	0.343	0.000
TRI3	3.896	1.126	-0.326	0.689	0.000
TRI4	4.150	1.05	-0.846	-0.057	0.000
TRI5	3.756	0.945	-0.061	-0.747	0.000
TRI6	3.767	1.473	-0.952	0.67	0.000
TRI7	4.051	1.078	-0.272	0.433	0.000
TRI8	4.121	1.125	-0.321	0.643	0.000
ARI1	3.754	1.056	-0.525	0.269	0.000
ARI2	3.948	1.101	-1.253	-0.001	0.000
ARI3	3.547	1.094	-0.641	0.343	0.000
ARI4	4.004	1.118	-0.301	0.7	0.000
ARI5	3.701	1.167	-0.624	0.553	0.000
ARI6	3.504	1.424	-0.932	0.545	0.000

It is inferred that all the items have their relative loadings of above 0.50. The same has been justified in the available literature (Afthanorhan, 2013).

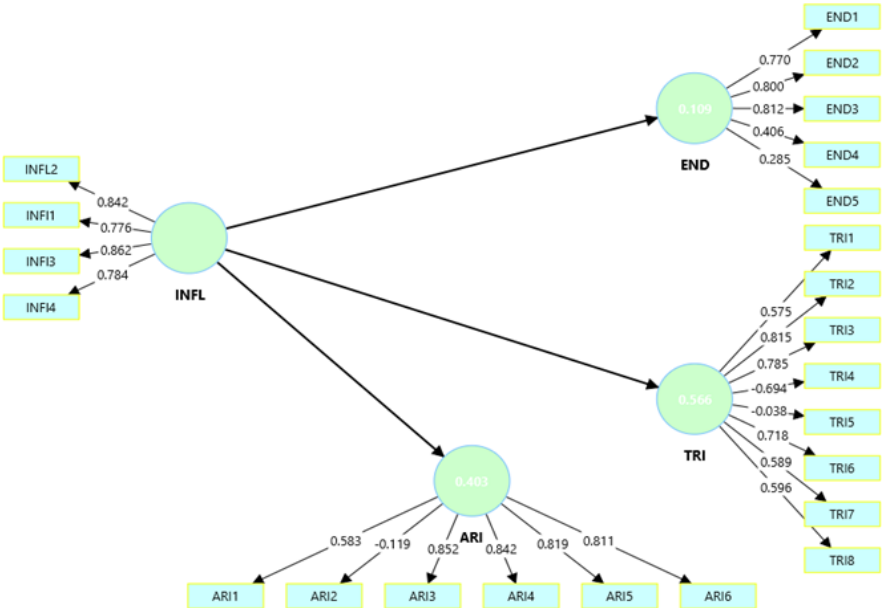

Figure 2: Measurement Model with Items' Loadings.

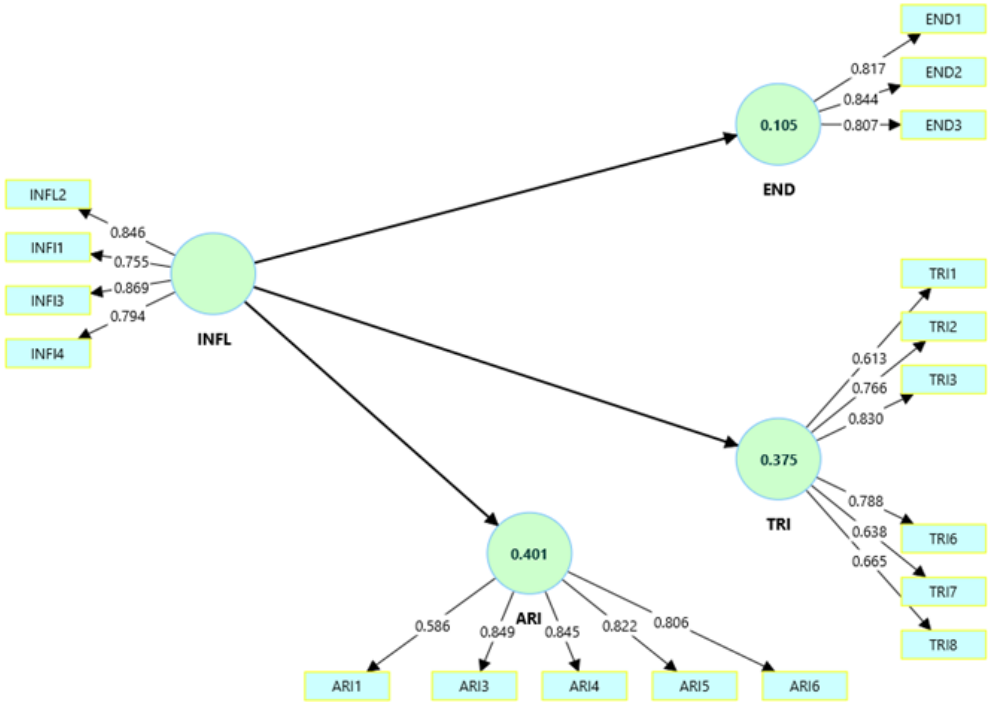

Figure 3: Measurement Model with Loadings Above 0.50.

Concerning the internal consistency and convergent validity of the variables, Table 4 reports some reliable results. The alpha values for these variables are well above 0.70 (lowest=0.763, highest=0.844).

Moreover, for the composite reliability, both the rho_a and rho_c are showing the scores as above 0.70. The last column in Table 4 reflects the average variance extracted for which the minimum value must be above 0.50 (Haji-Othman and Yusuff, 2022; Nasution et al., 2020). It shows that at least 0.50% of the variance has been explained by that relative variable into the model. As per the results, the AVE values are found to be as lowest as 0.520 for the TRI, confirming that the model has well achieved the convergent validity.

Table 4: Reliability and Validity.

Variables	Cronbach's Alpha	CR (rho_a)	CR (rho_c)	(AVE)
END	0.763	0.767	0.863	0.677
ARI	0.844	0.873	0.890	0.621
INF	0.833	0.842	0.889	0.668
TRI	0.818	0.852	0.865	0.520

The first measure to examine the discriminant validity is the HTMT ratio. The current literature determines that HTMT value between the two latent constructs must be less than 0.85 (Ab Hamid et al., 2017; Roemer et al., 2021; Yusoff et al., 2020). As the results show, the HTMT correlation between END and ERI, between END and INF, between END and TRI, between ERI and INF, between ERI and TRI and between INF and TRI were 0.449, 0.399, 0.734, 0.613, 0.088, and 0.697, etc.

All of these values are well below the cut off level of 0.85, confirming that the variables are not identical in nature, rather they are discriminant based on the HTMT (Table 5).

Table 5: HTMT Ratio.

HTMT	END	ERI	INF	TRI
END	---	---	---	---
ARI	0.449	---	---	---
INF	0.399	0.734	---	
TRI	0.613	0.088	0.697	---

Regarding the Fornell Larcker criteria, the literature reveals that square root of AVE must be greater than the rest of the correlations between the

variables. As the results show, the square root of END, ERI, INF and TRI were found to be as 0.823, 0.788, 0.817, and 0.721, respectively.

These values clearly confirm that none of the variables have any potential reservation in terms of discriminant validity, hence the findings are robust in nature (Table 6).

Table 6: Fornell-Larcker.

Fornell and Larcker	END	ERI	INF	TRI
END	0.823	---	---	---
ARI	0.348	0.788	---	---
INF	-0.325	-0.633	0.817	---
TRI	0.451	0.335	-0.512	0.721

By the end, under Smart PLS analysis of measurement model, Table 7 is covering the variance inflation factor to detect any possible existence of the multicollinearity between the given items and their relative variables. The current literature determines that VIF values must be less than 5 to confirm the non-existence of collinearity between them (Kalnins and Praitis Hill, 2025; Zhong-Lin et al., 2018). We observed that for the items of variables, all the values of VIF are truly less than 5. For the tolerance level (1/VIF), the values are also above 0.10, therefore, making it evident that the study variables are not being observed with any potential issue of multiclonality. Figure 4 covers the VIF and Tolerance values of the selected items.

Table 7: VIF and Tolerance.

Items as Finalized	VIF	Tolerance
END1	1.427	0.701
END2	1.844	0.542
END3	1.600	0.625
ARI1	1.335	0.749
ARI3	3.334	0.300
ARI4	2.097	0.477
ARI5	2.003	0.499
ARI6	2.942	0.340
INFL2	1.968	0.508
INFl1	1.544	0.648
INFl3	2.243	0.446
INFl4	1.854	0.539
TRI1	1.344	0.744
TRI2	1.753	0.570
TRI3	2.018	0.496
TRI6	1.723	0.580
TRI7	1.882	0.531
TRI8	1.990	0.503

The structural model analysis helps in testing the relationships between the variables of interest. As shows in Table 8, all three direct paths from INF to END, from INF to ERI and from INF to TRI was highly significant at 1%. For example, the information literacy reflects a coefficient value of 0.325, indicating that an increase in such literacy is positively connected with the entrepreneurship development. This effect is highly significant as t-statistics of 5.164 confirm the p-value as 0.000, which is less than 1%. Therefore, the results confirm with 99% level of confidence that there is a significant and positive impact of information literacy on the END among the higher educational institutions. Several associated factors and pathways can be highlighted on such nexus between information literacy and END. For example, those faculty members having higher level of information literacy can effectively guide and mentor their students towards the entrepreneurial journey through fostering the environment of critical thinking, while identifying the business Opportunities and market trends. The reason is that such type of skills is quite essential to Improve the learning of the students Towards some innovative business solutions. Moreover, Entrepreneurs often relies on the information to make some critical decisions specifically in terms of business ideas and related concepts were the information learning through their teachers would be of great support in gathering and accessing the relevant data in order to make some improved decisions which ultimately strengthens their entrepreneurial capabilities. At the same time, information literacy tends to foster the ability to innovate and explore by providing some the accurate guide and access based on the advance technologies. Besides, information literacy of the faculty members also assists in building the research skills which are quite essential to identify the market gaps along with understanding the needs of the potential customers. Therefore, the positive relationship between information literacy and END is logical enough specifically at the higher educational institutions. The current literature also provides some facts related to the logical relationships between both. For example, Bosman et al. (2022) claim that there are several barriers to access the entrepreneurial education. Based on this notion, the authors investigate the role of information literacy in order to boost the entrepreneurial mindset. The findings of the study confirm that there is a change in the entrepreneurial mindset of the students after engaging themselves in several information literacy exercises. Carroll et al. (2019) have investigated the

role of the information literacy training programs as introduced among the undergraduate biomedical engineering students to improve the quality of their projects. The study results show that those students who receives the information literacy training in the domain of medical entrepreneurship and healthcare economics perform very well as compared to those who did not receive any such training. Nikou et al. (2020) were also among those who have justified the role of the information literacy towards the entrepreneurship.

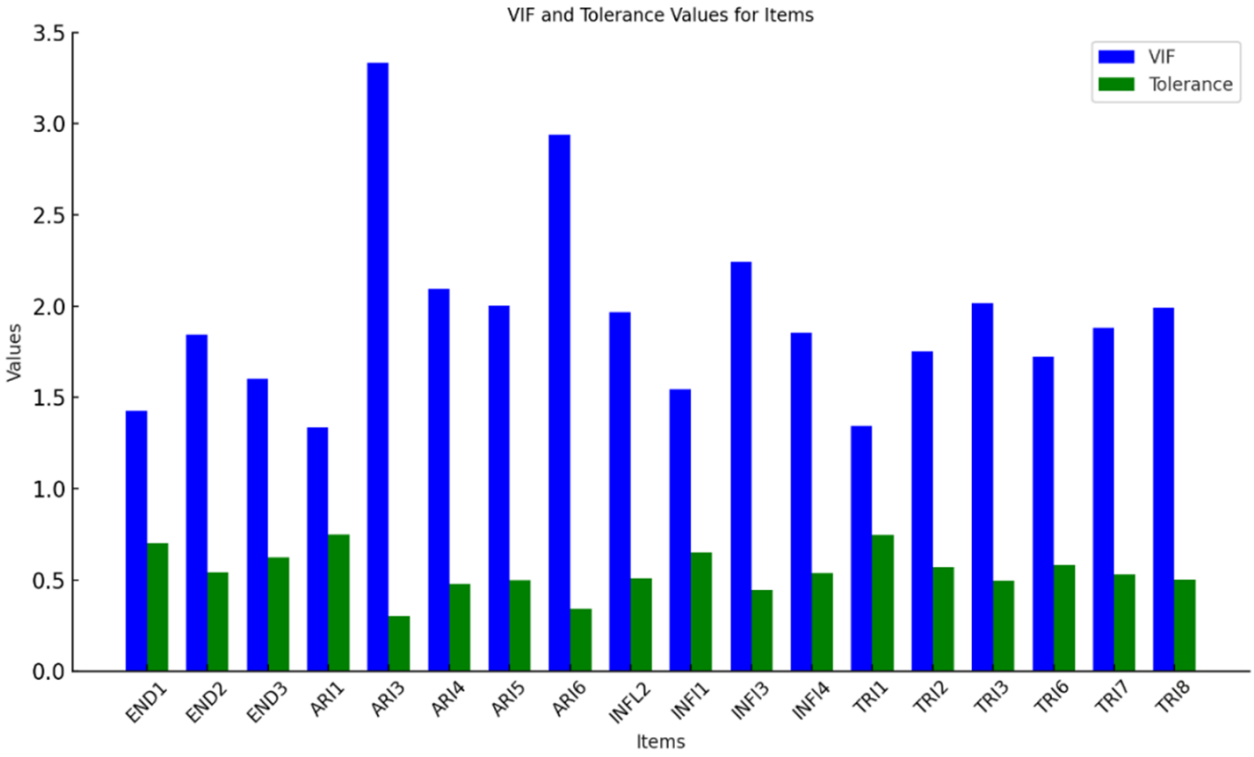

Figure 4: VIF and Tolerance Values.

The further investigation of the empirical results in table 8 confirms that information literacy is positively and significantly connected to administration-related innovations where the coefficient is 0.633, leading to a T-statistics of above 10. The given t-value confirms that the level of significance is 1%, hence confirming that there is a positively significant influence of the information literacy towards the ERI when account of full sample consideration through bootsrapping option under Smart PLS. As the relationship between the information literacy and educational innovation is positive, therefore, the debate has provided several meaningful insights. For instance, the achievement of higher level of information literacy among the faculty members allow them to be updated in terms of latest trends in the administrative tasks and practices where they can effectively evaluate the information. Additionally, faculty members with the higher level of INF and related skills are better equipped to track the advancements in the technology like digital tools for the student management, internal communication or implication of learning management system. Moreover, faculty members with higher level of information literacy would be under greater position to apply new administrative practices through which there is an improvement in the efficiency of the higher educational institutions. Besides, faculty members will also help in developing and promoting the innovative structure for the administrative process and organization management. Bouranta and Psomas (2024) claim that during the time duration of COVID-19, several educational institutions have introduced online teaching and learning practices, where there is a growing trend in terms of administrative related innovations along with the teaching and online

learning innovations.

The third path represents the effect of the information literacy on the teaching related innovations. However, comparatively to the administrative related innovations, the value of path coefficient is lower, yet it is positive. It indicates that keeping the rest of the factors as constant, a one percent upsurge in the value of INF among the faculty members of higher education is causing an upward shift in the teaching related innovations, reflecting a productive output. This effect is highly significant at 1% for which the value of coefficient is 0.000. Therefore, it is inferred that there is a significant and positive impact of INF on TRI. This relationship is significantly logical due to the fact that INF helps the faculty members to evaluate and access the up to mark information which leads towards the adoption of new methods of teaching and educational strategies, hence fostering the innovation in terms of curriculum design and subsequent implementation. Moreover, as the higher educational institutions tend to incorporate more technologies in learning, INF aims to ensure the fact that both the students and faculty members are effectively utilizing the digital tools and techniques. At the same time, INF helps in boosting the creativity, problem-solving along with encouraging the collaboration among different departments and faculty members. As a result, INF creates a culture of learning, therefore, acts as a key enabler of the education-related innovations. Figure 5 illustrates the path model output for the SEM estimation where the inner model covers the T-values and outer model shows the loadings with p-values.

Table 8: Structural Model Results.

Paths	Original Sample	Sample Mean	STDEV	T Statistics	P Values
INF -> END	0.325***	0.330	0.063	5.164	0.000
INF -> ERI	0.633***	0.636	0.059	10.745	0.000
INF -> TRI	0.612***	0.617	0.053	11.537	0.000

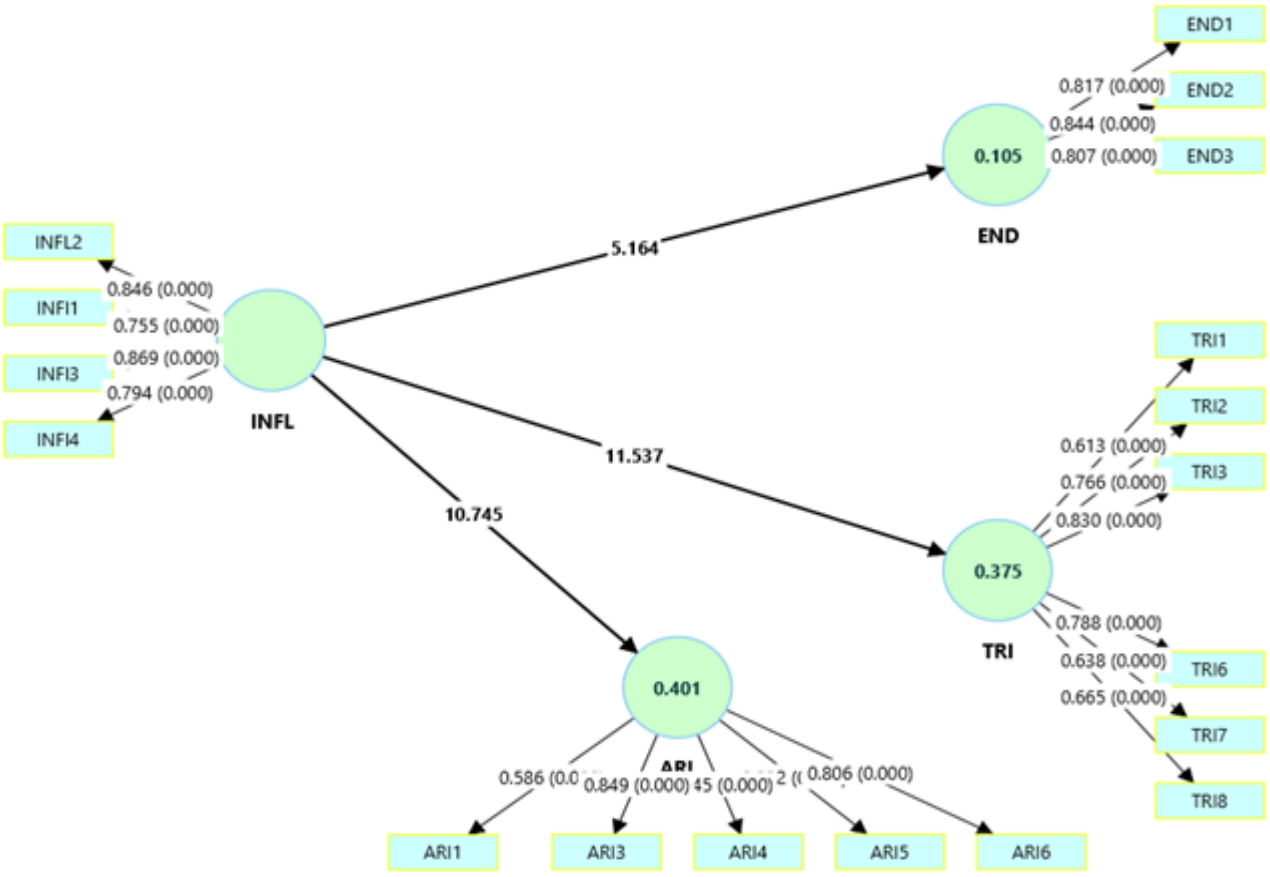

Figure 5: SEM Output Diagram.

Conclusion and Recommendations

In higher educational institutions, information literacy is a key role player for the purpose of fostering not only the two-dimensional educational innovations (teaching related and administrative related) but also positively impacts on the entrepreneurship development among the students. This study focuses on the faculty members among the higher educational institutions and highlights that information literacy is a meaningful tool in developing an environment of innovations among the same organizations. The reason is that information literacy among the faculty members is an empowering mechanism in order to create a dynamic curriculum while integrating the technology through student-oriented teaching strategies that ultimately foster the creativity and critical thinking among the students. Moreover, the study further confirms that information literacy not only boosts the teaching practices but also support the entrepreneurship development. This indicates that those faculty members having higher level of proficiency in terms of information literacy are in a better position to guide the students in terms of assessing, analyzing and applying the information for the purpose of entrepreneurial thinking and innovation. Overall, the study provides the significant evidence that information literacy is a successful key for both the educational innovations and entrepreneurship development in higher education. The study recommends the following policy insights.

First, the higher education institutions should implement some sort of comprehensive information literacy training programs for the faculty members with the core focus on equipping such members with the necessary skills and expertise to effectively utilize the digital tools along with integration of innovative teaching approaches to their curriculum.

Second, the factor of information literacy needs to be incorporated into the faculty development plans on regular basis as its role is not only a significant determinant of improving the teaching effectiveness but also towards the faculty engagement with the modern technologies and pedagogical innovations.

Third, higher education institutions should make it sure that information literacy programs are well accessed by the students too which further support their entrepreneurial thinking. The reason is that such programs will the students to critically analyze the market data along with identification of the business opportunities.

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