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Article

Instructional Delivery, E-Literacy, and Total Quality Management on Entrepreneurial Competence of Faculty in State Colleges and Universities

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Abstract:. The purpose of this study was to determine the entrepreneurial competence of faculty considering their instructional delivery, e-literacy and total quality management in state colleges and universities in Northern Mindanao, Philippines. The study employed descriptive correlational design with 439 participants. The study revealed that faculty are proficient in instructional delivery in terms of teaching strategy, mastery of the subject matter, classroom management and instructional assessment. Moreover, faculty are literate in e-literacy as measured through technical, pedagogical, ethical and attitudinal. Additionally, the dimensions of total quality management namely: leadership, student-focus, faculty satisfaction and programs/services management was moderately implemented. Furthermore, entrepreneurial competence of faculty in the context of conceptual, human relations, functional and opportunity was competent. The study underscored that instructional delivery, e-literacy and total quality management are significantly related to entrepreneurial competence of faculty. However, instructional delivery—including teaching strategies, instructional assessment, and classroom management—along with total quality management in leadership, program and service management, and e-literacy in technical aspects, were the best predictors of faculty entrepreneurial competence.

Keywords: Human Relations, Self-Efficacy, Strategic

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1. Introduction

Entrepreneurial competence of teachers is increasingly recognized as a vital aspect in enhancing educational outcomes and preparing students for the demands of the modern economy. However, entrepreneurial competence among teachers is a significant challenge globally, teachers often lacks entrepreneurial knowledge and skills to effectively prepare students for real-world challenges (Education Sciences, 2024). Limited access to resources, inadequate professional development opportunities, and the absence of a supportive ecosystem were found to impede the effective implementation of entrepreneurship education (Chojak, 2024). Moreover, when teachers lack entrepreneurial skills, they may struggle to be creative and help students solve real-world problems (Gibb, 2018).

In the Philippines, entrepreneurial competence of teachers reveals serious obstacles. The study of Capote et.al. (2015), found out that despite the increasing importance of entrepreneurial skills in the job market, many educators were unprepared to teach these subjects effectively due to inadequate training and support. Similarly, the study of Villanueva and Lim (2019), indicates that teachers often lack the necessary training and resources to foster an entrepreneurial mindset among students, leading to disconnect between theoretical concepts and practical application. Moreover, many educators exhibit insufficient entrepreneurial skills, which hampers their ability to effectively impart

entrepreneurial knowledge to students (Abad, 2020). In addition, the recent study of Saranza et.al (2022), on various competencies such as conceptual, human relations, opportunity, and functional skills underscored that many teachers lacked formal business training or experience, which negatively affected their ability to teach effectively.

The concern over entrepreneurial competence among higher education teachers are also evident in Northern Mindanao Region, Philippines. The study of Dela Cruz et al. (2021) revealed that while many teachers recognized the importance of entrepreneurship education, their actual competencies were lacking. This gap was attributed to insufficient professional development opportunities and a lack of practical experience in entrepreneurial activities, which hindered their ability to inspire and educate students effectively. Likewise, many educators felt unprepared to integrate entrepreneurship due to inadequate training and resources. Teachers expressed a desire for more comprehensive professional development programs that focus not only on theoretical knowledge but also on practical applications of entrepreneurship (Rojas et.al., 2022). Also, Bañez et al. (2023), underscored the challenges, such as limited access to resources and support from school administrations, which continued to impede the implementation of effective entrepreneurship education.

Moreover, the Commission on Higher Education (CHED) has emphasized the development of entrepreneurial competence in teachers. The commission develops programs and frameworks integrating entrepreneurial competencies into curricula to enhance teaching quality and promote sustainability in economic ventures (CHED, 2024). Teachers with entrepreneurial skills—such as opportunity recognition, conceptual thinking, and effective resource management—can enhance their teaching methods and inspire students to adopt similar mindsets (Kaplan, 2024). In addition, the study of Ingersoll (2021), indicates that when teachers are trained in entrepreneurial methods, they are more likely to implement innovative teaching strategies that cater to diverse learning styles and needs, ultimately leading to improved student outcomes.

Furthermore, effective instructional delivery empower educators to embed entrepreneurial skills into teaching, improving both faculty and student entrepreneurial thinking while ensuring relevance and practicality in education (Gede, 2023). Similarly, e-literacy enhances the ability of educators to leverage digital platforms for accessing entrepreneurial resources, improving technological engagement, and facilitating innovative business practices, thereby directly contributing to entrepreneurial competencies (Hasanah et al., 2024). Also, Total Quality Management (TQM) principles provide a structured framework for continuous improvement by emphasizing quality benchmarks, regular skill enhancement, and feedback mechanisms, ensuring alignment of instructional strategies with institutional goals to foster entrepreneurship (Blegur et.al. 2020).

It is in the light of the above context, that the researcher felt the need to conduct this study to assess the influence of instructional delivery, e-literacy and total quality management on the entrepreneurial competence of faculty in State Colleges and Universities in Northern Mindanao.

This study employed a descriptive-correlational research design to examine relationships among instructional delivery, e-literacy, total quality management, and entrepreneurial competence. The research was conducted across various State Colleges and Universities in Northern Mindanao with a sample of 439 faculty members. Data collection utilized a validated four-part questionnaire with 5-point Likert-type scales measuring instructional delivery, e-literacy, total quality management implementation, and entrepreneurial competence. The instrument underwent rigorous validation through expert review followed by pre-testing, yielding strong reliability coefficients (Cronbach's alpha) of 0.945, 0.945, 0.973, and 0.959 for each section respectively. Statistical analysis followed a three-stage approach. First, descriptive statistics (means) were calculated to determine current levels of all variables. Second, Pearson product-moment correlation coefficients were computed to examine relationships between variables. Third, stepwise multiple linear regression analysis was conducted to identify significant predictors of entrepreneurial competence.

2. Results

Instructional Delivery

Table 1 summarizes the mean scores of instructional delivery of faculty based on different aspects such as teaching strategy, mastery of the subject matter, classroom management, and instructional assessment. Among these indicators, teaching strategy received a mean rating of 4.31, interpreted as proficient. Mastery of the subject matter obtained a mean rating of 4.25, also interpreted as proficient. Classroom management had a mean rating of 4.25, indicating it is proficient. Lastly, instructional assessment received a mean rating of 4.25, interpreted as proficient. The overall mean rating for the faculty's instructional delivery was 4.26, indicating that the level of instructional delivery is proficient.

This finding aligns with research indicating that teacher instructional quality directly impacts student achievement and engagement (Kraft et al., 2018). The balanced proficiency across teaching strategies, subject mastery, classroom management, and assessment suggests a well-rounded faculty capable of delivering quality education, which Darling-Hammond et al. (2017) found to be a critical factor in student success. However, there remains room for growth, indicating potential benefits from targeted professional development initiatives. This potential for improvement is supported by research from Sims and Fletcher-Wood (2021), who found that evidence-based professional development focusing on specific pedagogical skills can significantly enhance instructional quality beyond proficient levels.

Table 1. Summary on the mean scores of instructional delivery of faculty

INDICATORS	Mean	Descriptive Rating	Qualitative Interpretation
Teaching Strategy	4.31	Agree	Proficient
Mastery of the Subject Matter	4.25	Agree	Proficient
Classroom Management	4.25	Agree	Proficient
Instructional Assessment	4.25	Agree	Proficient
Overall Mean	4.26	Agree	Proficient

LEGEND:

Rating Scale	Descriptive Rating	Qualitative Interpretation
4.51-5.00	Strongly Agree (SA)	Highly proficient
3.51-4.50	Agree (A)	Proficient
2.51-3.50	Moderately Agree (MA)	Moderately proficient
1.51-2.50	Disagree (D)	Least proficient
1.00-1.50	Strongly Disagree (SD)	Not proficient

E-literacy

Table 2 presents the mean scores of e-literacy of faculty within the context of technical, pedagogical, ethical, and attitudinal. Among these indicators, technical received a mean rating of 4.18, interpreted as literate. Pedagogical obtained a mean rating of 4.28, also interpreted as literate. Ethical had a mean rating of 4.33, indicating it is literate. Lastly, attitudinal received a mean rating of 4.27, interpreted as literate. The overall mean rating for the faculty's e-literacy was 4.27, indicating that the level of e-literacy is literate.

The literate level of e-literacy demonstrated by faculty reflects proficient digital competence supporting contemporary educational practices. Falloon (2020) emphasized that teacher e-literacy directly impacts technology integration effectiveness in educational contexts. The consistent literacy across dimensions suggests faculty possess well-rounded digital competencies, with ethical e-literacy being strongest, which Choi et al. (2018) identified as essential for responsible digital citizenship modeling. The relatively lower technical literacy score indicates an opportunity for targeted professional development, supporting Lawrence and Tar's (2018) findings that technical confidence often limits

educational technology adoption. This balanced e-literacy profile aligns with Mishra's (2019) TPACK framework emphasizing integrated understanding of technology, pedagogy, and content knowledge. Williamson et al. (2020) noted that faculty with strong e-literacy are better positioned to adapt to educational disruptions requiring rapid shifts to online or hybrid teaching, making this finding particularly significant in post-pandemic contexts.

Table 2. Summary on the mean scores of e-literacy of faculty

INDICATORS	Mean	Descriptive Rating	Qualitative Interpretation
Technical	4.18	Agree	Literate
Pedagogical	4.28	Agree	Literate
Ethical	4.33	Agree	Literate
Attitudinal	4.27	Agree	Literate
Overall Mean	4.27	Agree	Literate

LEGEND:

Rating Scale	Descriptive Rating	Qualitative Interpretation
4.51-5.00	Strongly Agree (SA)	Highly proficient
3.51-4.50	Agree (A)	Proficient
2.51-3.50	Moderately Agree (MA)	Moderately proficient
1.51-2.50	Disagree (D)	Least proficient
1.00-1.50	Strongly Disagree (SD)	Not proficient

Total Quality Management

Table 3 shows the mean scores of total quality management implementation in terms of leadership, student-focus, faculty satisfaction, and programs/services management. Among these indicators, leadership received a mean rating of 3.47, interpreted as moderately implemented. Student-focus obtained a mean rating of 3.52, interpreted as implemented. Faculty satisfaction had a mean rating of 3.45, indicating it is moderately implemented. Lastly, programs/services management received a mean rating of 3.54, interpreted as implemented. The overall mean rating for the total quality management implementation was 3.50, indicating that the total quality management is moderately implemented.

The moderate implementation of total quality management practices reflects an educational institution in transition toward a more comprehensive quality assurance framework. This finding aligns with research by Sahney (2016) who noted that educational institutions often face unique challenges in fully implementing TQM principles. The inconsistent implementation across dimensions, with stronger results in programs/services management and student-focus but weaker performance in leadership and faculty satisfaction, suggests an uneven approach that Manatos et al. (2017) identified as common during implementation phases. Aldhuwaihi and Shee (2021) found that leadership commitment is the most critical factor for successful TQM implementation, highlighting the need for development in this lower-scoring area. The moderate faculty satisfaction rating indicates a need to better incorporate faculty perspectives into quality initiatives, which Steinhardt et al. (2017) demonstrated is essential for sustainable quality culture development. As Dwaikat (2020) concluded, progression from moderate to high TQM implementation typically requires focused attention on leadership development and stakeholder engagement.

Table 3. Summary on the mean scores of total quality management implementation

INDICATORS	Mean	Descriptive Rating	Qualitative Interpretation
Leadership	3.47	Moderately Agree	Moderately Implemented
Student-focus	3.52	Agree	Implemented
Faculty Satisfaction	3.45	Moderately Agree	Moderately Implemented
Programs/Services Management	3.54	Agree	Implemented
Overall Mean	3.50	Moderately Agree	Moderately Implemented

LEGEND :

Rating Scale	Descriptive Rating	Qualitative Interpretation
4.51-5.00	Strongly Agree (SA)	Highly literate
3.51-4.50	Agree (A)	Literate
2.51-3.50	Moderately Agree (MA)	Moderately literate
1.51-2.50	Disagree (D)	Least literate
1.00-1.50	Strongly Disagree (SD)	Not literate

Entrepreneurial Competence

Table 4 displays the mean scores of entrepreneurial competence of faculty with respect to conceptual competence, human relations competence, functional competence, and opportunity competence. Among these indicators, conceptual competence received a mean rating of 4.07, interpreted as competent. Human relations competence obtained a mean rating of 3.94, interpreted as competent. Functional competence had a mean rating of 3.97, indicating it is competent. Lastly, opportunity competence received a mean rating of 4.16, interpreted as competent. The overall mean rating for the faculty's entrepreneurial competence was 4.03, indicating that the level of entrepreneurial competence is competent.

The competent level of entrepreneurial competence among faculty suggests a solid foundation for promoting entrepreneurial mindsets and skills in educational settings. According to Bauman and Lucy (2021), faculty entrepreneurial competence directly influences their ability to foster entrepreneurial thinking in students. The variation in competence levels across dimensions, with opportunity competence scoring highest and human relations competence lowest, aligns with findings by Puni et al. (2018) who noted that educators often excel in identifying possibilities but may need development in building entrepreneurial networks. Secundo et al. (2021) emphasized that entrepreneurial competence in faculty is crucial for educational institutions seeking to strengthen industry-academia connections and promote innovation. The overall competent rating indicates potential for further development, supporting Morris et al. (2019) who found that targeted professional development can significantly enhance faculty entrepreneurial capabilities, particularly in areas scoring lower on assessment scales. As Lackéus (2020) concluded, faculty with stronger entrepreneurial competence are better positioned to prepare students for an increasingly dynamic and uncertain professional landscape.

Table 4. Summary on the mean scores of entrepreneurial competence of faculty

INDICATORS	Mean	Descriptive Rating	Qualitative Interpretation
Conceptual Competence	4.07	Agree	Competent
Human Relations Competence	3.94	Agree	Competent
Functional Competence	3.97	Agree	Competent
Opportunity Competence	4.16	Agree	Competent
Overall Mean	4.03	Agree	Competent

LEGEND:

Rating Scale	Descriptive Rating	Qualitative Interpretation
4.51-5.00	Strongly Agree (SA)	Highly implemented
3.51-4.50	Agree (A)	Implemented
2.51-3.50	Moderately Agree (MA)	Moderately implemented

1.51-2.50	Disagree (D)	Rarely implemented
1.00-1.50	Strongly Disagree (SD)	Not Implemented

Correlation Analysis of Instructional Delivery, E-literacy, Total Quality Management and Entrepreneurial Competence

As shown in Table 5, correlation results indicated that instructional delivery r = 0.576, (p<0.000) and its sub-components, particularly teaching strategy r = 0.512, (p<0.000), mastery of the subject matter r = 0.463, (p<0.000), classroom management r = 0.481, (p<0.000), and instructional assessment r = 0.466, (p<0.000) showed statistical significance relative to the faculty's entrepreneurial competence. This is to say that an increase in faculty's instructional delivery in terms of teaching strategy, mastery of the subject matter, classroom management, and instructional assessment leads to an increase in faculty's entrepreneurial competence, which also means that the more they practiced effective instructional delivery, the more they become entrepreneurially competent.

Correlation results further suggested that e-literacy r = 0.422, (p<0.000) and its order factors, namely: technical r = 0.332, (p<0.000), pedagogical r = 0.354, (p<0.000), ethical r = 0.400, (p<0.000), and attitudinal r = 0.305, (p<0.000) were significantly associated with faculty's entrepreneurial competence. As shown, the analysis indicates a positive relationship between e-literacy and faculty's entrepreneurial competence. This means that fostering e-literacy within educational institutions could lead to improved entrepreneurial competence among faculty.

Finally, a correlation between total quality management and entrepreneurial competence also showed significance r = 0.323, (p<0.000) and its subscale, namely: leadership r = 0.156, (p<0.001), student-focus r = 0.273, (p<0.000), faculty satisfaction r = 0.311, (p<0.000), and programs/services management r = 0.399, (p<0.000) were also significantly linked with faculty entrepreneurial competence. The strength of the correlation is moderate, which means that if the faculty's total quality management increases, the faculty's entrepreneurial competence will also increase. Hence, the result contends that if the total quality management of the faculty is positively high, more likely, that they will be entrepreneurially competent.

The results revealed that the faculty's entrepreneurial competence is significantly related to instructional delivery, e-literacy, and total quality management. The results of the study corroborate with the study of Kim and Park (2019), who proved the relationship between instructional quality and entrepreneurial mindset development in higher education institutions. The study demonstrates that various aspects of instructional delivery, including teaching strategies, subject matter expertise, and assessment methods, are positively correlated with entrepreneurial competence among faculty in higher education settings. Additionally, the findings align with research by Sousa et al. (2021), which found that e-literacy among educators significantly predicts their ability to foster innovation and entrepreneurial thinking. Furthermore, the study highlights the importance of quality management practices, including leadership and service management, in creating an institutional environment conducive to entrepreneurial competence development.

Table 5. Correlation analysis of instructional delivery, e-literacy, total quality management, and entrepreneurial competence of faculty

Independent Variables Correlated with entrepreneurial competence of faculty	Correlation Coefficient (r)	p-value
Instructional Delivery	**0.576****	**0.000**
Teaching Strategy	0.512**	0.000
Mastery of the Subject Matter	0.463**	0.000
Classroom Management	0.481**	0.000
Instructional Assessment	0.466**	0.000

E-literacy	**0.422****	**0.000**
Technical	0.332**	0.000
Pedagogical	0.354**	0.000
Ethical	0.400**	0.000
Attitudinal	0.305**	0.000
Total Quality Management	**0.323****	**0.000**
Leadership	0.156**	0.001
Student-focus	0.273**	0.000
Faculty Satisfaction	0.311**	0.000
Programs/Services Management	0.399**	0.000

**Correlation is significant at the 0.01 level (2-tailed)

Regression Analysis of Instructional Delivery, E-literacy, Total Quality Management and Entrepreneurial Competence of Faculty

Table 6 provides insights into the regression analysis examining the influence of instructional delivery, e-literacy, and total quality management on the entrepreneurial competence of faculty. The regression model indicates that the variables teaching strategy ($\beta = 0.293$, $t = 6.130$, $p < 0.000$), instructional assessment ($\beta = 0.150$, $t = 2.757$, $p = 0.006$), classroom management ($\beta = 0.109$, $t = 2.041$, $p = 0.042$), technical ($\beta = 0.119$, $t = 2.641$, $p = 0.009$), leadership ($\beta = 0.222$, $t = 4.542$, $p < 0.000$), and programs/services management ($\beta = 0.283$, $t = 5.577$, $p < 0.000$) significantly predict the entrepreneurial competence of faculty.

Specifically, an increase in teaching strategy by one unit is associated with a 0.293 unit increase in entrepreneurial competence, holding other variables constant. Likewise, a one-unit increase in instructional assessment is linked to a 0.150 unit increase in entrepreneurial competence, and a one-unit increase in classroom management results in a 0.109 unit rise in entrepreneurial competence. Additionally, an increase in technical skills contributes to a 0.119 unit increase in entrepreneurial competence. In terms of total quality management, an increase in leadership contributes to a 0.222 unit increase, while programs/services management leads to a 0.283 unit increase.

Table 6. Regression Analysis of the Impact of Instructional Delivery, E-Literacy, and Total Quality Management on Faculty Entrepreneurial Competence in State Colleges and Universities

INDICATORS	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.140	0.193		5.914	.000
Instructional Delivery					
Teaching Strategy	0.288	0.047	0.293	6.130	.000
Instructional Assessment	0.137	0.050	0.150	2.757	.006
Classroom Management	0.097	0.047	0.109	2.041	.042
Total Quality Management					
Leadership	0.132	0.029	0.222	4.542	.000
Programs/Services Management	0.186	0.033	0.283	5.577	.000
E-literacy					
Technical	0.110	0.042	0.119	2.641	.009

R= .624 R^2=.390 F= 45.968 Sig. 0.000

The R^2 value of 0.390 indicates that 39.0% of the variance in entrepreneurial competence can be explained by the predictors in the model, suggesting that these factors play a significant role in predicting and influencing faculty's entrepreneurial competence. In comparison, 61.0% of the variance can be attributed to other factors outside of this regression model.

The regression equation predicting entrepreneurial competence (Y) is illustrated as:

$\hat{Y} = 1.140 + 0.293X_1 + 0.150X_2 + 0.109X_3 + 0.119X_4 + 0.222X_5 + 0.283X_6$

Where: 1.140 is the constant

X_1 = Teaching Strategy

X_2 = Instructional Assessment

X_3 = Classroom Management

X_4 = Technical

X_5 = Leadership

X_6 = Programs/Services Management

Thus, the findings affirm the significant influence of instructional delivery, e-literacy and total quality management dimensions on faculty's entrepreneurial competence. The findings substantiate the study of Saranza et al. (2022) found a significant correlation between teaching methods and entrepreneurial competencies, emphasizing the role of instructional strategies in entrepreneurship education. Similarly, Huang et al. (2020) highlighted the importance of professional training, innovative teaching methods, and entrepreneurial practice in shaping faculty competencies. Effective classroom management has also been recognized as essential for fostering entrepreneurial learning environments, as noted in a report from The Australian (2024). Additionally, research by Montenegro and Andal (2023) demonstrated that total quality management (TQM) practices positively influence teachers' performance and overall school success, reinforcing the idea that structured management approaches contribute to entrepreneurial competence.

3. Discussion

Thus, the findings affirm the significant influence of instructional delivery, e-literacy and total quality management dimensions on faculty's entrepreneurial competence. The findings substantiate the study of Saranza et al. (2022) found a significant correlation between teaching methods and entrepreneurial competencies, emphasizing the role of instructional strategies in entrepreneurship education. Similarly, Huang et al. (2020) highlighted the importance of professional training, innovative teaching methods, and entrepreneurial practice in shaping faculty competencies. Effective classroom management has also been recognized as essential for fostering entrepreneurial learning environments, as noted in a report from The Australian (2024). Additionally, research by Montenegro and Andal (2023) demonstrated that total quality management (TQM) practices positively influence teachers' performance and overall school success, reinforcing the idea that structured management approaches contribute to entrepreneurial competence.

4. Conclusion

This systematic review provides a comprehensive examination of social media's Faculty members demonstrate proficient instructional delivery across teaching strategy, subject mastery, classroom management, and assessment dimensions, indicating solid teaching capabilities while leaving room for growth toward highly proficient performance. They exhibit literate e-literacy competencies across technical, pedagogical, ethical, and attitudinal dimensions, reflecting adequate digital skills for contemporary educational environments with potential for further advancement. Total quality management are moderately implemented overall, with inconsistent application across dimensions, suggesting an institution in transition toward comprehensive quality assurance with significant room for improvement. Faculty demonstrate competent entrepreneurial abilities across conceptual, human relations, functional, and opportunity

dimensions, providing a foundation for fostering entrepreneurial mindsets while indicating areas for continued development. Faculty entrepreneurial competence is positively correlated with instructional delivery, e-literacy, and total quality management, indicating these professional domains are interconnected and mutually reinforcing with instructional delivery showing the strongest relationship. Teaching strategy, instructional assessment, classroom management, programs/services management, leadership, and technical e-literacy emerge as the most significant predictors of faculty entrepreneurial competence, suggesting these specific competencies should be prioritized in faculty development initiatives.

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