Student needs assessment analysis in e-commerce courses of vocational colleges in Guizhou Province China

[ID]Linxi Tan[1], [ID]Thanin Ratanaolarn[2*], [ID]Kanyarat Sriwisathiyakun[3], Jianming Cui[4]

[1,2,3]School of Industrial Education and Technology, King Mongkut's Institute of Technology Ladkrabang, Thailand; 65036074@kmitl.ac.th (L.T) thanin.ra@kmitl.ac.t (T.R.) kanyarat.sr@kmitl.ac.th (K.S.)

[4]School of Humanities and International Studies, Zhejiang University of Water Resources and Electric Power, China; cui_jm@zjweu.edu.cn (J.C.).

Abstract: This study aimed to identify the specific needs of students in e-commerce courses in vocational colleges, focusing on digital marketing competencies, team spirit, learning methods, and course content to support curriculum development and the construction of innovative teaching models. The researcher of this study conducted a needs assessment survey with a sample size of 400 current vocational students. The collected data were analyzed using descriptive statistics to determine the means of 12 items. The results showed that the mean value of items ranged from 3.44 to 4.29, and all items reached at least the need level. Furthermore, respondents perceived a strong need to enhance digital marketing competencies and adopt new learning methods in e-commerce courses. Respondents also showed a need to integrate project-based learning and blended learning compared to other learning methods. A comprehensive student needs assessment analysis towards e-commerce courses has been provided in this study; it could serve as basic information for educators to develop a better teaching model and curriculum in the field of e-commerce education in vocational colleges.

Keywords: Digital marketing competencies, E-commerce courses, Learning methods, Needs assessment, Team spirit.

1. Introduction

The surging growth of e-commerce in the digital era has offered vast job opportunities for vocational graduates in Guizhou province, China. Nevertheless, the fierce competition in this field demands that vocational students enhance their professional and comprehensive competencies to gain a competitive edge in the job market. Smaldone, et al. [1] emphasized that digital marketing competencies have become a cornerstone of vocational students' future professional success in the digital era. In addition, today's employers in E-commerce highly value team-oriented individuals who contribute to positive work environments, making teamwork a key asset in professional settings [2]. E-commerce education in higher education often involves collaborative group projects that simulate workplace dynamics, exposing students to emerging technologies and entrepreneurial opportunities in reality. These projects equip students with essential digital marketing competencies and foster team spirit by encouraging teamwork, communication, and running digital marketing campaigns, using analytics tools, and managing online stores through teamwork and collaboration with their peers, preparing students for professional success in the dynamic digital landscape. Furthermore, student needs assessment is vital in e-commerce education to ensure the curriculum aligns with learners' goals, skill levels, and industry demands. Traditional learning methods, which often focus on theoretical knowledge, fall short in addressing the practical requirements of the rapidly evolving e-commerce landscape [3]. To bridge this gap, innovative approaches like Project-Based Learning and Blended Learning have emerged, engaging students in real-world projects and fostering a deeper understanding

of e-commerce concepts [4]. These methods provide students with hands-on experience, enhance problem-solving skills, and promote a collaborative mindset, better preparing them for careers in the industry [5]. By assessing students' prior knowledge, interests, and aspirations, educators can design learning experiences that address skill gaps and build relevant competencies. This study focuses on analyzing student needs in areas such as digital marketing competencies, team spirit, project-based blended learning, and e-commerce courses to create a curriculum that bridges the gap between academic instruction, student needs, and industry expectations, ensuring students graduate with job-ready skills.

2. Literature Review

2.1. Vocational Student Needs of Digital Marketing Competences in E-commerce

Digital marketing competences are fundamental for vocational students pursuing careers in e-commerce, as the increasing reliance on digital platforms for business operations demands the acquisition of essential skills to effectively market products and services online. Digital marketing represents a shift from traditional marketing methods, utilizing internet-based tools like social media, mobile devices, and search engines to engage audiences [6]. Key components of digital marketing competences include search engine optimization (SEO), social media marketing, data analytics, and email marketing, all of which enable students to drive traffic, engage customers, and measure the success of digital campaigns. In today's technology-driven industries, these skills are crucial for navigating dynamic digital platforms with versatility and innovation [7] fostering entrepreneurial capabilities, and enhancing employability [8]. Employers increasingly prioritize candidates who can design and execute digital campaigns, as these skills directly contribute to revenue growth and brand visibility [9]. Proficiency in tools like Google Analytics, social media advertising, and email marketing reflects an understanding of market trends and technological advancements, which are critical for business success [10]. However, students face challenges such as rapidly changing technology, limited access to industry-standard tools, and the need for practical experience. To address these challenges, educators can integrate digital marketing education into curricula through project-based learning, internships, and partnerships with e-commerce companies, providing hands-on experience and exposure to real-world practices. By incorporating digital tools into the curriculum and fostering continuous learning, vocational programs can better equip students with the technical and strategic marketing skills essential for career success in the competitive e-commerce landscape. This alignment of educational programs with industry demands ensures that graduates are well-prepared to thrive in a competitive job market while driving organizational innovation and efficiency.

2.2. Vocational Student Needs of Team Spirit in E-commerce

Team spirit is essential in e-commerce education, as it fosters collaboration, problem-solving, and communication skills crucial for students' success in the digital marketplace. Teams consist of individuals with specific roles and responsibilities who interact dynamically to achieve common objectives. Unlike groups, teams are characterized by well-defined roles, specialized knowledge, and collective problem-solving abilities, often operating under time and workload constraints [11]. Developing team spirit among vocational students is essential for professional success, as modern workplaces demand strong collaboration, communication, and interpersonal skills. Teamwork allows students to simulate real-world scenarios, navigate group dynamics, resolve conflicts, and achieve collective goals, fostering leadership and emotional intelligence [12]. E-commerce tasks, such as website development, digital marketing, and customer service, often require students to work together, and the development of strong teamwork skills enhances both technical and interpersonal abilities. Collaborative learning in e-commerce programs leads to improved engagement, better problem-solving outcomes, and greater career readiness by helping students build essential soft skills like leadership, negotiation, and conflict resolution [13]. However, challenges such as diverse skill sets, resistance to teamwork, and lack of exposure to collaborative environments can hinder the development of team spirit. Strategies like project-based learning, role rotation, peer mentoring, and simulated e-commerce

environments can address these barriers and ensure that students gain the teamwork skills needed in real-world e-commerce settings [14]. As employers increasingly seek candidates who can thrive in multidisciplinary teams, vocational e-commerce students with strong team spirit are better positioned for success in the competitive e-commerce job market.

2.3. Vocational Student Needs of Project-based Blended Learning in E-commerce

Project-based blended learning (PjBBL) is an innovative educational approach that integrates project-based learning with blended learning methods, promoting creativity, critical thinking, collaboration, and problem-solving among vocational students in e-commerce education. By combining traditional face-to-face instruction with online tools and technologies, PjBBL enables students to tackle real-world challenges through hands-on projects while benefiting from the flexibility of both asynchronous and synchronous learning [15]. This approach allows students to apply theoretical knowledge to practical tasks in areas such as digital marketing, search engine optimization, social media marketing, web development, and customer engagement—skills that are essential for success in the dynamic e-commerce industry. Moreover, PjBBL emphasizes student-centered learning, encouraging active engagement through exploration, problem-solving, and reflection [16]. It fosters self-directed learning, where students can access online resources at their own pace, accommodating diverse learning styles and schedules. Additionally, PjBBL promotes the development of essential soft skills, including teamwork, communication, leadership, and conflict resolution, as students collaborate on projects that mirror the collaborative nature of e-commerce work environments. Working together on real-world digital marketing projects, students not only enhance their technical competences but also improve their ability to manage team dynamics, foster collaboration, and achieve collective goals [17]. This collaborative element also nurtures team spirit, which is critical in e-commerce settings where cross-functional cooperation is essential for business success. Despite challenges like technological barriers, student resistance to online learning, and the need for teacher training, strategies such as industry partnerships, access to digital tools, and structured support can help overcome these obstacles. Research has shown that PjBBL enhances active learning by allowing students to apply theoretical concepts in real-life contexts, improving their critical thinking and problem-solving abilities [18] . The hybrid structure of PjBBL ensures that students gain both technical expertise and practical, collaborative experience, equipping them with versatile skills to meet the dynamic demands of the e-commerce industry. By fostering a balance between independent exploration and teamwork, PjBBL significantly enhances students' employability and ensures they are well-prepared for the emerging challenges of the digital marketplace.

3. Research Methods

This was a student needs survey for E-commerce courses in vocational colleges in Guizhou province, China. The population of this study is the current vocational college students who need to learn e-commerce-related courses in Guizhou province, China. Up to 2024, there are 48 vocational colleges with 496 thousand current students in Guizhou Province, China. According to Krejcie and Morgan [19] a sample size of 384 respondents is the least needed for this survey study to ensure that the population is representative. However, the researcher collected 400 students with a multistage sampling method to ensure the representative of population in this study. The researcher first employed cluster sampling method to select 4 vocational colleges from 48 vocational colleges in Guizhou Province, secondly, employed simple random sampling method to select 100 students per college from those 4 selected vocational colleges. Female respondents were slightly more than males, accounting for 53%; most of the respondents' age ranged from 19-21, accounting for 71.25%; all the respondents have the need to study E-commerce-related courses in their current academic program. The details of respondents' information are shown in Table 1.

Table 1.
Demographic factors of respondents (n=400).

Demographic factors	Items	Frequencies	Percentages (%)
Gender	Male	188	47.00%
	Female	212	53.00%
Age	Less than 19	63	15.75%
	19-20	110	27.50%
	20-21	135	33.75%
	More than 21	92	23.00%

A need assessment questionnaire has been developed to find the students' needs in E-commerce courses in the form of a five-point Likert scale (Strongly disagree (1) to Strongly agree (5)). There were four dimensions: digital marketing competencies, team spirit, learning methods, and E-commerce courses. Each dimension was for three items, 12 items in total. An item objective convergency (IOC) test was conducted by inviting five experts to evaluate the content validity; the IOC values respectively between 0.8 to 1, all IOC values greater than 0.5, thereby, the designed questionnaire was qualified and aligned with the purpose of this study. Furthermore, the Cronbach alpha test was conducted to find the reliability of the designed questionnaire has good reliability. As a result, the alpha value was 0.87, greater than 0.7, indicating that the questionnire was a valid test and effective; according to Amirrudin, et al. [20] the designed questionnaire had good reliability. Descriptive statistics were used to analyze the data, including indicators such as means and standard deviations (SD). Additionally, the means were evaluated using rubric scores categorized as follows: Strongly Disagree (1.00-1.49), Disagree (1.50-2.49), Neutral (2.50-3.49), Agree (3.50-4.49), and Strongly Agree (4.50-5.00). All scales were included to assess the level of need for each item, while the standard deviation (SD) was used to evaluate data variability.

4. Results

The student needs assessment for E-commerce courses in vocational colleges analyzed four dimensions: digital marketing competencies, team spirit, learning methods, and E-commerce courses. For digital marketing competencies, table 3 showed consistency with SD values ranging from 0.69 to 0.73 and mean scores between 3.44 and 4.29, highlighting a strong need for enhancing knowledge and skills in this area, particularly for future careers. Team spirit emerged as the highest priority, with mean scores between 3.92 and 4.08 and an overall mean of 4.02, indicating a clear need for improving student collaboration and teamwork skills.

Table 2 similarly reflected consistent data for learning methods and E-commerce courses with SD values below 1.0. Learning methods achieved mean scores between 3.76 and 3.87, with students expressing a strong preference for integrating project-based and blended learning approaches (mean score: 3.82). Meanwhile, E-commerce courses showed mean scores ranging from 3.54 to 4.24, with a notable need for modernized teaching methods to boost learning engagement, especially courses designed to motivate student interest (mean score: 4.24). Overall, while team spirit scored the highest need, all four dimensions indicated significant areas for improvement and development.

Table 2.
Result of need assessment on the dimension of digital marketing competencies.

Dimensions	Items / To What Extent Do You Agree with the following need statements	Means	SD	Level
1.Digital marketing competencies	1.1More knowledge about digital marketing competencies in the digital era	3.44	0.69	Agree
	1.2To enhance digital marketing competencies due to its importance in life and future career	4.29	0.70	Strongly agree
	1.3To be cultivated with digital marketing competencies through E-commerce courses	4.14	0.73	Agree
	Total of digital marketing competencies	3.96	0.71	Agree
2.Team spirits	2.1More knowledge about team spirit due to its importance in future career	3.92	0.73	Agree
	2.2To enhance team spirit due to its importance in life and future career	4.08	0.87	Agree
	2.3 To cultivate team spirit through E-commerce courses	4.06	0.84	Agree
	Total team spirits	4.02	0.81	Agree
3.Learning methods	3.1A new learning method that links the learning process of E-commerce to reality (Project-based learning)	3.83	0.82	Agree
	3.2A new method that enables learning of E-commerce courses through both online and offline (blended learning)	3.76	0.86	Agree
	3.3 A new method that could realize the learning of E-commerce thought reality, online and offline (the learning method that integrates project-based learning and blended learning)	3.87	0.82	Agree
	Total learning methods	3.82	0.75	Agree
4.E-Commerce courses	4.1More knowledge about E-commerce	3.54	0.91	Agree
	4.2E-commerce courses to enhance digital marketing competencies and team spirit	4.05	0.82	Agree
	4.3E-commerce courses to adopt new learning methods to motivate learning interest	4.24	0.80	Strongly agree
	Total of E-commerce courses	3.94	0.84	Agree

5. Discussion

In the findings, vocational Students highlighted a significant need for enhanced digital marketing competencies, reflecting the growing importance of such skills in modern business environments [6]. While students recognize the value of digital marketing, they lack a comprehensive understanding and practical application of these competencies. This suggests a need for lecturers to integrate tools, platforms, and analytics into their teaching practices, bridging the gap between theory and real-world application [9]. Additionally, fostering team spirit emerged as another priority. Emphasizing teamwork in E-commerce education equips students with critical soft skills such as effective communication, leadership, and conflict resolution, preparing them for future collaborative work environments[11, 14].

Students also strongly preferred innovative learning methods, mainly project-based and blended learning, as traditional teaching approaches no longer meet their needs. Project-based learning promotes active learning, problem-solving, and creativity, while blended learning enhances engagement and flexibility, ensuring learning can occur anytime and anywhere [15, 21]. Integrating these methods aligns theory with hands-on practice, fostering student motivation, innovation, and self-confidence [14, 18] . Furthermore, the demand for real-world projects and online resources highlighted the need for dynamic, student-centered approaches in E-commerce education. In conclusion, students indicated a clear need for E-commerce courses that integrate digital marketing skills, team spirit development, and project-based learning methods, aligning with research supporting active and practical learning.

6. Suggestions

Based on the research findings, the following suggestions are made to enhance e-commerce education for vocational students. First, the educational content should be focused on developing

students' team spirit and digital marketing competencies, as these are critical skills for success in the e-commerce industry. Digital marketing competencies, including SEO, social media strategies, and data analytics, are vital, while fostering team spirit will help students adapt to the collaborative nature of the industry. Second, Project-based blended learning (PjBBL) model should be further implemented to elevate these competencies. PjBBL combines traditional face-to-face instruction with online learning platforms, allowing students to collaborate on both online and offline projects, which fosters flexibility, creativity, and effective teamwork. Online platforms can be used for asynchronous discussions, resource sharing, and project management, while face-to-face sessions can focus on team meetings, brainstorming, and hands-on workshops. This blended approach not only helps students develop technical skills but also enhances their soft skills, such as collaboration and communication.

Additionally, group discussions and interactive learning elements should be incorporated into the learning process to increase the effectiveness of PjBBL. By introducing challenges, rewards, and competitions, students can be motivated to actively participate in team projects, further enhancing their teamwork and problem-solving abilities. Regular assessments and feedback loops should be embedded in the model to track progress, address areas for improvement, and maintain student engagement. To ensure the success of this model, instructors may require professional development to effectively integrate PjBBL into their teaching strategies.

To address potential challenges, strategies such as industry partnerships can be implemented. Industry collaborations will provide students with real-world project experience and access to industry-standard tools, helping bridge the gap between education and the evolving e-commerce landscape. Integrating digital tools into the curriculum—such as Google Analytics for data analysis, content management systems for website creation, and social media advertising platforms—will help students familiarize themselves with technologies commonly used in the e-commerce industry. Involving industry professionals in project assessments or offering guest lectures and webinars can expose students to current trends and practices, ensuring that the learning experience is relevant and aligned with industry needs. By blending face-to-face learning with online resources, this approach equips students with both the technical expertise and collaborative skills required for success in the competitive e-commerce marketplace.

7. Conclusion

This study provides valuable insights into the needs of vocational college students for developing digital marketing competencies, team spirit, and in-depth knowledge of E-commerce through E-commerce courses in vocational colleges. Furthermore, the vocational students have expressed a strong need for an innovative learning method that integrates projected and blended learning in their E-commerce courses. To address these needs, E-commerce courses should strongly emphasize digital marketing competencies and team spirit development. In addition, one of our future directions is to develop a project-based blended learning model, particularly for E-commerce courses, to align with student needs and E-commerce courses, to better prepare students for successful careers in the digital age.

Institutional Review Board Statement:
All procedures in this study were conducted in accordance with the Ethics Committees of Tongren Polytechnic College, China.

Transparency:

The authors confirm that the manuscript is an honest, accurate and transparent account of the study that no vital features of the study have been omitted and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

Competing Interests:

The authors declare that they have no competing interests.

Authors' Contributions:

All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

Acknowledgements:

We would like to acknowledge all the people who facilitated this project including administrators, faculty members and the research participants for their cooperation. Special acknowledgments to my Advisor Dr. Thanin who facilitated a lot of this research processes.

Copyright:

References

[1]	F. Smaldone, A. Ippolito, J. Lagger, and M. Pellicano, "Employability skills: Profiling data scientists in the digital labour market," *European Management Journal*, vol. 40, no. 5, pp. 671-684, 2022. https://doi.org/10.1016/j.emj.2022.05.005

[2]	S. L. Olivares, E. Adame, J. I. Treviño, M. V. López, and M. L. Turrubiates, "Action learning: challenges that impact employability skills," *Higher Education, Skills and Work-Based Learning*, vol. 10, no. 1, pp. 203-216, 2020. https://doi.org/10.1108/heswbl-07-2019-0097

[3]	Y. Yustina, W. Syafii, and R. Vebrianto, "The effects of blended learning and project-based learning on pre-service biology teachersâ€™ creative thinking through online learning in the covid-19 pandemic," *Jurnal Pendidikan IPA Indonesia*, vol. 9, no. 3, pp. 408-420, 2020. https://doi.org/10.15294/jpii.v9i3.24706

[4]	E. V. Stepanova, "The blended learning in higher education," in *the European Proceedings of Social & Behavioural Sciences*, Oct. 2020. *https://doi.org/10.15405/epsbs.2020.10.03.103*, 2020.

[5]	Y. Tong and X. Wei, "Teaching design and practice of a project-based blended learning model," *International Journal of Mobile and Blended Learning*, vol. 12, no. 1, pp. 33-50, 2020. https://doi.org/10.4018/ijmbl.2020010103

[6]	G. G. Jadhav, S. V. Gaikwad, and D. Bapat, "A systematic literature review: Digital marketing and its impact on SMEs," *Journal of Indian Business Research*, vol. 15, no. 1, pp. 76-91, 2023. https://doi.org/10.1108/jibr-05-2022-0129

[7]	K. Tzafilkou, M. Perifanou, and A. A. Economides, "Development and validation of students' digital competence scale (SDiCoS)," *International Journal of Educational Technology in Higher Education*, vol. 19, no. 1, p. 30, 2022. https://doi.org/10.1186/s41239-022-00330-0

[8]	H.-F. Lu, "Enhancing university student employability through practical experiential learning in the sport industry: An industry-academia cooperation case from Taiwan," *Journal of Hospitality, Leisure, Sport & Tourism Education*, vol. 28, p. 100301, 2021. https://doi.org/10.1016/j.jhlste.2021.100301

[9]	A. Morgan, R. Sibson, and D. Jackson, "Digital demand and digital deficit: Conceptualising digital literacy and gauging proficiency among higher education students," *Journal of Higher Education Policy and Management*, vol. 44, no. 3, pp. 258-275, 2022. https://doi.org/10.1080/1360080x.2022.2030275

[10]	K. Arora and M. Faisal, "The use of data science in digital marketing techniques: Work programs, performance sequences and methods," *Startupreneur Business Digital (SABDA Journal)*, vol. 1, no. 2, pp. 143-155, 2022. https://doi.org/10.33050/sabda.v1i2.110

[11]	P. Zaug *et al.*, "Development of an innovative educational escape game to promote teamwork in dentistry," *European Journal of Dental Education*, vol. 26, no. 1, pp. 116-122, 2022. https://doi.org/10.1111/eje.12678

[12]	E. De Prada Creo, M. Mareque, and I. Portela-Pino, "The acquisition of teamwork skills in university students through extra-curricular activities," *Education+ Training*, vol. 63, no. 2, pp. 165-181, 2021. https://doi.org/10.1108/et-07-2020-0185

[13] E. D. Prada, M. Mareque, and M. Pino-Juste, "Teamwork skills in higher education: Is university training contributing to their mastery?," *Psicologia: Reflexao e Critica*, vol. 35, p. 5, 2022. https://doi.org/10.1186/s41155-022-00207-1

[14] M. Bhatti, M. Alyahya, A. A. Alshiha, M. G. Qureshi, A. S. Juhari, and M. Aldossary, "Exploring business graduates employability skills and teaching/learning techniques," *Innovations in Education and Teaching International*, vol. 60, no. 2, pp. 207-217, 2023. https://doi.org/10.1080/14703297.2022.2049851

[15] C. Knoblauch, "Combining and balancing project-based and blended learning in education," *International Journal of Advanced Corporate Learning*, vol. 15, no. 1, pp. 35-44, 2022. https://doi.org/10.3991/ijac.v15i1.27135

[16] M. J. E. Distyasa, E. T. Winanti, I. A. Buditjahjanto, and T. Rijanto, "The effect of project-based blended learning (PJB2L) learning model on students learning outcomes," *International Journal for Educational and Vocational Studies*, vol. 3, no. 4, pp. 268-274, 2021. https://doi.org/10.29103/ijevs.v3i4.3959

[17] R. Mursid, A. H. Saragih, and R. Hartono, "The effect of the blended project-based learning model and creative thinking ability on engineering students' learning outcomes," *International Journal of Education in Mathematics, Science and Technology*, vol. 10, no. 1, pp. 218-235, 2022. https://doi.org/10.46328/ijemst.2244

[18] M. Mielikäinen, "Towards blended learning: Stakeholders' perspectives on a project-based integrated curriculum in ICT engineering education," *Industry and Higher Education*, vol. 36, no. 1, pp. 74-85, 2022. https://doi.org/10.1177/0950422221994471

[19] R. V. Krejcie and D. W. Morgan, "Determining sample size for research activities," *Educational and Psychological Measurement*, vol. 30, no. 3, pp. 607-610, 1970. https://doi.org/10.1177/001316447003000308

[20] M. Amirrudin, K. Nasution, and S. Supahar, "Effect of variability on Cronbach alpha reliability in research practice," *Jurnal Matematika, Statistika dan Komputasi*, vol. 17, no. 2, pp. 223-230, 2021. https://doi.org/10.20956/jmsk.v17i2.11655

[21] I. J. Nurhidayah, F. C. Wibowo, and I. M. Astra, "Project Based Learning (PjBL) learning model in science learning: Literature review," in *In Journal of Physics: Conference Series (Vol. 2019, No. 1, p. 012043). IOP Publishing*, 2021.