

Essential Skills for Thai Graduates to Work in the 21st - Century Workforce: An Entrepreneurs' Perspective

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Abstract

This study aimed to: 1) investigate the essential skills required for Thai graduates in the 21st -century workforce from the perspective of entrepreneurs, and 2) examine the entrepreneurs' perspective on essential skills for Thai graduates entering the 21st -century workforce across various types of establishments. Employing a sequential mixed-methods approach with multilevel sampling, the study utilized in-depth interviews with ten entrepreneurs for the qualitative phase and surveys with 400 entrepreneurs for the quantitative phase. Qualitative data were analyzed using typological analysis and analytic induction, while quantitative data were processed using mean, standard deviation, and one-way ANOVA. The results revealed that communication, teamwork, critical thinking, problem-solving, technology, information literacy, media literacy, accountability, leadership, and adaptability are essential skills for 21st - century Thai graduates. Within the 'learning and innovation' domain, critical thinking, communication, and problem-solving were rated at a high level, whereas teamwork received a moderate rating. Skills in the 'technology, information, and media literacy' domain were rated highly across all categories. Regarding 'life and career skills,' leadership and adaptability were rated at a high level, while accountability was rated moderately. In addition, the results indicated no significant differences in entrepreneurs' perspectives on these essential skills across different establishment types.

Keywords: Thai Graduates, 21st Century Skills, Entrepreneur's Perspective

Introduction

The concept of preparing graduates for work in the 21st century is gaining increased attention due to the rapidly changing nature of work in the new era. 21st-century entrepreneurs are seeking individuals with both soft and hard skills as they enter the labor market. Skills are the ability to apply knowledge and know-how to accomplish a task or solve a problem, whether in professional or learning contexts and in personal and social life. In terms of work, 21st-century entrepreneurs are looking for graduates who possess soft skills such as responsibility, self-confidence, communication skills, flexibility, and teamwork. Many skills acquired through project-based learning are highly sought by today's entrepreneurs, including the ability to collaborate effectively, resolve interpersonal conflicts, make informed decisions, and address complex problems (Musa et al., 2012; Asefer & Zainal Abidin, 2021). Skills development is not limited to formal technical, vocational, education and training.

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It encompasses the productive capacities acquired through all levels of education and training, occurring in formal, non-formal, and on-the-job settings. These skills enable individuals in all sectors of the economy to engage fully and productively in livelihoods and to adapt to the evolving demands and opportunities of the economy and labor market. Previous research highlights a widespread mismatch between entrepreneurs' expectations and graduates' skills. This underscores the need for collaboration among entrepreneurs, educators, and policymakers to better align graduate skills with the demands of the modern workplace (Tushar and Sooraksa, 2023).

As mention above, employers are seeking well- rounded individuals who can perform technical tasks and contribute to a positive and productive work environment. By developing a strong technical and soft skills foundation, individuals can position themselves for success in the 21st-century labor market. In Thailand since 2016, the Thai government launched the Thailand 4.0 policy, which was integrated into the 12th National Economic and Social Development Plan (2017-2021) and aligned with the 20-year national development plan. The government set three main objectives for Thailand 4.0: 1) to elevate Thailand to a high-income country, 2) to reduce inequality, and 3) to achieve sustainable development. Additionally, the government defined New S-Curve target industries and the direction of human resource development policy for 2020-2024 (Demand New S-Curve 2563-2567). To support this growth, it is necessary to survey entrepreneurs about the required skills to obtain information aligned with the labor market's needs. Accordingly, the current study aims to investigate skills needed for Thai graduates to work in the 21st-century labor market from the viewpoint of entrepreneurs. This information can then be used to develop strategies for preparing the future workforce.

Researchers seek to understand business executives' views on the skills needed by recent graduates to inform workforce development strategies for the 21st century. Accordingly, this study aims to: 1) investigate essential skills for Thai graduates to work in the 21st-century labor market from the perspective of entrepreneurs and 2) examine the entrepreneurs' perspective on essential skills for Thai graduates entering the 21st-century workforce across various types of establishments.

Literature Review

The term “21st-Century Skills” refers to a broad range of knowledge, skills, work habits, and character traits that are thought to be critical to success in today's world (Ultay, Dönmez-Usta & Ultay, 2021). One of the most detailed and adopted frameworks was developed by the Partnership for 21st Century. 21st-Century Skills have been extensively explored by scholars such as Trilling and Fadel (2009). They outlined the core 21st-century skills, beginning with the letter "C": Critical thinking and problem-solving, creativity and innovation, they were identified as teamwork and leadership, cross-cultural understanding, communication and media fluency, computing and ICT fluency, and career and learning self-reliance. Additionally, they emphasized the three "R" skills: Reading, Writing, and Arithmetic. Similarly, Dede (2010) used the P21 framework as a basis for a comparative analysis of various 21st-century frameworks. He divided the skills into three sets:

1. Learning and innovation skills: This set focuses on communication and thinking abilities.
2. Information, media, and technology skills: This set emphasizes traditional IT skills (e.g., keyboarding, web surfing, word processing) and information literacy skills (e.g., searching, evaluating, and citing information ethically).

3. Life and career skills: This set focuses on the ethical aspects of citizenship and the ability to live and work in a rapidly changing world.

Accordingly, Chu et al. (2016) found that all three reviewed frameworks considered similar sets of skills and competencies as follows;

Skill Set 1: Learning and innovation

The learning and innovation skill set comprises four key components including 1.1) core subjects: These fundamental subjects, often represented by the "three Rs" (Reading, Writing, and Arithmetic), form the bedrock of a 21st-century education, 1.2) critical thinking and problem-solving: these skills are essential for analyzing complex issues, developing creative solutions, and making informed decisions, 1.3) communication and teamwork: effective communication and teamwork are vital for success in both academic and professional settings, and 1.4) creativity and innovation: fostering creativity and innovation empowers learners to think outside the box, generate new ideas, and adapt to change.

Skill Set 2: Digital Literacies

In today's digital age, these skills are crucial for navigating the vast information available online and for participating effectively in a globalized world. Digital literacies encompass three key components including 2.1) information literacy: this involves the ability to effectively search for, evaluate, and use information from various sources, 2.2) information and communication technology (ICT) skills: these skills enable individuals to use digital tools and networks to access, manage, and create information, and 2.3) media literacy: this involves the ability to critically analyze and evaluate media messages in various formats.

Skill Set 3: Life and career skills

Life and career skills equip learners with the necessary tools to succeed in the 21st-century workplace. These skills include: 3.1) flexibility and adaptability: the ability to adjust to change and embrace new challenges, 3.2) initiative and self-direction: the capacity to take initiative, set goals, and work independently, 3.3) social and cross-cultural interaction: the ability to build relationships, collaborate with others, and understand diverse perspectives, 3.4) productivity and accountability: the ability to manage time effectively, prioritize tasks, and take responsibility for one's work, and 3.5) leadership and Responsibility: the capacity to lead, inspire, and contribute positively to a team.

Previous research about skills needs for work in the 21st century labor market.

Previous research has indicated that in real-world work settings, skills such as decision-making, problem-solving, conflict resolution, teamwork, and innovation are crucial components of job competence (Musa et al., 2012). In today's rapidly evolving knowledge economy, 21st-century digital skills are essential for driving organizational competitiveness and innovation. While these skills are widely recognized as crucial, the intersection of digital skills and broader 21st-century skills is not yet fully defined. A meta-analysis by Laar et al. (2017) revealed that 21st-century skills encompass a broader range of competencies than digital skills, and they are not necessarily reliant on ICT. The study identified seven core skills: technical skills, information management, communication, teamwork, creativity, critical thinking, and problem-solving. In line with Thai studies, individuals need a multifaceted skill set to succeed in today's job market, encompassing technology, creativity, learning agility, teamwork, effective communication, and personal resilience. (Akkarathitiphong, 2019).

Based on the literature review, the researcher has categorized the essential skills for the 21st-century workforce into three groups: learning and innovation skills, digital literacy skills, and life and career skills. These categories have been used to develop a theoretical framework for this research, as illustrated in Figure 1.

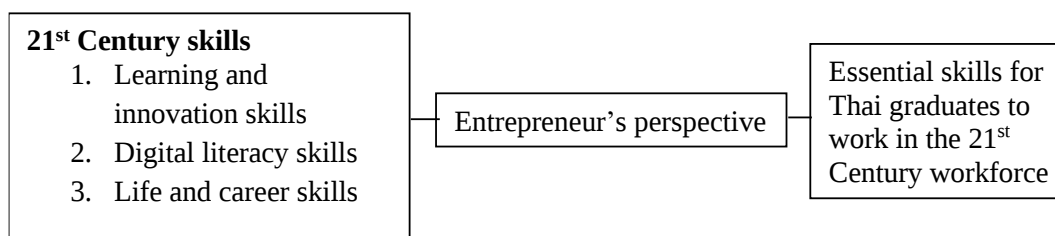


Figure 1: Theoretical Framework

Research Methodology

Research design

A sequential mixed-methods approach was employed to gather comprehensive, contextually relevant data on the essential 21st-century skills required for Thai graduates. Due to funding constraints, the study focused on Southern Thailand, a region where the industrial sector is developing rapidly. This growth is driven by the ten core S-curve industries outlined in the Thailand national development plan. The design employs a mixed methods approach to data collection and sampling, as illustrated in Figure 2. This strategy was chosen for its flexibility and ability to incorporate multiple lines of evidence and data sources, enabling multiple interpretations for triangulation. Following a document review that identified essential skills for the 21st-century labor market, an in-depth study was conducted, building upon those findings. A questionnaire, informed by the qualitative phase, was then designed and used to collect data from a larger sample of entrepreneurs, providing a broader understanding of the skills in demand.

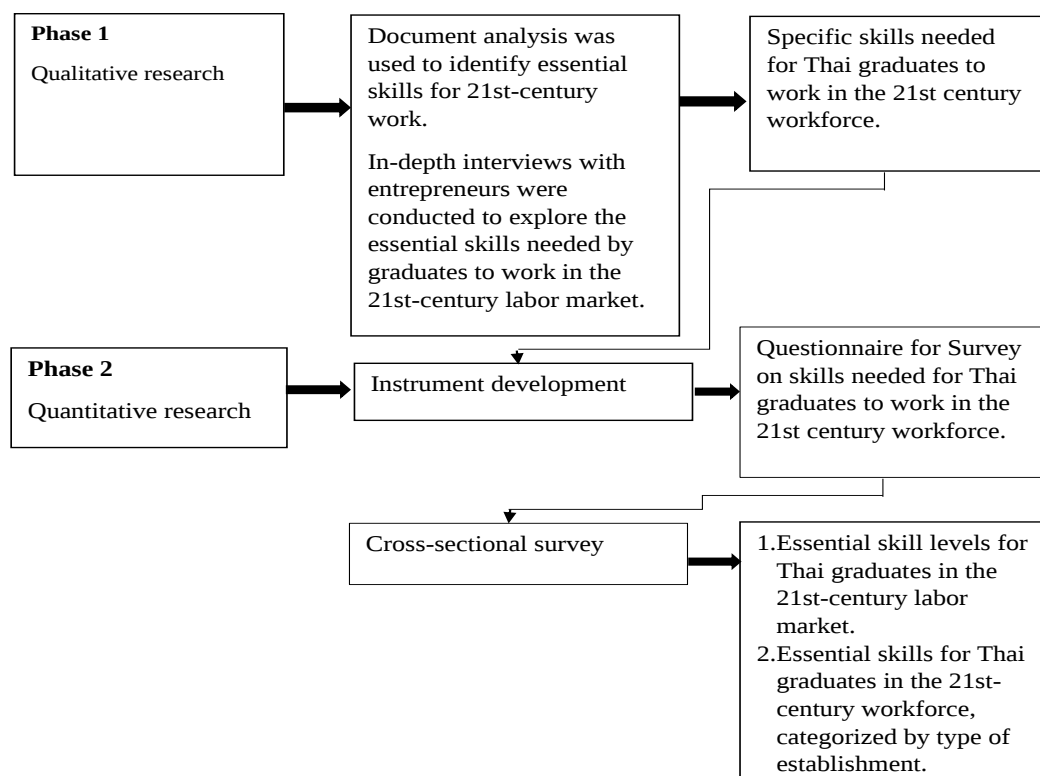


Figure 2: Methodological framework

The qualitative study

The qualitative study was conducted the following:

Participant selection: The researcher identified and interviewed entrepreneurs from a diverse range of sectors, specifically selecting ten key informants to represent Thailand's S-curve industries. This sample size is adequate for identifying the required skills; as Hennink and Kaiser (2022) noted, core themes in qualitative research typically emerge after interviewing at least nine participants. These ten entrepreneurs were selected based on their extensive experience in organizational management and human resources, having held their leadership positions for at least three years. Consequently, they were well-positioned to provide in-depth insights into the essential skills required for the 21st-century workforce. Participants were drawn from ten major industries outlined in the national development plan. The sample consisted of six women and four men, with an average age of 41.60 years.

Development of interview questions: The researcher followed these steps: 1) reviewed relevant literature; 2) developed interview questions to comprehensively address the research objectives; 3) submitted the draft questions to experts for review; 4) conducted a pilot test of the interview protocol; 5) revised the interview protocol based on the pilot test; and 6) used the finalized interview protocol to collect data.

Data collection through interviews: The researcher conducted the following steps: 1) obtained permission from organizations to collect data; 2) scheduled interviews with key informants; 3) informed participants of their rights using consent forms; and 4) conducted interviews.

Data analysis: The researcher employed a two-pronged approach: typological analysis and analytic induction. Typological analysis involves categorizing data into specific types, while analytic induction involves interpreting and drawing conclusions from the data. By applying these methods to the data gathered from entrepreneurs, the researcher identified the key skills essential for Thai graduates to work in the 21st-century workforce.

The Quantitative study

The quantitative research was carried out in the following sequential steps.

Participant: The study population consisted of entrepreneurs from establishments in the southern region of Thailand. To select a representative sample, a stratified random sampling technique was employed to ensure proportionate representation from the ten major industrial categories as outlined in the national development plan and the Department of Employment. Given a combined population of 101,277 establishments (National Statistical Office data, 2017), a sample size of 400 was determined using Yamane's formula (Yamane, 1967). Simple random sampling was then conducted within each stratum to finalize the sample.

Instrument development: The instrument was developed based on the findings of the qualitative phase and a thorough literature review. To ensure its quality and reliability, a rigorous validation process was conducted. A 30-item questionnaire was developed to assess the skills necessary for Thai graduates to work in the 21st-century workforce, divided into three skill groups: learning and innovation (communication, teamwork, critical thinking, and problem-solving), digital literacy (technology, information, and media literacy), and life and career skills (accountability, leadership, and adaptability). The questionnaire employed a 5-point Likert-type scale to measure the extent to which participants rated with various statements, with 5 indicating very high and 1 indicating very low. The criteria for interpreting results based on the mean are as follows: 4.51-5.00 = very high, 3.51-4.50 = high, 2.51-3.50 = moderate, 1.51-2.50 = low, 1.00-1.50 = very low (Srisa-ad, 2017). A panel of three experts in relevant fields evaluated the questionnaire for content validity. The experts assessed each item aligned with the study's objectives. The average Index of Item-Objective Congruence (IOC) score ranged from 0.67 to 1.00, indicating an acceptable level of validity for the questionnaire (Rovinelli and Hambleton, 1977). Based on the experts' feedback, the questionnaire was revised to enhance its clarity and relevance.

To evaluate the reliability of the questionnaire, a pilot test was conducted with 30 entrepreneurs to assess the questionnaire's internal consistency. Cronbach's alpha, a measure of reliability, was calculated to be 0.82, indicating a high degree of internal consistency among the items (Cortina, 1993).

These results support the reliability and validity of the questionnaire for use in the main study.

Data Collection: Data was collected between March and April 2020. The data collection process involved the following steps: 1) Formal requests were sent to various establishments seeking permission to conduct the study. 2) Appointments were scheduled with establishment coordinators. 3) Participants were informed of their rights through an informed consent form. 4) Upon completion, questionnaires were collected and checked for completeness. A total of 400 completed

questionnaires were received from executives of various establishments. The majority of respondents (52.75%, or 211 individuals) were male.

Data analysis: Descriptive statistics, including mean and standard deviation, were utilized to examine the level of essential skills required for Thai graduates in the 21st-century workforce. One-way ANOVA was used to compare the entrepreneur's perspective of essential skills for Thai graduates for work in the 21st-century workforce.

Ethical approval: This research has been approved by the Human Research Ethics Committee, Social Sciences, Prince of Songkla University, as evidenced by document number PSU IRB 2019-PSU-L-002.

Research Findings

The researcher presents the findings in two sections: (1) essential 21st-century skills for Thai graduates from the perspective of entrepreneurs, and (2) entrepreneurs' perspectives on essential 21st-century skills for Thai graduates, categorized by establishment type, as follows.

Essential 21st-century skills for Thai graduates from the perspective of entrepreneurs

Through interviews with ten entrepreneurs from a diverse range of industries, the research found that ten key skills were deemed crucial for Thai graduates to work in the 21st-century.

Participants highlighted the importance of skills related to learning and innovation, including communication, teamwork, critical thinking, and problem-solving as fundamental for workplace success. They emphasized the need for 21st-century workers to possess innovative and critical thinking skills, allowing them to apply theories and principles effectively and develop novel ideas or inventions. Furthermore, the ability to build social connections and collaborate effectively within a team was deemed crucial. Participants noted that while analytical skills are essential, the ability to communicate and collaborate with others is equally important for overall organizational success, especially in today's fast-paced, data-driven work environment.

In terms of digital literacy skills, encompassing technology, information literacy, and media literacy, entrepreneurs emphasized that these skills are crucial in today's rapidly evolving digital world. Employees must be able to effectively access and select information, using appropriate language and methods, to fulfill their job responsibilities. Furthermore, these skills are inherently linked to social skills as they facilitate interactions and understanding among individuals. Employees must be able to perceive, understand, create, and manage relationships, as well as solve problems and address interpersonal issues.

Regarding life and career skills, participants emphasized the importance of accountability, leadership, and flexible and adaptability. They noted that individuals must be accountable for their own work and be able to manage themselves effectively. Employees should be confident in voicing their opinions and be adaptable to changing circumstances within organizational guidelines. Additionally, employees should possess leadership skills, particularly the ability to supervise and monitor work, as well as the confidence to make decisions and give instructions within their scope of authority. These skills promote collaboration and contribute to organizational goals.

Table 1: Highlights of interview results

Skills	Findings
Critical thinking and problem-solving	The ability to think critically, analyze information, and present ideas in an engaging manner. The ability to synthesize and present information in innovative ways, such as through Google searches, and the ability to process and present this information in new and innovative ways to create original works is highly valued. This includes the ability to offer diverse perspectives, conduct thorough research to support one's work, and build upon existing knowledge to develop new insights and create unique outputs.
Communication and teamwork	Able to communicate in a way that ensures mutual understanding. Able to explain or provide information logically. Communicates based on accurate information. Has the ability to seek sufficient information and can select appropriate information to support decision-making. Must choose an appropriate method, communicating what, to whom, and how. Demonstrates consideration for colleagues and the overall team goals. Responsible for oneself and colleagues, especially regarding punctuality because some tasks can be delayed, while others cannot, due to their interconnectedness within a system.
Information literacy	Able to make decisions independently on tasks related to their work. Can solve problems as they arise. Possesses systematic thinking abilities. Can seek out information and facts to make informed decisions. Demonstrates flexibility in decision-making based on facts. Demonstrates courage and confidence in decision-making.
Information and communication technology skills	Proficient in using computers for information retrieval, storage, management, and data-driven decision-making. Skilled in utilizing technology to manage various tasks, including communication and teamwork in the workplace. Proficient in using various software programs for production, even as they become increasingly complex, to significantly enhance work efficiency.
Media literacy	Able to utilize technology platforms in a creative manner, such as seeking information to enhance personal and professional development while being mindful of potential risks and pitfalls associated with online platforms. Possesses the ability to manage emotions when communicating through digital channels, especially in stressful, frustrating, or pressured situations.
Flexible and adaptability	Able to work effectively in diverse and dynamic environments. For example, some jobs require patience and resilience to handle

	uncertainty and pressure, while others demand adherence to strict rules and regulations for safety purposes. Demonstrates the ability to collaborate with others without being self-centered.
Accountability	Works systematically, using facts as a guiding principle. They are dedicated and meticulous in their work. Works with a focus on efficiency. Able to work effectively as part of a team. Understands their role and responsibilities.
Leadership	Leadership is crucial. A leader must understand their role and responsibilities, be able to oversee tasks to achieve goals, know who to assign tasks to and how, motivate and inspire others. Effective communication and negotiation skills are also essential. Consistently makes decisions based on careful consideration rather than impulsive emotions.

Based on the results from the qualitative phase, the researchers categorized the essential skills from the study, expert evaluations, and the main concepts from the literature review according to the research framework. The three essential skill groups identified were 1) learning and innovation, comprising communication, teamwork, creativity, critical thinking, and problem-solving, 2) digital literacy including technology, information literacy, and media literacy, and 3) life and career skills including, accountability, leadership and adaptability. After these findings, the researchers proceeded to develop a research tool and engage in quantitative research to further explore the topic.

A survey of 400 entrepreneurs revealed that all ten skills are considered necessary for Thai graduates to work in the 21st -century, as shown in Table 2.

Table 2: Presents the mean and standard deviation of entrepreneur opinions regarding the necessary skills for Thai graduates to work in the 21st century. (n=400)

Skills	$\bar{X}$	S.D.	Level
1. Learning and innovation			
1.1 Communication	4.078	.434	High
1.2 Teamwork	3.006	1.300	Moderate
1.3 Critical thinking,	4.147	.463	High
1.4 Problem-solving	4.061	.449	High
2. Digital literacy			
2.1 Technology	4.183	.452	High
2.2 Information Literacy	4.129	.464	High
2.3 Media literacy	3.743	.612	High
3. Life and career skills			
3.1 Accountability	3.42	1.143	Moderate
3.2 Leadership	3.530	.991	High
3.3 Adaptability	3.900	.546	High

Table 2 indicates that entrepreneurs highly rated three skills within the learning and innovation group: critical thinking, communication, and problem-solving. Critical thinking was deemed highest, while teamwork was rated moderately. The second skill group, technology skills, was rated highly across the board, with technology skills specifically receiving the highest rating. For life and career skills, leadership and adaptability were considered at a high level, while accountability was rated moderately.

Entrepreneurs' perspectives on essential 21st-century skills for Thai graduates, categorized by establishment type

The findings from Section 1 identify ten essential skills for graduates entering the labor market. While the majority of these skills were rated as highly necessary, two were rated at a moderate level. However, when categorized by organization type, the mean scores for these 21st-century skills varied, as illustrated in Table 3.

Table 3: Average required skills for Thai graduates to work in the 21st century, by type of establishment. (n=400)

Type \ Skills	Learning and innovation								Digital literacy						Life and career skills					
	Communication		Teamwork		Critical thinking		Problem-solving		Technology		Information Literacy		Media literacy		Accountability		Leadership		Adaptability	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Petroleum industry	4.07	.35	2.75	1.55	4.02	.61	4.00	.57	4.14	.41	4.04	.37	3.57	.63	3.21	1.40	3.40	1.40	3.45	.71
Media and technology company	3.97	.63	2.98	1.23	4.17	.51	4.13	.41	4.17	.47	4.05	.51	3.73	.63	3.53	.97	3.50	.79	3.87	.62
Real estate and construction	3.92	.75	2.83	1.28	4.02	.23	3.91	.39	4.17	.34	4.15	.36	3.46	.58	3.52	1.22	3.31	1.06	3.90	.57
Logistic	4.06	.41	2.93	1.31	4.16	.38	4.00	.47	4.10	.52	4.09	.36	3.68	.58	3.39	1.16	3.42	1.05	3.80	.59
Gas station	4.13	.47	2.86	1.36	4.27	.46	4.16	.46	4.29	.52	4.22	.50	3.89	.68	3.18	1.30	3.35	1.12	3.93	.54
Hotel	4.13	.49	2.94	1.41	4.13	.46	4.01	.48	4.21	.47	4.17	.47	3.75	.54	3.50	1.17	3.67	1.06	3.88	.55
Retail	4.17	.45	3.01	1.18	4.37	.39	4.31	.53	4.39	.43	4.31	.48	3.80	.66	3.69	.98	3.57	.84	4.04	.48
Healthcare facility	4.18	.44	2.85	1.37	4.18	.70	4.13	.47	4.21	.46	4.13	.68	3.70	.73	3.29	1.13	3.43	1.04	3.98	.56
Financial	4.05	.32	2.88	1.43	4.06	.31	4.04	.29	4.13	.46	4.07	.30	3.73	.62	3.27	1.20	3.50	1.13	3.84	.55
Factory	4.02	.08	3.18	1.08	4.10	.29	3.99	.29	4.12	.32	4.05	.27	3.75	.52	3.57	.94	3.57	.68	4.00	.37

Table 3 shows that entrepreneurs in all organizations rate three skills within the learning and innovation group as highly important: communication, critical thinking, and problem-solving. Teamwork, however, is rated as moderately important. In the digital literacy group, all skills—technology literacy, information literacy, and media literacy—are rated highly by executives in all organizations except for those in real estate and construction. Entrepreneurs in these sectors rate

media literacy as moderately important. Within the life and career skills group, adaptability is the only skill consistently rated as highly important across almost all industries, except for the petroleum industry, where it is rated as moderately important.

To compare the differences in essential skills required for work in the 21st century from the perspective of entrepreneurs, categorized by the type of organization, a one-way ANOVA was conducted. However, the results revealed that no statistically significant differences were found at the .05 level, as shown in Table 4.

Table 4: A comparison of the entrepreneurs' perspective of essential skills for Thai graduates to work in the 21st-century workforce across different establishment types. (n=400)

		Sum of Squares	df	Mean Square	F	Sig.
Communication	Between Groups	1.716	9	.191	1.074	.381
	Within Groups	64.777	365	.177		
	Total	66.493	374			
Teamwork	Between Groups	4.018	9	.446	.252	.986
	Within Groups	645.730	365	1.769		
	Total	649.748	374			
Critical thinking	Between Groups	2.273	9	.253	1.260	.257
	Within Groups	73.142	365	.200		
	Total	75.415	374			
Problem-solving	Between Groups	2.805	9	.312	1.605	.112
	Within Groups	70.870	365	.194		
	Total	73.675	374			
Technology	Between Groups	2.197	9	.244	1.216	.283
	Within Groups	73.268	365	.201		
	Total	75.465	374			
Information literacy	Between Groups	1.707	9	.190	.881	.542
	Within Groups	78.567	365	.215		
	Total	80.274	374			
Media literacy	Between Groups	2.774	9	.308	.804	.612
	Within Groups	139.863	365	.383		
	Total	142.637	374			
Accountability	Between Groups	7.212	9	.801	.606	.792
	Within Groups	482.615	365	1.322		
	Total	489.826	374			
Leadership	Between Groups	4.787	9	.532	.509	.868
	Within Groups	381.629	365	1.046		
	Total	386.417	374			
Adaptability	Between Groups	4.663	9	.518	1.729	.081
	Within Groups	109.371	365	.300		
	Total	114.034	374			

As shown in Table 3, although the mean scores for essential 21st-century skills varied slightly, a one-way ANOVA revealed no statistically significant differences in entrepreneurs' perspectives across various establishment types (see Table 4).

Discussion

The researcher discusses the findings in two parts, corresponding to the study's objectives as follows:

Essential 21st-century skills for Thai graduates from the perspective of entrepreneurs

The results revealed the highlight that entrepreneurs identified communication, teamwork, critical thinking, problem-solving, technology, information literacy, media literacy, accountability, leadership, and adaptability as essential skills for Thai graduates to work in the 21st-century workforce. Three skills within the learning and innovation group were rated as highly important: communication, critical thinking, and problem-solving. In the digital literacy group, all skills—technology literacy, information literacy, and media literacy—were rated at a high level. Within the life and career skills group, adaptability and leadership were rated as highly important.

The findings of this study provide valuable insights into the essential skills required for 21st-century Thai graduates. Notably, the consistently high ratings for communication, critical thinking, and problem-solving across various industries underscore the importance of these core skills in the modern workplace. Recent studies have revealed that creativity is a skill gap for half of Thailand's workforce, highlighting the need for development in this area (Centre for the new economy and society, 2018). These skills are fundamental for effective interpersonal interactions, decision-making, and innovative problem-solving, which are essential to thriving as a citizen in the 21st-century (Carlgren, 2013) and modern workplace (Tripathy, 2020; Thornhill-Miller, et al, 2023).

The emphasis on digital literacy skills, including technology, information, and media literacy, reflects the increasing digitalization of the global economy. Additionally, the work sector demand for labor qualifications has transformed with digital skills becoming a strong requirement for the sustainability of businesses, the livelihood of workers, and the growth of economies (Reddy, Chaudhary, & Hussein, 2023). Innovation starts with people, making human capital within the workforce decisive. In today job's market, 21st-century digital skills drive organizations' competitiveness and innovation capacity. To thrive in a rapidly changing world, employees need to develop 21st-century digital skills (Laar et al, 2017).

The high rating for adaptability underscores the importance of flexibility and resilience in today's dynamic and rapidly evolving job market. The ability to learn new skills, embrace new technologies, and adapt to changing circumstances is crucial for career advancement. As highlighted by Mustafa and Lleshi (2024), cultivating a resilient and adaptive workforce capable of navigating the changing needs of the modern workplace is essential for improving employee performance.

Finally, the high rating for leadership also underscores its importance in the 21st-century workforce. Previous research reveals that leadership is associated with employees' innovative work behavior (Alheet et al., 2021), which is important for work in the new era. As indicated in previous studies leadership skills are confirmed as essential for a modern workforce (Northouse, 2024).

Entrepreneurs' perspectives on essential 21st-century skills for Thai graduates, categorized by establishment type.

The results indicated no significant differences in entrepreneurs' perceptions of essential skills—including communication, teamwork, critical thinking, problem-solving, and various literacies—for Thai graduates across different industries. This suggests a universal demand for a specific competency set in the contemporary workforce, regardless of the organizational sector. Consequently, these competencies are vital for Thai graduates seeking to thrive in the 21st-century labor market. This finding aligns with Akkarathitiphong (2019), who suggests that individuals entering today's workforce must possess more than just technical knowledge; they must also demonstrate creativity, adaptability, collaboration, and self-management traits such as resilience. Furthermore, these results are consistent with Nadarajah (2021), who identified communication, analytics, and leadership as essential employability skills. They also echo the summary by Tushar and Sooraksa (2023) regarding the top ten employability skills of the decade, which include problem-solving, integrity, and a willingness to learn.

Conclusion and Recommendation

This study concludes that three skills within the learning and innovation domain—critical thinking, communication, and problem-solving—were rated at a high level, while teamwork was rated moderately. In the second category, technology, information literacy, and media literacy were rated highly across all metrics. Regarding life and career skills, leadership and adaptability were perceived at a high level, whereas accountability received a moderate rating. Furthermore, no significant differences were found in entrepreneurs' perspectives regarding essential skills for Thai graduates across different types of establishments. These skills are crucial for Thai graduates, driving innovation and organizational success in the 21st-century labor market, as presented in Figure 3.

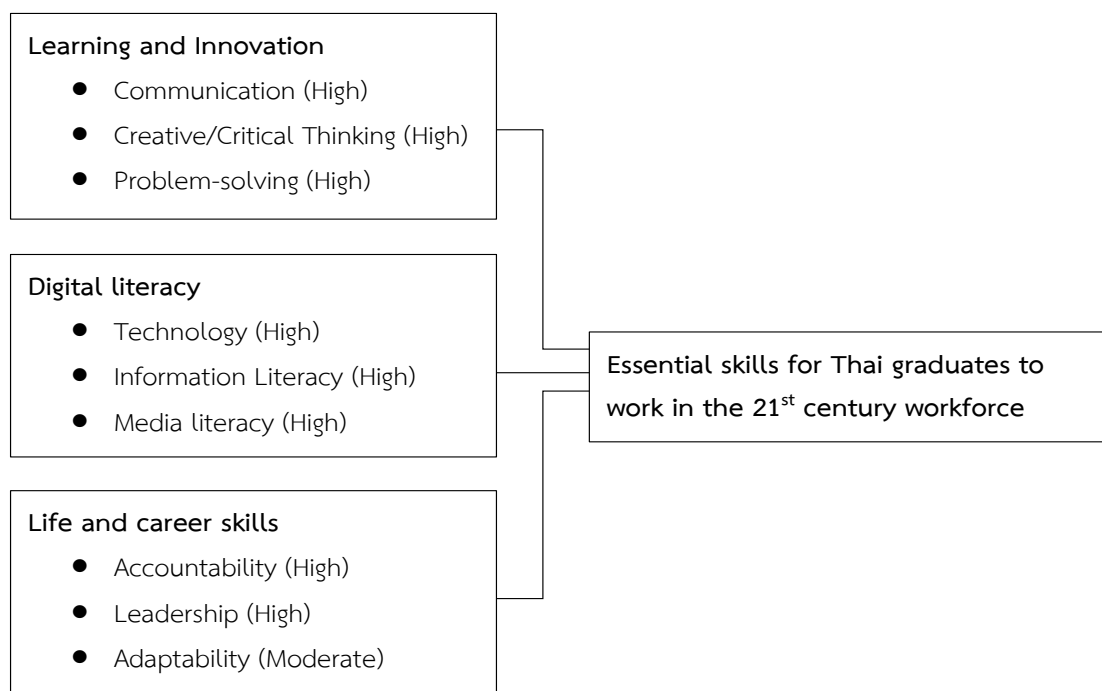


Figure 3: Essential skills for Thai graduates to work in the 21st century workforce

Refer to the study findings, we have some suggestions for policy application and further study as follows:

1. To equip Thai graduates with these essential skills, policymakers, educators, and employers should prioritize and consider curriculum reform such as incorporating 21st-century skills into education at all levels to promote continuous learning and skills development as tools for lifelong learning.

2. It is interesting to note that while the study found no significant differences in the perception of essential skills across various industries, there may be subtle nuances in the specific skill requirements for different sectors. Future research could delve deeper into these nuances to provide more tailored insights for specific industries.

3. Additionally, while this study focuses on the perspective of entrepreneurs, it would be valuable to explore the views of other stakeholders, such as employees, HR professionals, and policymakers, to gain a more comprehensive understanding of the evolving skill landscape.

4. As this study was limited to Southern Thailand, future research should include other regions to determine nationwide skill requirements. This broader perspective would help policymakers develop national strategies for organizations tasked with preparing graduates for the 21st-century workforce.

Conflict of Interest

The author declares that there is no conflict of interest.

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