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Navigating the new frontier: the impact of artificial intelligence on students' entrepreneurial competencies

Tatiana Somià
College of Business, Ohio University, Athens, Ohio, USA and Faculty of Economics and Management, Free University of Bozen Bolzano, Bolzano, Italy, and
Mariangela Vecchiarini
University of North Georgia, Dahlonega, Georgia, USA

Abstract

Purpose – Artificial intelligence (AI) technologies have led to significant transformations across industries and society, including the field of education. The integration of AI in educational settings has the potential to improve students' learning experience and support their individual competencies when paired with non-AI methods. Despite the growing importance of AI in modern education, there remains a noticeable research gap regarding its use in entrepreneurship education and the effects of Chatbots on students' entrepreneurial competencies. To address this gap, an exploratory study was conducted on undergraduate students who were tasked with using ChatGPT to improve their business model canvas.

Design/methodology/approach – The chosen methodology aligned with the research purpose, aiming to explore the relationship between Generative AI and competencies. Due to the novel nature of the research problem, an exploratory study was conducted using a mixed methods approach. A survey with open- and closed-ended questions was designed, and statistical and text analyses were performed to interpret data and test identified propositions.

Findings – The findings of this study indicate that ChatGPT can enhance the types of students' entrepreneurial competencies considered in this study: spotting opportunities, creativity, vision, valuing ideas and ethical and sustainable thinking. The results show that ChatGPT can be particularly helpful to improve the ability of students of valuing ideas.

Originality/value – Overall, this study highlights the potential of adopting ChatGPT in experiential learning methodologies for enhancing students' entrepreneurial competencies and improving their learning outcomes.

Keywords Entrepreneurial competencies, AI, GenAI, ChatGPT, BMC

Paper type Research paper

1. Introduction

Artificial intelligence (AI) technologies have radically transformed numerous industries, increasing efficiencies, reducing costs and changing the way businesses are created, scaled and operated (Chalmers *et al.*, 2021; Reim *et al.*, 2020). While AI is still in its infancy and its full potential has yet to be fully unveiled, it is already possible to see how these technologies are changing our society: from virtual assistants and chatbots, to smart homes and self-driving

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cars, AI is radically transforming the way people work, communicate and perform everyday tasks (Dhawan and Batra, 2020; Schneider and Leyer, 2019).

As AI is altering many aspects of modern society, higher education is no exception. The implementation of AI systems in educational settings has the potential to enhance students' learning experience (Gadanidis, 2017) and may support their individual competencies when carefully combined with non-AI approaches (Wilkens, 2020).

In this study, we look at Generative AI (GenAI), which refers to a type of AI that can learn patterns, structures and features from a large amount of input data, and use it to create new content, including text, images, music, voice or other types of media (Lv, 2023; Gupta and Yang, 2024).

Generative Pre-trained Transformer (GPT) models, a subset of GenAI, can create text that closely mimics human writing across various languages (Baidoo-Anu and Owusu Ansah, 2023). GPT models hold immense potential across a wide range of applications and industries thanks to their advanced natural language processing capabilities. ChatGPT, launched by OpenAI in November 2022, is one of the most popular and advanced GPT models.

Since its launch, ChatGPT has inspired extensive research on its impact in higher education (e.g. Alafnan *et al.*, 2023; Dempere *et al.*, 2023; Ratten, 2023; Su and Liu, 2023), but limited literature exists on its use in entrepreneurship courses and its potential impact on students' entrepreneurial competencies (Ratten, 2020; Vecchiarini and Somià, 2023). This study aims to address this gap in the literature.

ChatGPT is a conversational AI chatbot that was trained on a massive amount of data to be able to understand and generate natural language text and perform a variety of tasks, such as answering complex questions, generating content on various subjects, writing music or poems, summarizing information, solving mathematical problems, analyzing data and providing insights based on it (Dempere *et al.*, 2023; Wang *et al.*, 2023). This study investigates whether ChatGPT's use in the classroom, under the guidance of instructors, can enhance students' entrepreneurial competencies, such as the ability to identify opportunities and valuing ideas, their creativity and vision and their ethical and sustainable thinking (Bacigalupo *et al.*, 2016).

This research explores the integration of ChatGPT into the entrepreneurship curriculum of two undergraduate courses at a university in the Southwest of the United States. The purpose was to provide students with the opportunity to utilize ChatGPT as a tool to improve business model canvases (BMCs) they had previously developed without the aid of GenAI, ultimately contributing to their competencies' development. To assess the effectiveness of ChatGPT and its impact on the students' entrepreneurial competencies, an anonymous survey was administered to those who participated in the class activity.

The paper is structured as follows. The authors introduce the study with a discussion of the impact of GenAI in entrepreneurship education and the relevance of adopting an experiential learning approach integrated with GenAI to foster the development of entrepreneurial competencies. A brief review of the literature on the BMC is then presented to examine how this tool can support experiential business education to enhance students' competencies. The authors then provide the theoretical background of research on the impact of GenAI on individual competencies. The focus then shifts towards exploring the literature on entrepreneurial competencies, such as *Spotting opportunities, Creativity, Vision, Valuing ideas* and *Ethical and sustainable thinking*, and how they can be affected by the adoption of GenAI. The study also makes some preliminary reflections on how specialization (major/course) and gender might shape students' perceptions of GenAI's impact on their entrepreneurial competencies.

The study employs an exploratory mixed methods approach to answer the research questions and presents the results of instrument testing and qualitative analysis of the survey conducted with entrepreneurship students. The paper concludes with a discussion on the theoretical implications, contributions and limitations of adopting GenAI in entrepreneurship education for the development of entrepreneurial competencies.

2. Impact of GenAI on entrepreneurship education

Higher education is experiencing a significant transformation thanks to the integration of various AI tools. Among the most popular are Grammarly and Turnitin, which enhance writing and ensure academic integrity, or platforms like Knewton Alta to adapt learning to individual student needs. Zoom AI provides features like automatic transcription and real-time translation, while Blackboard Ally helps instructors improve the accessibility of their online content using advanced machine learning algorithms. Among the most significant advancements, GenAI technologies, led by models such as ChatGPT, are proving to be particularly transformative in higher education (Rejeb *et al.*, 2024).

A recent literature review revealed limited research on the use of AI in business education (Desai, 2023), with even fewer studies focusing on entrepreneurship courses (Ratten and Jones, 2021; Vecchiarini and Somià, 2023).

The integration of GenAI in the entrepreneurial learning process can enhance the effectiveness of entrepreneurship education in several ways. GenAI chatbots can help students improve their BMC and business plans, as well as receive feedback on their pitch presentation outlines. Moreover, GenAI systems can facilitate brainstorming sessions and support students in identifying potential business opportunities (Vecchiarini and Somià, 2023). Utilizing GenAI chatbots enables students to efficiently access market data, gain insights into specific customer segments and competitors, and thus receive guidance in making venture-related decisions (Mavlutova *et al.*, 2020). Moreover, AI is increasingly utilized in entrepreneurship education for creating simulations and serious games, enabling students to experience aspects of the entrepreneurial process in a virtual environment (Fox *et al.*, 2018). These simulations can provide a safe and controlled environment for students to test their entrepreneurial ideas and develop their competencies.

According to TeachingEntrepreneurship.org, a leading organization driven by a team of educators and practitioners, GenAI could also aid students in identifying the right questions for customer interviews and practicing interview protocols with a GenAI "chat coach." Steve Blank, known for creating the customer development approach that launched the lean startup methodology, suggests GenAI could revolutionize customer discovery and business model validation (Blank, 2013).

Despite the potential benefits of GenAI in entrepreneurship education, concerns about the use of ChatGPT include its accuracy and ethical implications. Growing concerns suggest that ChatGPT might compromise students' independent thinking and language development (Dempere *et al.*, 2023; Dwivedi *et al.*, 2023; Meckler and Verma, 2022). Some have emphasized the importance of preserving human touch and interpersonal communication in education when implementing AI tools, highlighting the risk of students developing a dependency on AI for information and a reduced motivation for independent research and learning (Aithal and Aithal, 2023; Pradana *et al.*, 2023; Su and Liu, 2023). Other negative aspects highlighted by recent studies include concerns about privacy, academic integrity issues with students potentially using ChatGPT for cheating, the risk of bias and misinformation and accessibility challenges (Alafnan *et al.*, 2023; Atlas, 2023; Wang *et al.*, 2023; Gulati *et al.*, 2024).

As a result, some universities and educators have already prohibited the use of ChatGPT (Rosenzweig-Ziff, 2023). Additionally, ChatGPT has been banned in some countries due to the risk of spreading misinformation and generating inaccurate or biased responses based on the quality of the data it accesses (Borji, 2023; Dwivedi *et al.*, 2023).

Given the current concerns and considerations, this study relied on voluntary student participation, allowing them to choose whether to use ChatGPT after being informed on its uses, limitations and benefits provided by the instructor. This approach aims to address the ChatGPT's potential drawbacks while allowing students to make informed decisions.

Nonetheless, society expects universities to produce graduates proficient in the latest technological advancements that are disrupting the business world (Giuggioli and Pellegrini, 2022). Furthermore, it is also widely acknowledged that the future of entrepreneurship education entails a technology-driven classroom with immersive AI and augmented reality interactions (Ratten and Jones, 2021).

3. Experiential learning, business model canvas and entrepreneurial competencies

There is an emerging consensus that entrepreneurship is best learned through an experiential learning approach, which involves applying knowledge through examples and project-based activities, such as business planning and developing business model cases (Neck and Greene, 2011). This method has proven successful in teaching how to master the skills associated with entrepreneurship (Morris and Kaplan, 2014; Somià *et al.*, 2024). Experiential learning of entrepreneurship may benefit from GenAI, which can offer personalized virtual environments where students can explore topics of interest (Hwang, 2014). This approach, facilitated by interactive dialogues with a virtual tutor such as ChatGPT, can enrich the educational journey by offering diverse and engaging ways to learn (Baidoo-Anu and Owusu Ansah, 2023).

The experiential nature of contemporary entrepreneurship education makes it one of the most innovative and progressive subjects in management education (Hägg and Gabrielsson, 2020). Central to this approach is the Business Model Canvas (BMC), a widely acknowledged tool in entrepreneurship courses for its effectiveness in experiential learning (Duval-Couetil, 2013; Vecchiarini *et al.*, 2023). Developed by Osterwalder *et al.* (2011), the BMC provides a visual framework divided into nine building blocks that describe how a business operates and creates value, such as "Value Proposition" and "Customer Segments."

Supporting the Lean Startup methodology, a cornerstone in modern experiential entrepreneurship education, the BMC encourages students to articulate their business hypotheses within the canvas (Liu *et al.*, 2022; Solaimani *et al.*, 2022). This approach involves engaging with potential customers to better understand their needs, validating assumptions to achieve product-market fit and using validated learning to iteratively refine their business models and products (Blank, 2013).

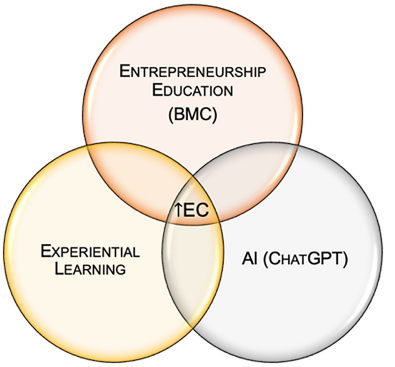
Research indicates that students engaged in Lean Startup practices, including BMC creation and customer interviews, are more likely to enhance their creative abilities and entrepreneurial self-efficacy, because this approach encourages them to seek feedback from others (Liu *et al.*, 2022). Furthermore, the iterative process of hypothesis testing and business model refinement through the BMC has been shown to cultivate essential entrepreneurial competencies (Mason and Arshed, 2013; Nikou *et al.*, 2023), which are essential abilities for effectively engaging in entrepreneurial activities (Crotty *et al.*, 2017; Mitchelmore and Rowley, 2010).

The literature on the development of entrepreneurial competencies through experiential learning activities is still limited and, to our knowledge, to date there are no studies looking at how GenAI can be integrated into these activities to support the development of such competencies.

This study focuses on the area of intersection of entrepreneurship education (specifically the BMC), experiential learning and GenAI adoption to explore the development of entrepreneurial competencies (↑EC) (see Figure 1).

Accordingly, this study aims to test the following proposition:

P1. Entrepreneurial competencies are positively affected by using GenAI in entrepreneurship courses.



Source(s): Authors' elaboration

Figure 1.
Venn diagram to study entrepreneurial competencies development

4. Effect of GenAI on individual competencies

Recent research suggests that individual competencies may either be substituted, augmented or remain unchanged with the adoption of GenAI (Farrow, 2019; Paschen *et al.*, 2020).

GenAI technologies have been used in higher education in different ways, from virtual teaching assistants that can answer questions about course material, to grading systems that help instructors assess assignments and tests, to systems able to deliver personalized content based on students' learning abilities and preferences (Dwivedi *et al.*, 2023). Furthermore, universities have leveraged GenAI for recruitment, applicant assessment, financial decision-making and student advising. GenAI chatbots, in particular, can streamline tasks such as drafting assignments or exam questions, designing lesson plans, responding to student inquiries, grading and offering feedback, enhancing efficiency and speed, especially in low-interaction settings, like online courses or those with high student numbers (Essel *et al.*, 2022). Large language models also offer significant benefits to students by aiding in research, writing and exam preparation (Kasneci *et al.*, 2023). Tools like ChatGPT are invaluable for improving the writing and communication skills of individuals who struggle in these areas, enabling them to produce quality work swiftly, thus boosting productivity and freeing up time for more complex challenges (Noy and Zhang, 2023).

At the same time, GenAI is not limited to replacing elementary tasks but plays a crucial role in fostering specific competencies, particularly in enhancing critical thinking and problem-solving skills. GenAI, in fact, can aid in refining decision-making processes by aggregating and analyzing vast amounts of data, summarizing observational data across various formats and sources, and generating comprehensive insights (Giraud *et al.*, 2022; Kasneci *et al.*, 2023).

As mentioned earlier, competencies can be replaced and augmented by the adoption of GenAI, but some might instead remain unaffected because of their extreme complexity, such as emotional intelligence competencies (Goleman, 1998), or because they require brainstorming, such as exploration and improvisation abilities (Bieser, 2023).

5. Impact of GenAI on students' entrepreneurial competencies

This study examines the impact of ChatGPT on college students' entrepreneurial competencies, by adopting the EntreComp framework (Bacigalupo *et al.*, 2016). The EntreComp framework conceptualizes entrepreneurship as a set of key competencies that can be applied by individuals and organizations in any aspect of life, not limited to starting a new venture (Bacigalupo *et al.*, 2016). The model includes three competence areas, namely "Ideas

and Opportunities", "Resources" and "Into Action". This study focuses specifically on the competencies belonging to the "Idea and Opportunities" cluster which includes: *Spotting opportunities*, *Creativity*, *Vision*, *Valuing ideas* and *Ethical and sustainable thinking* (Bacigalupo *et al.*, 2016).

The choice to focus on these particular competencies stems from their critical role in the ideation, creation and refinement of a BMC, as they are closely associated with the development of specific abilities necessary for this stage. Conversely, the remaining entrepreneurial competencies included in the EntreComp framework pertain more to the operational management of resources and the practical execution of entrepreneurial activities, which become more crucial during the subsequent phases of business model execution and validation. Below it is discussed the potential impact that GenAI could have on *Spotting Opportunities, Vision, Valuing ideas* and *Ethical and sustainable thinking.*

5.1 Spotting opportunities

Research has consistently found that some individuals are more alert at *Spotting opportunities*, while others tend to focus more on the complexity of changing the status quo, and by doing that they overlook potential prospects (Valliere, 2013). Recognizing opportunities is a critical part of the entrepreneurial process, which can initiate the creation of value (Tang *et al.*, 2012). The ability to identify opportunities for creating value has also been included in a framework developed by Morris *et al.* (2013) as "Opportunity Recognition" and in White's framework (2021) as "Understanding Opportunities".

This competency has received a great deal of attention in the entrepreneurship field, as it is fundamental to understand how business ideas are found (Shane, 2000), but there is a lack of studies on how GenAI technologies could support its development. As previously mentioned, GenAI has predictive abilities and can analyze large amounts of data to identify patterns and trends that may reveal insights on customer needs and opportunities in the market.

5.2 Creativity

Creativity is widely considered as a crucial 21st-century competency whose importance is recognized in educational systems (Marrone *et al.*, 2022). Creativity and creative problem solving are considered essential competencies in the established European (EntreComp, Bacigalupo *et al.*, 2016) and American Entrepreneurship Competence Frameworks (Morris *et al.*, 2013; White, 2021).

Even if the leading opinion is that GenAI cannot generate completely new ideas, it is important to understand the different ways of generating novel ideas and how GenAI can contribute to the development of different types of creativity. Boden (1998) defines three main types of creativity: combinational, exploratory and transformational. The first type involves novel combinations of familiar ideas and might be especially useful in entrepreneurial creativity because those combinations represent specializations that are not limited to simple concepts but might extend to many aspects and to diverse consumer needs (Ward, 2004).

Exploratory creativity involves the generation of novel ideas by exploring structured conceptual spaces. This type of creativity is studied in GenAI by identifying patterns in large data sets, that may inspire humans to develop new hypotheses they may have missed (Bieser, 2023), and by researching on analogy. GenAI models can generate and evaluate analogies, using domain-general mapping rules, applied to pre-structured concepts (Boden, 1998). Analogy can foster creative developments in entrepreneurship as in science, art, music or literature. A good analogy has the dual power to help develop ideas or a new successful venture in a different domain, connecting the familiar and novel domains at very deep levels, and to contribute to communicating a new idea to others in a concise and understandable way (Ward, 2004).

The third type of creativity identified by Boden (1998), involves the transformation of some dimensions of the space that enable the generation of previously impossible ideas. Most current GenAI-models of creativity attempt only exploration, not transformation because transformational creativity requires a strong domain-expertise to reshape a conceptual space and the evaluation of the resulting structures. It is hard to embody in GenAI transformational programs the criteria to evaluate the structures generated within newly transformed spaces that are different from those implicit within the original space. The evaluation of creativity needs to be done interactively by human beings (Boden, 1998). There are contextual and interpersonal factors that affect how people weigh novelty and usefulness of an idea (Lloyd-Cox *et al.*, 2022), but GenAI can help in making an overall judgment of the potential value of a business idea, as it will be discussed later in this paper.

5.3 Vision

The concept of vision has been the subject of analysis and discussion across various domains and has a long history in management and organizational practices, although there is no universally agreement upon its definition (Kantabutra and Avery, 2010).

According to Boyatzis *et al.* (2015) a personal vision is based on an ideal self and is necessary to lead to sustained and desired change. The importance and development of a shared vision has also been studied and recognized in the management literature.

However, whether at the individual or organizational level, for any type of organization, vision revolves around a desired image of the future and is generally developed to move from the current state to the desired end state, providing a sense of mission (Boyatzis *et al.*, 2015).

In entrepreneurship research on competencies, vision is a competency considered both in EntreComp and in Morris *et al.* (2013) framework who define it as the ability "to conceive an image of a future organizational state and to articulate that image in a manner that empowers followers to enact it." (Morris *et al.*, 2013, p. 357).

Entrepreneurs are required to imagine and forecast the future of their businesses, necessitating the development of clear and compelling visions that can inspire action to achieve desired outcomes (Okolie *et al.*, 2021). To date, there are no studies on the impact that GenAI may have on the process of setting and sharing a business vision.

5.4 Valuing ideas

Valuing ideas is the ability to assess the content structure of opportunities to ascertain whether they are worth developing (Smith *et al.*, 2010). Morris *et al.* (2013) define this competency as "opportunities assessment" because it allows to accurately determine the relative attractiveness of an opportunity, The ability to evaluate opportunities enables the entrepreneur to assess whether particular combination of resources will result in economic success (Ardichvili *et al.*, 2003).

Opportunities assessment require a decision-making process in which the entrepreneur decides whether or not to pursue an entrepreneurial opportunity (Smith *et al.*, 2010). Relying on this conceptualization of Smith *et al.* (2010), there are studies indicating that GenAI might significantly enhance complex decision-making and ultimately contribute to the development of opportunities assessment competency (Colson, 2019; Giraud *et al.*, 2022).

5.5 Ethical and sustainable thinking

The sustainability competency has been included in the EntreComp framework but has not been addressed by other American Competency Frameworks. Sustainability is one of the European Union's key education priorities for 2019–2024 and the European Commission recently developed the European Sustainability Competence Framework, GreenComp (Bianchi *et al.*, 2022).

Despite the increasing attention on developing sustainability through education, there are no studies on the impact of using GenAI to support the development of this competency.

6. Methodology

The choice of methodology was consequent to the identification of the research purpose (Voss *et al.*, 2002) which was to examine the relationship between key variables – GenAI and competencies – that have been studied and analyzed, but almost always separately.

Given the nature of the research problem, which can be considered a "blue sky" topic referring to a new research domain (Murphy *et al.*, 2017), an exploratory study was conducted using a convergent parallel mixed methods approach (Creswell, 2013).

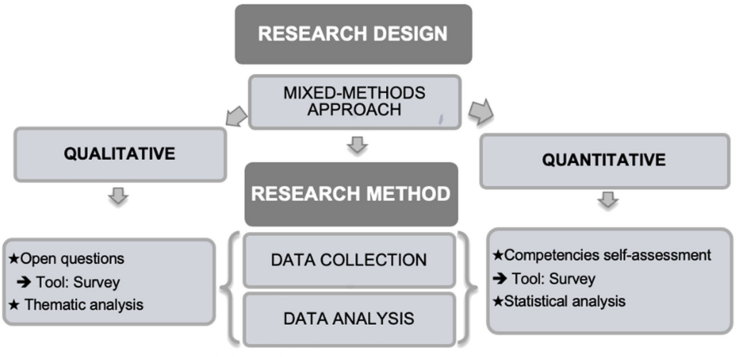
Statistical and text analysis were performed on data of a survey, with both open- and closed-ended questions, to achieve across dataset interpretation and test the identified propositions (see Figure 2).

The inquiry was based on the assumption that collecting diverse types of data provides a more comprehensive understanding of a research problem than either quantitative or qualitative data alone. However, given the exploratory nature of this investigation, addressing a timely and novel topic, the relevance of qualitative data was prioritized to explore the meaning students assign to the adoption of GenAI in entrepreneurship education and its impact on entrepreneurial competencies. When research is in its initial stage, according to Edmondson and McManus (2007), a qualitative approach is apt, and in our case, it allowed us to gain deeper insights into participants' experiences and perceptions.

Therefore, as a preliminary step in the quantitative exploratory process of understanding the potential effects of GenAI on these competencies, data were collected using single-item measures to gauge the extent to which students perceived ChatGPT to impact their competencies. This can be viewed as a starting point that could be further developed using multi-item scales to measure entrepreneurial competencies and their development using ChatGPT. This approach allowed the authors to generate preliminary results that can guide future research in assessing the impact of GenAI and competencies development by incorporating rigorous testing methodologies.

6.1 Sample

The sample population for this study consists of undergraduate students enrolled in face-to-face and online undergraduate entrepreneurship courses during the Spring semester of 2023 who participated in an anonymous survey after using ChatGPT to enhance their BMC.



Source(s): Authors' elaboration

Figure 2.
Research design

After developing their BMC without the help of GenAI, students were introduced to ChatGPT during a class activity and were given the option to improve their BMC using GenAI.

Given the prevailing concerns about the use of ChatGPT mentioned earlier (cf. section 2), the authors opted to conduct this research on the voluntary participation of students. This strategy intended to tackle any potential downsides associated with ChatGPT, while empowering students to make well-informed choices. A total of 53 ChatGPT users out of 70 enrolled students completed the anonymous survey concerning their learning experience.

6.2 Data collection

Quantitative and qualitative data were collected to assess students' self-perception of the benefits of using ChatGPT on entrepreneurship learning outcomes.

To assess the impact of using ChatGPT on entrepreneurial competencies development the authors implemented a Likert scale from 1 (very low contribution) to 5 (very high contribution). To explore and assess the students' perceived benefits and limitations of using ChatGPT to develop a BMC and make business decisions, both open- and closed-ended questions were adopted, using a 5-point Likert scale.

6.3 Data analysis

The quantitative data collected were analyzed using statistical analysis to study students' perceptions of the impact of ChatGPT in the development of their competencies.

To conduct a comprehensive analysis, pair samples *t*-tests were employed to compare the means of self-assessed entrepreneurial competencies. Additionally, an independent *t*-test was utilized to compare the competency assessments between female and male subsamples. This allowed to examine the statistical differences in a rigorous manner.

The qualitative data collected on the benefits and limitations of using ChatGPT for developing a BMC was analyzed using thematic analysis, as suggested by Boyatzis (1998), to identify actual examples of how GenAI affected the development of students' competencies. Thematic analysis is the process of coding qualitative information using a codebook that articulates specific themes and how to identify them. The EntreComp Framework was used as a codebook that describes the entrepreneurial competencies that this research aims to explore (Bacigalupo *et al.*, 2016). Finally, text analysis was used to investigate how the use of ChatGPT can enhance the BMC and strengthen students' entrepreneurial competencies.

7. Results

Quantitative and qualitative data were collected and integrated to provide a comprehensive analysis and interpretation of the research problem. Moreover, the mixed methods approach provides a better understanding of data contradictions or incongruent findings (Creswell, 2013).

7.1 Quantitative results

The students' assessment of ChatGPT's contribution to their competencies' development was positive, surpassing the midpoint of the Likert scale, which represents neutrality. The mean rating was 3.58, with a standard deviation of 0.83.

To compare the different entrepreneurial competencies, paired samples *t*-tests were employed, assuming that the samples are normally distributed, and the difference between their means was calculated, as shown in Table 1. The effect size was also computed to determine whether the findings are meaningful from a practical perspective.

The results of this study revealed that, on average, students experienced a statistically significant improvement in their ability to value ideas compared to all other competencies

		Paired differences							Significance	
				Std. Error	95% Confidence interval of the difference					
		Mean	SD	mean	Lower	Upper	t	df	One-sided p	Two-sided p
Pair 1	4–1	0.28302	0.86330	0.11858	0.04506	0.52097	2.387	52	0.010*	0.021*
Pair 2	4–2	0.33962	0.75812	0.10414	0.13066	0.54859	3.261	52	<0.001**	0.002**
Pair 3	4–3	0.30189	0.84546	0.11613	0.06885	0.53492	2.599	52	0.006**	0.012*
Pair 4	4–5	0.39623	0.76811	0.10551	0.18451	0.60794	3.755	52	<0.001**	<0.001**
Pair 5	1–2	0.05660	0.69102	0.09492	−0.13386	0.24707	0.596	52	0.277	0.554
Pair 6	1–3	0.01887	0.74655	0.10255	−0.18691	0.22464	0.184	52	0.427	0.855
Pair 7	1–5	0.11321	0.89142	0.12245	−0.13250	0.35891	0.925	52	0.180	0.359
Pair 8	2–3	−0.03774	0.83118	0.11417	−0.26684	0.19137	−0.331	52	0.371	0.742
Pair 9	2–4	0.05660	0.84159	0.11560	−0.17537	0.28857	0.490	52	0.313	0.626
Pair 10	3–5	0.09434	0.88283	0.12127	−0.14900	0.33768	0.778	52	0.220	0.440

Note(s): 1. Spotting Opportunities, 2. Creativity, 3. Vision, 4. Valuing Ideas, 5 Ethic and Sustainable Thinking
*p-value < 0.05; ** p-value <0.01
Source(s): Authors' elaboration

Table 1.
Paired samples T-tests entrepreneurial competencies

(refer to Table 1). They rated the average contribution of GenAI in developing their ability to value ideas as 3.849, indicating a strong inclination towards a "4 = high contribution" rating.

More specifically, when evaluating the impact of ChatGPT, students rated its contribution to the development of their ability to *value ideas* even higher (M = 3.849, SEM = 0.109) than its impact on other abilities including.

(1) *Spotting opportunities* (M = 3.566, SEM = 0.122): This difference was significant t(52) = 2.387, two-sided p = 0.021. It represented a moderate-sized effect d = 0.328 (Cohen's d).

(2) *Creativity* (M = 3.509, SEM = 0.116): This difference was significant t(52) = 3.261, two-sided p = 0.002. It demonstrated a moderate effect size d = 0.448 (Cohen's d).

(3) *Vision* (M = 3.547, SEM = 0.116): This difference was significant t(52) = 2.599, two-sided p = 0.012. It demonstrated a moderate-sized effect d = 0.357 (Cohen's d).

(4) *Ethical and sustainable thinking* (M = 3.566, SEM = 0.122): This difference was significant t(52) = 3.755, two-sided p= < 0.001. It represented a large-sized effect d = 0.516 (Cohen's d).

In summary, the findings demonstrate that ChatGPT's impact on developing the ability to value ideas surpassed its influence on all other competencies, including spotting opportunities, creativity, vision and ethical and sustainable thinking.

The authors also made preliminary reflections on the impact of two variables – students' major or course and gender – on the assessment of entrepreneurial competencies development facilitated by the use of ChatGPT.

Given the small size of the subsamples, the authors took precautionary measures by primarily using descriptive statistics to derive initial insights and prioritized qualitative analysis to gain a deeper understanding. However, the authors conducted both parametric and non-parametric tests, and evaluate effect sizes to explore mean differences in the assessment of entrepreneurial competencies between business and STEM students and between genders within the sample. This analysis can be provided to interested readers upon request.

Regarding the major/course variable, the sample breakdown reveals that 81% are business students, 6% are STEM students, and the remaining 13% includes students from diverse specializations like interdisciplinary studies and psychology or those who did not specify their major. Recognizing the limited sample size and its skew toward business students, the authors chose to focus on descriptive statistical analyses. This approach allowed them to draw preliminary insights, which were further explored in the qualitative analysis.

With respect to the gender variable, the sample consisted of 18 women and 35 men who provided their assessments of the average contribution of GenAI to the development of their competencies. The average assessment for women was 3.73, while for men it was 3.51. The assessment level of *Vision* significantly differed between women (M = 3.89, SEM = 0.159) and men (M = 3.37, SEM = 0.148) subgroups. These early insights were subsequently investigated through qualitative analysis.

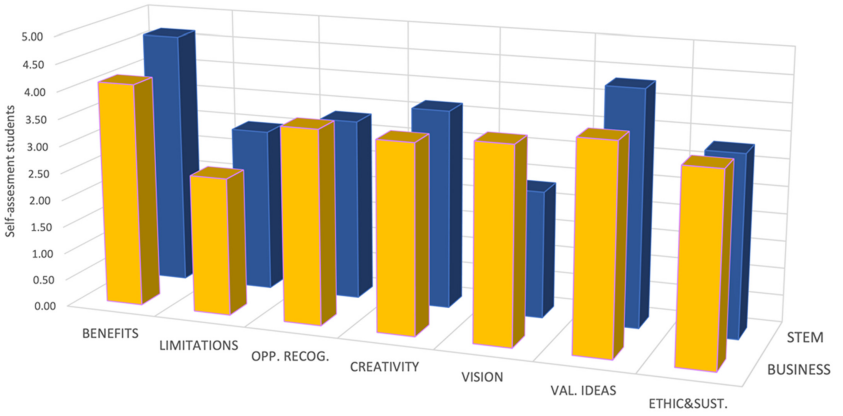
Students were also asked to rate the overall benefit of using ChatGPT to further develop their BMC from 1 (very poor) to 5 (excellent). The average rating of benefits of using ChatGPT was 4.19 more than "4 = Good". Additionally, participants were asked to assess the general limitations associated with employing ChatGPT for refining their business model canvas, using a scale from 1 (very weak) to 5 (very strong). The results indicated that, on average, students perceived the limitations of utilizing ChatGPT as relatively weak, with a rating of 2.57.

Analyzing data with respect to the major/course variable (see Figure 3), STEM students, on average, rated the contribution of ChatGPT in developing entrepreneurial competencies at 4.67 (near "excellent"), surpassing the rating of 4.12 (more than "good") by business students. While showing greater appreciation for the benefits brought by the use of ChatGPT, STEM students also appeared more demanding in assessing its limitations, giving it a score of 3 (medium), slightly higher than the 2.54 (relatively weak) assigned by business students.

The use of descriptive statistics in the analysis of students' major/course variable revealed that both STEM and business students recognized ChatGPT's substantial contribution to the development of the ability of *Valuing ideas*. STEM students rated the impact of GenAI on the development of the ability to evaluate ideas more than "good" (4.33) compared to business students who rated it almost "good" (3.81). However, STEM students rated the contribution of ChatGPT to developing their *Vision* lower, with a rating of 2.33, in contrast to business students who rated it at 3.60 (see Figure 3).

In addition, students were asked what building blocks of their BMC they modified or improve using ChatGPT. It was found that over half of the students (53%) utilized ChatGPT to enhance the "Key Resources" of their BMC. Additionally, the students employed ChatGPT to improve all the other aspects of the BMC, with "Key Activities" (42%), "Channels" (38%), "Value Proposition" (32%) and "Revenue Streams" (32%) being the other frequently modified building blocks (see Figure 4).

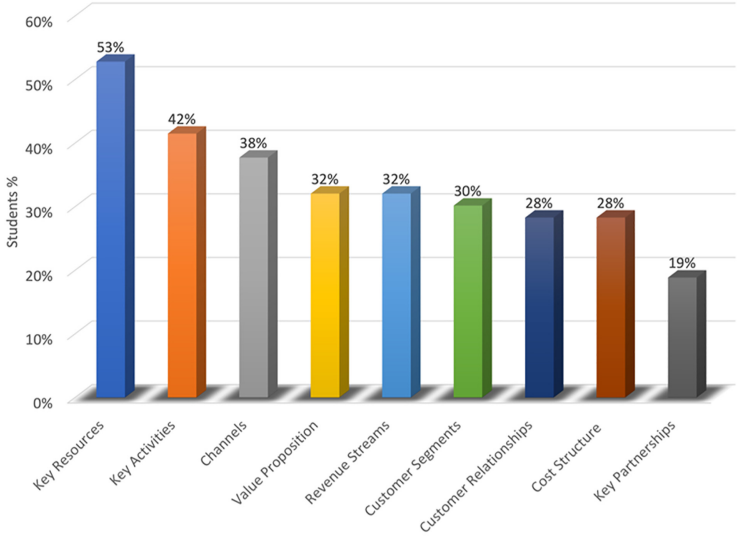
The survey inquired about the types of tasks students sought business advice from ChatGPT for their class activities. The findings revealed that nearly half of the students



	BENEFITS	LIMITATIONS	OPP. RECOG.	CREATIVITY	VISION	VAL. IDEAS	ETHIC&SUST.
BUSINESS	4.12	2.54	3.58	3.49	3.60	3.81	3.49
STEM	4.67	3.00	3.33	3.67	2.33	4.33	3.33

Source(s): Authors' elaboration

Figure 3.
Business and STEM students' comparison



Source(s): Authors' elaboration

Figure 4.
Building blocks of BMC improved after using ChatGPT

utilized ChatGPT primarily for marketing research (51%) and competition analysis (46%). Other tasks that prompted students to consult ChatGPT included finding customers and conducting market research (45%), addressing legal aspects (38%) and seeking guidance on social media, app development or web design (28%).

7.2 Qualitative results

This study used open-ended questions to collect students' opinions on the benefits and limitations of using ChatGPT in developing a BMC that they had previously created without the help of GenAI. The responses were analyzed to identify the specific excerpts where students explained the actual contribution of ChatGPT in the development of entrepreneurial competencies and in refining the tasks associated with their class activities. Through this analysis, the authors derived insights into the intricate connections between these improvements and the building blocks of their BMCs (see Table 2).

7.2.1 Spotting opportunities and valuing ideas. Drawing insights from the qualitative data gathered, it has become evident that the integration of GenAI, particularly ChatGPT, enhances the ability of entrepreneurship students in identifying and evaluating opportunities. ChatGPT serves as a valuable tool in discerning unexplored possibilities within the business environment, acting as potential avenues for profit or returns to a venture. Assessing the structural composition of opportunities becomes more accurate with ChatGPT, aiding students in determining their relative attractiveness. Making the decision to seize an opportunity involves the identification and assessment of its value in relation to the costs required to generate it, as well as alternative avenues for value creation (Shane and Venkataraman, 2000). This intertwining of competencies related to both opportunity recognition and assessment ability is underscored in our research findings, further emphasizing their interconnected nature (Morris *et al.*, 2013).

Within the scope of this study, business students sought guidance from ChatGPT specifically on competition analysis and market research. By providing a distinct perspective on the market, ChatGPT enabled students to identify opportunities that may have been overlooked. Students noted that ChatGPT allowed them to *"look at the market and see what the current companies were doing and where there was an opportunity*" prompting them to "*think of business aspects you wouldn't normally think of*". This unique perspective proved invaluable in augmenting the "Key activities' and more broadly the left side of the (BMC).

Students who engaged with ChatGPT expressed a considerable appreciation for its role in evaluating their business ideas (as highlighted in Table 1), and facilitating the decision-making process. In particular, within tasks related to competitive analysis and market research, ChatGPT emerged as a facilitator for decision making and as an aid in developing the ability to evaluate opportunities.

Artificial intelligence was credited with helping to quickly identify crucial aspects that would otherwise have taken longer through individual research efforts. Students especially recognized its usefulness in validating their thoughts, facilitating the evaluation and refinement of their business ideas and BMC through comparison with successful companies.

7.2.2 Creativity. Qualitative findings have shown that there are controversial views on the impact of ChatGPT on creativity. Students hold differing perspectives and have divergent opinions on the role of ChatGPT in generating creative ideas.

While a senior business student stated that "*ChatGPT can help someone find creative ideas if they're stuck and it can spark a creative outlook*" another female junior business student pointed out that although ChatGPT *"provides useful tips with explanation and goes into depth about our business model topic*" this GenAI tool "*doesn't provide originality or creativity.*"

Both students primarily utilized ChatGPT for tasks such as finding customers, seeking marketing advice and exploring social media strategies. This utilization contributed to improvements in the "Customer Segments' and overall enhancements in the right side of the BMC.

A male senior business student recognized ChatGPT potential to offer novel ideas, stating that *"it gives you ideas that you may have never come to"*. However, he cautioned against over-reliance on the tool, as *"being solely dependent on ChatGPT can lead to decreased imaginative*

Main areas improved	Tasks	Entre comp	Student (gender, major)	Excerpts benefit and limitations (*)
Key activities Key resources (Left side of BMC)	Competition analysis Market research Legal aspects	Spotting opportunities	Male Business	The way ChatGPT looked at the market and saw what the current companies were doing and where there was an opportunity
			Female Business	ChatGPT makes you think of business aspects you wouldn't normally think of
			Female Business	It cannot foresee customers reactions to a new business (*)
		Valuing ideas	Male Business	ChatGPT helps the user figure out certain aspects they need a lot quicker than if they were to do their own individual research
				It reassured me that my thoughts and ideas were correct regarding the benefits of my product
			Female Business	It helps in further develop your own ideas and thoughts. [ChatGPT suggests way to] stand out from competitors
			Male Business	An example of an already business model or company in which it explains various concepts that were used to make that model or company successful
Customer Segments (Right side of BMC)	Marketing research Social media App or Web design Finding customers	Creativity	Female Business	ChatGPT can help someone find creative ideas if they're stuck and it can spark a creative outlook . . . look for weaknesses within my business model and identify my target market and embrace innovation"
			Male Business	It gives you ideas that you may have never come to . . . being solely dependent on ChatGPT can lead to decreased imaginative capabilities
			Female Business	It provides useful tips with explanation and goes into depth about our business model topic . . . it doesn't provide originality or creativity
Value proposition' (Center BMC)	Market research Competition analysis	Vision	Male STEM	While the response of ChatGPT will not be directly used in changing our value proposition, it does give me better direction in how I could frame our value proposition. It also gives me a lead I can research further into. It helps facilitate ideas among creative workers, rather than outright replacing the need for them
			Male Business	ChatGPT provided a good format to follow with the value proposition. It actually helped spark a discussion and helped us regain our focus with having a very technical point of view. It worded it in a way that sounded more professional
			Male STEM	ChatGPT gives vague answers when asking assistance in providing a unique value proposition. It can only draw conclusions based off of concrete data. (*)

Source(s): Authors' elaboration

Table 2. ChatGPT impact on BMC, tasks and entrepreneurial competencies

capabilities." Nevertheless, he acknowledged ChatGPT's value in enhancing all aspects of the BMC".

7.2.3 Vision. Setting a vision is the first step in leading an organization into the future because it provides guidance and inspiration for setting organizational goals and strategic plans (Yang *et al.*, 2022). Creating a "value proposition" of a business is closely linked to this process and is central to the BMC creation. Asking advice to ChatGPT primarily focusing on competition analysis and market search has proven useful for students in reframing their value proposition and approaching it in a new way.

A male junior student majoring in physics/civil engineering expressed that: "*While the response of ChatGPT will not be directly used in changing our value proposition, it does give me better direction in how I could frame our value proposition. It also gives me a lead I can research further into*." He added that ChatGPT *"helps facilitate ideas among creative workers, rather than outright replacing the need for them."*

Additionally, according to another male senior business student majoring "*ChatGPT provided a good format to follow with the value proposition. It actually helped spark a discussion and helped us regain our focus with having a very technical point of view"*. He mainly used ChatGPT for market research and found the GenAI's guidance on the BMC particularly useful, stating that it "*worded it in a way that sounded more professional*".

When discussing the creation of a distinctive value proposition, a senior male student majoring in computer science remarked that ChatGPT may not be very efficient in this regard. He noted receiving *"vague answers when asking assistance in providing a unique value proposition"* and observed that *"ChatGPT can only draw conclusions based off of concrete data"* and performs exceptionally well in analyzing accurate and quantifiable information. However, he cautioned that ChatGPT's qualitative evaluations should be approached with more care.

7.2.4 Ethical and sustainable thinking. The open-ended questions in the study did not contain explicit references to the role of ChatGPT in promoting sustainability and ethical considerations in the development of a business idea, and as such, the ethical and sustainable thinking of the students did not appear to be a major focus in their interactions with the GenAI platform.

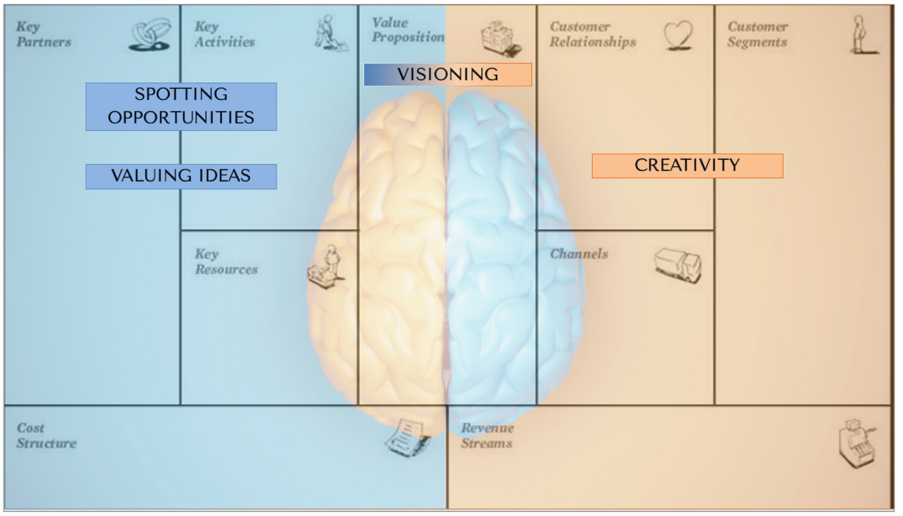
In this research, the authors established and described a linkage between entrepreneurial competencies, tasks refined by students with the assistance of ChatGPT, and the building blocks of BMC. Additional students' quotes on ChatGPT responses for improving Canvas Building Blocks can be found in Appendix (Students' Excerpts on ChatGPT Responses for improving Canvas Building Blocks). These insights are valuable for entrepreneurship educators to understand how ChatGPT can assist in their courses on business model development.

Drawing inspiration from the analogy proposed by Osterwalder and Pigneur (2010), which likened the BMC to the brain with its left side associated with logic and efficiency, and the right side with emotion and value (see Figure 5), the study unfolds further.

This analogy elucidates the role of Spotting Opportunities and Valuing Ideas abilities, aligning predominantly with the left side of the BMC. These competencies emerge as more useful in our sample for the development of "Key Activities" or "Key Partners" building blocks. Conversely, creativity is predominantly associated with the right side of the BMC, proving especially beneficial in developing areas where emotions are important, such as "Customer Relationships." However, its applicability can extend to other areas of BMC as well.

A noteworthy finding from this research is that the "Value Proposition" section of the BMC is primarily associated with the entrepreneurial competency of vision, though not exclusively.

Figure 5 below illustrates the connection between entrepreneurial competencies and BMC building blocks and serves as a visual representation of these associations.



Source(s): Authors' elaboration based on Osterwalder and Pigneur (2010) model

Figure 5. Entrepreneurial competencies and BMC

This exploratory study brings to light the enhanced utility of ChatGPT in refining students' ability to Value Ideas (see Table 1). Notably, ChatGPT is predominantly employed for the development of 'Key Resources' and 'Key Activities' building blocks, both residing on the left side of the BMC (see Figure 4). This leads to a preliminary conclusion: ChatGPT proves particularly effective in cultivating competencies aligned with the logical and efficient aspects of the left side of the BMC.

By exploring the specific student excerpts presented above and considering the linkage with the tasks of the class activities, this study allows for a deeper understanding of the entrepreneurial competencies developed using the ChatGPT and how these skills are intricately associated with the building blocks of the BMC. As highlighted in the specific examples, this analysis sheds light on the role that GenAI may play in shaping and enhancing entrepreneurship education.

8. Discussion

The findings of this study indicate that the utilization of ChatGPT in entrepreneurship courses has the potential to enhance entrepreneurial competencies as perceived by students, albeit to different extents.

This research specifically examined the influence of ChatGPT on enhancing existing BMCs created by students, rather than focusing on generating new ones from scratch. During the evaluation of ChatGPT's impact on fostering novel ideas and stimulating creativity, student responses revealed varying viewpoints.

Notably, this research focused on the impact of using ChatGPT to improve BMCs students had already created, rather than creating it *ex-novo*. In fact, when students were asked to reflect on ChatGPT's contribution in helping them create completely new ideas and enhance their *creativity*, they expressed controversial opinions. The findings suggest that although ChatGPT can be a useful tool for supporting creative work and class activities tasks such as marketing and social media research, web design or customer discovery, it should not be seen as a substitute for human creativity and originality, but instead, it should be used in

conjunction with other approaches and methods to support and enhance the creative process. According to Rometty (2016) GenAI may not replicate human imagination, thinking of questions to ask and imagining something that does not yet exist. As noted by Agrawal *et al.* (2017), GenAI is not creative enough to find new opportunities by itself. The students confirmed that, even if GenAI may be helpful to *spot opportunities,* especially by learning what other competitors are doing, it cannot foresee customers' reactions to a completely new business.

The findings demonstrate that GenAI can be particularly helpful to improve the ability of *valuing ideas* of students, whether they are STEM or business students. Ideas and opportunities evaluation require a complex decision-making process (Smith *et al.*, 2010), which can be facilitated by using GenAI. GenAI can quickly gather information, identify certain problems, analyze and also predict based on history, and propose potential solutions and actions (Giraud *et al.*, 2022). By leveraging the power of GenAI, people can make decisions by reconciling objective rationality with their values, strategy and culture (Colson, 2019). GenAI can therefore help in making an overall judgment of the potential value of a business idea, but contextual and interpersonal factors play an important role in making the final decision (Lloyd-Cox *et al.*, 2022). As a student effectively and simply pointed out "*ChatGPT provides a lot of help but at the end of the day you have to make the decision and put in the work.*" However, within the class activities tasks related to competitive analysis and market research, ChatGPT emerged as a facilitator for decision making. It plays a pivotal role in honing the abilities to identify and evaluate opportunities, contributing significantly to the development of the left side of the BMC and crucial components such as key activities and key resources.

Regarding the impact of ChatGPT in the development of the ability of *vision*, this study found that the vision development process is closely related to the definition of a business "value proposition," that plays a pivotal role in the creation of the BMC. The results of this study also indicate that female participants in the sample rated the use of GenAI as more valuable for enhancing their ability to create a business vision compared to their male counterparts. This ability also emerged as a differentiating competency between STEM and business students. The ability to create and convey a compelling vision is considered a crucial aspect of transformational, visionary and charismatic leadership theories (O'Connor, 2018) and, as Kouzes and Posner (2009) noted, it is the ability that most distinguishes leaders from non-leaders. Despite the importance of visioning ability, research exploring its significance and self-assessment among women, particularly female students, remains limited. The finding of this exploratory study could suggest that women may be more receptive to using GenAI technologies in the early stages of their business development, when creating a clear *vision* and strategy they consider critical for success. This research, however, highlights the need to explore more in detail the underlying factors that shape gender differences in students and entrepreneurs' attitudes and behaviors towards GenAI technologies.

Analyzing students' specialization emerged that business students exhibit a higher likelihood of embracing ChatGPT compared to their counterparts in STEM. This inclination stems from their perception that ChatGPT imposes weaker constraints, thereby facilitating the refinement of their BMC. Intriguingly, STEM students, despite appearing more demanding and aware in assessing its limitations, rated the overall benefits of leveraging ChatGPT more favorably for advancing their BMC compared to business students.

Some studies have looked at the differences between STEM and business students, analyzing variables such as entrepreneurial orientation (Nikitina *et al.*, 2023), entrepreneurial activity (Draksler and Sirec, 2021), entrepreneurial competencies (Põder *et al.*, 2019), or entrepreneurial readiness (Rakićević *et al.*, 2022). While the literature on the topic is still limited, preliminary results show that business students often feel more ready for entrepreneurship, benefiting from targeted training in crucial business skills. In contrast,

STEM students, while strong in innovation and technical abilities, might lack formal business education. This background influences their entrepreneurial activities, with business students more likely involved in startups, leveraging their curriculum and networks. This underscores the crucial need to refine entrepreneurship education to enhance students' entrepreneurial skills and ambitions (Izedonmi and Okafor, 2010; Sánchez, 2013).

The implementation of experiential learning techniques, particularly the utilization of the BMC, has the potential to enhance entrepreneurial competencies as recognized in previous research (Crotty *et al.*, 2017; Holdford *et al.*, 2022), but, at the same time, the development of entrepreneurial competencies, including through the use of GenAI, can contribute to the improvement of a BMC (Sundah *et al.*, 2018; Ripollés and Blesa, 2023).

By exploring the association among entrepreneurial competencies, various components of BMC and class activity tasks, it was possible to acquire valuable insight into how educators can effectively utilize generative GenAI for the development of students' competencies. This research highlights the significant role that ChatGPT can play in enhancing students' ability to evaluate ideas, aiding them in competition and market analysis. Particularly noteworthy is its contribution to the development of the left side of the BMC, which is intricately associated with logic and efficiency, as outlined by Osterwalder and Pigneur (2010).

9. Conclusion

This research contributes to the emergent literature on the integration of GenAI, particularly ChatGPT, within entrepreneurship education frameworks, emphasizing an experiential learning approach. Our findings suggest that ChatGPT not only enhances students' entrepreneurial competencies but also significantly improves their ability to develop and refine BMCs. Moreover, the adoption of GenAI in classroom settings has shown a notable increase in student interest, engagement and participation in entrepreneurial activities (Cribben and Zeinali, 2023).

Building on the work of Giuggioli and Pellegrini (2022) and Khalid (2020), who respectively highlighted the facilitative role of GenAI in experiential learning and its encouragement of entrepreneurial activities, our study extends these narratives by empirically investigating these effects in specific educational contexts. However, further research should explore how these findings translate to other experiential learning settings beyond BMC development, potentially offering richer insights into the broader applicability and impact of ChatGPT in entrepreneurship education.

Early research has highlighted ChatGPT's capability to amplify student self-efficacy and learning motivation, marking it as a revolutionary tool within higher education (Mogavi *et al.*, 2024). However, there is a concurrent need to address the risks of overdependence on such AI tools, which could foster superficial learning habits and possibly erode critical academic skills. Additionally, ethical considerations, particularly concerning data privacy and the integrity of educational assessments, present significant challenges (Parker *et al.*, 2024). These challenges must be navigated carefully to maintain trust and effectiveness in AI-integrated learning environments. This can be achieved through the development of comprehensive AI policies and targeted educator training programs (Mogavi *et al.*, 2024).

While the present study primarily investigated the impact of GenAI on the development of some entrepreneurial competencies, future research could extend the study to other entrepreneurial competencies. It would be valuable to investigate the contribution of GenAI in the development of the ability of *valuing ideas* in greater detail and determine how GenAI can be leveraged more effectively for this purpose and not only for the improvement of a BMC. Additionally, further examining GenAI's contribution to fostering and enhancing specific types and aspects of *creativity* could improve the creative process.

The main limitations of this study, mainly due to its exploratory nature, include the small sample size, the voluntary participation of students and the limitation of the study to a single university which may restrict the robustness of our conclusions. Future research could address these limitations by adopting a broader sampling perspective on a range of institutions with an overall larger sample. The possible future official recognition and integration of ChatGPT at the university level will allow future research to be developed, without the aforementioned limitations, based on the undisputed application of this tool in classrooms.

Furthermore, the initial insights garnered from our study on gender differences current qualitative analysis could be further enhanced and validated with a larger and more diverse sample. This will afford greater statistical relevance, fortifying the foundation laid by this study and fostering continued advancements in this field.

Deepening the study of gender differences in using GenAI to develop entrepreneurial competencies can also contribute to the design of more effective entrepreneurship education programs that consider the unique needs and challenges faced by women. It thus foreshadows the potential development of a new research area exploring how women learn and use GenAI technologies to achieve their business goals and develop the entrepreneurial competencies needed to succeed in today's fast-paced and technology-driven business world.

Moreover, it is crucial to investigate the adoption of AI tools in entrepreneurship education across a variety of majors and specializations, not just among STEM and business students. Differences in students' educational backgrounds may influence how these tools are utilized and perceived, potentially revealing insights into tailoring AI-enhanced education to meet diverse learning needs and objectives.

In conclusion, while this study has begun to bridge the theoretical and practical aspects of GenAI in entrepreneurship education, it also opens avenues for future research into its diverse applications and impacts. This is crucial for preparing a new generation of entrepreneurs capable of navigating a tech-driven business landscape, ensuring that educational practices evolve together with technological advancements (Gupta, 2024).

The authors believe that investing in entrepreneurial competencies, including through the use of GenAI, will empower students to excel in a world filled with unprecedented opportunities.

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Further reading

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Appendix

Table A1.
Students' excerpts on ChatGPT responses for improving canvas building blocks

Building blocks canvas	Students' excerpts on ChatGPT responses
Key resources	It provided extra pieces of each aspect in the business model to consider, like adding a few more key resources that we didn't think of
	They gave me a list of potential resources for the business
	I liked how it gave me multiple options for key resources
Key partnerships	When creating an App providing affordable recipes for college students, there are several key partners that you may want to consider to help make your app a success
Value proposition	It could help you gain information about other businesses to further look in on what you want to do
	ChatGPT came up with businesses (existing businesses) that we originally never had on our radar
Channels	It gave more avenues or channels than I was previously aware of to market my business
Customer segments	It helped me to understand how the customer segments can be targeted better
	It can help figure out your customers and how to reach them
Revenue stream	It suggested ways they earn money
	For example, a sports agent may negotiate a contract worth $10 million for a professional athlete and earn a commission of 3% to 5%, which would be $300,000 to $500,000
Cost structure	When asking about specific startup costs, ChatGPT was not very useful. It did not provide accurate review or insight on cost structures. Some of the information is also outdated so you can use it as an outline, but it will say some stuff that is incorrect with confidence

Source(s): Authors' elaboration

Corresponding author
Tatiana Somià can be contacted at: tsomia@unibz.it