Investigating educators' readiness to adopt generative artificial intelligence in entrepreneurship education

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Abstract

The purpose of this study is to investigate factors influencing educators' readiness to adopt generative artificial intelligence (GAI) for entrepreneurship education. GAI tools generate concepts and suggest innovative ideas that can impact entrepreneurship learning. This research addresses the important gap in understanding educators' perceptions, competencies, and universities and departments' readiness needed for the effective adoption of GAI tools.

This study uses a qualitative approach, using semi-structured interviews with entrepreneurship educators and administrative staff from Lund University. This method allows for a detailed analysis of participant views and experiences with GAI tools. The data were analyzed using the GIOIA data analysis method to identify key factors related to entrepreneurship educator readiness.

The findings present four key areas that influence entrepreneurship educators' readiness to adopt GAI tools: university readiness, department readiness, educator competencies, and educators' perceptions. University readiness includes organizational dynamics, cultural attributes, resources, and AI literacy. Department readiness focuses on support, communication processes, and policies. Educators' competencies incorporate professional, pedagogical, and adaptive learning skills, which are significant when adopting GAI efficiently. Finally, educators' perceptions of GAI include optimism, curiosity, and caution.

The research concludes that most entrepreneurship educators are open to the adoption of GAI tools with specific training and support. The integrated theoretical model highlights the connections among educators' competencies, perceptions, and university readiness and presents a model for the adaptation of GAI in entrepreneurship education. Further suggestions focus on departments' support of their educators by having policies for educators and a more prominent strategy to adopt GAI integration in their teaching.

Further quantitative studies across different cultural universities could provide a deeper understanding of the different factors impacting GAI adoption. Examination of the ethical and pedagogical implications of GAI tools in more detail will also be significant for establishing exhaustive guidelines for their use in entrepreneurship education.

Keywords: entrepreneurship education, generative artificial intelligence, educators' readiness, AI adoption, educators' perception

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1. Introduction

Recently, advancements in generic artificial intelligence (GAI), exemplified by OpenAI's ChatGPT, have opened new avenues for educational innovation. Within 2 months of its release, ChatGPT attracted a user base of 100 million, representing a world record (Hu, 2023). This popularity, owing to its generalized applicability, created a productivity boost, especially among students (Strzelecki, 2023). This increase in GAI usage within educational institutions has been an ongoing trend, gaining substantial momentum and prompting extensive research into its potential to transform learning experiences (Celik et al., 2022).

Entrepreneurship education, defined as "*the process of providing individuals with the ability to recognize commercial opportunities and the insight, self-esteem, knowledge and skills to act on them.*" (Jones & English, 2004), is particularly poised to benefit from these technological innovations. GAI presents such a technical advancement, which is why knowledge about its use cases is crucial in entrepreneurship education for rising aspiring entrepreneurs with the knowledge and skills needed for building the business driving the future (Dabbous & Mallah Boustani, 2023). Consequently, it is essential for educator's to be ready to integrate GAI into their teaching to effectively prepare students for future entrepreneurship challenges.

Despite the promising potential of GAI, its successful integration into entrepreneurship education requires educators to be well-prepared and equipped with the necessary skills. Studies underscore the high demand and importance of such tools in entrepreneurship courses and see the need for curriculum adaption that matches the changing entrepreneurship context and the integration of GAI (Giuggioli & Pellegrini, 2022a; Tan, 2020). This involves not only awareness but also addressing concerns related to trust and communication in Human-AI collaboration (Schelble et al., 2022; Ulfert et al., 2023).

From the students' perspective, the use and opinions of GAI in learning highlight the benefits and concerns of its efficiency and effect on traditional learning (Malmström et al., 2023). The effective usage of GAI concepts, abilities, and restrictions is crucial to make ethical and informed decisions (Bezrukova et al., 2023) for GAI usage for entrepreneurship activities like market research, analysis of gathered data, and business model creation (Giuggioli & Pellegrini, 2022b).

The ability of educators to integrate GAI into their teaching practices significantly influences student outcomes. Research on the use of AI in education has shown the significance of teacher guidance in such subjects (Chiu et al., 2023). While some educators possess the necessary technological knowledge and pedagogical understanding for successful incorporation of GAI, others may need support to adjust their teaching methods (Celik et al., 2022). Enhancing educators' understanding of GAI enables them to make informed decisions about its implementation in their teaching.

Given the transformative potential of GAI in entrepreneurship education, it is crucial to study and address the factors influencing educators' readiness to adopt these tools. However, little is known about the factors that influence readiness for such adoption in enterpreneurship education. This thesis aims to fill this gap by contributing to the existing literature and providing practical insights for educational practice.

1.1 Problem Formulation

GAI tools have specific features like generating concepts, suggesting ideas with a chance to change entrepreneurship learning. However, effective integration of GAI resources into entrepreneurship education requires an in-depth understanding of the possible benefits and limitations of GAI tools (Bezrukova et al., 2023; Chan & Hu, 2023; Vecchiarini & Somià, 2023).

Several challenges prevent GAI from being adopted in entrepreneurship education. One major problem is the lack of preparation among students and educators (Vecchiarini & Somià, 2023). Educators may have difficulties incorporating GAI into their teaching methods (Chan & Tsi, 2023). Furthermore, ethical concerns regarding GAI, transparency, and responsibility should be addressed to promote ethical and reasonable implementation (Bezrukova et al., 2023).

This research purpose is to address these challenges by exploring readiness of entrepreneurship educators to adopt generative artificial intelligence tools and what factors influence this readiness.

Previous research by (Giuggioli & Pellegrini, 2022b) and Khalid (2020) highlight the potential of AI to improve entrepreneurship skills and productivity. Nevertheless, these studies mostly focus on the theoretical side and lack actual data on teachers' views on their skills related to GAI. Research by Schelble et al., (2022) and Ulfert et al., (2023) mentions that the successful

implementation of generative AI requires not only technical skills but also a cooperative approach and new knowledge about the advantages and limitations of these tools.

Malmström et al. (2023) and Kim & Cho (2023) argue that a deeper evaluation of educators' perception of GAI tools and their functions within the larger framework of entrepreneurship education is required. Hauptman's et al. (2022) research on human-AI teaming shows the importance of adapting and solving obstacles in cooperative situations. This viewpoint proves that knowing teacher opinions about working with GAI in entrepreneurship is critical, as it may include adjusting current processes and adopting new collaboration methods.

Moreover, Adiguzel et al. (2023) stresses the ability of generative AI technologies such as ChatGPT to transform education by encouraging creativity, personalized learning, and its availability. Chan & Tsi (2023) and Tan & Subramonyam (2023) investigated the potential of AI to take over and help teachers at universities. While recognizing AI's potential advantages like personalized learning and feedback, it shows the importance of human teachers in encouraging intellectual curiosity, moral principles, having relationships with others during the learning process, avoiding possible overuse, and the importance of ethical aspects. Providing educators with a thorough grasp of AI is critical for them to make accurate decisions about the choice, integration, and evaluation of AI tools. Furthermore, strong pedagogical abilities are crucial for using generative AI in courses while remaining human-centered and addressing any ethical issues about AI (Jeon & Lee, 2023). When providing educators with essential knowledge, skills, and assistance, AI can serve as a helpful tool for complementing, rather than replacing, educators' role in creating meaningful learning experiences for students.

Despite the research that exists on the potential of AI in entrepreneurship education, there is a gap regarding the factors that influence entrepreneurship educators' readiness to use GAI in entrepreneurship education. This section describes the identified gaps.

The first gap that is about the limited understanding of educator's perceptions: the main research focuses on the potential advantages of AI in entrepreneurship education, with limited studies of how teachers see their willingness and openness in using generative AI tools.

The second gap concerns the lack of specific focus on GAI: current studies investigate educator's opinions but do not show their perceptions toward the specific functions and limitations connected with AI in entrepreneurship education.

The third gap concerns the need for in-depth research on the challenges and opportunities of generative AI tools: some studies investigate the obstacles and the AI integration, but more studies are needed to understand the challenges educators face when using generative AI tools with potential solutions and opportunities to overcome them.

The fourth gap relates to the ethical and pedagogical use of GAI tools. There are not many studies on concerns related to AI transparency, responsible use, and its influence on traditional teaching. More studies are needed to promote the ethical and safe integration of GAI tools in entrepreneurship education.

1.2 Research Aim and Research Questions

This study investigates factors influencing educators' readiness to adopt generative AI in entrepreneruship education.

"What factors influence educators' readiness to adapt generative artificial intelligence for entrepreneurial education?" presents the research question addressed in this study.

This research question directly addresses the problem of a lack of awareness of educators' preparation for using GAI in entrepreneurship education. This study delves into educators' perceptions, with a focus on recognized competencies and the factors that influence readiness to use GAI. By investigating this topic, the thesis hopes to present beneficial knowledge for educators to use GAI efficiently to improve entrepreneurship education.

This thesis also adds to the new topic of incorporating AI into education by focusing on educators' competencies for using generative AI tools in entrepreneurship education. By addressing the observed knowledge gaps, this thesis provides meaningful insights for establishing efficient teaching methods and promoting a more educated and accountable incorporation of AI into entrepreneurship education.

1.3 Delimitation

As this study focuses on the factor's influencing educators' readiness for GAI adoption for entrepreneurship education and the adoption is happening in different departments at different speeds, the thesis focuses on the current present stage in which entrepreneurship educators are in. In the first stage euphemism about its functionality is expressed. Followed by fear about challenges in detecting whether students cheated with GAI is expressed, resulting in exam adjustments and policies for GAI usage for students. The third stage is familiarization with the tool's capabilities and usage cases for entrepreneurship education. The fourth stage presents the adaptation of the curriculum to fully embrace the technology within the course. As the department of business administration, where entrepreneurship educators belong to, is in the third stage, this study only focuses on this stage. Other departments are excluded as they do not have any entrepreneurship educators or courses.

Furthermore, as influences happen on multiple levels starting from the microlevel up to the macro level with many sublevels, the thesis focuses on the educators' influencing factors up to the broad university level, excluding external influencing factors like legislations or political influencers as such factors mainly flow indirectly through the university or department layer toward entrepreneurship educators.

Also, this thesis focuses on educators and not GAI tools. Therefore, possible influences of specific tools like ChatGPT or Google Gemini are excluded as their feature set changes constantly. It does not focus on integration possibilities within the current toolset or their GDPR compliance and ethical considerations for the use of dedicated GAI tools.

1.4 Disposition of the thesis

This qualitative abductive thesis is organized into six chapters, beginning with this chapter introducing the research field with its aim. The literature review chapter first encapsulates the state-of-the-art knowledge about the topic, resulting in a tentative theoretical framework. The methodology chapter presents detailed information on how primary data were collected and analyzed using the GIOIA data analysis method. The finding chapter applies the data analysis process resulting in a data structure. In chapter 5, the results are discussed together with the

findings of other relevant papers and theoretical input, resulting in an integrated theoretical model. Chapter 6 discusses the conclusions and practical implications.

2. Literature Review

2.1 Entrepreneurship and economic development

Entrepreneurs generate with their business's jobs and wealth. Therefore, they reduce social and regional inequality, highlighting their key role in enhancing economic development leading to a nation's economic growth (Khalid, 2020; Westhead & Wright, 2013).

Furthermore, Dabbous and Mallah Boustani (2023) highlight that entrepreneurship education students develop a positive perceived behavior control toward becoming entrepreneurs as this education provides necessary skills and inspires by showcasing the possibility of creating their own venture. Graduates feel comfortable, well prepared, and ready for their entrepreneurship journey (Dabbous & Mallah Boustani, 2023). Universities have interplay roles like "entrepreneurship intention, the student readiness in entrepreneurship, the impact of education program toward entrepreneurship" (Khalid, 2020, p.5420) in aspiring entrepreneurs' journey. Practical exercises like interviewing entrepreneurs are a good way of teaching entrepreneurship (Solomon et al., 2002). Other ways like "exposure to successful entrepreneurship role models positively influences entrepreneurship intention while its effect on entrepreneurship passion is more negative" (Fellnhofer, 2017) highlight that high expectations reduce perceived success.

2.2 Integration of AI in Entrepreneurship Education

AI is an enabler for entrepreneurs as new venture processes can be supported in different ways (Chalmers et al., 2021). 70% of new businesses will include digital platforms and business modules (Xu et al., 2021), which requires future entrepreneurs "to have the digital skills and understanding of new technology" (Bell & Bell, 2023). Asawa (2018) asserts the growth of digital technologies creates a tectonic shift in business, which is due to the immense increase of information and availability of datasets, enabling infinitive economic opportunities. Therefore, entrepreneurship education should prepare students for upcoming job roles through engagement with cutting-edge and innovative technologies (QAA, 2018).

AI in education (AIED) highlights AI technologies such as chatbots, intelligent tutoring systems, and student prediction platforms for the support and enhancement of education. AIED can be

divided into the categories teaching, learning, assessment, and administration, highlighting the comprehensive usability of AI. The accessibility of personal adaptiveness of general information through (GAI) has the potential to transform the classroom (Pavlik, 2023). For example, intelligent tutoring systems support educators regarding students' learning outcomes (Ma et al., 2014; Steenbergen-Hu & Cooper, 2014) by recommending "subject content and tasks, and teaching strategies; chatbots could offer; chatbots could give feedback to foster student self-regulated learning, and answer students' inquiry on administration; automatic marking systems could offer more effective grading" (Chiu et al., 2023).

Khalid (2020) argues that "artificial intelligence learning has central importance in entrepreneurship. It effects positively … by increasing the entrepreneurship orientation." This is supported by Giuggioli and Pellegrini (2022b), who stated that easy access to these AI solutions exists for entrepreneurs as they become relatively affordable. AI is assumed to take on the role of an intelligent tutor, intelligent tutee, intelligent learning tool, or advisor to policymakers (Hwang et al., 2020), allowing a wide range of applications. Bell and Bell (2023) even argue that "the way in which generative artificial intelligence is utilized in learning is likely to play a part in how effective it is at developing students critical thinking. If only introduced as a tool to produce knowledge, it is likely to limit the development of critical thinking skills; however, if outputs are reviewed, interrogated, and reflected upon, supporting students to create their own meaning, and understanding, more critical thought and critical skills are likely to be developed." A typical use case for Bells argumentation, as discussed by Vanichvasin and Vanichvasin (2022), would be human conversations with AI agents mimicking successful entrepreneurs using real-world data from interviews, books , and articles about the entrepreneur. This shows students how to become successful entrepreneurs from their perspective.

Vallis et al., (2023) states "The future is now. AI applications are rapidly becoming collaborative tools and potential partners that offer far more than productivity gains." Daugherty and Wilson (2018) support this, stating that AI is no longer a futuristic notion. 21st-century pioneer companies are using AI and surge fast, whereas companies neglecting it will fall behind.

However, the educational sector is lagging behind other sectors like finance, health, medicine or business in the use of AI (Borges et al., 2021; Clark, 2020; Luckin & Cukurova, 2019). Tatpuje et al. (2022) found that entrepreneurship students often do not acquire the necessary skills for digital entrepreneurship, which is influenced by educators' knowledge. Most entrepreneurship programs

focus on general entrepreneurship skills rather than providing the digital competences required to leverage the opportunities provided by AI (Wahl & Münch, 2022). “To effectively prepare students for future entrepreneurship endeavors, entrepreneurship education should prepare students to take advantage of new opportunities, through embracing technology” (Bell, 2023).

This study focuses on the factors that influence entrepreneurship educators to use generative AI tools and stresses the obstacles that need to be overcome until the technologies of the next industrial revolution find their way into the entrepreneurship classroom.

2.3 Departmental Support for GAI in Entrepreneurship Education

This section explores how department support plays an important role in the implementation of generative AI tools by entrepreneurship educators. Department readiness to use generative AI tools is explored in the context of the Technology-Organization-Environment (TOE) framework as it applies to department adoption and support for the usage of generative AI tools (Tornatzky et al., 1990). The connection between personal and country-level factors, including educational readiness, is essential for encouraging entrepreneurship and innovation. The department’s environment significantly impacts entrepreneurship readiness skills, fear of failure, and opportunity recognition highlighting the importance of preparing educators for technology adoption in education (Schillo et al., 2016).

2.3.1 Effective Communication influences GAI adoption in Entrepreneurship Education

(McDonald et al., 2024) presents how institutions like the University of Pittsburgh or the University of Central Florida introduce GAI tools. His research presents an approach to how universities educate their educators and students about AI, with a focus on data privacy and ethical issues. The University of Pittsburgh supports their educators by having open conversations on how AI processes data (McDonald et al., 2024). Additionally, Baker (2012) suggests that the implementation of new technologies at universities is influenced by the management’s approach toward innovation. A great example is the University of Central Florida’s management, which sees GAI as a supportive tool and has discussions with their teachers to see tools like ChatGPT as their teaching assistant instead of a threat (McDonald et al., 2024). Kohnke et al., (2023) highlights that

a support system that promotes collaboration and discussion with AI specialists and experienced educators is crucial in the integration of the new technology.

2.3.2 Financial Considerations for GAI in Entrepreneurship Education

According to Kevin et al., (2004) financial resources are the most important aspect of assessing department readiness in the context of the adoption of new technologies. Kohnke et al., (2023) observed that many universities can afford to give educators access to platforms that specialize in AI detection, such as Turnitin and GPTZero. However, it proves that the universities do not offer tools that teachers could use in their teaching and do not organize conferences or courses that educators could take to learn more about GAI. Many universities struggle to obtain government funding (Ng et al., 2023).

Giuggioli & Pellegrini (2022) highlight the importance of financial support, especially from the government, in the context of AI tool implementation. This suggests that universities should not be dependent only on public money but should consider private partnerships and collaborations with other institutions to be able to require more funding, resources, and infrastructure that are needed to implement GAI tools in teaching (Kohnke et al., 2023).

2.3.3 Support and Infrastructure for GAI tool use in Entrepreneurship Education

Rees et al., (1984) showed that the process of innovation is dependent on skilled workers and available technology. In the context of GAI tools in entrepreneurship education, it is crucial to consider the AI competencies and skills of teachers. Institutions that are open to innovation should provide training for their teachers to expand their knowledge and collaborate with specialists in the AI industry (Kohnke et al., 2023). Moreover, universities should create guidelines and instructions that explain educators how to use AI in their teaching and assignments (Malmström et al., 2023). However, according to McDonald et al., (2024), many institutions are concerned about the use of AI tools. However, there are some exceptions, The University of Central Florida is an example of an open-for-innovation university, where the department recommend their teachers to use GAI tools to increase their productivity (McDonald et al., 2024). By 2024, 50% of the institutions in America will present to their educators an AI-generated curriculum and provide them with resources that would help teachers to use GAI in their classes (McDonald et al., 2024). Only 30% of the universities have advised their faculties on how teachers should use GAI tools to

prepare for their classes (McDonald et al., 2024). McDonald et al., (2024) showed in his research that universities are starting to implement GAI and support their teachers with the adoption of these tools in class; however, because this technology is a new phenomenon, not many universities have considered using it.

2.3.4 Government and institutional Guidelines influence on GAI

Baker (2012) discusses the impacts of AI policies, especially within the European Union, which promote safe AI use and innovation. In addition to EU regulations, universities such as The University of Houston, educates its faculty on privacy regulations regarding data shared with GAI tools, which shows that universities should create regulations to address ethical issues of GAI (Kohnke et al., 2023). Institutional policies should be made with educators, legal and data privacy experts, and AI specialists regarding the use of GAI in education (Spivakovsky et al., 2023).

2.4 Entrepreneurship Educators' Skills for using GAI

This section explores the competencies that entrepreneurship educators need to have to effectively use generative AI tools in entrepreneurship education using the Digital Competence Framework for Educators (DigCompEdu) (Redecker, 2017). This section elaborates on the pedagogical focus on entrepreneurship thinking skills, such as problem-solving and empathy, using methods like the flipped classroom, which prepares educators to use GAI. This approach enhances educators' technology and teaching competencies (Peschl et al., 2021).

2.4.1 Entrepreneurship Educators' use of GAI for Professional Development

The implementation of GAI tools in entrepreneurship education depends on the educators' technical skills. Jeon & Lee (2023) highlight the need for educators to know how to develop the questions to receive high-quality answers. Additionally, Chiu & Chai (2020) describes that many educators lack the technical knowledge that has an impact on the adoption of GAI in education. Jeon & Lee (2023) in their study identified a gap among teachers: those who can implement GAI tools in their courses and those who have difficulties. Such differences show the need for ongoing training for educators' use of digital technologies. However, Kohnke et al., (2023) state that lack

of confidence might be a reason for this problem. Bell & Liu (2018) elaborate more on this topic by discussing the challenges of teachers, concluding that some teachers are open to learning about AI, but some feel overwhelmed by the new technology. Yet, Bell & Bell (2023) argue that it is essential for entrepreneurship teachers to develop new technical competencies because they prepare students for being an entrepreneur.

2.4.2 Entrepreneurship Educator's use of GAI in teaching

The implementation of generative artificial tools in entrepreneurship education is influenced by educators' pedagogical competence, which means having digital skills and knowing how to adopt GAI tools in teaching. According to Kohnke et al., (2023) many educators still do not comprehend the pedagogical understanding of GAI, highlighting the need to educate teachers more on that topic. Yet, if teachers would integrate AI into their classes, it would be beneficial for students (Farrokhnia et al., 2023). Thanks to the use of GAI, educators could create personalized assessments that will help students' individual needs. Moreover, the teachers could also implement GAI for other purposes like reviewing students' business models, marketing strategies, or market analysis. Additionally, educators could use AI for the automated grading system for assignments. Such a system would not only make the grading process more effective but also objective (Yuan et al., 2020).

Educators could teach students entrepreneurship practical skills using generative artificial tools. The tasks could include the creation of MVP in a limited time, which would be challenging for students since they would need to apply their practical knowledge in a short time (Winkel et al., 2020). The purpose of such tasks is to improve students' problem-solving, strategic thinking, teamwork, and communication skills (Eimler & Straßmann, 2023).

Moreover, educators could create an interactive and personalized class for their students that will rise motivation for participation. The use of GAI to simulate real-life situations would allow students to use their knowledge in practice (Vecchiarini & Somià, 2023). However, educators should be aware of the challenges that come up with the use of generative AI, especially the AI tool's tendency to provide not that accurate feedback to students' real needs (Burstein et al., 2004).

Teachers should not only understand GAI technology but also have an innovative pedagogical approach that will allow them to integrate AI tools into their courses. Such an approach affects not

only teachers but also students. The use of new technology during courses would make it easier for students to deal with real entrepreneurship obstacles. More importantly, the development of teachers' digital skills is crucial in the world of constantly changing technology (Tondeur et al., 2020).

2.4.3 Usage of GAI tools by Entrepreneurship Educators to personalize teaching

The competence of adaptive learning is an important part of the Digital Competence Framework for educators, especially with regard to the use of GAI in entrepreneurship education. This competency includes using and managing digital technologies to improve inclusion and personalization and students' active engagement (Joint Research Centre, 2017).

The educators could empower their students by making their learning experiences more personalized with the use of GAI (Cunningham-Nelson et al., 2019). Additionally, Alemdag (2023) noted that the feedback generated by GAI tools should be used in a way that would inform students in which areas they need to improve. Such personalized feedback is crucial for helping students fully understand their potential (Chen et al., 2020). Su et al., (2014) provided an example of the usage of AI in a class by the development of a sensor-based focused learning monitoring system in a school. The device allowed teachers to monitor their students' concentration levels during lessons. This AI-powered monitoring system allows teachers to provide immediate help.

For instance, teachers were able to notice crucial moments in groups and provide detailed feedback. However, Cantú-Ortiz et al., (2020) show that educators must acknowledge the advantages and disadvantages of generative AI tools in their teaching. The educators participate in debates about AI and think about how it can be implemented in their courses (Vallis et al., 2023).

2.5 Entrepreneurship Educators' Readiness to use GAI

In this section, the educator's perception will be discussed. It could be defined as the educators' readiness to impart entrepreneurship skills, even though non-related subjects, shows the role of their perception of teaching competencies. Exposure to competencies like creativity and financial literacy underlines how GAI can improve the integration of technology in teaching (Stenholm et al., 2021).

2.5.1 Easiness of using GAI tools in entrepreneurship education

The Efort Expectancy, as said in the UTAUT model by Venkatesh et al., (2003) refers to the degree of ease associated with the use of a technology. This section explores the educator's perspective on the easiness of using GAI tools and how it affects the integration of this technology in teachers' classes.

Some educators believe that GAI tools like ChatGPT could make it easier for them to create and revise lesson materials (Jeon & Lee, 2023). Jeon & Lee, (2023) highlight that such tools enable teachers to access many resources, making it possible to improve their lessons and teaching materials. According to his research, this feature of GAI tools to easily generate content not only saves teachers time but allows them to adapt their courses to meet the student's needs. The easiness of use of the GAI tools can reduce the effort and time needed for the preparation of student's assignments (Chan & Hu, 2023). Also, Jeon & Lee (2023) demonstrate the use of tools like ChatGPT to come up with multiple-choice questions, making it less time-consuming to prepare test materials.

Effort expectancy is an important aspect of the integration of GAI tools in entrepreneurship education (Venkatesh et al., 2003). GAI tools have the opportunity to become a support tool for teachers by saving time and increasing their productivity (OECD, 2024).

2.5.2 Entrepreneurship Educators' Perspective on GAI to increase teaching performance

Venkatesh et al., (2003) highlighted Performance Expectancy is the degree to of individuals believe that the usage of technology improves job performance. In the context of GAI in entrepreneurship education, performance expectancy relates to teachers' thoughts that these tools can influence their job performance and help students in their learning.

Educators who are using GAI tools see them as support tools to help with administrative tasks, grading, and giving feedback (Chen et al., 2020). This allows teachers to spend more time on lesson planning, interaction with students, and effective teaching.

GAI tools can help students improve in areas important for entrepreneurship success. Studies suggest that the use of tools can help develop business ideas, decision-making, and

communication. By having interactive classes and tasks that require analyzing and improving AI-generated content, students can have higher motivation in class and improve their entrepreneurship skills (Bell & Bell, 2023).

Educators view GAI tools as virtual assistants that can automate instructional tasks and help with professional growth (Jeon & Lee, 2023). By offering opportunities for personal growth and promoting new teaching methods, GAI tools can help educators adapt their teaching practices to help students with their learning (Adiguzel et al., 2023; Chan & Hu, 2023).

GAI tools have the potential to become tools used by teachers to increase their job performance and help students with their learning (Vecchiarini & Somià, 2023). However, teachers should be aware that the integration of such tools in their teaching must overcome challenges such as potential bias in algorithms (Baker & Hawn, 2022).

2.5.3 Entrepreneurship Educators' Views on GAI influenced by the Community

Social influence can be described as the degree to which an individual perceives that important others believe they should use the new technology (Venkatesh et al., 2003). In the context of GAI tools in entrepreneurship education, this refers to an educator's perception of their colleagues and university administration's support for the use of these tools in their lessons.

The creation of an environment that promotes social influence impacts the adoption of GAI by teachers. Being in a community allows teachers to share experiences, learn from others, and provide each other with support while incorporating GAI tools into their teaching (Kohnke et al., 2023). However, educators can attend such meetings when they are available since they have many responsibilities (Kohnke et al., 2023). The positive experiences of other educators could be an encouraging factor for teachers to try to integrate GAI tools into their teaching. For instance, by sharing the outcomes of using AI tools and breaking monotony in classes (McCarthy et al., 2016). The social influence of the teacher's community can play an important role in promoting the usage of these tools in entrepreneurship education (Bell & Bell, 2023).

2.6 Synthesis of literature and tentative theoretical model

In the literature review, the authors identified the factors that influence the readiness to adopt generative artificial tools in entrepreneurship education. The Unified Theory of Acceptance and Use of Technology (UTAUT) framework was used (Venkatesh et al., 2003).

The literature review showed the important role of departments' readiness in the adoption of GAI tools in entrepreneurship education. Factors such as open communication at universities, AI policies, and finances can encourage entrepreneurship educators to use these tools in their teaching (Kevin et al., 2004; McDonald et al., 2024). Moreover, government regulations related to data privacy and ethical use should be established to use GAI tools in education responsibly (McDonald et al., 2024).

Educators' perceptions and competencies are also crucial when using GAI tools in entrepreneurship education. The key areas include the easiness of use, higher productivity, and improvement in student learning (Bell & Bell, 2023). Moreover, entrepreneurship educators need support to use GAI tools in their courses. The DigCompEdu framework provides resources to develop educators' competencies (Redecker, 2017).

Currently, there is a research gap concerning how generative artificial tools are perceived by the entrepreneurship educators. While addressing these gaps, it is important that institutions have a strategy that includes department support and educator growth to successfully adopt GAI tools.

The tentative theoretical model presents an approach to understanding GAI adaptation in entrepreneurship education. It shows the interrelationships with department's readiness, educator's competencies, and perceptions by presenting a foundation for future research on readiness to adopt GAI tools in entrepreneurship education (Figure 1.1).

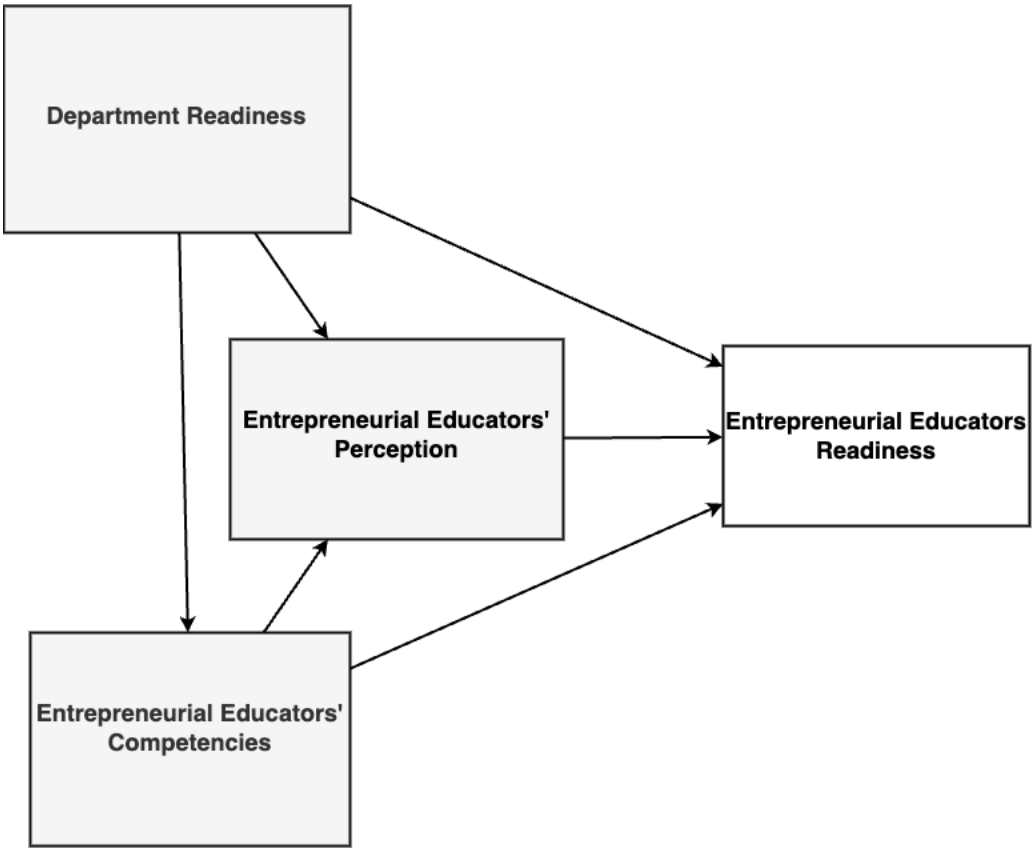

Figure 1.1 Tentative theoretical model for entrepreneurship educators' perceptions of their readiness toward GAI

3. Methodology

This thesis explores factors influencing educators' readiness to use GAI in the context of entrepreneurship education. For this social constructivism presents the ontology as the authors believe there is no singular methodology for comprehending GAI. Individuals interpret and interact with GAI using diverse, subjective methodologies. The authors are examining the subjective interpretations and influencing factors of individuals regarding this technology (Galbin, 2014).

From an epistemological standpoint, this research is grounded in interpretivism, which emphasizes the understanding of the meanings and experiences of individuals from their own viewpoint (Schwandt, 1994). This perspective is crucial given the niche field of study characterized by its limited scope within Swedish academic institutions offering entrepreneurship education and the novelty of GAI usage, which is attributable to ChatGPT. By employing a qualitative approach, this thesis provides deep insights into the phenomenon, capturing the nuanced ways educators perceive and interact with this emerging technology.

3.1 Research Design

The newness of this research field, with little existing literature and theoretical frameworks, empathizes the use of abductive reasoning. Abductive reasoning is particularly suitable for exploring educators' perceptions of (GAI) because it allows for the development of new theoretical insights based on empirical data (Dubois & Gadde, 2002). This approach is suitable as educators' perceptions regarding GAI have not been previously studied, and no comprehensive theoretical perspective exists in this context.

Certain theories like UTAUT (Venkatesh et al., 2003) or DigCompEdu (Joint Research Centre, 2017) cover specific areas of readiness but have not been synergistically explored in the context of GAI. By employing an abductive approach, this thesis can iteratively move between empirical data and theoretical frameworks to generate new understandings (Timmermans & Tavory, 2012).

The flexibility and generalizability regarding the data analysis allows easier adaptation of the framework, deeper insights, and capturing participants' insights and experiences in a dynamic

manner using open-ended questions. This choice is rooted in the abductive approach, which values the generation of new theoretical insights from detailed, qualitative data (Suddaby, 2006)

The rapid advancement of GAI requires an up-to-date analysis of educators' readiness to integrate these tools. The cross-sectional approach is advantageous as it provides an immediate snapshot of readiness, which is essential for ensuring relevance and effectiveness towards the current educational climate.

3.2 Data Collection

To ensure deep insights, semi-structured interviews with open-ended questions were conducted. This mono-method choice is rooted in the depth of understanding participants' insights that is irretrievable by other data collection methods. This level of detail is essential for exploring the nuanced ways in which generative AI tools are perceived and leveraged in entrepreneurship education. This focus respects their personal and professional experiences as educators, treating them as experts of their own experiences, which aligns with practical constraints of qualitative research, where data gathering from a small number of interviews has potential for higher valuable insights and insightful than broader, more superficial data collection methods.

To ensure interviewing the right target group, purposive sampling was chosen. To gain insights from the target group entrepreneruship educators from the department of Business Administration were interviewed. This was chosen as this department houses most entrepreneruship educators and the conclusive reflection of influencing factors for GAI adaption for education has the necessity of a holistic perspective over multiple entrepreneruship educators. Additionally as the tentative framework highlighted the importance of the department perspective, administration personel of this department was choosen tool. Table 1 represents the overview of participants.

This sampling approach is rooted in the necessity of dedicated expertise in the entrepreneurship education setting. Through personal connections to Lund University, fitting educators and department management staff were contacted, resulting in a high willingness for interviews.

The interviews lasted around 1h, leaving enough room for answering the key questions (see appendix) and dynamically deep diving into emerging topics. At the beginning, participants were asked about their consent and informed about their anonymity and usage of the data.

Nine participants were interviewed online via Zoom for lowering the barrier of entry and guarantee qualitative audio recordings. One participant's interview was split into two interviews lasting 1h.To ensure safety, the recordings were transcribed, anonymized, and AES-256 encrypted with a strong password. Only the researchers working on this thesis (see title page) had access to the data.

For long-term preservation, the anonymized transcriptions are stored on multiple backup locations and are only receivable upon reasonable request and the permission of the researchers and Lund University.

Participant	**Job role**
1	Educator
2	Administrative staff
3	Educator/Administrative staff
4	Administrative staff
5	Educator
6	Educator/Administrative staff
7	Educator
8	Educator/Administrative staff
9	Administrative staff

Table 1: Participants and their job role

3.3 Data Analysis

The examination of the data was conducted using the Gioia data analysis method, which allowed for capturing key insights critical for validating and enhancing the core topics of the theoretical framework.

The initial phase entailed deep familiarization with the interview responses to identify preliminary topics that aligned with the theoretical framework. For example, initial mentions of "communication processes" and "pedagogical competences" were found as potential factors.

For the extraction of first-order concepts Atlasti was utilized, where responses underwent line-by-line coding (Magnani & Gioia, 2023). They represented significant relevance to the research topic. For instance, an educator mentioning “GAI is a great opportunity” was coded as a first-order concept. The coding continued until saturation was reached.

The first-order concepts were then grouped into second-order themes. This involved looking for similarities and differences among the concepts and relating them back to the theoretical framework. For example, first-order concepts like "Learning from entrepreneurship students" and "student-professor-administration feedback loop" were grouped under the second-order theme "Adaptive Learning Competence".

The second-order themes were then organized into four aggregated dimensions. These dimensions represent broader key areas for GAI adoption that encapsulate the various themes. For instance, themes such as "Support" and "Policies" were grouped under the dimension "Department Readiness".

The data structure resulting from this analysis is illustrated in the following chapter. This structure reflects the hierarchical arrangement from raw data (first-order concepts) to theoretical constructs (aggregate dimensions). For example, the dimension "Educators’ Competences" includes themes like "Professional Competence" "Pedagogical Competence" and "Adaptive Learning Competence".

3.4 Validity, Reliability and Trustworthiness

Validity and Reliability are of high significance for scientific work but possess challenges in qualitative studies as exact replicability is different due to limited data availability (Bell et al., 2019).

For bias prevention, the researchers split the data analysis by familiarizing themselves with all interviews and then one party conducted the coding, which the other party validated. For a subsample, the parties switched coding and validation to verify the same result.

Transferability and replicability are essential for the trustworthiness of the thesis; therefore, a detailed description of the process, participants, and context was provided.

3.5 Limitations

The qualitative nature of this thesis, with its narrow focus on entrepreneurship educators and administration staff in Lund, may possess limitations toward generalizability for other countries as a replication in other countries could deliver other results due to different cultures, regions, or institutional culture.

Interviewees might possess a response bias as they may not fully recall their experiences accurately or macrofactors might shape their perception when the interviews were conducted.

The cross-sectional nature of this thesis allows a snapshot of the factors influencing educators' readiness, preventing the potential elimination of macro factors influencing the perception of their readiness toward AI, as longitudinal studies would.

3.6 Ethical Considerations

Participants were fully informed about the purpose of the thesis, their participation, and how their data would be handled. This was accomplished through a detailed explanation of the process and an allowance to record the session. The detailed formulation is presented at the beginning of the interview questions in the appendix.

To protect participants' anonymity, all interview transcriptions were anonymized. Each participant was assigned a unique participation number, and no names or other data were stored. This approach ensured that individual responses could not be traced back to specific participants. The anonymized data were stored securely, with access restricted to the researchers involved in this study.

The data analysis occurred on the researchers' devices with device encryption enabled, providing an additional layer of security against data theft. This measure was crucial for protecting sensitive information and maintaining the integrity of the research process.

Ethical considerations whether the results outweigh the harmfulness were carefully considered, resulting in high usefulness for society, including the micro and macroenvironment of educators. The theoretical framework provides a foundation for quantitative studies, allowing further exploration of this research area. Practical insights shape the awareness of the importance of educators' readiness for GAI, which will likely have a strong influence on entrepreneurship. For the societal context, it might support educators' openness toward GAI, increase their effort for diving deeper into these technologies' capabilities, facilitating their work, and open opportunities for new education concepts.

As this paper discusses factors for GAI implementation for entrepreneurship education, the authors had to familiarize themselves with the current GAI tools to conduct the interviews in a high-quality manner. In this process GAI tools were familiarized in a practical manner as reflection tool, providing feedback on how the literature review could be more conclusive and for finding further topic-related papers using Litmaps. The information was critically reflected and was not used for writing, analyzing, or paraphrasing any content. GAI tools showed high limitations, and the supervisors' feedback was invaluable.

4. Findings

Based on the data analysis about what factors influence educators' readiness to implement generative AI in entrepreneurship education, the authors found four key areas which are represented in aggerated dimensions incorporating the factors influencing educators' readiness. These agregated dimensions are university readiness, department readiness, educators' competences, and educators' perception which are discussed in the following sections.

4.1 University Readiness

University Readiness refers to the readiness for GAI adoption on the operational level above the departments. The following four influencing factors *Organizational Dynamics, Cultural Attributes & Believes, Resources*, and *AI Literacy* were identified playing a key role in indirectly supporting educators' readiness.

Organizational dynamics refers to the complex and multifaceted patterns of activity and change within organizations, including the ways in which structures, processes, and behaviors interact to influence organizational effectiveness and adaptability (Koenders & Rogerson, 2005). Participant 8 describes the cautious GAI adoption approach as "*The university is always slow to act when it comes to emerging technologies in a formal sense, but there are hundreds of people working within the university. It's natural that it takes a little bit longer*." Participant 3 sees this slow acting partially as advantage "*We can do [the GAI rollout] incrementally so we make sure that we get it right and we don't mess up the education quality for the students*." Within the various departments, the adaption speed is different, as Participant 6 expresses for the informatics department as "*leading when it comes to the technical part of [AI adoption], for them, this is a no-brainer; this is the future*." Whereas the Department of Business Law "*is in the first phase, thinking of how to regulate [GAI]"* (Participant 9). Participant 7 sees the need for a committee of experts in AI supervising GAI adoption as important because "*we cannot make sure that all professors at the university are at the same level of knowledge on how to use AI, what are the limitations of AI, and how best to get the main outcome.*"

Resources refers to the comprehensive set of assets available to support the university's mission of education, research, and public service (Church et al., 2003). The analysis showed that resources

are restrained, tools like Microsoft Copilot are available but "*[access] is not there yet but probably not so far away*" (Participant 8) and books and other small resources can be retrieved but "*whether there is money or not depends on how strategically important it is*." as Participant 9 summarized the situation. Participant 7 sees there a need for higher investment "*I think that universities since [AI] is the future, whether we like it or not, need to invest more time, money, resources, and energy.*" The selection of potential tools wanted by educators is "*overwhelming because there are thousands of different kinds of [GAI] tools*." (Participant 1). Participant 5 mentioned "*It is a total minefield…. When these [GAI] tools are finally figured out, the job of educators becomes easier because then it's basically these six tools are the ones that are the best*."

Cultural Attributes and Beliefs is defined as comprising the standards of practices and values that predictably recur within an organization over time (Serpa, 2016). The analysis shows within 10 interviews the cultural attributes and beliefs diversify strongly, which Participant 7 summarized by talking about shared responsibility as "*The complexity of this decision, how we integrate [AI], when and why, and how, is a matter of understanding, the needs and requirements of multiple stakeholders and how one action from one side will spill over into the next… [students] are a stakeholder. I am a stakeholder. The administration is a stakeholder. And the world is a stakeholder."* From the perspective of how important GAI in education is are the opinions split between it not being key topic of program "*There were arguments saying that our students are not skillful when it comes to using [a state-of-the-art technology], and that stands in the way of their understanding of other things. The argument against this was, no, that is not within the realms of what we are doing here. We are not teachers in software. That is not our job. Learn that somewhere, but we should not be the provider of that sort of course."* (Participant 6) and "*It's important to teach our students how to use AI to incorporate it in our teaching. I think this is a skill that you need going forward. I mean you personally, in your career, will need it, and this will come very soon.*" (Participant 2).

AI Literacy refers to a set of competencies that enable individuals to understand, critique, and interact effectively with AI technology (Long & Magerko, 2020). It extends beyond simple awareness of how AI works to include a broader comprehension of its ethical implications, societal impacts, and the skills necessary to navigate and leverage AI systems responsibly (Heyder & Posegga, 2021). The analysis shows entrepreneurship educators are welcoming AI literacy like Participant 5 for example highlights "*I would prefer to take some course to get some ideas about*

how I can use it in a safe way." Educators have various possibilities available to educate themselves like the Pedagogical Support which "*offers different courses for teachers*" (Participant 8) and Canvas pages directed towards educators to learn new technologies (Participant 5). The topic of educators' literacy represents an important topic as Participate 3 working in the administration mentioned "*It's our job to act in a supporting role for the teachers who have to solve the problem [of AI adoption]. They can come to us for advice."*

The analysis showed a bidirectional connection between University Readiness and Department Readiness as the university provides an umbrella under which the department communicates with other institutions. The department provides university feedback about what professors need for their courses and how GAI adoption is progressing as Participant 6 describes "*From the management point of view of the school or the departments, we have decentralized [the decision of AI adoption] to the course directors because they are the ones that can actually see the consequences for it on the individual courses.*"

4.2 Department Readiness

Department readiness refers to the readiness of a university department towards the readiness of GAI implementation for entrepreneurship education. Through the analysis the four influencing factors *Communication Processes, Support, Educational Strategy,* and *Policies* were identified, participating indirectly in educators' readiness.

Communication Processes refer to a standardized set of interactions aimed at enhancing operational clarity and reducing errors within team-based environments (Leonard et al., 2004). The analysis showed interactions happening within the department and towards other departments on how GAI implementation could be addressed via discussions, kickoffs, knowledge exchange and seminars. Participants exemplified this as "*We've had a couple of teachers' conferences where [AI] has been a prime topic where we've had both internal discussions sort of ventilating "What does this mean for us?"*" (Participant 2) and "*There's a big organization for business administration education, which is called FIKIS. They have a conference in autumn. Last time, there were quite a few seminars on AI*." (Participant 9).

In relation to Communication Processes the analysis showed **Support** plays a crucial role for educators' readiness. According to Cambridge Dictionary (2024), a broader sense support "refers

to emotional or practical help". Support on the department level is contextualized for entrepreneurship education support as a way of shaping the importance of the topic and providing a communication ground. Participant 3 summarized the importance of GAI as "*You cannot regulate [AI] away. What you can do is not leave the teachers alone with this problem, but you can give them guidelines and help*." The analysis shows the support is provided as extra time for competence development, an internal newsletter, and awareness shaping like Participant 2, working in the department, mentions, "*I see it as important … to reach out to employees at the department to make certain that no one leans back too much and says, "Well, this is probably not much to think about." We have to be aware of [updates in the field of AI], and we have to maintain awareness of it*." Participants agreed that these actions providing them support "*The department and institution tried hard to educate us in soft ways on how powerful [AI] tools can be, but they're just scratching the surface… The department is trying to do this in a soft way because they understand that people are busy and not everyone's super interested [in AI]*" (Participant 8).

Educational Strategy is defined as a structured plan or approach within the field of educational administration that aims to achieve specific educational outcomes (Eacott, 2008). The analysis shows various perspectives on how and on which level the adoption of GAI for entrepreneurship education should be happening. For example, Participant 6 talks about adoption happening at the course director level "*because they are the ones that can see the consequences for it on the individual courses…. [The GAI adoption should be] guided by the learning objectives of the particular course*." Participant 7 sees individual GAI adaption as concerning "*It needs to be an institutional decision, because you are swaying the future of generations ahead when you are deciding that this course needs to be taught in that way… We as individuals have biases whether we like it or not.*" A common perception is that it is a learning process where mistakes occur. "*We make mistakes like everyone else*." (Participant 2). The analysis further showed various perceptions of such a strategy ranging from conservative "*We in business administration, have our particular setting and traditions when it comes to examinations and so on*." (Participant 2) to the high open mindedness of especially entrepreneurship educators "*We as entrepreneurship scholars are a little bit different… because we are used to not use conventional approaches in our classroom.*" (Participant 5). Furthermore, the sense of autonomy highlights a challenge for a straightforward adoption "*Academics is a profession where you are judged by your knowledge, and autonomy is really important to people*" (Participant 1).

In the fast developing context of GAI adoption for entrepreneurship education **Policies** are defined as a dynamic process that involves ongoing negotiation and reevaluation in response to the changing circumstances of further GAI developments (Nudzor, 2020). The analysis showed that no AI adoption policies are in place for educators "*We don't have a policy banning [GAI], nor do we have a policy saying, "You're only allowed to use these particular tools." We learn as we go."* (Participant 2). Participant 9 mentioned that rules were not feasible at the university level due to the variety of courses. Furthermore, at the department level, the lengthy process of establishment which outdates them "*If we were to introduce rules at the department level, it had to be processed very formally we are board would have to decide on it and so and it feels like already when it was new and established, it would be old"* (Participant 9). Furthermore, she highlighted AI policies at the university level to have failed resulting in brought guidelines because of bureaucracy and broadness of courses. Participant 6 mentions in this regard "*The AI policy must be in relation to the different departments challenges.*" Furthermore, the analysis showed that static policies are not feasible, as Participant 2 highlighted, *"[AI] developments are so fast that if you wrote a policy six months ago, you probably need to adapt it by now*."

The analysis showed a direct connection from Department Readiness toward Educators' Readiness in the sense that educators feel not alone with the challenge of GAI adoption and see the support as help to overcome the otherwise enormous obstacle "*[Without guides, instructions, and self-learning AI] would be a barrier for me. I don't have the necessary technical skills*" (Participant 1).

The bidirectional connection from Department Readiness towards Educators' Competences was found as experiments done to increase competence and provide answers to provide feedback to the department. This allows adaptions of strategy, policies, and support while the communication processes within the department and toward other departments through discussions "W*e're all talking to each other and sharing information and resources and … we have mailing lists … that we use to keep in touch with each other*" (Participant 4).

4.3 Educators' Competencies

Educators' Competencies refer to skills and behaviors enabling entrepreneurship educators to execute tasks or roles for educating entrepreneurship university students efficiently.

Through the analysis the key influencing factors *Professional Competence, Pedagogical Competence, and Adaptive Learning Competence* were identified as having an influence on the entrepreneurship educators' readiness for the adaptation of GAI for entrepreneurship education.

Professional Competencies refers to a range of competencies needed by educators to use GAI for their entrepreneurship education like digital resource, subject-specific, and professional engagement competencies (Joint Research Centre, 2017). Participant 2 described the situation of competences for using GAI in entrepreneurship education as follows: "*There is dispersion. It's not as wide as you might expect, but there is dispersion*." The dispersion is described to range from "*It is still quite new to us, it's quite a lot about building confidence in teaching.*" (Participant 9) to "*We are heavy users of the technology*." (Participant 8). Most participants describe being in the process of understanding how GAI works and how to confidently utilize it. Participants agree that the best way to learn GAI tools is by trying them out themselves "*I'm in the process of trying to teach myself [how GAI works] to be able to teach it to others in the future"* (Participant 8). Before using GAI for educational purposes, participants agree on a pre-use trail and that GAI content needs to be critically reflected.

Pedagogical competences represent teaching of GAI and its usage for the creation and usage in and around assessments for entrepreneurship education (Joint Research Centre, 2017). The analysis shows the awareness of GAI for students is present: "*We need to teach you [students] how to use AI, because that will be the reality for you when you leave the university. It's not acceptable that we ignore it or that we don't make you aware of that this tool exists and create an ability in you to use it in a proper way.*" (Participant 1) and "*The expectation from the future generations is that AI is part of their courses."* (Participant 7). Participants see it as important to teach it wisely: "*The thing why you are a student is not that you want to have a degree only, but that you will learn to become good entrepreneurs or develop a good understanding of entrepreneurship and having an entrepreneurship skills and knowledge. In that sense, AI will not help you if you use it in a wrong way*." (Participant 5). Concerns about overreliance and creativity stagnation were brought up by most participants. Participant 8 highlighted this as "*There is a concern that if it … becomes standard practice to ideate and find opportunities, then we never find new ideas.*" First experiments for educational integration of GAI seem to be in place as it is allowed by some supervisors to be used as analytical support for the thesis creation with clear declaration that

written text must come from students as Participant 8 highlighted: "*[Supervisors say] very explicit, ... that everything handed in must be written by the authors and not generated by AI."*

Adaptive Learning Competence represents a set of transversal, subject-specific, empowering, and facilitating competences for adapting to students' needs (Joint Research Centre, 2017). The adaptability to students' needs was expressed as "*We [entrepreneurship educators] have as a belief that we want to be innovative, we want to be helping to support our students as much as we can.*" (Participant 5). Furthermore, the analysis showed the importance of students' involvement in the adaptation of courses as they provide insights. Participant 8 highlights this regarding the valuable insights gained from students: "*I learn more from the students I teach than I do from my colleagues ... because they're younger, ... more eager to adapt to [GAI], or there are more of them.*". Participant 7 complemented GAI by giving the possibility to go a step further and integrate students into the learning process "*We need to take into account how we can integrate students into designing those courses and what is being done on these courses*." Further deeper adaptions seem to be on the rise : "*The discussions [about adapting curricula to include more AI] are beginning to come ... they are not that loud yet, but it will soon be. That I'm convinced of"* (Participant 1).

Direct influence of Educators' Competences on Educators' Readiness was found as educators prepared themselves to understand the technology for directly using it for education *"[After attending AI course] I would like to instruct students on how to use it wisely*." (Participant 5) but critically reflected on how the quality of education can be guaranteed "*We should be careful in how we use AI and how we integrate AI into our work, to the extent that it doesn't cause any brain drain*." (Participant 7).

Influence towards Educators' Perception was found as perception is shaped through the learning process and information received from other educators using it in entrepreneurship education. "*I see [the learning process about AI] happening at multiple levels that start from the classroom. How do students perceive the integration of AI? Is it useful?"* (Participant 7).

4.4 Educators' Perception

Educators' Perception refers to entrepreneurship educators' or staff's individual view about GAI for entrepreneurship education, which represents a driving force for action, creating a lens for viewing the world through a filter.

The analysis shows educators' unique view on GAI, including the view of knowledge about the technology as well as the personal preferences of using them, which is represented in the factors M*indset, Effort Expectancy*, and P*erformance Expectancy.*

Mindset is elaborated by Auster-Gussman & Rothman (2018) as an "established set of beliefs that shape how people think and reason about this topic." The mindset found throughout the interviews of entrepreneurship educators is that educators and staff seeing GAI as an opportunity where curiosity drives the adoption, staying up to date is crucial, and technology influences everyone. Participant 3 highlighted it as follows: "*There's no point in sitting there and wishing that it won't impact you, because it will impact specifically you on your course. It will impact everybody*." Educators possess a high level of interest towards GAI implementation. "*We have educators who are interested in how we can make use of this in an educational situation. We have individuals who are interested in how we should introduce this in an educational situation. There's a lot of interest. We're curious people. Weare researchers."* (Participant 2).

In relation to mindset, Effort **Expectancy** represents an important aspect of educators' perception, which is defined as the ease of using GAI (Venkatesh et al., 2003). The analysis showed that mainly curious tech-savvy people are experiencing GAI as easy to use. Participant 5, not having a technical background, highlighted *the following: "[ChatGPT has] the benefit of a natural language interface. You don't need technical skills.*" Participants referred to the importance of effective prompting to retrieve the right answers, which might reduce attractiveness and increase the need for time to practice and the desire for instructions "*To make [GAI] appealing, there should be something where I can learn by myself and read or follow some instructions or guidelines"* (Participant 5).

Performance expectancy is defined as believed gains of using GAI to attain gains in job performance (Venkatesh et al., 2003) , which can be referred to as usefulness. The analysis shows general benefits of GAI are seen, but the implementation in entrepreneurship education is reluctant.

Participant 8 mentioned this regarding the teaching of such technologies in entrepreneurship courses: "*As soon as something is emerging, there's a natural comment that in entrepreneurship education it should be part of the education. I disagree, the same way we do not teach food technology, engineering, or chemistry. This is not the core of the subject. These technologies or disciplines sure are important but not to every startup."* Participant 6 mentioned the fast pace of development as a challenge for education *"[Designed courses] should be sustainable. They should be whole for some time*." Participant 6 further questioned the usefulness "*Will I lose certain skills that will be useful in the future if I don't practice certain things when it comes, for instance, to data analysis, data collection, et cetera, or is this something that is just fine?*" Participant 7 highlighted these concerns: "*If I'm too reliant on AI, I might jeopardize the variety of knowledge and information being produced*."

The analysis shows an influence of Educators' Perception toward Educators' Readiness through the Effort Expectancy directly influencing how ready educators perceive their skills for GAI adoption. Participant 1 highlights as "*People who are interested, curious and a bit tech savvy, they will learn [AI tools] quickly.*" Furthermore, the open mindset has a direct influence as this new technology is directly embraced "*I think we, as entrepreneurship educators, are quite open, embracing new technologies and new ways of educating and including that into our pedagogy*" (Participant 5). The influence of the Performance Expectancy toward readiness is expressed through driving the adoption and experimentation resulting in feeling ready: "*Two weeks ago [was a seminar] where it was presented how to use AI to analyze data from research where I learned nothing new*" (Participant 8).

A unidirectional connection from University Readiness toward Educators Perception was found as Participant 2 mentions "we don't have any resources in the department." However, the university providing resources "The unit for educational services gives us videos on generative AI and education, they have a Q&A, and there's also a contact person." (Participant 8) increasing the feeling of competency.

Furthermore, a connection from Department Readiness toward Educators' Perception was found as strategy and policies influence what boundaries exist on how useful educators perceive technology for entrepreneurship education. For example, a clear strategy toward recommending tools allows easier reflection on the usefulness of a tool. "*I'm finding this a more challenging than other topics because there are so many different tools to choose from and different people have*

fallen in love with some tools for whatever reason and then other people recommend other tools. It's a bit messy at the moment" (Participant 5).

Figure 2.1 highlights the relationships of the first-order concepts with GAI influencing factors (second-order themes) and key areas (aggregated dimensions).

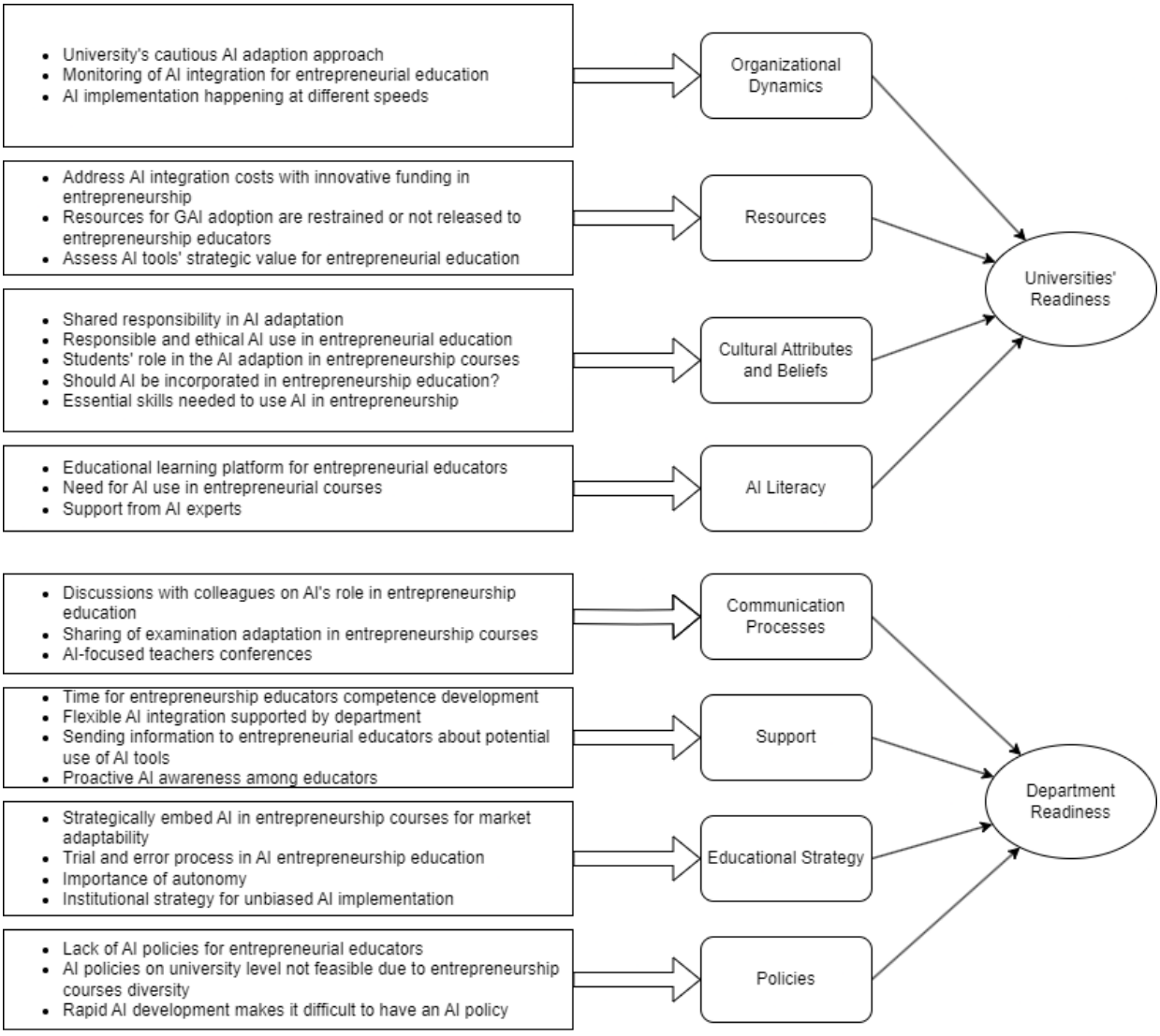

Figure 2.1 Data Structure for Departments' and University Readiness

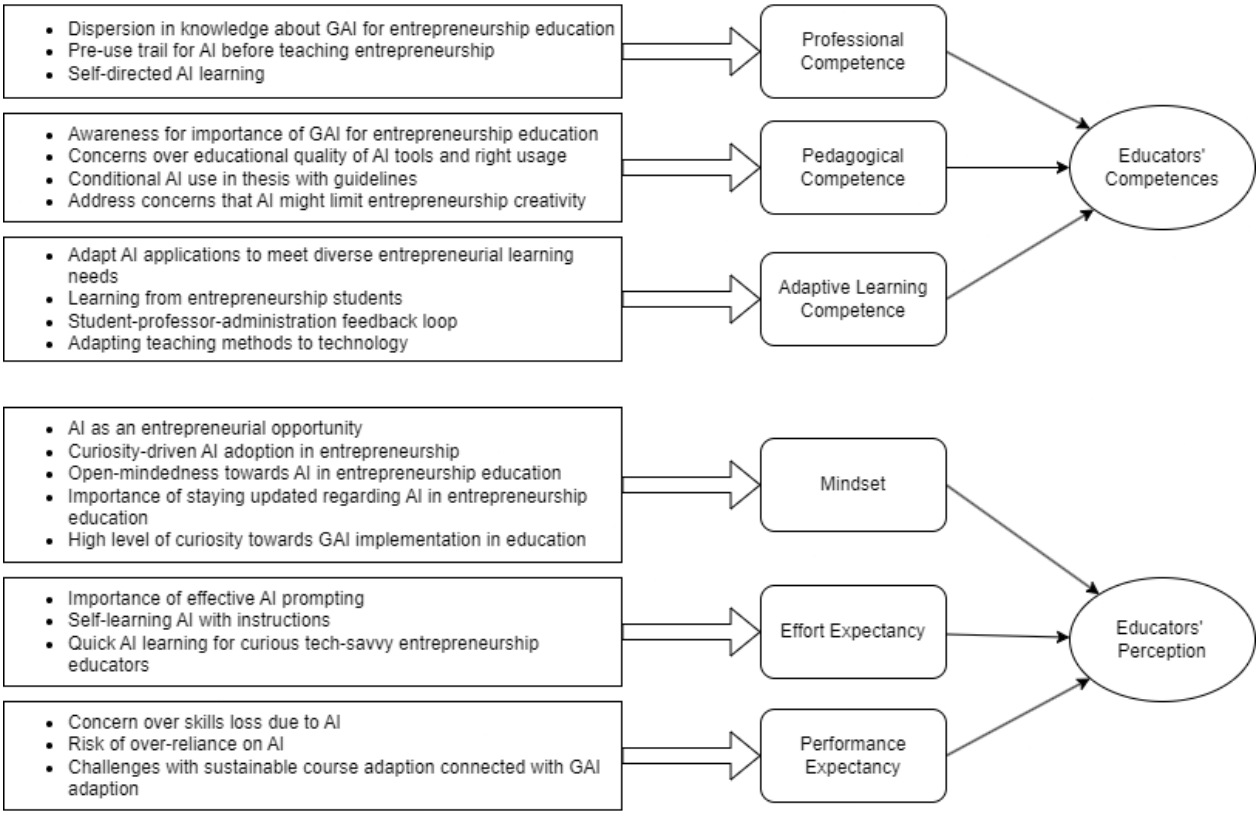

Figure 2.2 Data structure for Educators' Perception and Competences towards GAI

5. Discussion

In this chapter, the discussion and analysis of the empirical findings will be presented in greater depth. In this section, the findings are explained and how they relate to the literature review and research question. After the analysis, a theoretical model will be introduced that incorporates our findings and the connections between the four aggregate dimensions within the readiness to use GAI tools in entrepreneurship education.

5.1 University readiness

While exploring the readiness of universities to adopt GAI tools in entrepreneurship education, influencing factors emerged from the analysis: Cultural Attributes and Beliefs, Organizational Dynamics, AI Literacy, and Resources. Each of these factors affects how effectively universities can integrate GAI into their education.

5.1.1 Cultural Attitudes and Beliefs

The research identified that cultural attributes and beliefs in a university impact readiness toward the adoption of GAI tools. Based on the research, some educators presented a forward-thinking attitude by acknowledging the need to incorporate AI into the curriculum to prepare students for the future. For instance, the findings indicate that some of the educators think it is important to teach their students how to use AI responsibly and see it as a needed skill for their careers. This viewpoint aligns with the literature. Bell & Bell (2023) argue that technology in entrepreneurship education can impact students' engagement and learning.

However, the study identified that educators also have concerns about being too dependent on GAI tools, which could impact creativity and critical thinking ability. These concerns are reflected in the literature, with Wahl & Münch (2022) describing that while GAI tools offer benefits, they should be carefully incorporated to not influence essential cognitive skills. The balance between the use of technology and educational quality demonstrates the importance of cultural readiness. Khalid (2020) suggests, the adoption of AI in education should help to adapt entrepreneurship education without eliminating fundamental entrepreneurship skills.

5.1.2. Organizational Dynamics

Organizational Dynamics at the university are another factor identified in the context of readiness for GAI adoption. The research shows that adoption differs across departments.

The study found that there is a need for institutions to be responsible for the adoption of tools while being certain that all departments are aligned in their approach to the adaptation of GAI tools. This finding corresponds to the literature as Kohnke et al., (2023) states that coordination and planning are essential for technology integration in education.

This study found that deliberate actions in organizational change can be beneficial. This aligns with the literature by suggesting that methodical approaches to technology integration can prevent potential failures and provide sustainable integration (Westhead & Wright, 2013).

5.1.3 AI Literacy

AI literacy is another key factor that influences university readiness to use GAI in education. Our findings identified a gap in technical skills among educators. This corresponds with the literature by highlighting the need for professional development, as it provides educators with the skills to use GAI efficiently in their teaching (Jeon & Lee, 2023). Moreover, the literature describes that support is important for entrepreneurship educators to keep up with the latest technology (Farrokhnia et al., 2023).

The research discovered that universities should prioritize AI literacy to help educators adopt AI into their courses and improve the quality of their education. This is important in entrepreneurship education, where the use of the newest technology can impact future entrepreneurs (Tatpuje et al., 2022).

5.1.4 Resources

The analysis highlighted that while some resources, like for instance Microsoft Copilot, are becoming available for teachers. The study found that universities should spend more time, money, and resources to support AI adoption. However, the lack of finances and tools was found to be a challenge. This finding aligns with the literature, which highlights the importance of funding and resources to integrate GAI technology (Chan & Tsi, 2023). Universities should seek innovative

funding to deal with financial struggles and provide educators with the tools to adopt GAI for entrepreneurship education.

Moreover, the findings indicated that a standardized approach is crucial for selecting and adopting resources. This is consistent with the literature, which supports that strategic planning and prioritization of resources are crucial in GAI tool adoption (McDonald et al., 2024).

The readiness of universities to integrate GAI tools into entrepreneurship education is influenced by an interplay of the factors cultural attributes and beliefs, organizational dynamics, AI literacy, and resources that can improve the integration of AI into entrepreneurship education.

5.2 Department readiness

In this section, the readiness of university departments is analyzed in the context of the adoption of GAI in entrepreneurship education. Several key factors were identified: communication processes, support, educational strategy, and policies. Each of these factors plays an important role in determining how effectively GAI can be integrated into entrepreneurship education.

5.2.1 Communication Process

Effective communication is an important aspect of the implementation of GAI tools in entrepreneurship education. The study revealed that open communication within and between different departments at the university creates a collaborative space that is needed to adopt new technologies. According to Leonard et al., (2004) standardized communication processes help to understand information clearly. This is supported by the findings in which participants mentioned the importance of conversations, knowledge exchange meetings, and seminars focused on AI adoption. For instance, one participant mentioned the department's proactive approach in promoting discussions on GAI adoption by educators. This approach not only helps educators understand GAI technology but also addresses potential concerns by having open discussions about GAI tools in entrepreneurship education.

5.2.2 Support

The support provided by the department affects the readiness of educators to adopt GAI in entrepreneurship education. The findings indicate that department support appears in different

forms, such as internal newsletters sent out to teachers. The support system is significant as it helps educators to not feel alone with the challenges associated with learning the tools. In the study, the authors found the need to provide guidelines and help educators rather than leaving them to learn about the GAI tools on their own. This corresponds to McDonald et al., (2024), who described the importance of institutional support for the effective adoption of GAI technology in higher education.

Moreover, Kevin et al., (2004) highlighted that department support is crucial for the implementation of new technologies. Kohnke et al., (2023) also discusses the importance of having a support system with AI specialists and experienced educators. However, the support provided by departments is not always sufficient. As identified in the study, while the department puts effort into educating educators about the potential use of GAI, these efforts are not sufficient. This shows the gap between the given support and the actual struggles of educators. This finding could be related to the observations of Bell & Bell (2023)Bell & Liu (2018), who noted that while some educators are open to learning about AI, others feel confused about the technology.

5.2.3 Educational Strategy

The educational strategy of a department is another factor that determines how GAI tools can be integrated into entrepreneurship education. The analysis revealed different perspectives on how GAI could be adopted in entrepreneurship education. The study found that course directors are crucial in the process of GAI tool integration because they can best understand the consequences of GAI adoption on individual courses. This corresponds to the literature by Rees et al., (1984) , who discussed the decentralized approach to educational strategy, in which the flexibility and autonomy of course directors are crucial for new technology implementation. However, our analysis also presented various thoughts by educators about who should be responsible for GAI adoption. A participant mentioned that institutions should decide. This finding refers to Kohnke et al., (2023), who presented the need for an effective strategy that includes all stakeholders at the university to develop a comprehensive and not biased approach to the adoption of GAI tools.

The findings further showed a contrast between traditional teaching and innovation. It was found that there is an emphasis on traditional teaching in the business administration department, which can be a challenge in adopting new technologies. This observation is supported in the literature by

Wahl & Münch (2022) who describe that many entrepreneurship programs still focus on general entrepreneurship skills rather than digital knowledge.

The research discovered that these challenges could be addressed by having clear objectives for GAI integration, providing training and resources for entrepreneurship educators, and constantly assessing the impact of GAI tools on education.

5.2.4 Policies

The findings indicate that there are no specific GAI policies for educators. It was discovered that a lack of policy might be a factor for uncertainty and inconsistency in how GAI tools are integrated at different courses and departments. However, it was found that it is not practical for departments to introduce rules because of the rapid development of AI technology and differences in courses.

Nudzor (2020) describes the dynamic characteristics of policymaking in response to technological developments. Because of the rapid evolution of GAI tools, it would be needed to have flexible and adaptive policies that can be updated regularly. The analysis presented that policies are not practical due to the rapid change of AI development; constant adaptation might be needed.

To address these problems, universities should think of developing broad guidelines that provide instructions on how to use of GAI while being flexible and adaptative. These guidelines should include input from educators, legal and data privacy, and AI specialists to be sure they concern ethical problems and challenges with implementation. Furthermore, regular reviews and updates of these guidelines are needed to make sure they stay relevant and effective.

5.3 Educators' Competences

The competences of educators influence their readiness to adopt generative AI in entrepreneurship education. This section analyzes the professional, pedagogical, and adaptive learning competences that are crucial for GAI integration.

5.3.1 Professional Competence

Professional competence in the context of GAI includes the ability of educators to efficiently understand and use these tools. This study revealed differences in educator competence. The study

found that there are a range of educators who start to learn about GAI and those who are aware of the technology. This finding aligns with the literature, which highlights the need for educators to constantly develop their technical skills to be updated with technological developments (Jeon & Lee, 2023). Most participants agreed that self-learning is important for understanding GAI. However, entrepreneurship educators highlighted that critical thinking ability is crucial when using GAI.

5.3.2 Pedagogical competence

Pedagogical competence is also a factor that influences the adoption of GAI tools in entrepreneurship education to create assessments. The analysis showed that educators are aware of the importance of GAI for students. For instance, the authors found that teachers think that it is important to teach students how to use AI responsibly, which reflects a forward-thinking approach. This finding is supported in the literature, which highlights that the integration of GAI into entrepreneurship education can significantly impact students' learning outcomes (Bell & Bell, 2023). However, in this study, some educators shared concern about the use of GAI tools by students because it might limit their ideation process. While adopting GAI tools, it is important to present not only the benefits but also their disadvantages (Farrokhnia et al., 2023).

5.3.3 Adaptive Learning Competence

This study found out how important it is to support students with innovative methods. This finding aligns with the literature that describes the value of adaptive learning in improving student engagement and learning(Cunningham-Nelson et al., 2019). Moreover, the authors discovered that educators consider it important to learn from students about their experiences with GAI technology. This approach improves the quality of education and guarantees that teaching remains relevant and effective (Alemdag, 2023; Bell & Bell, 2023).

5.4 Educator's Perception

This section provides an analysis of entrepreneurship educators' perceptions regarding the use of GAI according to the findings of this study. The study categorized educators' perceptions into the following areas: effort expectancy, performance expectancy, and mindset.

5.4.1 Effort Expectancy

The findings from the research show that entrepreneurship educators have different approaches regarding the ease of integrating GAI tools into their teaching. In our study, some educators expressed the simplicity of the GAI tools and their potential benefits in their teaching, while others mentioned the challenges of learning how to use these tools.

Venkatesh et al., (2003) highlighted that ease of use influences the adoption of new tools in education. Moreover, according to our study, educators with better technical skills tend to find GAI tools easier to use and invest more time and effort in learning about this technology. This finding relates with the UTAUT framework, which presents that the perceived ease of use of GAI tools can have an impact on the adoption of these tools by entrepreneurship educators (Venkatesh et al., 2003).

The study identified that entrepreneurship educators must not only know GAI but also how to implement it in their courses. The research found that educators see the implementation of GAI tools as inevitable in entrepreneurship education, which indicates that educators would need to adapt to new technologies. This way of thinking is supported by (Holmes et al., 2019), who suggested that educators' willingness to find time to learn new technologies is often connected with the benefits of GAI tools. However, in our study, some educators expressed concerns about how difficult it is to use GAI tools, stating that they need more training and support. It was discovered that tech-savvy educators think that with appropriate support and available resources, the adoption would be easier for teachers.

5.4.2 Performance Expectancy

Performance Expectancy is defined as the benefit of using generative artificial intelligence tools to increase job performance (Venkatesh et al., 2003). In this research context, entrepreneurship educators believe that GAI tools can improve their jobs and help students learn. The findings show that even though educators are aware of the advantages of GAI tools, some are still not convinced about their application in entrepreneurship education. In our interviews, teachers mentioned that there is a debate among entrepreneurship educators about the implementation of these tools in entrepreneurship courses. The study found that some educators have a cautious approach toward the integration of GAI into the entrepreneurship education curriculum. It highlights that not every

new technology should be integrated into entrepreneurship education. This finding is supported by Bell & Bell (2023) who stated that educators should focus on teaching students crucial entrepreneurship skills and not always integrate the latest technology in teaching. Additionally, educators highlighted the need for a sustainable course design. This aligns with the Jeon & Lee (2023) who presented the importance of creating courses that provide knowledge about the recent technology. In addition, the authors noticed that educators share concerns about losing skills due to GAI. This finding is supported by who empathizes that the adaptation of GAI should be balanced. The authors found that educators expressed concerns about being too reliable on AI. This corresponds to Kohnke et al., (2023), who emphasized that AI can improve efficiency but may also limit critical thinking ability.

5.4.3 Mindset

It was identified that the mindset of entrepreneurship educators toward the adoption of GAI influences the integration of GAI into entrepreneurship education. The findings presented few aspects of this mindset that influence the readiness and willingness of entrepreneurship educators to use generative AI.

The study discovered that most entrepreneurship educators perceive generative AI as an opportunity rather than a threat. This perception is influenced by educators' curiosity and acceptance that GAI will impact entrepreneurship education. This finding is crucial for the adoption of GAI and aligns with the viewpoint that being updated about the newest technology is important in modern entrepreneurship education Khalid (2020).

The research identified that the mindset toward GAI adoption in entrepreneurship education is impacted by how educators work. For instance, the department and university's readiness to support GAI adoption can impact educators' opinions. Support systems, open communication, and guidelines can result in positive mindsets toward GAI integration (Farrokhnia et al., 2023; Jeon & Lee, 2023).

Based on this research, the mindset of entrepreneurship educators toward GAI consists of optimism, curiosity, and caution. The willingness to learn and adopt GAI corresponded with an awareness of their limitations, which influenced the integration of GAI into entrepreneurship education (Jeon & Lee, 2023).

The integration of GAI into entrepreneurship education depends on the competence of educators. Professional, pedagogical, and adaptive learning competences are all important factors that influence educators' use of GAI. The findings suggest that while there is an openness to embrace GAI, there is also a need for structured support and training to develop educators' technical competences (Bell & Bell, 2023; Kohnke et al., 2023). These findings lead to an integrated theoretical framework that presents how these competences interact with other factors that impact entrepreneurship educators' adoption of GAI.

5.5 Integrated Theoretical Model

In this section, findings were synthesized to provide a final theoretical model that illustrates the interrelations within and between university readiness, department readiness educators' competencies and perceptions, which leads to comprehensive readiness for GAI adoption (see Figure 3.1). The model presents how different components interact with each other, resulting in a cohesive structure that supports the effective adaptation of GAI in entrepreneurship education.

The theoretical model highlights that educators' competencies (professional, pedagogical, and adaptive learning) are deeply connected with their perceptions (effort expectancy, performance expectancy, and mindset) and institutional readiness factors (department and university readiness). Department readiness includes elements such as communication processes, support systems, educational strategies, and clear policies, while university readiness includes cultural attitudes and beliefs, dynamic organizational structures, AI literacy programs, and resources.

Moreover, professional competence influence educators' effort expectancy by determining how easily the educators can learn to use GAI tools. Pedagogical competence also impacts performance expectancy because educators can incorporate these tools into their courses to help students with their learning. Adaptive learning competence impacts educators' positive mindset toward GAI tools.

Department readiness, including communication processes, support systems, educational strategies, and clear policies, provides an environment for educators to develop their competencies and adopt GAI. University readiness, which includes a supportive culture, dynamic organizational structures, AI literacy programs, and resources, further impacts this environment by providing educators with the tools and support they need.

The integrated theoretical model shows the bidirectional relationships between these factors. As entrepreneurship educators continue to expand their competencies and see GAI in a positive way, they have an impact on the overall readiness of their departments and universities. Moreover, appropriate department and university support and resources give educators the opportunity to use new technologies in entrepreneurship courses.

This theoretical model presents the importance of a holistic approach to GAI adoption in entrepreneurship education, where the development of educators' competencies, positive perceptions, and strong institutional readiness are mutually reinforcing. By addressing these interconnected factors, universities can create a conducive environment for adopting GAI, thus improving the quality and effectiveness of entrepreneurship education. This theoretical model serves as a foundation for further research and practical implementation, providing a deep understanding of the factors that influence entrepreneurship educators readiness to adopt GAI.

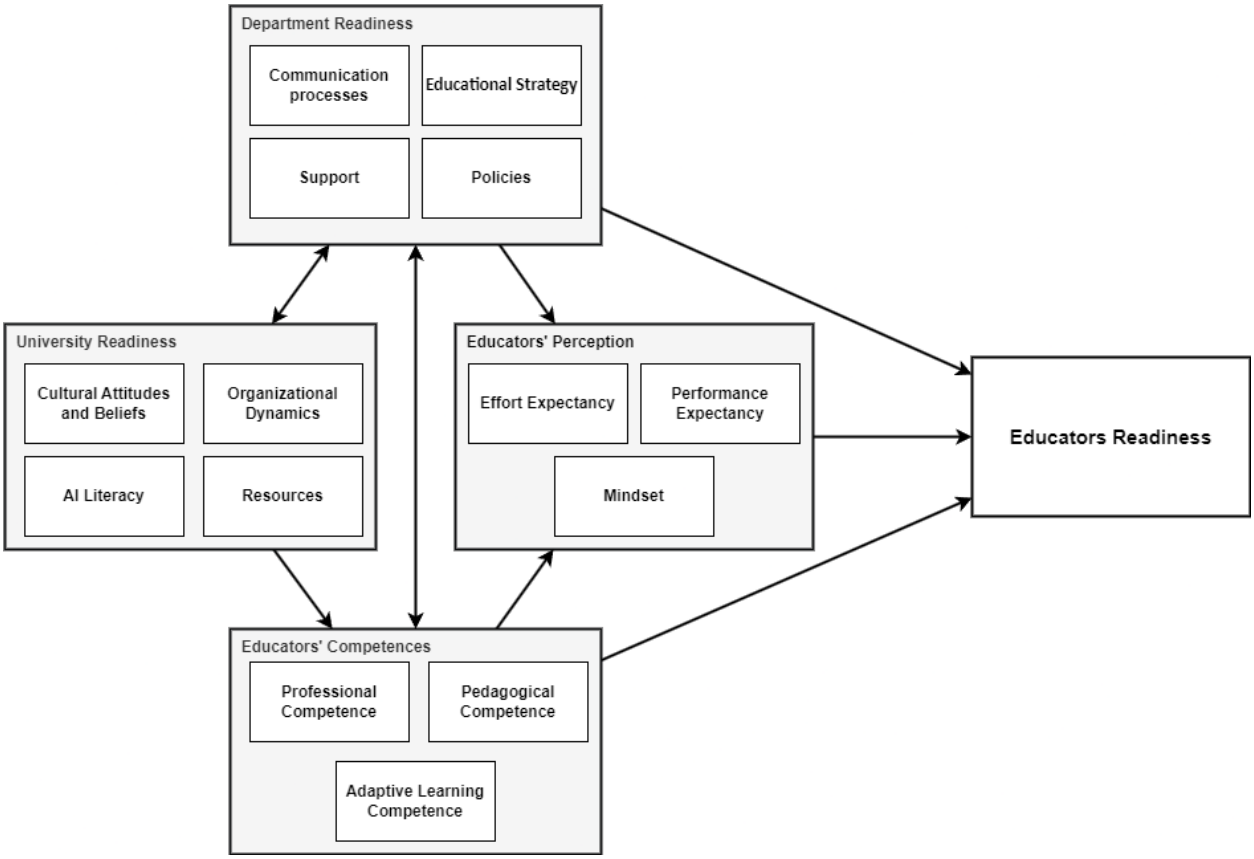

Figure 3.1 Integrated theoretical model for educators' readiness towards GAI adaption

in entrepreneurship education

6. Conclusion

The goal of this research was to identify the factors influencing the adaptation of generative artificial intelligence for entrepreneurship education.

The introduction expressed the need for such research as the GAI adaption possesses challenges when the factors contributing to success or expansion of adoption time are unknown.

The literature review adressed this question through generating an overview of the topic from secondary sources, highlighting the key areas of educators' readiness and competences along with department readiness. This overview resulted in a contemporary theoretical framework influenced by theoretical contributions from the frameworks UTAUT, DigCompEdu, and TOE, showing the first influencs between the components.

In the methodology, the process of how information was gathered through semi-structured interviews of entrepreneurship educators and business administration staff was described together with our perspective on the ontology of social constructivism. This chapter further addressed how the data analysis with the GIOIA method was conducted, resulting in a data structure rooted in 10 hours of interviews and 51 first-order concepts.

The findings provided first insights into the results gathered from the interviews, highlighting the strong sense of seeing GAI as an opportunity and the drive to master the technology. Department readiness highlighted the diverse perspectives found throughout the interviews regarding education strategy and progress in mastering the technology. Clear challenges connected with the advantages resulting in dependence on GAI were expressed, highlighting the difficulty of balancing convenience against knowledge sustainability.

The discussion section builds upon this knowledge and validated it with the literature of the most well-known authors of this research field like Bell, Kohnke, and Jeon.

The answer of the research question of what factors influence educators' readiness to adapt generative artificial intelligence for entrepreneurial education can be provided by the factors contained withing the key areas University Readiness, Departmens Readiness, Educators' Competence and Educators' Perception, like shown in figure 3.1.

6.1 Research Contributions

This study addresses a significant gap in the existing literature on the adoption of GAI in entrepreneurship education. The widely used concept UTAUT defines perception of the usefulness of a technology as a combination of influencing factors like gender, age, experience, and social influence (Venkatesh et al., 2003). However, these factors were not found to have concrete influences in this study. Instead, the authors' research highlights the crucial role of the influencing factor mindset, suggesting that educators' perceptions and attitudes toward GAI are pivotal. This finding represents a significant new influencing factor, emphasizing the limited understanding of educators' perceptions in the existing literature.

The integrated theoretical model synthesizes these insights, bridging the gap between theoretical frameworks and practical applications. This model incorporates the concept of Educators' Competences, supporting the DigCompEdu framework while it highlights a transition among various competencies which was not found in this study. Rather, the various competences were mutually dependent. Furthermore, a higher focus on ethical considerations was found, which DigCompEdu does not sufficiently address, despite the inherent drawbacks associated with new technologies.

Furthermore, research on Department Readiness reveals the challenges educators face in adopting GAI while managing daily responsibilities. Factors such as communication processes and institutional policies present additional obstacles, underscoring the need for clear personal goals and support structures for educators.

As educators are strongly interconnected withing the department, similar to organizations, the concept of department readiness is initially understood by the TOE framework which suggests support as financial, infrastructural, and knowledge support. The research showed that in the university setting, the extended support mentioned by the framework is provided at the university level, whereas the (educational) strategy, which would be expected to be at the university level, is defined at the department level. These findings deviate from TOE's original intended setting within organizations and highlight the need for a possible adaptation of the framework for use cases within the university setting.

6.2 Practical Implications

This study outlines the factors influencing educators' readiness to adopt GAI in entrepreneurship education, as viewed by entrepreneurship educators and business administration staff.

The common view on GAI being seen as the future and educators working on understanding how such tools work and how to conduct first experiments represents a common long-term goal, laying out solid ground for the GAI adoption process. The research showed that the path toward achieving this goal seems uncertain as participants express confusion and feeling overwhelmed. A more prominent educational strategy at the department level and within the programs could lead to a more common view enhancing clarity, easiness for action setting, and knowledge about additional support. This can be achieved through answering questions about the common perspective of GAI usage at the department level in a year, the level of desired GAI integration within entrepreneurship programs within a year, presenting visible opportunities and affordable losses acceptable to drive the adaption further, creatiing co-creation partnerships with other departments (or department-level collaborations within programs), and analysing possible available resources within the department and extended professional and privat network.

Furthermore, a common perspective on how and in what ways GAI can safely be integrated into entrepreneurship education can be revealed through policies for educators. Like the findings showcase, the more participants interviewed, the more perspectives about GAI usage ways in entreprenerial education were identified. Common ground setting within the department through policies being adapted regularly and based on experience gained within the programs is recommended.

Given the vast array of GAI tools available to educators, which were perceived as a "minefield", establishing a recommendation of a GAI toolset can significantly lower the barrier to entry and contribute to clarity as educators avoid the risks of investing time in learning tools that may soon become obsolete. A focus group reflecting the needs of the department can conduct a market analysis, resulting in a toolset having potential for presenting recommendations for educators, other departments, and the university as a whole having the pioneering advantage with a higher adoption and funding success.

As the adoption of GAI at Lund University follows specific stages, as outlined in the study's delimitation and findings, further exploration of GAI integration in courses presents a unique opportunity to drive innovation. By implementing a flipped classroom model, where students are divided into groups based on their areas of interest, the presentation of various GAI tools relevant to future lectures, such as market validation, testing, and mockup creation, not only enhances student engagement and participation but also the acquisition of up-to-date knowledge of valuable AI tools, ultimately saving time and increasing the success rate of future startups.

6.3 Limitations and Future Research

This thesis was conducted in the business administration department of Lund University, where programs and educators are located, which limits its applicability to other universities due to possible macrofactors.

Furthermore, as expressed in the delimitation and finding sections, the progress of GAI adoption for education in general is happening in various stages, of which this study focuses on the third stage, where the GAI regulation for students happened beforehand and exams were adjusted. In this third stage educators are aware of the potential, and willingness to learn the technology. Further research could explore the adoption of the next stage on how GAI could be integrated into curricula or how the findings relate to other Nordic universities.

The thesis focused on factors directly or closely influencing educators' readiness. Further macrofactors at the university level or the influences of other faculties or departments were not focused on, which further research could expand upon.

The cross-sectional approach provides first insights into this dynamic process. Further research like longitudinal studies, would shed light on the whole process of emerging technology becoming important for entrepreneurship education until it is fully adapted and integrated into the curriculum, creating a more holistic perspective on the topic allowing practical preparations of entrepreneurship educators for future technologies.

References

Adiguzel, T., Kaya, M. H. & Cansu, F. K. (2023). Revolutionizing Education with AI: Exploring the Transformative Potential of ChatGPT, *Contemporary Educational Technology*, vol. 15, no. 3, p.ep429

Alemdag, E. (2023). The Effect of Chatbots on Learning: A Meta-Analysis of Empirical Research, *Journal of Research on Technology in Education*, pp.1–23

Asawa, A. (2018). Artificial Intelligence: The Star of the Digital Galaxy: A Study of Digital Disruption, Innovation, and Economic Transformation, Independently published

Auster-Gussman, L. A. & Rothman, A. J. (2018). Understanding the Prevalence and Correlates of Implicit Theories of Weight in the United States: Insights from a Nationally Representative Sample, *Psychology & Health*, vol. 33, no. 4, pp.483–498

Baker, J. (2012). The Technology–Organization–Environment Framework, in Y. K. Dwivedi, M. R. Wade, & S. L. Schneberger (eds), *Information Systems Theory: Explaining and Predicting Our Digital Society, Vol. 1*, [e-book] New York, NY: Springer, pp.231–245, Available Online: https://doi.org/10.1007/978-1-4419-6108-2_12 [Accessed 8 March 2024]

Baker, R. S. & Hawn, A. (2022). Algorithmic Bias in Education, *International Journal of Artificial Intelligence in Education*, vol. 32, no. 4, pp.1052–1092

Bell, E., Bryman, A. & Harley, B. (2019). Business Research Methods, Fifth edition., Oxford New York: Oxford University Press

Bell, R. (2023). Entrepreneurship Education in the United Kingdom, in X. Xu (ed.), *Comparative Entrepreneurship Education*, [e-book] Singapore: Springer Nature, pp.179–213, Available Online: https://doi.org/10.1007/978-981-99-1835-5_8 [Accessed 23 February 2024]

Bell, R. & Bell, H. (2023). Entrepreneurship Education in the Era of Generative Artificial Intelligence, *Entrepreneurship Education*

Bell, R. & Liu, P. (2018). Educator Challenges in the Development and Delivery of Constructivist Active and Experiential Entrepreneurship Classrooms in Chinese Vocational Higher Education, *Journal of Small Business and Enterprise Development*, vol. 26, no. 2, pp.209–227

Bezrukova, K., Griffith, T., Spell, C., Rice, V. & Yang, H. (2023). Artificial Intelligence and Groups: Effects of Attitudes and Discretion on Collaboration, *Group & Organization Management*, vol. 48, p.105960112311605

Borges, A., Laurindo, F., Spinola, M., Goncalves, R. & Mattos, C. (2021). The Strategic Use of Artificial Intelligence in the Digital Era: Systematic Literature Review and Future Research Directions - ScienceDirect, [e-journal], Available Online:

https://www.sciencedirect.com/science/article/pii/S0268401219317906?via%3Dihub [Accessed 23 February 2024]

Burstein, J., Chodorow, M. & Leacock, C. (2004). Automated Essay Evaluation: The Criterion Online Writing Service, 3, *AI Magazine*, vol. 25, no. 3, pp.27–27

Cambridge Dictionary. (2024). Support, Available Online: https://dictionary.cambridge.org/dictionary/english/support [Accessed 20 May 2024]

Cantú-Ortiz, F. J., Galeano Sánchez, N., Garrido, L., Terashima-Marin, H. & Brena, R. F. (2020). An Artificial Intelligence Educational Strategy for the Digital Transformation, *International Journal on Interactive Design and Manufacturing (IJIDeM)*, vol. 14, no. 4, pp.1195–1209

Celik, I., Dindar, M., Muukkonen, H. & Järvelä, S. (2022). The Promises and Challenges of Artificial Intelligence for Teachers: A Systematic Review of Research, *TechTrends*

Chalmers, D., MacKenzie, N. G. & Carter, S. (2021). Artificial Intelligence and Entrepreneurship: Implications for Venture Creation in the Fourth Industrial Revolution, *Entrepreneurship Theory and Practice*, vol. 45, no. 5, pp.1028–1053

Chan, C. & Hu, W. (2023). Students' Voices on Generative AI: Perceptions, Benefits, and Challenges in Higher Education, *International Journal of Educational Technology in Higher Education*, vol. 20

Chan, C. & Tsi, L. H. Y. (2023). The AI Revolution in Education: Will AI Replace or Assist Teachers in Higher Education?, *arXiv.org*

Chen, L., Chen, P. & Lin, Z. (2020). Artificial Intelligence in Education: A Review, *IEEE Access*, vol. 8, pp.75264–75278

Chiu, T. K. F. & Chai, C. (2020). Sustainable Curriculum Planning for Artificial Intelligence Education: A Self-Determination Theory Perspective, 14, *Sustainability*, vol. 12, no. 14, p.5568

Chiu, T. K. F., Moorhouse, B. L., Chai, C. S. & Ismailov, M. (2023). Teacher Support and Student Motivation to Learn with Artificial Intelligence (AI) Based Chatbot

Church, R. L., Zimmerman, D. L., Bargerstock, B. A. & Kenney, P. A. (2003). Measuring Scholarly Outreach at Michigan State University: Definition, Challenges, Tools., *Journal of Higher Education Outreach and Engagement*, vol. 8, pp.141–152

Clark, D. (2020). Artificial Intelligence for Learning: How to Use AI to Support Employee Development, London, United Kingdom ; New York, NY: Kogan Page

Cunningham-Nelson, S., Boles, W., Trouton, L. & Margerison, E. (2019). A Review of Chatbots in Education: Practical Steps Forward, in *30th Annual Conference for the Australasian Association for Engineering Education (AAEE 2019): Educators Becoming Agents of Change: Innovate, Integrate, Motivate*, [e-book] Australia: Engineers Australia, pp.299–306, Available Online:

https://search.informit.com.au/documentSummary;dn=068364390172788;res=IELENG [Accessed 13 May 2024]

Dabbous, A. & Mallah Boustani, N. (2023). Digital Explosion and Entrepreneurship Education: Impact on Promoting Entrepreneurial Intention for Business Students, *Journal of Risk and Financial Management*, vol. 16, p.27

Daugherty, P. R. (2018). Collaborative Intelligence : Humans and AI Are Joining Forces

Dubois, A. & Gadde, L.-E. (2002). Systematic Combining: An Abductive Approach to Case Research, *Journal of Business Research*, vol. 55, pp.553–560

Eacott, S. (2008). Strategy in Educational Leadership: In Search of Unity, *Journal of Educational Administration*, vol. 46, no. 3, pp.353–375

Eimler, S. C. & Straßmann, C. (2023). Future Proof: Hackathons as Occasions to Experience Entrepreneurial Thinking, in J. H. Block, J. Halberstadt, N. Högsdal, A. Kuckertz, & H. Neergaard (eds), *Progress in Entrepreneurship Education and Training: New Methods, Tools, and Lessons Learned from Practice*, [e-book] Cham: Springer International Publishing, pp.417–429, Available Online: https://doi.org/10.1007/978-3-031-28559-2_27 [Accessed 21 March 2024]

Farrokhnia, M., Banihashem, S. K., Noroozi, O. & Wals, A. (2023). A SWOT Analysis of ChatGPT: Implications for Educational Practice and Research, *Innovations in Education and Teaching International*, pp.1–15

Fellnhofer, K. (2017). The Power of Passion in Entrepreneurship Education: Entrepreneurial Role Models Encourage Passion?, *Journal of Entrepreneurship Education*, vol. 20, pp.58–87

Galbin, A. (2014). An Introduction to Social Constructionism, *Choice Reviews Online*, vol. 33, no. 05, pp.33-3018-33–3018

Giuggioli, G. & Pellegrini, M. (2022a). Artificial Intelligence as an Enabler for Entrepreneurs: A Systematic Literature Review and an Agenda for Future Research, *International Journal of Entrepreneurial Behaviour & Research*, vol. ahead-of-print

Giuggioli, G. & Pellegrini, M. (2022b). Artificial Intelligence as an Enabler for Entrepreneurs: A Systematic Literature Review and an Agenda for Future Research, *International Journal of Entrepreneurial Behavior & Research*

Hauptman, A. I., Schelble, B. G., McNeese, N. J., Madathil, K. C., Hauptman, A. I., Schelble, B. G., McNeese, N. J. & Madathil, K. C. (2022). Adapt and Overcome: Perceptions of Adaptive Autonomous Agents for Human-AI Teaming

Heyder, T. & Posegga, O. (2021). Extending the Foundations of AI Literacy, in *ICIS 2021 Proceedings*, 2021, ICIS 2021: International Conference on Information Systems, December 12-15, Available Online: https://aisel.aisnet.org/icis2021/is_future_work/is_future_work/9

Holmes, W., Bialik, M. & Fadel, C. (2019). Artificial Intelligence in Education. Promise and Implications for Teaching and Learning.

Hu, K. (2023). ChatGPT Sets Record for Fastest-Growing User Base - Analyst Note, *Reuters*, 2 February, Available Online: https://www.reuters.com/technology/chatgpt-sets-record-fastest-growing-user-base-analyst-note-2023-02-01/ [Accessed 19 March 2024]

Hwang, G.-J., Xie, H., Wah, B. W. & Gašević, D. (2020). Vision, Challenges, Roles and Research Issues of Artificial Intelligence in Education, *Computers and Education: Artificial Intelligence*, vol. 1, p.100001

Jeon, J.-B. & Lee, S. (2023). Large Language Models in Education: A Focus on the Complementary Relationship between Human Teachers and ChatGPT, *Education and Information Technologies : Official Journal of the IFIP technical committee on Education*

Joint Research Centre. (2017). European Framework for the Digital Competence of Educators: DigCompEdu., [e-book] LU: Publications Office, Available Online: https://data.europa.eu/doi/10.2760/159770 [Accessed 21 March 2024]

Jones, C. & English, J. (2004). A Contemporary Approach to Entrepreneurship Education, *Education + Training*, vol. 46, no. 8/9, pp.416–423

Kevin, Z., Kraemer, K., Xu, S. & Dedrick, J. (2004). Information Technology Payoff in E-Business Environments: An International Perspective on Value Creation of E-Business in the Financial Services Industry, *J. of Management Information Systems*, vol. 21, pp.17–54

Khalid, N. (2020). Artificial Intelligence Learning and Entrepreneurial Performance among University Students: Evidence from Malaysian Higher Educational Institutions, *Journal of Intelligent & Fuzzy Systems*, vol. 39, no. 4, pp.5417–5435

Kim, J. & Cho, Y. H. (2023). My Teammate Is AI: Understanding Students' Perceptions of Student-AI Collaboration in Drawing Tasks, *Asia Pacific Journal of Education*, vol. 0, no. 0, pp.1–15

Koenders, K. & Rogerson, R. (2005). Organizational Dynamics over the Business Cycle: A View on Jobless Recoveries, *Review*, vol. 87, no. Jul, pp.555–580

Kohnke, L., Moorhouse, B. L. & Zou, D. (2023). Exploring Generative Artificial Intelligence Preparedness among University Language Instructors: A Case Study, *Computers and Education: Artificial Intelligence*, vol. 5, p.100156

Leonard, M., Graham, S. & Bonacum, D. (2004). The Human Factor: The Critical Importance of Effective Teamwork and Communication in Providing Safe Care, *Quality & safety in health care*, vol. 13 Suppl 1, pp.i85-90

Long, D. & Magerko, B. (2020). What Is AI Literacy? Competencies and Design Considerations, in *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*,

New York, NY, USA, 23 April 2020, New York, NY, USA: Association for Computing Machinery, pp.1–16, Available Online: https://doi.org/10.1145/3313831.3376727 [Accessed 20 May 2024]

Luckin, R. & Cukurova, M. (2019). Designing Educational Technologies in the Age of AI: A Learning Sciences-Driven Approach, *British Journal of Educational Technology*, vol. 50, no. 6, pp.2824–2838

Ma, W., Adesope, O. O., Nesbit, J. C. & Liu, Q. (2014). Intelligent Tutoring Systems and Learning Outcomes: A Meta-Analysis, *Journal of Educational Psychology*, vol. 106, no. 4, pp.901–918

Magnani, G. & Gioia, D. (2023). Using the Gioia Methodology in International Business and Entrepreneurship Research, *International Business Review*, vol. 32, no. 2, p.102097

Malmström, H., Stöhr, C. & Ou, W. (2023). Chatbots and Other AI for Learning: A Survey of Use and Views among University Students in Sweden, [e-journal], Available Online: https://research.chalmers.se/en/publication/535715 [Accessed 30 January 2024]

McCarthy, T., Rosenblum, L. P., Johnson, B. G., Dittel, J. & Kearns, D. M. (2016). An Artificial Intelligence Tutor: A Supplementary Tool for Teaching and Practicing Braille, *Journal of Visual Impairment & Blindness*, vol. 110, no. 5, pp.309–322

McDonald, N., Johri, A., Ali, A. & Hingle, A. (2024). Generative Artificial Intelligence in Higher Education: Evidence from an Analysis of Institutional Policies and Guidelines, arXiv:2402.01659, Available Online: http://arxiv.org/abs/2402.01659 [Accessed 20 March 2024]

Ng, D. T. K., Lee, M., Tan, R. J. Y., Hu, X., Downie, J. S. & Chu, S. K. W. (2023). A Review of AI Teaching and Learning from 2000 to 2020, *Education and Information Technologies*, vol. 28, no. 7, pp.8445–8501

Nudzor, H. (2020). What Is "Policy", a Problem–Solving Definition or a Process Conceptualisation?

OECD. (2024). Building an Understanding of AI in Education, Available Online: https://www.oecd.org/pisa/aboutpisa/EHF_AI%20Issues%20Paper_Australia.pdf

Pavlik, J. V. (2023). Collaborating With ChatGPT: Considering the Implications of Generative Artificial Intelligence for Journalism and Media Education, *Journalism & Mass Communication Educator*, vol. 78, no. 1, pp.84–93

Peschl, H., Deng, C. & Larson, N. (2021). Entrepreneurial Thinking: A Signature Pedagogy for an Uncertain 21st Century, *The International Journal of Management Education*, vol. 19, no. 1, p.100427

QAA. (2018). Enterprise and Entrepreneurship Education: Guidance for UK Higher Education Provider, *Quality Assurance Agency for Higher Education*

Redecker, C. (2017). European Framework for the Digital Competence of Educators: DigCompEdu, *JRC Publications Repository*, Available Online: https://publications.jrc.ec.europa.eu/repository/handle/JRC107466 [Accessed 22 May 2024]

Rees, J., Briggs, R. & Hicks, D. (1984). New Technology in the American Machinery Industry: Trends and Implications : A Study, Washington: United States Congress Joint Economic Committee

Schelble, B. G., Lopez, J., Textor, C., Zhang, R., Mcneese, N. J., Pak, R. & Freeman, G. (2022). Towards Ethical AI: Empirically Investigating Dimensions of AI Ethics, Trust Repair, and Performance in Human-AI Teaming, *Human factors*

Schillo, R. S., Persaud, A. & Jin, M. (2016). Entrepreneurial Readiness in the Context of National Systems of Entrepreneurship, *Small Business Economics*, vol. 46, no. 4, pp.619–637

Schwandt, T. (1994). Constructivist, Interpretivist Approaches to Human Inquiry, *Handbook of Qualitative Research Thousand Oaks, California: Sage*

Serpa, S. (2016). An Overview of the Concept of Organisational Culture, *International Business Management*, vol. 10, pp.51–61

Solomon, G., Duffy, S. & Tarabishy, A. (2002). The State of Entrepreneurship Education in the United States: A Nationwide Survey and Analysis, *International Journal of Entrepreneurship Education*, vol. 1, pp.65–86

Spivakovsky, O., Omelchuk, S., Kobets, V. V., Valko, N. V. & Malchykova, D. S. (2023). INSTITUTIONAL POLICIES ON ARTIFICIAL INTELLIGENCE IN UNIVERSITY LEARNING, TEACHING AND RESEARCH, *Information Technologies and Learning Tools*, [e-journal], Available Online: https://consensus.app/papers/policies-artificial-intelligence-university-learning-spivakovsky/2b6f9e5a414b5146b69887713684e4df/ [Accessed 10 May 2024]

Steenbergen-Hu, S. & Cooper, H. (2014). A Meta-Analysis of the Effectiveness of Intelligent Tutoring Systems on College Students' Academic Learning, *Journal of Educational Psychology*, vol. 106, no. 2, pp.331–347

Stenholm, P., Ramström, J., Franzén, R. & Nieminen, L. (2021). Unintentional Teaching of Entrepreneurial Competences, *Industry and Higher Education*, vol. 35, no. 4, pp.505–517

Strzelecki, A. (2023). To Use or Not to Use ChatGPT in Higher Education? A Study of Students' Acceptance and Use of Technology, *Interactive Learning Environments*, vol. 0, no. 0, pp.1–14

Su, Y.-N., Hsu, C.-C., Chen, H.-C., Huang, K.-K. & Huang, Y.-M. (2014). Developing a Sensor-Based Learning Concentration Detection System, *Engineering Computations*, vol. 31, no. 2, pp.216–230

Suddaby, R. (2006). From the Editors: What Grounded Theory Is Not, *Academy of Management Journal*, vol. 49

Tan, M. & Subramonyam, H. (2023). More than Model Documentation: Uncovering Teachers' Bespoke Information Needs for Informed Classroom Integration of ChatGPT, *arXiv.org*

Tan, S. (2020). A Brief Analysis of AI Curricula Construction and Development Orientation from the Perspective of Innovation and Entrepreneurship Education, *Creative Education*, vol. 11, no. 10, pp.1866–1872

Tatpuje, D. U., Kakade, A., Jadhav, V. & Ganbote, A. (2022). A Comparative Study on Advanced Skills of Technology and Entrepreneurial Skills with the Awareness and Preparedness among the Rural Youths, *Entrepreneurship Education*, vol. 5, no. 1, pp.21–35

Timmermans, S. & Tavory, I. (2012). Theory Construction in Qualitative Research From Grounded Theory to Abductive Analysis, *Sociological Theory*, vol. 30, pp.167–186

Tondeur, J., Scherer, R., Siddiq, F. & Baran, E. (2020). Enhancing Pre-Service Teachers' Technological Pedagogical Content Knowledge (TPACK): A Mixed-Method Study, *Educational Technology Research and Development*, vol. 68, no. 1, pp.319–343

Tornatzky, L. G., Fleischer, M. & Chakrabarti, A. K. (1990). The Processes of Technological Innovation, [e-book] Lexington, Mass.: Lexington Books, Available Online: http://books.google.com/books?id=EotRAAAAMAAJ [Accessed 9 May 2024]

Ulfert, A.-S., Georganta, E., Jorge, C. C., Mehrotra, S. & Tielman, M. L. (2023). Shaping a Multidisciplinary Understanding of Team Trust in Human-AI Teams: A Theoretical Framework, *European Journal of Work and Organizational Psychology*

Vallis, C., Wilson, S., Gozman, D. & Buchanan, J. (2023). Student Perceptions of AI-Generated Avatars in Teaching Business Ethics: We Might Not Be Impressed, *Postdigital Science and Education*, pp.1–19

Vanichvasin, P. & Vanichvasin, P. (2022). Impact of Chatbots on Student Learning and Satisfaction in the Entrepreneurship Education Programme in Higher Education Context

Vecchiarini, M. & Somià, T. (2023). Redefining Entrepreneurship Education in the Age of Artificial Intelligence: An Explorative Analysis, *The International Journal of Management Education*, vol. 21, no. 3, p.100879

Venkatesh, V., Morris, M. G., Davis, G. B. & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View, *MIS Quarterly*, vol. 27, no. 3, pp.425–478

Wahl, D. & Münch, J. (2022). Turning Students into Industry 4.0 Entrepreneurs: Design and Evaluation of a Tailored Study Program, *Entrepreneurship Education*, vol. 5, no. 3, pp.225–259

Westhead, P. & Wright, M. (2013). Entrepreneurship: A Very Short Introduction, OUP Oxford

Winkel, D., Wilcox, J. & Teckchandani, A. (2020). The 60-Minute MVP, *Entrepreneurship Education and Pedagogy*, vol. 3, no. 4, pp.371–386

Xu, L., Lu, Y. & Li, L. (2021). Embedding Blockchain Technology Into IoT for Security: A Survey, *IEEE Internet of Things Journal*, vol. PP, pp.1–1

Yuan, S., He, T., Huang, H., Hou, R. & Wang, M. (2020). Automated Chinese Essay Scoring Based on Deep Learning, *Computers, Materials & Continua*, vol. 65, no. 1, pp.817–833

Appendix

Interview Questions and connected frameworks

Hello, my name is Aleksandra, and I'm conducting this research as part of my master thesis work at the Lund University, supervised by Solomon Akele Abebe. The focus of our thesis is to explore university educators' perceptions of their readiness to adopt generative AI in entrepreneurship education. We aim to understand the factors that influence educators' readiness and ability to integrate these innovative technologies into their teaching practices.

This interview will help gather valuable insights into your experiences, views, and any challenges you have encountered in using generative AI. I am interested in learning about the support systems available to you, the impact of policies, and how colleague discussions shape your views on adopting AI in education.

I want to assure you that all information shared during this interview will be treated with the upmost confidentiality. Your responses will be anonymized, and any identifying information will be removed to ensure your privacy. The insights gathered will contribute to a broader understanding of how educators like yourself perceive the integration of AI in teaching and learning processes.

The interview will take approximately one hour, and I encourage you to share your honest opinions and experiences. There are no right or wrong answers; we're simply interested in your perspective.

Do you have any questions before we begin, or is there anything you'd like to discuss regarding the thesis purpose and how your information will be used?

#	**Questions for educators**	**Connected frameworks**	**Aspect Explored**

1	What do you think about the adoption of generative AI in education?	TOE	Readiness for Change
2	What kind of policies are at your institution regarding the use of technology in education? How do they affect the adoption of GAI?	TOE	Institutional Policies
3	What specific technical skills or knowledge do you think are essential to integrate GAI in entrepreneurship education? Please share examples of tools or technologies you've encountered.	DigCompEdu	Technical competences
4	Please explain how critical thinking plays a role in the use of GAI in education. Can you provide instances where critical thinking is crucial for integrating GAI into your entrepreneurship teaching practices?	TOE	Critical thinking
5	Can you describe how you or other educators adjust teaching methods or content with GAI tools to better suit individual student needs or learning styles?	TOE	Educators' capabilities
6	How does the institution's support and guidance influence the adoption and integration of GAI tools within the teaching practices?	TOE	Support and Guidance
7	In terms of infrastructure and tools, what resources are available to you for integrating GAI into your teaching?	TOE	Resources

8	How would you rate the ease of use of generative AI tools in your teaching?	UTAUT	Effort Expectancy
9	How beneficial do you think generative AI technologies are in meeting the learning objectives of your entrepreneurship courses?	UTAUT	Performance Expectancy
10	What is your level of ambition and willingness to integrate GAI tools into your teaching?	UTAUT	Performance Expectancy
11	How do your colleagues and the broader academic community influence your decision to use or not use GAI in your teaching?	UTAUT	Social Influence
12	Reflecting on your competencies, institutional support, policies, resources, and social influence, do you believe you and your institution are prepared to use generative AI technologies in entrepreneurship education?	Combined Analysis	Educators' Readiness & Institutional Readiness

12 questions about Institutional Readiness for The Interview with Department Specialist

#	Question	Connected frameworks	Aspect Explored
1	How do internal communications within your department support the implementation of new technologies like generative AI? And if there also some challenges, could you elaborate on that?	TOE	Communication Processes
2	What support structures, such as technical staff or resources, are available in your department to assist with integration of generative AI?	TOE	Support and Infrastructure
3	How do current regulations affect your department's decisions related to use of GAI?	TOE	Government regulations
4	Could you elaborate on the financial investment your department has made towards adopting GAI? How do you think these investments influences your readiness for using GAI tools?	TOE	Financial resources
5	In what ways do you encourage innovation in your department, particularly regarding technologies like generative AI?	TOE	Innovation
6	How does access to external expertise, like consultants or technical partnerships, impact your department's ability to implement GAI?	TOE	External Expertise and Support

7	Are there any policies at your institution that specifically regulate the use of GAI in teaching and learning?	TOE	Institutional Policies on AI
8	How does your department address ethical and privacy concerns associated with generative AI, especially considering the EU's stance on AI?	TOE	Ethical and Privacy Concerns
9	What initiatives has your department undertaken to adapt to the technological requirements of generative AI tools?	TOE	Technological Adaptation Initiatives
10	How do academic developments in GAI influence your department's approach to adopting these technologies?	TOE	Influence of External Trends
11	Can you share examples of how collaborations with academic institutions have affected your readiness to use generative AI?	TOE	Collaborations and Partnerships
12	Looking at the future, what steps is your department taking to improve its ability to adopt and benefit from AI technologies?	TOE	Future Planning for AI Adoption