Coping with uncertainty, ambiguity and risk – a crucial future competence in entrepreneurship education

Anita Zehrer
anita.zehrer@mci.edu

Gundula Glowka
gundula.glowka@mci.edu

Desiree Wieser
desiree.wieser@mci.edu

Christine Pirhofer
christine.pirhofer@mci.edu

MCI The Entrepreneurial School, Austria

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Abstract

Coping with uncertainty, ambiguity and risk is a crucial future competence that needs to be addressed in entrepreneurship education, as the business landscape is increasingly unpredictable. The Erasmus+ project EICAA (Entrepreneurial and Intrapreneurial Competences Assessment Alliance) has undertaken the development of a digital platform explicitly designed for the evaluation and enhancement of entrepreneurial competences. This encompasses a comprehensive spectrum of competences, including those germane to the adept handling of uncertainty, ambiguity, and risk. The evaluative methodology is predicated on a questionnaire-based approach, allowing for a systematic and quantifiable assessment. This paper, situated within the context of a higher education institution in Austria, draws upon empirical data gathered during the year 2023 among cohorts of students specializing in tourism and management. The ensuing analysis endeavors to shed light on significant correlations between Dealing with Uncertainty and specific competences within the EICAA framework, underscoring the need for further attention to these competences.

Key Words:

Entrepreneurship Education, Entrepreneurial Competences, Digital Platform, Students

Introduction

Drawing from Social Cognitive Theory (Bandura, 2001), initially known as Social Learning Theory, entrepreneurial learning is inherently experiential (Cope, 2005; Politis, 2008). In the context of entrepreneurial learning, Social Cognitive Theory suggests that individuals learn entrepreneurial skills and behaviors primarily through observation, imitation, and modeling of others. Within the European Union, entrepreneurship competence development holds a pivotal role in lifelong learning. However, the conventional definition of entrepreneurship often confines it to the establishment of businesses and startup intentions. In contrast, the EU adopts a more comprehensive perspective, defining entrepreneurship as a collection of competences that enable individuals to think and act entrepreneurially. This broader conceptualization sees entrepreneurship as a means of personal development, active goal pursuit, fostering creativity, and instigating change; It underscores the role of

entrepreneurship in empowering individuals, driving innovation, and shaping a future characterized by resilience, ingenuity, and meaningful progress and celebrates entrepreneurship as a vehicle for personal fulfillment, societal impact, and the pursuit of purpose-driven endeavors (Bacigalupo, et al. 2016). The EICAA initiative seeks to pioneer a platform for assessing this spectrum of entrepreneurial competences and proposing interventions to enhance specific entrepreneurial skills. The ultimate goal is to transcend the limited understanding of entrepreneurship, emphasizing its broader relevance and contribution to personal and professional development.

Coping with uncertainty, ambiguity, and risk is an ongoing process that involves a combination of strategic thinking, adaptability, and emotional resilience. Developing these skills will not only help navigate challenges effectively but also contribute to personal and professional growth. University graduates are required to engage in judicious decision-making within the business milieu. This necessitates a nuanced comprehension of fundamental business functions, the application of enterprising knowledge, and the adept utilization of economic and financial principles. Such competencies are indispensable for effectively addressing contemporary transformative phenomena, including the green transition, the aging workforce, and the pervasive influence of digitalization (Bernardó & Teodoro, 2022; Teodoro et al., 2022a, 2022b).

Notwithstanding the imperative nature of these competences, a discernible disjunction emerges between the educational offerings at the management level proffered by academic institutions and the requisites articulated by industry stakeholders (Zehrer & Mössenlechner, 2009). This disjuncture underscores a prevailing incongruity in the alignment of educational curricula with the dynamic demands and expectations of the contemporary business landscape. The chasm between pedagogical endeavors and industry exigencies accentuates the imperative for a recalibration of educational paradigms to better cater to the exigencies of a rapidly evolving business ecosystem.

In the present context, learners are introduced to a competency monitor as a didactic instrument, leveraging it to discern the intricacies of students' proficiencies, both in terms of deficiencies and strengths. Furthermore, its utility extends to a comprehensive review of the knowledge assimilated during prior academic pursuits, with an emphasis on forging meaningful connections between theoretical constructs and practical application. This pedagogical approach entails a conscientious utilization of the competency monitor as a reflective tool, prompting students to engage in an introspective examination of competencies previously acquired and facilitating the transference of such cognitive frameworks into the pragmatic exigencies of the business milieu. This pedagogical strategy is conceived to instill a cognizant and adaptive mindset, wherein students learn to extrapolate and apply their acquired competencies in a purposive manner within the dynamic landscape of business practice.

Literature Review

Risk is a concept characterized by multiple definitions, reflecting its subjective nature and variability in perception across individuals and contexts (Brustbauer & Peters, 2013; Claver et al., 2008). For instance, Palmer and Wiseman (1999, p. 1039) conceptualize risk within organizations as "income stream uncertainty," highlighting its dependence on firm-specific attributes and external factors. Within decision-making frameworks, risk is often articulated as "the probabilistic uncertainty of outcomes resulting from a choice, encompassing variation in the distribution of potential outcomes, their associated probabilities, and subjective values" (Brustbauer, 2016, p. 71).

Nevertheless, a broader and more inclusive definition that serves as common ground across different perspectives is the notion of risk as "the distinction between reality and possibility" (Renn, 1998, p. 50). This definition underscores risk as the delineation between what is known and what could potentially occur, encapsulating the fundamental essence of uncertainty and the inherent challenge of navigating between existing circumstances and future contingencies.

Risk encompasses various categories that span financial, reputational, operational, personal, strategic, and legal dimensions within organizational contexts (Memili et al., 2010). Financial risks pertain to liquidity management, treasury operations, and asset allocation. Image risks are associated with a company's reputation and adherence to regulatory compliance. Operational risks encompass human errors, process inefficiencies, and technological challenges. Strategic risks involve factors such

as market intelligence, employee retention, competitive pressures, and knowledge transfer. Legal risks arise from evolving workplace, environmental, and fiscal regulations (Tavares et al., 2021). Personal risks extend to health issues, mortality, or other individual circumstances (Zahra, 2005). Industry-specific risks emanate from competitors and market dynamics.

Alternatively, risks are categorized into internal and external dimensions by Brustbauer & Peters (2013). Internal risks encompass factors such as quality standards, operational processes, partner relationships, IT infrastructure, and product development. External risks are linked to emerging market trends, technological advancements, customer behavior, political shifts, and supply chain disruptions.

Despite the often negative connotations associated with risk, it can also yield positive outcomes such as increased profitability and enhanced performance (Brustbauer, 2016). This dual nature of risk underscores its role as a critical factor in organizational decision-making and strategic management, where effective risk assessment and mitigation strategies can lead to both resilience and competitive advantage.

Hence, risk, which can be regarded as a future core entrepreneurial competence, is traditionally characterized as the likelihood of an event occurring along with its ensuing repercussions, coexists with uncertainty, a pervasive element in situations where the computation of event probabilities and consequences prove challenging (Takemura, 2021). Within the realm of conducting business operations amid an uncertain milieu, aspiring entrepreneurs consistently grapple with the intricacies of decision-making amidst uncertainty (Bevan, 2022). The entrepreneurial landscape introduces challenges that demand adept navigation through the market's inherent ambiguity, a landscape shaped by the fluidity of client preferences and competitive dynamics (Schindehutte et al., 2006).

An entrepreneur's reaction to uncertainty hinges upon a combination of analytical acumen for risk evaluation and a disposition towards unpredictable circumstances. Amidst heightened uncertainty, the concept of ambiguity tolerance becomes pertinent, denoting an individual's ability to make decisions in situations where information is incomplete (Moriano & Gorgievski, 2008). Moreover, individuals endowed with elevated self-efficacy within a particular domain demonstrate increased resilience when confronted with situations marked by complexity and uncertainty (Gist, 1987).

Nonetheless, entrepreneurs frequently manifest overconfidence by relying on scant information, engaging in optimistic planning devoid of retrospective consideration of past challenges, and maintaining a robust belief in their capacity to exert control over performance even in chance-influenced scenarios. Consequently, when chance factors prominently in a situation, entrepreneurs often perceive lower levels of risk (Chell, 2013). The significance of risk perception is accentuated, as individuals perceiving elevated risk levels across diverse scenarios may exhibit reluctance in recognizing nearly any concept as a genuine opportunity (Baron, 2006). The inclination towards risk-taking is shaped by antecedent experiences or profound knowledge in a particular domain (Sitkin & Pablo, 1992).

Empirical Study

In the pursuit of empirical insights, a quantitative research methodology was employed, manifested in the utilization of the Entrepreneurial and Intrapreneurial Competences Assessment Alliance (EICAA) self-administered questionnaire. This instrument was systematically administered to a cohort of students specializing in tourism and management within the confines of a distinguished higher education institution in Austria during the temporal span extending from November 2022 and December 2023. The questionnaire, designed for self-administration, necessitated respondents to evaluate the applicability of a comprehensive set of 19 entrepreneurial competences. The evaluation process was structured through a meticulously calibrated five-point interval scale, wherein respondents were solicited to assign ratings ranging from 1 denoting a complete lack of knowledge to 5 representing an expert level of proficiency.

The participant pool comprised a total of 186 students, constituting a representative segment of the targeted demographic. This cohort engagement yielded a response rate of 21.77% underscoring the meaningful participation of students in the evaluative exercise. The quantitative data gleaned from this survey affords a structured foundation for subsequent analytical endeavors, offering a quantitative lens

through which to scrutinize and interpret the perceived efficacy and relevance of entrepreneurial competences within the delineated academic context.

Results

In the data sample, 83 students were female and 77 males. The majority of students, n=121, belonged to the age group of 18-23 years old. The age group of 24-30 years counted 57 students, 31-40-years 7 students and one student was between 41 -50 years old.

Table 1. Years of work experience

Work experience in years	Number	Percent
0-2-years	86	46,2
10-plus-years	6	3,2
2-5-years	45	24,2
5-10-years	25	13,4

Of the 186 students, 84 were not employed and 102 had employment. From the employed students, 10 were self-employed.

Preliminary results are exploring the correlations of the competence Dealing With Uncertainty and the relations to the other entrepreneurial competences. The competences can be split into three main areas, which are ideas & opportunity, resources and into action. In the following, the correlations for the competence Dealing With Uncertainty are shown for each competence from the three areas.

Dealing With Uncertainty and Ideas & Opportunity Competences

The area *Ideas & Opportunities* involves the competences Spotting Opportunities (OPP), Design Orientation (Des_OR), Creativity (CREA), Vision (VIS), Valuing Ideas (VALUE_IDEA) and Ethical and Sustainable Thinking (SUST). The correlations in table 2 show that all competences correlate significantly and positively with the competence Dealing With Uncertainity (UNC).

Table 2. Correlations of Dealing With Uncertainty with Ideas & Opportunities Competences.

	UNC	OPP	Des_OR	CREA	VIS	VALUE_IDEA	SUST
UNC	**1**	**0.547****	**0.622****	**0.522****	**0.615****	**0.648****	**0.463****
OPP		1	0.694**	0.685**	0.618**	0.558**	0.522**
Des_OR			1	0.720**	0.675**	0.663**	0.545**
CREA				1	0.699**	0.661**	0.585**
VIS					1	0.733**	0.616**
VALUE_IDEA						1	0.595**
SUST							1

**. The correlation is significant at the 0.01 level (two-tailed).

Dealing With Uncertainty and Resource Competences

The competence area *Resources* includes the competences Self Awareness and Self efficacy (SELF), Motivation and Perseverance (MOT), Mobilising (financial) Resources (MOB_FR), Enterprising Literacy (ENT_L), Mobilising Others (MOB_O), Digital Competence (DIGI). The results in table 3 show that all competences correlate positively with Dealing With Uncertainty (UNC) above a value of 0.5.

Table 3. Correlations of Dealing With Uncertainty with Resource Competences

	UNC	SELF	MOT	MOB_FR	ENT_L	MOB_O	DIGI
UNC	**1**	**0.575****	**0.565****	**0.693****	**0.603****	**0.578****	**0.580****
SELF		1	0.712**	0.641**	0.548**	0.678**	0.496**
MOT			1	0.636**	0.562**	0.570**	0.548**
MOB_FR				1	0.638**	0.604**	0.578**
ENT_L					1	0.561**	0.654**
MOB_O						1	0.570**
DIGI						*	1

**. The correlation is significant at the 0.01 level (two-tailed).

Dealing With Uncertainty and Into Action Competences

The competence area Into Action includes the competences Taking the initiative (INI), Planning and Management (PLAN), Process Management (P_M), Design Validation and Co-Creation (DESN_VAL), Working with Others (OTHERS) and Learning through Experience (LTE). The results in table 4 show that Dealing With Uncertainty (UNC) correlates positively at values above 0.5 with every competence.

Table 4. Correlations of Dealing With Uncertainty with Into Action Competences

	UNC	INI	PLAN	P_M	DESN_VAL	OTHERS	LTE
UNC	**1**	**0.551****	**0.623****	**0.725****	**0.558****	**0.604****	**0.559****
INI		1	0.693**	0.669**	0.403**	0.656**	0.567**
PLAN			1	0.781**	0.501**	0.682**	0.562**
P_M				1	0.528**	0.653**	0.605**
DESN_VAL					1	0.483**	0.467**
OTHERS						1	0.661**
LTE							1

**. The correlation is significant at the 0.01 level (two-tailed).

Discussion

The observed correlations suggest a noteworthy association between the competency of Dealing With Uncertainty and specific dimensions within the EICAA framework.

In the realm of *Ideas & Opportunity Competences*, Dealing With Uncertainty demonstrates the strongest correlation with Valuing Ideas (0.648**), succeeded by Design Orientation (0.622**) and Vision (0.615**). In this context, the substantial correlation (0.648**) between Dealing With Uncertainty and Valuing Ideas implies that students who exhibit a higher proficiency in navigating uncertainty are also more likely to place a significant emphasis on the valuation of ideas. This suggests a potential linkage between the ability to handle uncertain situations and the recognition or appreciation of innovative concepts or opportunities. Similarly, the positive correlations with Design Orientation (0.622**) and Vision (0.615**) indicate that there is a notable connection between Dealing With Uncertainty and these competences. Students adept at managing uncertainty may also demonstrate a propensity for creative design thinking (Design Orientation) and possess a forward-looking, strategic perspective (Vision).

Turning to *Resource Competences*, our findings indicate that Dealing With Uncertainty exhibits the highest correlation with Mobilising (financial) Resources (0.693**) and Enterprising Literacy (0.603**). In this instance, the substantial correlation of Dealing With Uncertainty with Mobilising (financial) Resources (0.693**) suggests a robust positive relationship. This indicates that students proficient in navigating uncertainty are more likely to demonstrate a heightened capability in mobilizing financial resources. In practical terms, this could mean that those adept at managing uncertain situations are also skilled in securing and effectively utilizing financial resources for entrepreneurial ventures. Furthermore, the positive correlation with Enterprising Literacy (0.603**) implies that there is a meaningful association between Dealing With Uncertainty and a broad understanding of entrepreneurial principles and practices. Students who excel in handling uncertainty may also exhibit a higher level of enterprising literacy, encompassing knowledge and proficiency in entrepreneurial concepts and strategies.

Within the domain of *Into Action Competences*, the most notable correlation for Dealing With Uncertainty is with Process Management (0.725**), followed by Planning and Management (0.623**). In this case, the substantial correlation of Dealing With Uncertainty with Process Management (0.725**) suggests a robust and positive relationship. This implies that students who exhibit proficiency in handling uncertainty are highly likely to also excel in the domain of process management. Process management involves organizing and overseeing activities and workflows to achieve specific goals. The positive correlation indicates that those who can navigate uncertainty effectively are also adept at structuring and managing processes in their entrepreneurial endeavors. Similarly, the positive correlation with Planning and Management (0.623**) suggests a significant connection between Dealing With Uncertainty and the ability to plan and manage tasks and resources effectively. Students who demonstrate competence in handling uncertainty are also likely to excel in strategic planning and overall management.

Conclusion

In conclusion, the observed correlations underscore a nuanced relationship between the competency of Dealing With Uncertainty and various dimensions within entrepreneurial competence frameworks. The associations suggest a potential interdependence between the ability to navigate uncertainty and the emphasis placed on valuing ideas, design orientation, and visionary thinking within the entrepreneurial context. Additionally, the correlations highlight the robust link between Dealing With Uncertainty and effective mobilization of financial resources, as well as a comprehensive understanding of entrepreneurial principles encapsulated by Enterprising Literacy in the Resource Competences framework. Furthermore, the competency of Dealing With Uncertainty is strongly correlated with proficiency in effective process management and strategic planning within the domain of Into Action Competences. These findings collectively illuminate the multifaceted nature of entrepreneurial competencies and the integral role of Dealing With Uncertainty in shaping diverse aspects of entrepreneurial success.

As discussed by Bevan (2022), in the context of conducting business operations within an uncertain environment, emerging entrepreneurs consistently grapple with the complexities of decision-making amid uncertainty. The entrepreneurial terrain presents challenges that necessitate adept navigation through the inherent ambiguity of the market, a landscape shaped by the dynamic nature of client preferences and competitive dynamics (Schindehutte et al., 2006). Our findings reveal a significant correlation between Dealing with Uncertainty and specific competences within the EICAA Framework, underscoring the need for further attention to these competences. In the realm of higher education, educators stand to benefit from an awareness of these correlations, allowing them to implement interventions and course modules aimed at enhancing these crucial competences.

The present case study serves a dual purpose: firstly, it illuminates the efficacy and pragmatic applicability of the instruments developed within the framework of the Entrepreneurial and Intrapreneurial Competences Assessment Alliance (EICAA); and secondly, it functions as an illustrative guide delineating the utilization of the EICAA platform. Notably, this study underscores the practical instantiation of the EICAA Competence Monitor within an educational milieu.

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