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ADVANCING UNIVERSITY-BUSINESS COOPERATION IN THE MEDITERRANEAN AREA

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Abstract

The present paper aims at investigating potential strategies for advancing university-business cooperation (UBC) in the Mediterranean area. The paper was developed from a real practical problem consisting of a poor UBC, as observed at the University of Bari Aldo Moro (Bari, Italy). In a more particular case, this was translated into a *wall* perceived by both universities and companies, a *wall* that was represented by the lack of transparency and the temporal mismatch between the skills of students and the needs of entrepreneurs. In an innovative manner, in the light of the Design Thinking approach, the research addresses potential solutions to solve the identified practical problem, through the lenses of the Double Diamond model. Each step of the model revealed invaluable insights for better understanding the analysed problem and for providing coherent measures to improve UBC. Particularly, it was revealed that collaborations between the businesses and the university must become an integral part of research projects, as well as a key element of academic publications and teaching. Also, strong networks between representatives from the academic and business environments should be enhanced. In a more specific perspective, three main directions (prototypes) were explored in the paper: (a) design of relax and convivial areas which allow students and entrepreneurs to meet; (b) organization of meetings between students and entrepreneurs in a human-centred perspective; and (c) implementation of real synergies between companies and students, based on meetings, formal agreements, mutual knowledge and win-win performances. The paper brings new knowledge on UBC, especially in the Mediterranean area, of both practical and theoretical relevance.

Keywords: university-business cooperation, Design Thinking, Double Diamond, Mediterranean area

JEL Classification: A20, M10

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Introduction

Important generators of growth and wealth for societies worldwide, universities and businesses, especially the cooperation amid them, represents the core subject of investigation specific to the present paper. University-business cooperation (UBC) is not a new phenomenon but is one that has captured the attention of scholars, especially in the past periods (Orazbayeva et al., 2019). In a rapidly changing and evolving world, UBC becomes a must to ensure the development of strong, competitive societies. On the one hand, universities shape the new generation of highly skilled and knowledgeable both entrepreneurs and workforce, promote innovation, engage in research and development, etc. On the other hand, businesses make use of that highly skilled and knowledgeable workforce and even of the innovations emerged from universities, sometimes even funding their research and development activities (Kesting, Kliewe and Baaken, 2014). Embracing different forms and benefiting from a vast scientific literature as outlined in the next section of the paper, UBC also represents a key topic at the European Union level: “Promoting and developing cooperation between higher education and business is a core element of the European Union’s Agenda for Modernising Higher Education, and the potential to further enhance this contribution, through increased levels of collaboration, was firmly recognized within European Union policy circles and in Member States, with the publication of Europe 2020 and related Flagship Initiatives” (Healy et al., 2014, p.5).

The present paper was developed starting from a real practical problem, consisting in a poor UBC, as perceived at the University of Bari Aldo Moro (Bari, Italy), through one of their research laboratories. Considering commercial and confidential reasons the name of the laboratory is not revealed. Developed in 2019, the laboratory was meant to connect the university with businesses, especially through the provision, by teams of students, of solutions to complex problems that businesses were facing. Up to the moment when the research was carried out, ten entrepreneurs got involved into the research laboratory, launching business challenges to students. However, after the business challenge was solved, the companies were not interested anymore in further continuing their collaboration with the laboratory.

The present paper aims to provide coherent solutions to this practical problem, especially by investigating potential strategies to advance UBC in the Mediterranean area, with a particular focus on the University of Bari Aldo Moro. To do this in a systematic way, the paper puts forward a novel approach, respectively, it employs the Double Diamond model, within the Design Thinking framework, as a method to generate solutions to the presented problem. In such a context, the paper is structured into three main parts, in addition to introduction and conclusions. The first section of the paper focuses on reviewing the specific scientific literature with a particular focus on employing Design Thinking methods in business and management education. The second section of the article outlines the methodology, while the third presents the main findings of the paper. The paper ends with a series of final considerations, bringing new knowledge on UBC, especially in the Mediterranean area, of both practical and theoretical relevance.

1. Literature review

Of high societal relevance, UBC might generate important outcomes that can contribute to the development of strong, competitive societies. “The number of patents and spin-offs, licensing income, or the monetary value of consulting services provided by academia” (Kesting, Kliewe and Baaken, 2014, p.2) represent just few examples of such outcomes. Usually, UBC is found in the form of entrepreneurship education, knowledge transfer, innovation, research activities, or in different aspects of the ‘Model of Augmented Interaction Academia – Business Environment (MAI-A-BE)’ (Dragusin, Sirbu and Grosu, 2018). In a more specific approach, UBC, might take the following forms (table no. 1).

Table no. 1. Forms of UBC

Type of cooperation	Brief description
Collaboration in research and development (R&D)	Joint R&D activities, contract research, R&D consulting, cooperation in innovation, joint publications with firm scientists/researchers, joint supervision of theses with firm scientists/researchers in cooperation with business, and student projects in cooperation with business.
Mobility of academics	Temporary or permanent movement of professors or researchers from higher education institutions (HEIs) to business, and of employees, managers, and researchers from business to HEIs.
Mobility of students	
Commercialisation of R&D results	Commercialisation of scientific R&D results with business through spin-offs, disclosures of inventions, patenting, and licenses.
Curriculum development and delivery	The process of collaboratively creating a learning environment with members of the business community, including the creation of a fixed programme of courses or planned experiences.
Lifelong learning	Includes all learning activity undertaken throughout life through a HEI, whether formal or informal.
Entrepreneurship	Actions within or involving HEIs towards the creation of new ventures or developing an innovative culture within the HEI in cooperation with business.
Governance	Cooperation between HEI and business at the management level of the HEI or firm.

Source: Adapted from Science-to-Business Marketing Research Centre, 2011, p.43 cited in Healy et al., 2014, p.6

Due to unprecedented dynamics and complexity in both business and academic environments, UBC has aroused interest in research amid scholars around the world, currently benefitting from a vast, still burgeoning scientific literature. Some of the most common research directions in the area refer to: UBC ecosystem, determinants of UBC, outcomes of UBC, impact of UBC and ways to measure it, etc. (Healy et al., 2014; Kliewe and Baaken, 2014; Galan-Muros and Plewa, 2016; Galan-Muros and Davey, 2019). Although there is a vast literature on UBC, its investigation in the Mediterranean area is in an incipient stage. The present paper aims at enriching the literature on this specific region. However, the paper is not developed from a research problem identified in the scientific literature, but from a real problem that arises from practice: a poor UBC in the Puglia region (Bari, Italy). To advance coherent solutions to this practical issue, the Double Diamond model was employed, within the Design Thinking framework.

The Design Thinking framework – defined as “a human-centred approach to innovation that draws from the designer’s toolkit to integrate the needs of people, the possibilities of

technology, and the requirements for business success” (IDEO, 2021) – could be applied to create innovative solutions in response to complex business challenges. Currently, Design Thinking has become topical among companies, matching creative ideas with open innovation paradigms. This requires the development of novel and original skills among managers and employees, such as the ability to visualize, the predisposition toward multifunctionality, systematic vision, the ability to use language as a tool, and the affinity for teamwork (Santoro et al., 2019; Harel et al., 2021; Thrassoï et al., 2021). Different variables can lead to the success of Design Thinking strategies at the company level (Liedtka, 2011), among which teamwork (Lynch et al., 2021) and problem solving through creativity (Foster, 2019) have played a crucial role in recent years.

Design Thinking has been successfully applied in the scientific literature in the field of business and management education. It has been applied to product configuration projects, revealing its utility for improving user motivation, stakeholders’ satisfaction, and knowledge acquisition (Shafiee et al., 2021), as well as developing corporate social responsibility for enhancing innovation and openness among users and other communities, internal or external (Magistretti et al., 2021; Szostak and Boughzala, 2021). Furthermore, Design Thinking has been developed in business and management education, being identified as a strong contributor to business and management success (Matthews, and Wrigley, 2017; Roth et al., 2020). Design Thinking has been implemented at the school level, as a tool to respond to competitive marketplaces and increase enrolment growth (Gray and Lowenhaupt, 2021), as well as to build empathy among students (Donnelly et al., 2021), and at the university level, as an instrument to develop/enhance students’ skills in innovation management (Auernhammer and Roth, 2021). Furthermore, a Design Thinking approach was proposed in entrepreneurship education to help students develop an original entrepreneurial mindset (Daniel, 2016). Nevertheless, research in the field of Design Thinking as a framework to enhance UBC is still required, and the present paper aims at addressing this issue.

2. Methodology

The present paper aims at investigating potential strategies for advancing UBC in the Mediterranean area, with a particular focus on the University of Bari Aldo Moro (Bari, Italy) and local businesses. The paper was developed from a real practical problem consisting of a poor UBC. In a more particular case, this was translated into a *wall* perceived by both universities and companies, a *wall* that was represented by the lack of transparency and the temporal mismatch between the skills of students and the needs of entrepreneurs. A similar problem was also encountered by Bigliardi and Galati (2016). Such a *wall* should be intended as metaphorical and is essentially due to the fact that universities take too long to deliver results, whereas companies need well-prepared students in the shortest time possible, generating a temporal mismatch between skills developed by university in students and skills required by the labour market. On the basis of this practical problem, the research started from the following question: *How can UBC be improved?*

To address this question, the research adopts the Design Thinking paradigms by implementing the Double Diamond method, that is considered as one of the most suitable and systematic guidelines to reach Design Thinking goals (Castro-Gonzàles et al., 2016; Nakata and Hwang, 2020; Design Council, 2021). This method represents one of the best options for a clear, comprehensive and visual description of the design process (Clune and

Lockrey, 2014), dealing with complex problems through innovative solutions, reaching final goals (Buchanan, 1992; Castro-González et al., 2013). The Double Diamond method consists of four different systematic steps, as follows (Gustafsson, 2019):

- *the discover step*, which helps understanding, rather than just suppose, the main challenge, through speaking and spending time with the users;
- *the define step*, which helps defining the challenge under different perspectives through the gathered information;
- *the develop step*, which encourages people to find inspiration and co-design solutions towards the main challenge;
- *the deliver step*, which consists in experimenting different solutions on small scale, rejecting those not suitable and improving those suitable.

The discover and define steps compose the first diamond, while the develop and deliver steps compose the second diamond (Figure no. 1).

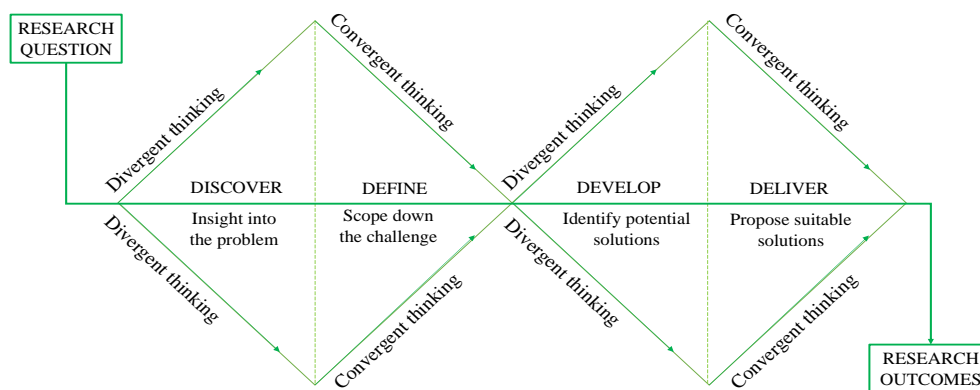


Figure no. 1. Double Diamond method

Source: Adapted from Design Council, 2018

The Double Diamond method could be considered as an accepted representation of the design process (Design Council, 2021). Theoretically, this is characterized by an outside-in direction, and users are the starting point for the innovation process. The Double Diamond is composed of two main areas. The first diamond represents the Problem Space, where the problem is first investigated based on a broader perspective (i.e., divergent phase), and then on a deeper view (i.e., convergent phase). The second diamond represents the Solution Space, where the problem is solved through real actions, such as testing and prototyping (Zhang et al., 2019). Although the Design Thinking approach indicates five different steps (i.e., empathize, define, ideate, prototype, test), while the Double Diamond is composed of four steps (i.e., discover, define, develop, deliver), the reference literature has recognized the Double Diamond as an appropriate method to pursue Design Thinking goals (Wolniak, 2017). Therefore, the discover step identified in the Double Diamond method matches with the empathize step in the general Design Thinking guidelines, while the develop step includes either the ideate and prototype steps.

The discover step has been carried out in both on-site and on-line settings. In what concerns the on-site setting, in-depth interviews were carried out in the so-called ‘war room’ (Shaker, 2002), a shared space useful to enact the visual part of the research through billboards or post-its, as well as to prototype either the low-fi (i.e., basic version) and the upgraded versions of the project. In addition, to cope with the measures imposed by the COVID-19 pandemic, online platforms such as Miro, Mural or Jamboard were also used. However, to pursue the objective of social sharing and preserve human sociability, the on-site setting was preferred in favour of the on-line environment, whenever possible.

As the research question (*How can UBC be improved?*) primarily envisages the entrepreneurs’ perspective, the needs of the target users (i.e., the entrepreneurs) were investigated between May and June 2020. The developed investigation was a qualitative one, consisting in carrying out semi-structured interviews with the entrepreneurs. The interviews were based on an interview guide developed in accordance with the research objectives (Table no. 2). However, as one of the most important aspects in interviewing is to empathize with the respondents as to let latent aspects emerge (Köppen and Meinel, 2015), during the interviews, questions have been asked in a nonchronological manner, expanded, or increased, depending on the progress of each interview.

Table no. 2. Research objectives and correspondence with the interview guide

Research objective	Corresponding question/s in the interview guide
Identifying the entrepreneurial motivation of local entrepreneurs	How was your company born?
Understanding local entrepreneurs’ perception on innovation in their business	How has your organization changed over time?; Have you developed new products or services in the last few years?; How do you approach the introduction of new products and services?
Approaching the willingness of local entrepreneurs to cooperate with students	Could you please describe your experience related to collaborating with students?; How would you rate your collaboration with students?
Analysing the perception of local entrepreneurs on the knowledge and skills of students	How important is the human component in your business? Can you please describe?; What are the most important characteristics that people working in your business must have?; What is your opinion about students’ knowledge and skills?
Analysing local entrepreneurs’ approach to challenges they face throughout the entrepreneurial process	What was the most difficult moment you faced in your entrepreneurial endeavour? How did you overcome it?; If you had the opportunity to make three wishes to solve your company’s problems, what would you ask for?; How does the ‘perfect working day’ look in your opinion?

The discover step involved the interviewing of six entrepreneurs selected based on the convenience sampling technique, mainly considering time-related reasons in the context of the time allotted to the step and the high reluctance of entrepreneurs to participate in research. The six entrepreneurs were young and willing to improve their collaboration with students following business and management studies. Furthermore, they were running businesses operating in different sectors – ceramics; production and distribution of plastic films, sheets, and accessories for covering vineyards; musical academy; production of table grapes; software development; production of textiles and accessories – which was an essential aspect for the research. In this way, a diverse sample composed of respondents with different backgrounds and heterogeneous needs was ensured. Before each interview, participants were

informed about the research aims and their role in the research; participation was voluntary. During this phase, all the information received during the different interviews was collected to create *Personas*, intended as fictional identity cards created to represent comparable and replicable user types (Designers Italia, 2021). Such *Personas*, defined as tools for pattern recognition (Tonkinwise, 2011), provide data beyond the socio-demographic characteristics, highlighting entrepreneurs' skills, desires, uncertainties, or needs.

Based on the information synthesized in *Personas*, **the define step** was developed between July and August 2020. During this period, additional in-depth interviews were carried out to specifically address the UBC experience from the perspective of entrepreneurs, focusing on their contact with student-related projects. More specifically, the main aims of the discussion were to describe the lived experience, the ideal experience, and the traits 'most wanted' in students. In-depth interviews were held through video calls through digital platforms, to create a conducive environment for listening and sharing. Information collected during the define step has been analysed according to the content approach to draw up insights, doubts, or opportunities related to the specific research question (Amicarelli et al., 2021). Content analysis aimed to detect 'themes' in interview material (notes), giving the opportunity to identify not so obvious perspectives within interviews. The define step has been concluded with the identification of possible solutions in line with experiences supported by the literature.

The develop step has been developed from September to November 2020, focusing on providing concrete solutions to respond to the main research challenge, by translating previous collected data into real opportunities. Such a data analysis generated a broader and more complex vision of the research laboratory in terms of UBC. To identify possible prototypes to break the *wall* between the university and companies and implement synergies in the Mediterranean area, the 'How Might We?' question scheme (Siemon et al., 2018; Rosala, 2021) was adopted. This is considered a structured organizational system that ensures clarity and transparency of the analysis. Considering the presence of a *wall* as one of the main obstacles to the implementation of synergies between companies, university's representatives and students, the subsequent 'How Might We Questions' (HMWQ) have been implemented:

- HMWQ1. How might students and entrepreneurs be helped in breaking the *wall*?
- HMWQ2. How might entrepreneurs and the university's representatives be helped in breaking the *wall*?
- HMWQ3. How might students, entrepreneurs and the university's representatives be helped in breaking the *wall*?

To answer the HMWQs, brainstorming moments were implemented with students, entrepreneurs or professors (i.e. university representatives). Furthermore, to collect feedback and enter the learning and testing interaction loop (Lindner et al., 2021), the IBM feedback grid (IBM, 2021) was used. This represents a useful tool to have quick visual recognition on what worked, what should be changed, what are the main doubts and the main ideas coming from people testing the prototypes (IBM, 2021).

The deliver step was developed during December 2020 and February 2021, by experimenting the different prototypes on a small scale, rejecting those non suitable and improving those suitable to enhance UBC. The proposed prototypes, emerging by answering the different HMWQs, were tested following the 'Show, don't tell!' theory (Beidas et al., 2014). This

helped to evaluate, disseminate and implement possible solutions among users, obtaining quick feedback.

As a synthetic outline of the previously presented information, table no. 3 highlights the main directions of the *Double Diamond* method, focusing on research steps, needs and applied tools, as proposed by Santos et al. (2017).

Table no. 3. The implemented Double Diamond method: steps, needs and applied tools

Discover step	Insights	Identification of general aspects specific to the entrepreneurial endeavours of the investigated entrepreneurs, with a particular focus on their needs.
	Tools	Semi-structured interviews developed through on-line platforms and in on-site settings. Synthetised data resulted in <i>Personas</i> .
Define step	Insights	Identification of a <i>wall</i> between the university and companies, represented by the lack of transparency and the temporal mismatch between the skills of students and the needs of entrepreneurs.
	Tools	In-depth interviews on on-line platforms. Data analysis through the content approach. Identification of possible solutions outlined in the reference literature.
Develop step	Insights	Development of real solutions to respond to the main research challenge, by translating previous collected data into real opportunities.
	Tools	' <i>How Might We?</i> ' question scheme (three questions) and IBM Feedback Grid. Moments of brainstorming with students, entrepreneurs, or professors.
Deliver step	Insights	Test of three prototypes, rejecting those not suitable and improving those suitable to enhance synergies between academia and businesses.
	Tools	' <i>Show, don't tell!</i> ' theory to evaluate, disseminate and implement possible solutions among users, obtaining quick feedback.

3. Research results

In the light of the analysis of the *Personas*, during the discover step, some emerging co-needs were expressed by the entrepreneurs: (1) do something good for the planet (i.e., leaving a positive mark on the society and environment); (2) create a good corporate image; (3) have valid collaborators (i.e., outsource performant students); (4) have a better selection of the human resources; (5) understand how to motivate and stimulate collaborators. Table no. 4 presents some of the main investigated aspects specific to the entrepreneurs.

Table no. 4. Entrepreneurs' aims, needs and difficulties

Company	Key activities	Goals	Wishes	Needs	Difficulties
Ceramics	Customer reception, receipt preparation	Satisfied customers and employees	Increased notoriety, increased knowledge of customers' needs, improvement of weaknesses	Meetings with students following architecture classes	Increasing number of too demanding customers, with complex needs and requirements
Software development	Help companies in IT to	Development of economic forecasts	Management forecasting, simulation of	Increase the level of satisfaction	Long projects which are difficult to

Company	Key activities	Goals	Wishes	Needs	Difficulties
	improve business processes by creating innovative, stable, and scalable software		relationships with collaborators, increasing the number of loyal customers	and happiness of the employees through an adequate human resources management	manage due to high fluctuations in personnel and customer expectations
Production of table grapes	National and international sale of fruit juices	A better understanding of the needs and expectations of the customers, a greater attention paid to the needs of the customers	Going on international markets, increasing the number of multilingual collaborators	Expand company image on global scale	Find suitable collaborators

During the define step, on the basis of the previously identified needs, three particular insights have been deepened, as follows: (a) opportunities to rely on a young team, able to speak multiple foreign languages, to generate new ideas, and to operate in international markets; (b) opportunities to outsource pro-active and smart students; and (c) opportunities to generate economic stability through forecasting and planning. These appeared to be the most common needs among the interviewed entrepreneurs. Furthermore, the content analysis revealed that, in businesses composed of young people, a contact between entrepreneurs and students is much easier and more direct due to their proximity in age, making it easier to carry out paid internships based on growth perspective and recruitment opportunities. However, from the perspective of the interviewed entrepreneurs, students, considered an important resource, usually follow the same profile and have limited competencies and abilities, with an important gap in terms of transferable skills. It seems difficult for the interviewed local entrepreneurs to find well-prepared students, which might lead to the idea that university studies – defined by the entrepreneurs as “the ground, not the foundation” – are insufficient to meet companies’ needs imposed by constantly changing economies and societies. As a consequence, the university should provide students with an appropriate mindset to face job challenges, well equipped with both theoretical knowledge and, the most important, with key transferable skills like complex problem solving, creativity, critical thinking, adaptability, teamwork, communication, etc. Acquiring and/or enhancing students’ key transferable skills is mandatory in a world in which there is an increasing demand for graduates displaying them, all framed by an entrepreneurial mindset (Dragusin et al., 2019). An additional obstacle has been identified in the poor (or, sometimes, even a lack) of transparency and communication between the entrepreneurs and the university’s leaders and professors, derived primarily from a high degree of bureaucracy. Among others, such poor transparency could be due to the lack of official communication points for entrepreneurs at the university level. In such a context, UBC is mainly based on personal relationships and unofficial channels. Therefore, it appears impossible to establish trusted UBC, making the process of

establishing formal agreements and creating advantages for entrepreneurs even more complex. To this extent, one of the aims of the investigated research laboratory was to create networks and rejuvenate the university's image, adding value to students and therefore to the university. Possible solutions to strengthen networks among universities and companies, as highlighted in the reference literature, could be (Löhr et al., 2020): (a) the *World Café* model, intended as meetings organized to generate exchanges of ideas between large groups of people; (b) the *Salt* model, intended as an opportunity to bring together all the fractures between different environments (i.e., business and academic).

To cope with the previous challenges (i.e., lack of suitable skills, communication gap), mutual efforts are required, responsible in this sense being both entrepreneurs and the university's leaders. To this extent, ideals of cooperation must be pursued based on teamwork between companies and universities (i.e., the *World Café* model). It appears that students and universities, which do not plan and communicate with companies and entrepreneurs, make education an end in itself. In fact, entrepreneurs who have experienced previous cooperation with the university have defined it as *fragmented*. Therefore, applying the *Salt* model as emerged during the define step, a series of measures were designed to improve UBC in the case of the investigated entrepreneurs and the University of Bari Aldo Moro. Such a proposal, involving either students or professors from different and transversal departments of the university, underlines: (a) collaborations between the businesses and the university must become an integral part of research projects, as well as a key element of academic publications and teaching; and (b) strong networks, even communities, should be enhanced, between representatives from the academic and business environments. As regards the develop step, different prototypes were identified, as a result of the HMWQ approach: (a) design of relax and convivial areas which allow students and entrepreneurs to meet; (b) organization of meetings between students and entrepreneurs in a human-centred perspective (i.e., low-fi prototype); and (c) implementation of real synergies between entrepreneurs and students (i.e., upgraded version of the low-fi prototype).

Regarding the design of relax and convivial areas (HMWQ1), sharing areas that inspire and stimulate creativity have been imagined within the university, to help students develop their teamwork projects. Also, areas destined to sport, videogaming or culture, where companies could provide specific devices, were emphasized as proper examples for relax areas. Although the creation of learning environment areas requires huge investments, the cooperation between companies and universities, therefore private and public funds, could help in experiencing such a reality. Further, it was revealed that entrepreneurs are willing to get to know students beyond their academic profile, in line with various working scenarios. Entrepreneurs have identified several skills that students lack, as follows: adaptability, speed of learning, resilience, leadership skills, empathy, perseverance, and sacrifice.

Prototyping meetings between students and entrepreneurs in a human-centred perspective (HMWQ2) was more difficult due to the information asymmetry and the lack of communication between companies and the university. In case of the UBC-related projects developed within the investigated research laboratory, the first meeting between the entrepreneurs and the professors was meant as an explanation of the Design Thinking methodology and how this would be implemented by the teams of students. Its goal, in addition to attracting companies and involving them in the activities of the research laboratory, was to organize meetings based on agile methodologies. Although several webinars and seminars with students and entrepreneurs should have been developed within

the research laboratory, entrepreneurs have proposed to reduce the duration of the meetings to a single day, since time is a rare, invaluable resource. Time is an essential variable in the learning environment; therefore, time should be considered as fundamental to create suitable and effective meetings that match the needs of companies or students. According to the 'learning environment' theories (Guney and Al, 2012; Nicoli et al., 2021), 'time' is the number of intervals planned for students (i.e., attending the meeting) to develop knowledge, competences and skills through meetings with entrepreneurs, whereas the "structure" is the group of strategies used to provide the content to students, and extends from the use of visual and verbal metaphors (i.e., storytelling) to the creation of gaming experiences. As a result, entrepreneurs have discussed that sessions of more than two hours each can compromise the content of meetings, whereas presentations of approximately 15-25 minutes could represent a suitable option, as students are more likely to pay attention to the content.

The last prototype (i.e., upgraded version of the previous ones) has been defined as to transform theory into practice (HMWQ3). In addition to the definition of the program and the description of the Design Thinking methodology, entrepreneurs suggested the closing of formal agreements between them and the university's representatives during their first meeting. Such a request has been proposed to speed up the bureaucratic aspects and create pragmatic synergies with the university, and to increase the degree of engagement of both parties. As an instance, such agreements could regard the elaboration of theses, development of projects between companies and the university, and of research networks on local scale. Therefore, it is possible to convert *walls* into *networks*. Considering the last prototype, events and meetings are likely to create matches between professors, students, and entrepreneurs, leading to the stipulation of formal agreements. For example, the parties involved in the agreement have the opportunity to define which activities they intend to carry out together, which are the objectives to be achieved, how long should the agreement last, and how the results should be shared. Therefore, communication challenges and asymmetries could be avoided through formal agreements, which can be used for future meetings, as well. In addition, the working and collaborative relationship develops in a trustworthy and transparent environment. Feedback deriving from the upgraded version of the prototype is expected to be positive, with entrepreneurs and professors involved in each stage of the organization through promotional campaigns, information, and results dissemination.

Conclusions

In light of the present research, several opportunities to advance UBC in the Mediterranean area emerged. However, results of Design Thinking approaches could be considered as always in progress. Processes and prototyping activities start with people, but the final results are difficult to predict, are usually unexpected, and change continuously according to the responses and feedback received from users. As highlighted in the present research, each prototype must be tested in a *test-and-learn* session, and the final results are the result of continuous and convergent feedback from all users. Theoretically, the prototyping process could last indefinitely, but considering the urgent needs of the companies, the process should stop with the version considered best (i.e., the prototype that has the highest probability of success). Companies are willing to collaborate with students, but they need to establish trustworthy relationships with the university, based on mutual knowledge and *win-win* agreements. Considering the experience of the research laboratory, entrepreneurs are ready to improve their efficiency starting from local towards global, implementing either *human-*

centred or student-centred approaches. Therefore, the university should enhance its educational programs considering the needs of entrepreneurs, to improve existing synergies and create new ones, towards the development of real strong companies-university networks. As the interviewed entrepreneurs highly pointed out, “a key aspect of any company is certainly training new employees according to the corporate vision. It is essential to provide young students, about to finish their studies, the necessary know-how and all the useful tools to achieve the key transferable skills that will allow them to succeed on the labour market”.

The present paper brings new knowledge related to strategies aimed at advancing UBC in the Mediterranean area, by employing an innovative approach, respectively Design Thinking, through the Double Diamond method. The article might add value to both the scientific literature and practice. On the one hand, this paper enriches the scientific literature on UBC, especially by investigating a less researched area (i.e., the Mediterranean area). On the other hand, the insights outlined in the paper, translated into practice, could contribute to the development of stronger UBCs in the Mediterranean area. The solutions proposed for the University of Bari Aldo Moro (Puglia region, Italy, Mediterranean area) could be implemented and replicated for other universities that are confronted with poor UBC, as well.

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