

WOMEN IN ACADEMIC ENTREPRENEURSHIP: A QUALITATIVE STUDY

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF SOCIAL SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

GAYE ÖZPİNECİ

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF SCIENCE
IN
THE DEPARTMENT OF SCIENCE AND TECHNOLOGY POLICY STUDIES

JANUARY 2025

Approval of the thesis:

**WOMEN IN ACADEMIC ENTREPRENEURSHIP: A QUALITATIVE
STUDY**

submitted by GAYE ÖZPİNECİ in partial fulfillment of the requirements for the degree of Master of Science in Science and Technology Policy Studies, the Graduate School of Social Sciences of Middle East Technical University by,

Prof. Dr. Sadettin KİRAZCI
Dean
Graduate School of Social Sciences

Prof. Dr. Mehmet Teoman PAMUKÇU
Head of Department
Department of Science and Technology Policy Studies

Prof. Dr. Özlem ÖZDEMİR YILDIRIM
Supervisor
Department of Business Administration

Examining Committee Members:

Assist. Prof. Dr. Arsev Umur AYDINOĞLU (Head of the Examining
Committee)
Middle East Technical University
Department of Science and Technology Policy Studies

Prof. Dr. Özlem ÖZDEMİR YILDIRIM (Supervisor)
Middle East Technical University
Department of Business Administration

Assist. Prof. Dr. Şafak KILIÇTEPE
Kırşehir Ahi Evran University
Department of Anthropology

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last Name: Gaye ÖZPİNECİ

Signature:

ABSTRACT

WOMEN IN ACADEMIC ENTREPRENEURSHIP: A QUALITATIVE STUDY

ÖZPİNECİ, Gaye

M.S., The Department of Science and Technology Policy Studies

Supervisor: Prof. Dr. Özlem ÖZDEMİR YILDIRIM

January 2025, 104 pages

Research conducted at the universities by academicians and their students are transforming into new ideas and core technologies which initiate entrepreneurial pursuits leading to the development of the term “academic entrepreneurship”. Although academic entrepreneurship is at a focal point in terms of strategic plans for universities across the globe, still, it requires a more comprehensive definition and rigorous empirical work. This study aims to contribute to the literature by exploring the conceptualization of the term “academic entrepreneurship” through the perception of academicians at Middle East Technical University, and suggesting policy implications to contribute to the development of an effective academic entrepreneurship ecosystem. This research adopts a qualitative approach, in which 12 in-depth interviews were conducted with female faculty at a top tier research university in Türkiye. The results show that the understanding and the awareness of academic entrepreneurship and opportunities associated with it are limited among the participants. A framework of the concept which includes a larger boundary, increased number of academic entrepreneurship activities, and emphasizes the importance of process through which these activities and their outcomes come to life are outlined. Policy implications to overcome gender-related, personal, institutional and process-based barriers are discussed.

Keywords: Academic Entrepreneurship, Gender, Inclusive Innovation, Interview, Science and Technology Policy

ÖZ

KADIN AKADEMİSYENLERİN AKADEMİK GİRİŞİMCİLİK DENEYİMLERİ ÜZERİNE NİTEL BİR ARAŞTIRMA

ÖZPİNECİ, GAYE

Yüksek Lisans, Bilim ve Teknoloji Politikası Çalışmaları Bölümü

Tez Yöneticisi: Prof. Dr. Özlem ÖZDEMİR YILDIRIM

Ocak 2025, 104 sayfa

Üniversitelerde akademisyenler ve öğrencileri tarafından yürütülen araştırmalar, girişimcilik arayışlarını başlatan ve "akademik girişimcilik" teriminin gelişmesine yol açan yeni fikirlere ve temel teknolojilere dönüşmektedir. Akademik girişimcilik, dünya çapındaki üniversiteler için stratejik planlar açısından odak noktasında olmasına rağmen, daha kapsamlı bir tanımlama ve titiz bir ampirik çalışma gerektirmektedir. Bu çalışma, Orta Doğu Teknik Üniversitesi'ndeki akademisyenlerin algısı aracılığıyla "akademik girişimcilik" teriminin kavramsallaştırılmasını inceleyerek literatüre katkıda bulunmayı ve etkili bir akademik girişimcilik ekosisteminin geliştirilmesine katkıda bulunmak için politika çıkarımları önermeyi amaçlamaktadır. Bu araştırma, Türkiye'deki en iyi araştırma üniversitelerinden birinde 12 kadın öğretim görevlisiyle derinlemesine görüşme yapılan nitel bir yaklaşım benimsemiştir. Sonuçlar, katılımcılar arasında akademik girişimcilik ve bununla bağlantılı fırsatlar hakkındaki anlayışın ve farkındalığın sınırlı olduğunu göstermektedir. Daha geniş bir sınırı, artan sayıda akademik girişimcilik faaliyetini içeren ve bu faaliyetlerin ve sonuçlarının hayata geçtiği sürecin önemini vurgulayan bir kavram çerçevesi özetlenmiştir. Araştırma

kapsamında; cinsiyete dayalı, kişisel, kurumsal ve süreç temelli engellerin aşılmasına yönelik politika çıkarımları da ayrıca tartışılmaktadır.

Anahtar Kelimeler: Akademik Girişimcilik, Toplumsal Cinsiyet, Kapsayıcı Inovasyon, Mülakat, Bilim ve Teknoloji Politikaları

To My Brother Emir Alper ÜNALAN

ACKNOWLEDGMENTS

I would not be conducting this study or writing this thesis if it was not for Prof. Özlem ÖZDEMİR YILDIRIM, my supervisor, my mentor, my friend. Not only did she encourage me to pursue graduate studies, but also, she stood by me and encouraged me all the way through my studies.

A special thanks to Assist. Prof. Dr. Arsev Umur AYDINOĞLU and to Assist. Prof. Dr. Şafak KILIÇTEPE for their feedback and support.

I would like to thank all the women academicians with whom I had the chance to meet and conduct the interviews. They are the living proof of Middle East Technical University's quality of study and research, against all odds. I am in awe of their generosity, devotion and work ethic.

My mother and father who believed in, encouraged, and supported me all through my life. I am so lucky and proud to be their daughter.

My daughter who is the brightest, kindest, funniest kid I have ever known, has given me the support and motivation to finish up my work. I have started this to inspire her, but in the end, she inspired me.

Last, but not the least; I would like to thank my husband Prof. Dr. Altuğ ÖZPİNECİ, who is always a great support. He is also the living example of academic excellence and I will always be amazed and inspired by his love of science and teaching.

TABLE OF CONTENTS

PLAGIARISM	iii
ABSTRACT	iv
ÖZ.....	vi
DEDICATION	viii
ACKNOWLEDGMENTS.....	ix
TABLE OF CONTENTS	x
LIST OF TABLES	xii
LIST OF FIGURES.....	xiii
LIST OF ABBREVIATIONS	xiv
CHAPTERS	
1. INTRODUCTION.....	1
2. LITERATURE REVIEW	5
2.1. Academic Entrepreneurship	5
2.2. Gender and Academia	10
2.3. Personality and Entrepreneurship.....	13
2.4. Risk-Taking Attitude and Entrepreneurship.....	14
3. METHODOLOGY	15
3.1. Questionnaire Design	15
3.1.1. Demographic Questions	16
3.1.2. Risk-Taking Attitude Question	16
3.1.3. Big Five Personality Test Questions	16
3.1.4. Academic Entrepreneurship Activities Questionnaire	17
3.2. Interview Design	18
3.3. Recruitment and Data Collection	19
3.3.1. Recruitment	19
3.3.2. Data Collection and Analysis.....	22
4. ANALYSIS AND FINDINGS	24
4.1. Analysis.....	24

4.2. Findings.....	25
4.2.1. Results from the Questionnaire.....	26
4.2.1.1. The Demographics	26
4.2.1.2. Risk-Taking Attitude.....	27
4.2.1.3. Big Five Personality Test	27
4.2.1.4. Academic Entrepreneurship Activities of Participants	28
4.2.2. Results from the Interviews	30
4.2.2.1. Demographics, Personal Characteristics and Academic Status	30
4.2.2.2. Awareness about Academic Entrepreneurship.....	35
4.2.2.3. Definition of Academic Entrepreneurship	36
4.2.2.4. Output.....	37
4.2.2.5. Input	39
4.2.2.6. Process.....	45
5. DISCUSSION	48
5.1. The Academic Entrepreneur	49
5.2. Awareness	50
5.3. Definition and the Framework of Academic Entrepreneurship	51
6. POLICY RECOMMENDATIONS AND CONCLUSION	54
6.1. Policy Recommendations.....	54
6.2. Conclusion.....	56
6.2.1. Limitations of the Study.....	59
6.2.2. Suggestions for Future Research.....	60
REFERENCES.....	62
APPENDICES	
A. APPROVAL OF THE METU HUMAN SUBJECTS ETHICS COMMITTEE...	77
B. CODE BOOK.....	78
C. INTERVIEW QUESTIONS.....	80
D. THE QUESTIONNAIRE.....	83
E. SUMMARY / TÜRKÇE ÖZET	88
F. THESIS PERMISSION FORM / TEZ İZİN FORMU	104

LIST OF TABLES

Table 1. List of Entrepreneurial Activities in the Questionnaire	18
Table 2. Participant Profile.....	21
Table 3. Demographics of the Participants	26
Table 4. Risk-Taking Attitude, BFI-10, and the Participant’s Self-Perception About Academic Entrepreneurship	27
Table 5. Academic Entrepreneurship Activities.....	29
Table 6. Participant Self-Perceptions and Academic Entrepreneurship Activities Involvement Compared.....	35
Table 7. The Academic Entrepreneurship Framework	53
Table 8. Policy Implications.....	55

LIST OF FIGURES

Figure 1. Academic entrepreneurship activities classified according to the underlying type of knowledge and use of different IP protection methods.. 8

LIST OF ABBREVIATIONS

METU	Middle East Technical University
TTO	Technology Transfer Office
STEM	Science, Technology, Engineering and Mathematics
YÖK	The Council of Higher Education
ADEP	Research Universities Support Program
TÜBİTAK	Scientific and Technological Research Council of Türkiye
YFYİ	Ney Ideas, New Jobs
ATOM	Game Development Center
AGEP	Academic Development Program
EU	European Union
BAP	Scientific Research Projects

CHAPTER 1

INTRODUCTION

The history of the modern university is a rich and interesting journey. It goes back to ancient institutions and religious schools, that evolved into more complex, secular, and research-focused centers of knowledge that we come across today. As the university's organizational structure, function, and impact changed across time; so, did the role of its members: the academicians. They transformed from religious educators to modern-day researchers, educators, and societal contributors. Initially, academics were primarily clerics or scholars who pursued religious teachings, guiding students in theology and philosophy in line with the church's influence. Later, as universities gained autonomy in the 19th century, particularly with Wilhelm von Humboldt's establishment of the research university model in Germany, academics were encouraged to pursue independent research and intellectual inquiry. This shift marked a transformation from teaching-focused roles to those that emphasized generating original knowledge. In the 20th century, the role of academics further evolved as universities embraced public service and economic advancement.

University's third mission, economic development, in addition to research and teaching lead to a notion of entrepreneurial university. This notion is further imposed; not only with the organizational development of the universities, but also with the external influences such as the emergence of 'knowledge-based' innovation where entrepreneurial activities are pursued with the objective of improving regional or national economic performance as well as contributing to the university and its faculty's financial situation (Etzkowitz et al., 2000).

Guided by these internal and external factors, innovations are ignited from the research conducted at the universities by academicians and their students. These

innovations comprised of new ideas and core technologies that initiate entrepreneurial endeavors lead to the development of the term ‘academic entrepreneurship’. Wood (2011) defines academic entrepreneurship as “the efforts and activities that universities and their industry partners undertake in hopes of commercializing the outcomes of faculty research” (Wood, 2011, p. 153). Meanwhile Shane (2003) points out that entrepreneurship involves the “discovery, evaluation and exploitation of opportunities to introduce new goods and services, ways of organizing, markets, processes and raw materials through organizing efforts that previously had not existed” (Shane, 2003, p.4) In the literature, there are many definitions and conceptualizations of “academic entrepreneurship” however, a commonly accepted, more comprehensive definition and a broader understanding of the concept is needed (Abreu and Grinevich, 2013; Siegel and Wright, 2015; Hayter et al., 2018; Klofsten and Jones-Evans, 2000; Cunningham et al., 2024). Since academic entrepreneurship is a relatively new phenomenon, there are still gaps in the conceptualization of activities that are considered as academic entrepreneurship, the ecosystem which includes the interaction between human capital and other stakeholders as well as the support systems that facilitate the process of forming and continuing academic entrepreneurship (Guerrero et al., 2016; Hayter et al., 2018; Guinti and Duberley, 2023; Cunningham et al., 2024).

On the other hand, the story of female academicians within the university settings and their participation in the production and dissemination of knowledge is no less an interesting journey. Long before the concept of gender, distinct from that of biological sex, was introduced during the mid-20th century in the academic discourse (Stoller, 1968; Scott, 1986; Acker,1992), women were in between opportunities within the scientific realm. The opportunities they had access to, in academia, were limited to activities that were less popular among their fellow male counterparts and the jobs they acquired were low paying in nature. Moreover, early female academicians, as they navigated male-dominated academic contexts, confronted with challenges ranging from institutional barriers to societal prejudices (Richardson, 2010; Rivera and Tilcsik, 2019; Wiedman, 2020).

Whether it is evaluated within the scope of the history of science or women’s studies, the relationship between gender and academia happens to be intertwined with gender

playing a significant role in shaping educational experiences, career trajectories, and representation within the academic institutions (Richardson, 2010; Robnett, 2016; Muscio and Vallanti, 2024). The historical male-domination in academia is argued to continue to lead to systemic gender biases and disparities in opportunities, pay, and recognition for women and non-binary individuals (Keller, 1985; Harding, 1996). Recently, these inequalities have been increasingly challenged, leading to more research and policy efforts aimed at promoting gender equity (Monroe et al., 2008; O'Connor, 2020; Ni Laoire et al., 2021). The histories of both the male-domination in academia and the efforts for closing the gender gap are crucial for understanding how overall power dynamics and social structures influence the production of knowledge and the inclusive nature of the university.

The emergence of the concept of gender and the evolving role of women in academia are also interconnected with several key trends in academic entrepreneurship, reflecting ongoing efforts to balance academic research with societal impact and economic development (Clark, 1998). For example, European Commission's strategy and recommendations related to gender equality in research and innovation (EIGE, 2016), are aimed at equality in scientific careers, a gender balance in decision-making processes, and the inclusion of a gender dimension in the content of research and innovation. As is the case with entrepreneurial practices in general, entrepreneurship in the academic context is dominated by men. In this male-dominated field, both women's approaches to academic entrepreneurship and their experiences are valuable source of data for underrepresented groups. Thus, female faculty's attitude towards and involvement with academic entrepreneurship activities is a very important part within academic entrepreneurship research.

The motivations for this study rest upon a pilot study in which four women from different faculty and departments within Middle East Technical University (METU) were interviewed to answer the question of how women perceive the challenges and enablers to pursue academic entrepreneurship. While the context, self-motivation and collaborations emerged as the common themes in the analysis of the interview transcriptions, it was also observed and noted that almost all of the interviewees were unclear about the definition and the boundaries of academic entrepreneurship. Thus,

it was made clear that the definition and the boundaries of the concept have to be studied first, to grasp the initiators and beholders of academic entrepreneurship. The purpose of this study is, therefore, (1) to explore the conceptualization of the term “academic entrepreneurship”, (2) to understand the academic entrepreneurship perception of female academicians, and (3) to suggest policy implications to contribute to the development of an effective university ecosystem for academic entrepreneurship.

This thesis will contribute to the conceptualization of the term academic entrepreneurship by means of exploring the perception of female academicians working at the top university of Türkiye in terms of research and entrepreneurial activities. Furthermore, by promoting the understanding and widening the boundaries of the concept, this thesis contributes to the exploration of possible challenges and the support mechanisms in the METU case to foster academic entrepreneurship among female faculty.

The following chapters of the thesis is organized so that in Chapter 2, the literature on the history and the conceptualization of academic entrepreneurship as well as the role of gender in academic entrepreneurship will be reviewed in order to set the stage for our case. Chapter 3 is about the methodology of the study. The reasons for opting a qualitative approach as well as recruitment of the female faculty will be explained. We are also going to delve into data collection with the interview design and the use of the questionnaires. In Chapter 4, the analysis of the interview data and the findings will be shared. Finally, in Chapter 5 results will be discussed, compared to the existing literature and conceptualization of academic entrepreneurship followed by the introduction of a framework based on previous research as well as this study’s findings. The thesis will be concluded Chapter 6 with policy implications, limitations of this study and suggestions for future research agenda.

CHAPTER 2

LITERATURE REVIEW

The literature review on women in academic entrepreneurship provides an exploration of existing research on the intersection of gender, academia, and entrepreneurial activity. It examines the unique challenges and opportunities faced by women as they navigate the complex ecosystem of academic entrepreneurship, including institutional barriers, societal expectations, and individual aspirations. By synthesizing qualitative studies, theoretical frameworks, and empirical findings, this chapter aims to highlight the literature, uncover patterns of possible inquiry, and point out to the factors that enable or hinder women's participation and success in academic entrepreneurial ventures. This foundation sets the stage for a deeper understanding of women's experiences and contributions within this evolving field.

2.1. Academic Entrepreneurship

There is a bulk of literature to define and explain the nature of entrepreneurship built on the works of Schumpeter (1934) and later Kirzner (1973). Even though there is no one precise definition, researchers agree on several common characteristics of entrepreneurship which involve: (1) Risk-bearing on the part of the entrepreneur because there is much uncertainty related to the outcomes, (2) An organizing effort related to finding new ways of exploiting an opportunity, (3) An innovative activity so that it does not replicate what has been done before (Shane, 2003)

Burton R. Clark introduces the concept of academic entrepreneurship in the context of universities, adapting to the demands of the modern economy in his book *Creating Entrepreneurial Universities: Organizational Pathways of Transformation* (1998) while Henry Etzkowitz, is well-known for co-developing the Triple Helix Model.

The model suggests that industry, government, and academia are the three helices of economic development. Etzkowitz's work (1983) is pivotal in understanding the broader context of innovation and the role of universities which is closely related to academic entrepreneurship.

For the sake of our understanding of how the concept was introduced and evolved through the decades, in this section of the thesis, a brief history of academic entrepreneurship is presented in the paragraphs that follow.

The rise of venture capital, the passage of the Bayh-Dole Act in the United States in 1980 encouraged universities to commercialize their scientific findings. Increasing number of scientists and engineers, the mobility of these people to and from university settings, and technological advances in computing, biotechnology, and nanotechnology led to an entrepreneurial university conceptualization (Clark, 1998; Etzkowitz et al., 2000; Siegel and Wright, 2015). As a result of all of the factors presented above; entrepreneurial activities such as patenting, licensing, and entrepreneurial ecosystems such as incubators, science parks and technology transfer offices (TTO) became an important part of the campus life for scientists. These commercialization activities within academic settings have come to be known as 'academic entrepreneurship' (Wright et al., 2006; Wood, 2011; Urbano, et al., 2022).

Just like in the USA, academic entrepreneurship activities have also been observed in many countries in Europe and Asia, as well as in Australia, Canada and Israel (Grimaldi et al., 2011). Particularly in Europe, the executive body of the European Union, namely, The European Commission, launched several initiatives to encourage the transfer of university technology to industry (European Commission, 1995). However, European universities lagged a little behind in their efficiency of technology transfer compared to their US counterparts due to the differences in legal systems that regulate the technology transfer from the university to the industry (Rothaermel et al., 2007). Nevertheless, the shifts in the focus of US universities, the European Commission's initiatives, and the efforts of the European universities; all added the economic development mission to traditionally existing education and research missions of the university.

In Türkiye, this process gained traction in the early 2000s, with the introduction of several innovation and R&D policies (Cansız, 2016, p.25). The enactment of Technology Development Zones Law No. 4691 increased the university-industry interactions. These interactions also set the stage for academic entrepreneurship activities. According to the Ministry of Industry and Technology statistics, as of November 2024, there are 91 Technology Development Zones throughout Türkiye, with 13 more under construction. Of the 11.158 firms within these zones, 2.160 of them have an academician as a partner. The entrepreneurial university model in Türkiye also became visible around 2012 when Entrepreneurial and Innovative University Index was introduced by YÖK. This index is made up of 24 indicators under 4 dimensions which are (1) Scientific and technological research competence, (2) Intellectual property pool, (3) Cooperation and interaction, and (4) Economic and social contribution. METU has been leading other universities around Türkiye by an important margin in terms of claiming the top spot of the index since it was first introduced. While the entrepreneurial university, academic entrepreneurship activities and the ecosystem surrounding these activities were blossoming around the world and in Türkiye, so did research and publications in “academic entrepreneurship” (Rothermael et al., 2007; Hayter et al., 2018; Neves and Brito, 2020; Aydınoglu et al., 2022). Research on the entrepreneurial university points out to the natural evolution of the existing structure of the universities as well as their mission and that fostering entrepreneurship activities within the university settings means fostering economic and societal development (Etzkowitz and Kloftsten, 2005; Urbano and Guerrero, 2013).

The traditional approach to academic entrepreneurship involved commercialization of university research through licenses and patents via Technology Transfer Offices (TTO) (Lockett et al., 2014). These early approaches to academic entrepreneurship considered the function of such endeavors as a source of financial benefit for the university while recently the focus is turned on to the societal benefits university research contributes to.

For practical reasons, research on academic entrepreneurship focuses on an operational definition which includes the formation of a firm and activities related to

that formation such as invention disclosures, patenting, and the licensing of the research output (Roberts, 1991; Shane, 2004). Some researchers, however, argue that the concept of academic entrepreneurship should be widened including other informal commercial and non-commercial activities that are entrepreneurial (Abreu & Grinevich, 2013). They argue that any activity beyond the boundaries of teaching and/or research that is innovative and risky, which brings financial benefits for the university and the academicians can be considered within the scope of academic entrepreneurship. While some of these benefits may be monetary in nature, others may have indirect economic effects such as reputation, prestige, influence and societal benefits (Abreu & Grinevich, 2013; Siegel and Wright, 2015; Martin, 2012). Figure 1 demonstrates the division and categorization of several academic entrepreneurship activities from this perspective.

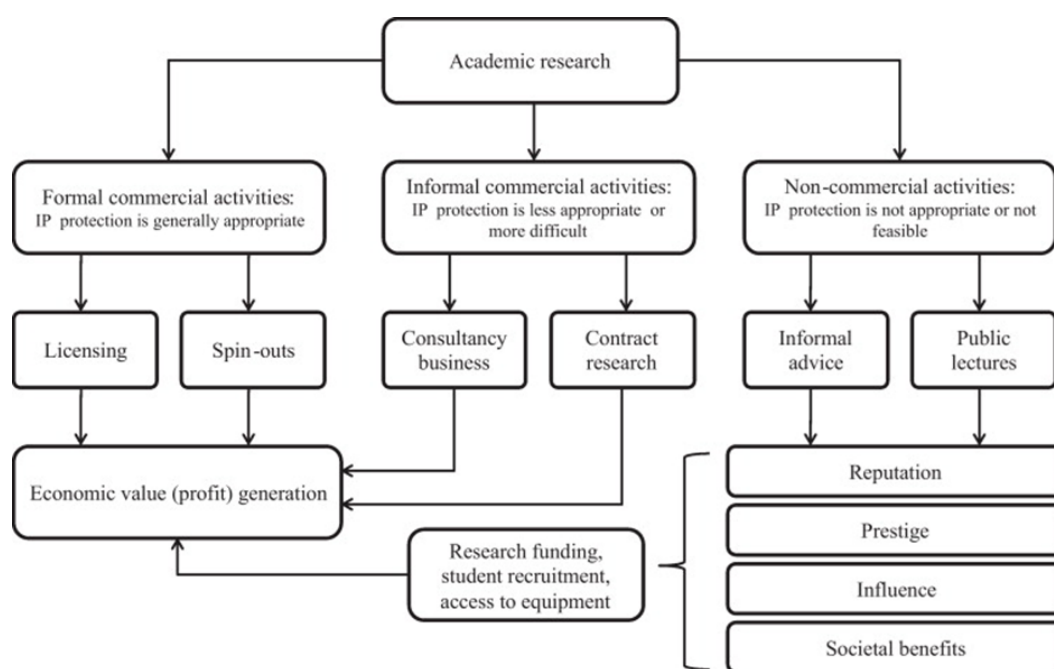


Figure 1. Academic entrepreneurship activities classified according to the underlying type of knowledge and use of different IP protection methods

Source: M. Abreu, V. Grinevich (2013) p. 412

The formal commercial activities are easy to spot since they are the most common and well researched types of academic entrepreneurship activities because the results of these activities are tangible. The case with informal-commercial and non-commercial entrepreneurship activities, on the other hand, is somewhat different.

They are mostly relatable to the disciplines within the social sciences, arts and the humanities. These disciplines are generally overlooked by the TTOs and by the academic literature whereas their STEM (Science, Technology, Engineering and Mathematics) counterparts receive the utmost attention both in terms of financial incentives, recognition and popularity (Iorio, et al., 2017; Gulbrandsen and Thune, 2017; Neves and Brito, 2020). Aligned with the shift in focus towards societal goals and the introduction of new entrepreneurship activities; social ventures, knowledge spillover to local firms and startups launched by students and university alumni also entered the boundaries of academic entrepreneurship research (Siegel and Wright, 2015).

Building on the existing literature within the field, the primary aim of this study is to explore the concept of “academic entrepreneurship” from the perspective of female academicians at METU. Although there are already many definitions in the existing literature (Wood, 2011; Abreu and Grinevich, 2013; O’Shea et al., 2004) which are either borrowed from the research on entrepreneurship or based on the early work about academic entrepreneurship, it seems as if there is still need for a more comprehensive conceptualization. This need comes from the existing literature’s frequent inclination to equate academic entrepreneurship with the formation and development of an academic or technological spin-off company with a visible and a countable contribution to the university, its faculty and the society (Di Gregorio and Shane, 2003; Murray, 2004; O’Shea et al., 2007; Stuart and Ding, 2006; Wright et al., 2006). On the other hand, there is research indicating alternative forms of academic entrepreneurship activities that initiate knowledge spillover from the academic settings to external organizations still contributing to the university, its faculty and the society, but through indirect, sometimes intangible benefits such as prestige, reputation and societal development (Abreu and Grinevich, 2013; Guerrero et al., 2015; Perkmann, et al., 2021; Wurth, et al., 2024).

While there are numerous definitions, there are also different approaches to “academic entrepreneurship” which shape the boundaries of the existing conceptualization. These approaches include; (1) groups of activities considered within the scope of academic entrepreneurship, (2) the human capital who is the

prominent agent taking action in decision making, initiating, developing and sustaining an academic entrepreneurship activity, (3) the ecosystem made up of individuals, institutions, resources and policies within a university or a research environment from which the academic entrepreneurship activity blooms, and (4) the process which is the sequence of actions influenced by the relationship between the actors and the ecosystem that transform an academic research into an entrepreneurial venture (Di Gregorio and Shane, 2003; Etzkowitz and Klofsten, 2005; Link et al., 2007; Guerrero et al., 2016; Hayter et al., 2018; Giunti and Duberley, 2023).

2.2. Gender and Academia

As universities increasingly embraced entrepreneurial activities, women also began to seize these opportunities to turn their research into marketable innovations. The gendered nature of academia often posed challenges for women in this arena, too, including access to resources, networks, and recognition (Wajcman, 2007; Sullivan and Meek, 2012; Abreu and Grinevich, 2017; Cropley and Cropley, 2017). Despite these challenges, women played a crucial role in advancing academic entrepreneurship, often focusing on innovations that address gender disparities and other social issues (Mickey & Smith-Doerr, 2022).

Women's involvement in academic entrepreneurship represents a critical intersection of gender, education, and innovation. As universities increasingly focus on knowledge transfer and commercialization of research, the participation of women in entrepreneurial ventures arising from academia has gained significant attention. Despite their growing presence, women in academic entrepreneurship face some unique challenges described above. However, they also bring diverse perspectives and leadership styles that can drive innovation and inclusivity in entrepreneurial ecosystems. The studies that explore the contributions, challenges, and opportunities for women in academic entrepreneurship, enlighten how gender dynamics influence entrepreneurial success and the broader impact on academic and societal progress. For example, Muscio and Vallanti (2024) conducted research demonstrating that the composition of academic faculty significantly influences female students' attitudes toward business-oriented research and its commercialization, which subsequently

impacts their entrepreneurial intentions and likelihood of starting a business. Moreover, research indicates that women benefit from engaging with same-sex role models and studying in environments with greater female representation. Such settings help to reduce gender barriers and enhance women's confidence in their ability to launch a business venture (Nikou et al., 2019). Furthermore, researchers examining the gender gap in academic entrepreneurship among university faculty highlight a notable disparity between women and men in spinout activities. This gap is linked to key factors identified in the literature, including: (1) women holding fewer senior positions, (2) their predominance in fields like health sciences, social sciences, humanities, and education, (3) less prior experience in running a business, and (4) ambivalence toward research commercialization (Abreu and Grinevich, 2017).

The gender gap in academic entrepreneurship is identified by several categories. One of those categories include the supply-side factors such as female faculty's limited or no industrial experience, their reliance on institutional support for their entrepreneurship endeavors, lower levels of seniority compared to their male counterparts and their choice of disciplines and research areas. The demand-side, on the other hand; focus on female faculty's lower visibility, their exclusion from networks and overall gender discounting (Murray and Graham 2007; Stephan and El-Ganainy 2007).

The relevance of some of these factors, especially the ones relating to networks and lack of experience, have been confirmed by female academics as part of qualitative case-study by Murray and Graham (2007). There is also significant quantitative evidence in the literature that point out to the fact that personal and institutional characteristics; such as level of seniority, academic discipline and the existence and level of institutional support, have an effect on academic entrepreneurship at all stages of the process (Stephan et al. 2007; Haeussler and Colyvas, 2011). It is pointed out that once a range of personal and institutional characteristics are controlled for, there is no further gender gap in the likelihood of disclosure of inventions, or in the likelihood that disclosures are converted into licenses (Colyvas, 2012).

The studies presented above are important in a number of ways. First, there is evidence that academic entrepreneurship is employed much more in disciplines and fields which have a lower representation by female academics (Rosa and Dawson, 2006). Also, academic entrepreneurship is greater among senior academicians with greater number of networks and experience of commercialization, and a significant number of those academicians are male (Stephan and El-Ganainy 2007; Link et al., 2007).

The findings of these studies also raise the question of whether female academicians with lower inclination to pursue entrepreneurship are self-selecting into disciplines and research paths that further alienate them from entrepreneurial opportunities. Then there is this situation of limited evidence on the entrepreneurial intentions and outcomes for academicians in disciplines other than STEM sciences. The understanding of the academic entrepreneurship activities of academicians in the arts, social sciences and humanities areas is then key to explaining the choices of female academicians, and their career outcomes (Cunningham et al., 2024).

Compared to the overall literature on academic entrepreneurship, relatively small, but a growing amount of attention is paid to the impact of gender. Studies point out to the fact that female faculty is less likely to reveal their research and inventions, seek to get patents and/or sought to commercialize their academic work (Ding et al., 2006; Thursby and Thursby, 2005; Whittington and Smith-Doerr, 2005; Mickey and Smith Doerr, 2022). The risk-taking factor associated with academic entrepreneurship especially in the form of a spin off company may also scare and distance female faculty to pursue such activities for they tend to be more risk averse than their male colleagues (Zhao et al., 2010; Dwyer et al., 2002; Harris et al, 2006; Zeffane, 2015). In addition, it has been pointed out in the literature that female faculty experience greater amount of pressure to find a balance between achieving tenure in the academic context and also fulfilling family demands and caretaking duties (Goel et al., 2015; Sinell et al., 2018). As a result of these incongruities between their priorities and the time pressure exerted to them to perform equally well and efficiently at public and private space, their commercial experience as well as networking activities with different stakeholders within the academic

entrepreneurship ecosystem stay limited (Ding et al., 2006; Ozasir Kacar et al., 2023). The studies and the findings summarized above suggest that the female faculty is less likely to initiate academic entrepreneurship.

2.3. Personality and Entrepreneurship

The conceptualization and realigning the boundaries of academic entrepreneurship is mandatory, but it is not the only dimension that explains the initiation of such endeavors. The academic entrepreneurs and their personality characteristics, attitudes and values play an important role. Therefore, while some researchers of academic entrepreneurship like to focus on the boundaries of and the types of outcomes within the concept, others like to focus on the entrepreneurs and their characteristics, their attitudes (Zhao et al., 2010; Iorio et al., 2017; Neves and Brito, 2020; Hayter et al., 2022).

There are many inventories that measure personality factors. Of those inventories, the Big Five Personality measure is a widely used reference in personality psychology (McCrea and Costa, 2003). It measures the participant's position across five dimensions. These dimensions are openness, neuroticism, conscientiousness, extraversion and agreeableness. Among these five dimensions, specifically, "Neuroticism" and "Extraversion" are found to be related to the initiation of entrepreneurship activities. "Extraversion" refers to the tendency to direct one's focus and energy toward the external world of people and activities rather than internal thoughts and experiences. In contrast, "Neuroticism" is characterized by a persistent level of emotional instability and a heightened susceptibility to psychological distress. (John and Srivastava, 1999). Based on this definition, it is reasonable to suggest that extraversion is a key personality trait for entrepreneurs, as extraverted individuals typically possess strong social skills and excel at persuading others—a crucial ability for entrepreneurs when engaging with stakeholders like venture capitalists, bankers, and customers. (Rauch and Frese, 2000; Shane, 2003). It is also reasonable to assume that individuals with low levels of neuroticism are more likely to succeed as entrepreneurs due to their self-confidence and persistence. Conversely, those with high levels of neuroticism may struggle with the confidence

and resilience needed to handle the challenges and pressures of entrepreneurship. (Brandstätter, 1997; Wooten et al., 1999).

2.4. Risk-Taking Attitude and Entrepreneurship

Since entrepreneurship activities possess large amounts of uncertainty in terms of outcome, those individuals with risk aversion attitude are less expected to favor any academic entrepreneurship activities. Research supports that risk taking attitude of individuals can predict their entrepreneurial intentions (Zhang et al., 2009; Zeffane, 2015; Neves and Brito, 2020). A study by Douglas and Shepherd (2002) found that individuals aspiring to an entrepreneurial career tend to be less risk-averse compared to those seeking stable employment within established companies. Similarly, a meta-analytic review by Zhao and colleagues (2005) revealed that the personality trait associated with risk-taking is linked to entrepreneurial intention.

CHAPTER 3

METHODOLOGY

In this study, a qualitative approach is adopted because of its descriptive and exploratory nature. Additionally, the qualitative data collected through interviews allowed us to get “different interpretations, expressions, and opinions” (Bryman & Bell, 2015) of female faculty, in terms of where they stand pursuing academic entrepreneurship. Academic entrepreneurship is often shaped by complex social, cultural, and institutional factors, which might be best understood through rich, descriptive narratives. Thus, this approach led to the exploration of participants’ unique perspectives, challenges, and motivations. Interviews provided the platform for female academicians to share their lived experiences, highlighting nuances that may be overlooked by quantitative methods. Our approach also enabled us to capture the diverse and context-specific realities of the participants, offering insights into how gender dynamics intersect with entrepreneurial activities in academia. By prioritizing their voices, the qualitative method fostered a deeper understanding of the perceptions, barriers and support mechanisms that influence participation in entrepreneurial endeavors.

In addition to the interviews conducted with them, the participants were asked to fill out a questionnaire made up of a demographics survey, as well as; a personality inventory, a risk-taking attitude question, and an academic entrepreneurship activities questionnaire. In the following paragraphs of this chapter, the methodological tools used for this study will be explained in detail.

3.1. Questionnaire Design

The questionnaire was presented to the participants before the interview session began. As briefly stated above, they are made up of four parts. The first part includes

a number of demographic questions that focus on parameters such as the participant's age, position, tenure, marital status, household income. The second part determines the participant's perceived risk-taking attitude. The third part consists of questions to determine several aspects of the participant's personality. Finally, the last part of the questionnaire examines the amount of academic entrepreneurial activities that the participants are involved with. The questionnaire is shared in Appendix D.

3.1.1. Demographic Questions

Demographic information derived from the questionnaire is used to categorize the participants of this study based on specific criteria, such as; age, income level, education, marital status, and employment. Among all the demographic characteristics within entrepreneurship research, age, gender and job experience are described as the most prominent ones (Sullivan and Meek, 2012; Liang et al, 2018; Marlow, 2019; Gendron-Carrier, 2023).

3.1.2. Risk-Taking Attitude Question

Participants' risk-taking attitude was explored through a single question where they were asked "How they perceive themselves in terms of risk-taking attitude?" on a scale from 1 (Risk Averse) to 7 (Risk Seeker). Risk-taking attitude is one of the most important factors concerning personal motivations towards entrepreneurship (Block et al., 2015; Neves and Brito, 2020)

3.1.3. Big Five Personality Test Questions

To assess the participants' positions according to five principal personality dimensions, an extra short version, the Big Five Inventory 10 (BFI-10) was used in this study. A short version was employed for the sake of our limited time with the interviewees. The inventory possessed ten statements based on adjectives and actions; each related to a dimension and the respondents filled the circle that best described themselves 1 (Strongly Disagree) through 7 (Strongly Agree) on a Likert type scale.

BFI-10 has been validated in German and English (Rammstedt & John, 2007) and it was shown to possess retest reliability, structural validity, convergent validity with the NEO-PI-R and its facets and sufficient external validity using peer ratings (Ryser, 2015).

3.1.4. Academic Entrepreneurship Activities Questionnaire

In line with the popularity of commercializing academic knowledge, there is also a growing research interest in the factors that encourage academic entrepreneurship. While the methods used to study these factors vary, the focus has been on a rather small range of activities. These activities include invention disclosures by academicians to the TTO (Thursby and Thursby, 2005), patents (Agrawal and Henderson, 2002; Henderson et al., 1998; Owen-Smith and Powell, 2003; Stephan et al., 2007), spin off firms (Di Gregorio and Shane, 2003; Murray, 2004; O'Shea et al., 2007; Stuart and Ding, 2006; Wright et al., 2006) and the licensing of research outputs (Jensen et al., 2003; Markman et al., 2005; Siegel et al., 2003). There are several reasons for this relatively limited focus. First of all, these activities resemble those formal activities that have been analyzed for years by a wider literature on entrepreneurship. Second, these activities are tangible therefore they are easy to quantify and their economic impact can be estimated unlike those activities that are informal and occur "under the radar". There are, however, studies that extend the boundaries of academic entrepreneurship activities (Klofsten and Jones-Evans, 2000, Abreu and Grinevich, 2013; Siegel and Wright, 2015). It is this extended focus and variation of activities that this study wants to explore in order to better understand and describe what academic entrepreneurship means to those who have a limited view to the whole wide range of activities and opportunities. Therefore, the respondents were asked to fill the questionnaire based on the existence and frequency of their experiences in the activities under four dimensions; the frequency ranging from 0 (Never) to 6 (Every Time). The activities listed in the questionnaire were derived from the study by Abreu and Grinevich (2013) adapted from Ulrichsen (2009). Table 1 demonstrates the list of dimensions and activities that have been described above. These activities offer a wider range of efforts in terms of academic

entrepreneurship activities. Thus, allowing the participants to choose from a greater number of activities that have different impacts.

Table 1. List of Entrepreneurial Activities in the Questionnaire

DIMENSION	ACTIVITY
People-Based	Employee training
	Student placements
	Curriculum development
	Attending conferences
	Standard setting forums
	Participating in networks
	Sitting on advisory boards
	Giving invited lectures
	Enterprise education
Commercialization	Licensed research
	Patenting
	Spun-out company
	Form/run consultancy
Community-Based	Lectures for community
	School projects
	Community based sports
	Public exhibitions
Problem-Solving	Informal advice
	Research consortia
	Prototyping and/or testing
	Joint publications
	Hosting personnel
	External secondment
	Joint research
	Contract research
	Consultancy services
Setting of physical facilities	

3.2. Interview Design

A combination of the interview guide technique with a standardized format was employed in the design. This made it possible to follow the same basic lines of inquiry with each interviewee while allowing the researcher to explore certain aspects in greater depth and to ask new questions to inquire about new aspects of the subject matter (Patton, 2012).

The twenty-six questions in the interview guide were chosen to explore a wide range of key concepts related with academic entrepreneurship studies in the literature such as output, human capital, ecosystem and process. The interview questions and the objectives they are asked to serve are shared in Appendix C.

3.3. Recruitment and Data Collection

In qualitative approach, “recruitment” involves identifying and inviting participants who possess relevant experiences or insights about the study topic. In this study, this began with defining inclusion and exclusion criteria, followed by selecting recruitment strategies such as convenient sampling and snowball sampling. Data collection from the participants who took part in our study involved interviews to gather rich, detailed information. This process included obtaining informed consent, establishing rapport with participants, and ensuring ethical considerations like confidentiality. We recorded the data, using audio recordings and field notes, and then transcribed and organized it for subsequent analysis.

3.3.1. Recruitment

In this study, the recruitment of participants was from METU. METU is an ideal context to study academic entrepreneurship for several reasons. First of all, gender distributions are almost equal – with the ratio of women among academic personnel is 51% according to the most recent University Monitoring and Evaluation Report by the Council of Higher Education (YÖK).

Second, METU is among the twenty-three research universities out of two hundred and eight in Türkiye. Within these twenty-three, along with İstanbul Technical University and Boğaziçi University, METU is in A1 category which signals high level of research performance. Presidency of Strategy and Budget’s Research Universities Support Program (ADEP) is introduced to fund research universities like METU, in the fields of health, social sciences and advanced technology. The aim of this support, which was given in 2022 for the first time, is to increase the competitiveness of research universities in the international arena, to enhance their

R&D activities, to increase the number of publications, to raise these universities' international rankings, and to promote their brand value so that they can produce high value-added products in the fields included in the Eleventh Development Plan.

Third, according to the eleventh Entrepreneurial and Innovative University Index which was prepared by The Scientific and Technological Research Council of Türkiye (TÜBİTAK) and announced in April 2023, METU has the top spot. This index was created for the first time in 2012 in order to trigger the innovation and entrepreneurship activities of universities and to measure their performance. Within the scope of the index, the fifty most entrepreneurial and innovative universities are ranked according to twenty-three indicators under the dimensions of "scientific and technological research competence", "intellectual property pool", "cooperation and interaction" and "economic and social contribution". METU leads the way by nine leaderboard top spots in this index followed by Sabancı University's three.

Finally, it is also in METU that Türkiye's first technopark was established. The formation of ODTÜ TEKNOKENT started in the 1980s with the establishment of ODTÜ TEKMER which was funded by the World Bank and supported the foundation of incubation centers for technology development. Later, the success of ODTÜ TEKMER reinforced the foundation of a science park at METU and in 2001, the first constructions were completed of the science park. The same year that Technology Development Zones Law No.4691 that defines the legal framework for technoparks in Türkiye was enacted.

ODTÜ TEKNOKENT is not only the first and most successful science park of its kind (ODTÜ TEKNOKENT ranked first for seven consecutive years, according to the Technology Development Zones Performance Index study of Ministry of Industry and Technology between years 2011-2017 and is still at the top of the list among the ninety-one technology development zones), but also it sets an example to its own kind. It does so by hosting accelerator programs like New Ideas New Jobs (YFYI), pre-incubation formations such as Animation Technologies and Game Development Center (ATOM)), incubation centers, accelerator and investor Growth Circuit which is formed as a financial tool, ODTÜ Technology Transfer Office for

the commercialization of academic know-how, Defense, ICT and Health clusters to encourage collaboration among companies, and liaison offices abroad to increase international cooperation.

All of the features of METU that are listed above describe the ideal university in terms of existing definitions of academic entrepreneurship ecosystem (Di Grigorio and Shane, 2003; Shane, 2004; O’Shea et al.,2005; Martin, 2012; Siegel and Wright, 2015). Therefore, recruiting the interviewees from METU allowed us to see the factors and mechanisms that have been studied before as well as potential new dimensions that lead to a successful entrepreneurial university. This, in turn, made it easier to search for an understanding and definition of academic entrepreneurship and the aspects and dimensions considered for constructing the suggested framework of academic entrepreneurship.

Before the interviews were conducted the approval from the METU Human Subjects Ethics Committee’s was sought after (Appendix A). After the approval was received, twelve women, working full-time at different departments, possessing various academic titles, were interviewed to gather data for the study.

Table 2. Participant Profile

PARTICIPANT PROFILE				
INTERVIEW ID	FACULTY	ACADEMIC TITLE	ADMINISTRATIVE TITLE	TENURE (YEARS)
Person A	Faculty of Education	Associate Professor	Yes	7
Person B	Faculty of Arts and Sciences	Associate Professor	No	17
Person C	Faculty of Arts and Sciences	Professor	No	11
Person D	Faculty of Arts and Sciences	Associate Professor	Yes	17
Person E	Faculty of Arts and Sciences	Associate Professor	Yes	5
Person F	Faculty of Economic and Administrative Sciences	Professor	No	26
Person G	Faculty of Engineering	Research Assistant	No	9
Person H	Faculty of Architecture	Professor	Yes	40
Person I	Faculty of Economic and Administrative Sciences	Professor	Yes	15
Person J	Faculty of Engineering	Associate Professor	Yes	19
Person K	Faculty of Education	Associate Professor	Yes	22
Person L	Faculty of Architecture	Associate Professor	Yes	11

The majority of the interviewees were chosen by convenience sampling although some of the interviewees were proposed by already interviewed academicians who thought their colleagues might be a good source of information for the study.

Therefore, snowball sampling was also used. Table 2 summarizes the information related to the participants whose names will not be used throughout the thesis, but will be addressed as Person A to Person L whenever their interviews were referred to.

3.3.2. Data Collection and Analysis

The data for this study is collected from the in-depth, semi structured interviews conducted face-to-face with the participants. The duration of each interview ranged between 43 minutes and 1 hour 42 minutes. The interviews were recorded on a mobile phone device to be transcribed later except for one interview which was conducted via Zoom and recorded on a computer, because the participant was not available at the university campus. The recorded interviews transcribed through Wisper (OpenAI). After the initial transcriptions were produced by artificial intelligence, the recordings and transcriptions were crosschecked for typos, errors and words lost in translation by the researcher.

For the coding process of the transcribed interview data, a qualitative analysis software called MAXQDA was used. To explore what academic entrepreneurship means to the participants and how they experienced academic entrepreneurship processes, the coding was completed in two steps. In the first step of the coding process open coding was employed. This involved systematical breaking down of the interview data to identify meaningful concepts among the transcriptions. The process began by reading the transcriptions thoroughly several times to gain familiarity with their content. Next, the transcriptions were segmented into smaller units such as words, sentences or paragraphs, and assigned descriptive codes which emerged inductively from the data and represented the actions, ideas, or themes. By continually refining and comparing these codes and by grouping similar ones, broader categories were developed. This iterative process helped uncover patterns and insights, forming the foundation for deeper understanding of the participants' perceptions about academic entrepreneurship, the university and other academicians as part of their ecosystem, the characteristics of their jobs as teachers, researchers and potential entrepreneurs and their personal characteristics as observed by

themselves. In the second step of the coding, the relationships between the codes and categories identified during open coding was explored. This exploration involved organizing and linking these codes by identifying central phenomena, cause-effect relationships, sentiments, contexts, and outcomes. This in turn helped us to refine and group the data in our hand into a more comprehensive structure, focusing on how different aspects interact or influence each other. The second step of the coding process, helped us to deepen the analysis by moving from codes to a connected and meaningful framework for possible theoretical insights. As a result of these two steps, a combination of 154 codes were generated. The list of the codes is provided in Appendix B.

CHAPTER 4

ANALYSIS AND FINDINGS

This chapter presents the results of this qualitative study on women in academic entrepreneurship, offering rich insights into their lived experiences, challenges, and successes. Drawing from in-depth interviews and qualitative analysis, it unpacks the nuanced dynamics of how women navigate entrepreneurial pathways within academic institutions.

Key themes emerging from the data illuminate the interplay between structural barriers, personal resilience, and institutional support. These findings not only shed light on the unique journeys of women academic entrepreneurs but also contribute to broader discussions on gender equity and innovation in academia.

4.1. Analysis

Building on the definitions and the approaches described within the academic entrepreneurship literature, the analysis and the presentation of the findings in this study is comprised of two parts. The first part is made up of the data gathered from the questionnaire and it is called the structured part. Since the total number of participants is small and a qualitative approach is employed as the primary method to explore the research questions, the data gathered from the questionnaire is mainly used to categorize participants rather than being used in complex statistical analyses. These categories are used to explore whether there are any patterns or not within the interview data that suggest the implication of demographics, personality factors, risk-taking attitudes, self-perceptions and intentions of the participants towards academic entrepreneurship.

The second part of the analysis is based on the data obtained from the participants' answers to the semi-structured interview questions. This unstructured part of the analysis is assisted by MAXQDA; a software designed to ease qualitative analyses. The coding process on MAXQDA lead to the identification of key concepts that emerged as themes that were aligned with existing literature on academic entrepreneurship activities and approaches as well as themes specific to the case at hand.

The analysis process involved an initial stage where open coding was employed. In this stage each response to the interview questions were treated on its own, ignoring the relationship with the approaches, frames and conceptualizations coming from the existing literature. This is done to break down the data and analyze it to identify patterns that may or may not eventually become concepts, categories, or themes within the study. In the second stage, memos were created from the noted observations during the interviews, the researcher's own experience within the university setting about attitudes and actions towards the concept, and the bulk of information coming from the literature about "academic entrepreneurship". In the following stage, the data from open coding session in the first stage and the framework based on the memos in the second stage are compared and contrasted. The final and the most rigorous stage of the analysis involved defining patterns and themes that appear among the interviews and perform a final analysis of the interview data within the scope of those themes.

4.2. Findings

Below, you will see that the findings of this study are presented in two sections as described under the "Analysis" heading. The first one is based on the structured part of the study. In this section, the information gathered from the questionnaire is going to be compared and contrasted with the literature and also each interviewee's remarks, if there is any, on the subject matter during the interviews. The second, unstructured part, is comprised of the interpretation of interview data on its own within the framework constructed by the researcher based on the literature and the emerging themes from the transcriptions.

4.2.1. Results from the Questionnaire

The first part of the findings is basically coming from the four parts of the questionnaire: (1) The demographics, (2) Risk-Taking Attitude, (3) BFI-10, and (4) Academic Entrepreneurship Activities.

4.2.1.1. The Demographics

The demographic information about the participants is shared in Table 3. It can be observed from the table that the majority of the women interviewed are from Faculty of Arts and Sciences. According to METU Research Information System, there are 552 researchers working under this faculty. The distribution of faculty by gender is 53.3% male and 46.7% female. Of the four female academicians all of whom are coming from different research areas.

Table 3. Demographics of the Participants

DEMOGRAPHIC INFORMATION OF THE PARTICIPANTS									
Interview ID	Age	Marital Status	Level of Education	Academic Title	Tenure	Administrative Title	Other People in Household	Children in Household	Monthly Household Income
Person A	45-54	Married	Postdoc	Associate Professor	7	Yes	2	1	50000-100000
Person B	45-54	Married	Postdoc	Associate Professor	17	No	1	0	100000-150000
Person C	45-54	Married	PhD	Professor	11	No	2	1	150000-More
Person D	55-64	Married	Postdoc	Associate Professor	17	Yes	3	2	150000-More
Person E	35-44	Married	Postdoc	Associate Professor	5	Yes	2	1	100000-150000
Person F	55-64	Divorced	PhD	Professor	26	No	0	0	50000-100000
Person G	25-34	Married	PhD	Research Assistant	9	No	1	0	50000-100000
Person H	55-64	Married	PhD	Professor	40	Yes	1	0	100000-150000
Person I	35-44	Married	PhD	Professor	15	Yes	3	2	50000-100000
Person J	45-54	Married	PhD	Associate Professor	19	Yes	2	1	100000-150000
Person K	45-54	Married	PhD	Associate Professor	22	Yes	2	1	150000-More
Person L	45-54	Married	PhD	Associate Professor	11	Yes	2	1	100000-150000

Table 3 also shows that four out of twelve participants are professors. There is only one participant who is a research assistant and the rest of the participants are working as associate professors.

It can also be seen from the table presented above that more than half of the participants in the study have an administrative job within METU, in addition to their teaching and research job responsibilities. These administrative responsibilities are ranging from being a dean of a faculty to being the manager of a research center among the thirty-one others within the university context.

In addition, all of the women in this study, except for one who is divorced now, were married.

4.2.1.2. Risk-Taking Attitude

Research suggests that risk averse people are more reserved towards entrepreneurship and that risk-taking attitude can predict entrepreneurial intention (Douglas and Shephard, 2002; Zhao et al., 2005). In our study, however, although a significant number of interviewees pointed out that they do not like to take risks, as you can see below, their intentions of pursuing academic entrepreneurship in the future are mostly above average. This can be related to the fact that the interviewees perceptions of academic entrepreneurship, at the beginning, is mostly establishing a spin-off company which carry a greater risk of losing money.

Table 4. Risk-Taking Attitude, BFI-10, and the Participant’s Self-Perception About Academic Entrepreneurship

INTERVIEW ID	RISK TAKING ATTITUDE	BIG FIVE PERSONALITY TEST (SHORT VERSION)					INTERVIEW QUESTION #6	INTERVIEW QUESTION #12
		Openness to Experience	Conscientiousness	Extraversion	Agreeableness	Neuroticism	Self-perception as entrepreneur (0-10)	Intention to be involved in AE
Person A	Occasionally	Positive	Strong Positive	Neither	Strong Positive	Strong Negative	1	"Maybe"
Person B	Never	Somewhat Negative	Positive	Positive	Negative	Negative	2	7,5
Person C	Frequently	Positive	Strong Positive	Neither	Neither	Positive	"I am already an entrepreneur"	7,5
Person D	Sometimes	Somewhat Positive	Strong Positive	Strong Positive	Positive	Somewhat Negative	"I did not have such an attempt"	5
Person E	Occasionally	Positive	Strong Positive	Strong Positive	Strong Positive	Positive	6	8
Person F	Sometimes	Negative	Strong Positive	Strong Positive	Strong Positive	Strong Positive	"I have written a project and managed that project"	8
Person G	Rarely	Neither	Strong Positive	Negative	Positive	Positive	"I do not"	10
Person H	Frequently	Strong Positive	Strong Positive	Positive	Neither	Somewhat Positive		
Person I	Rarely	Neither	Strong Positive	Neither	Strong Positive	Somewhat Positive	3,5	7,5
Person J	Rarely	Somewhat Positive	Strong Positive	Positive	Strong Positive	Positive	"Nearly 0 attempt"	"It will go on like this"
Person K	Never	Somewhat Positive	Strong Positive	Strong Negative	Positive	Neither	"I do not see myself as an entrepreneur"	
Person L	Occasionally	Strong Positive	Strong Positive	Strong Positive	Positive	Neither	6	8,5

4.2.1.3. Big Five Personality Test

Entrepreneurs have to take full responsibility, both financially and personally, for their endeavors and they mostly work in a very complex and restless environment. As a result, they face high pressure coming from all aspects of the entrepreneurship process, as well as possible work-family conflicts caused by their ever-changing priorities. Therefore, it is reasonable to think that individuals low in neuroticism would have a better chance of becoming entrepreneurs because they are described as more self-confident and resilient in times of conflict and turmoil.

Social skills and social networks are also significantly important during the entrepreneurship process. Therefore, extraversion is an advantage for the potential entrepreneur whose social environment in the form of networks may provide them the resources and the information necessary to pursue an entrepreneurship opportunity. According to a study by Zhang (Zhang et al., 2009) both extraversion and neuroticism partially mediate the genetic influences on entrepreneurship for women.

In the light of the information shared above and regarding the BFI-10 results, there are two interesting results in Table 4: Person D and Person H. Person D defines herself as someone who take risks “Sometimes”, her “Extraversion” score is “Strong Positive” and “Neuroticism” “Somewhat Negative”. Although personal characteristics and risk-taking attitude, based on the existing literature suggests that she is a good candidate for academic entrepreneurship, neither her self-perception nor her intention of becoming an entrepreneur is observed and emphasized during the interview session.

Person H, on the other hand, defines herself as taking risks “Frequently”, her “Extraversion” score is “Positive” and her “Neuroticism” score is “Somewhat Positive”. When asked about her own self perceptions and intentions of pursuing academic entrepreneurship, first, one can sense that she dislikes the idea of entrepreneurship very much for she thinks academic entrepreneurship is actually “Wrong”. Then her attitude towards such an endeavor remains negative until, during the interview, the societal impact of such an activity is brought up. After that turning point, one can sense an attitude change towards a more positive stance. In this specific example and in several other interviews, being true to oneself and staying loyal to one’s political and ideological stance regulate the participant’s approach to academic entrepreneurship.

4.2.1.4. Academic Entrepreneurship Activities of Participants

This part of the questionnaire consists of questions that aim to determine the academic entrepreneurial level of respondents through asking them how much they

are involved with the listed activities. These activities offer a wider range differing from the commonly perceived accepted academic entrepreneurship activities which were listed in the questionnaire under the commercial-based activities in other words; patents, licenses, spin offs and forming and running consultancy. They are also most related outcomes of faculty research for the applied, STEM fields. The people-based, community-based, and problem-solving activities however broaden the concept and definition of academic entrepreneurship for they focus all activities that involve third parties, are innovative in nature and possess an element of risk while they lead to direct and indirect financial rewards for the academician and the university (Abreu and Grinevich, 2013).

In Table 5, it can be seen that there is diversity among the activity levels of respondents, except for the commercial-based activities. Involvement with the commercial-based activities is very few for all. Community-based activities follow similar course. On the other hand, people-based and problem-solving activities are highly involved type of activities among the participants. Person F can be considered as an outlier in terms of all activities. She has the lowest overall score. At the other end of the spectrum, Person K has the highest overall score.

Table 5. Academic Entrepreneurship Activities

INTERVIEW ID	ACADEMIC ENTREPRENEURSHIP ACTIVITIES (QUESTIONNAIRE)								
	People Based Activities (0-9)	PBA Points(0-54)	Community Based Activities(0-4)	CBA Points (0-24)	Commercialization Activities(0-4)	CA Points (0-24)	Problem Solving Activities(0-10)	PSA Points (0-60)	Total Points (0-156)
Person A	5	9	2	2	1	1	6	14	26
Person B	4	4	0	0	0	0	6	22	26
Person C	8	10	2	2	3	4	3	3	19
Person D	7	22	1	1	0	0	6	27	50
Person E	6	17	2	3	1	2	6	20	42
Person F	4	4	1	1	0	0	2	2	7
Person G	4	9	1	4	0	0	4	7	20
Person H	7	15	2	2	1	1	8	17	35
Person I	8	17	2	4	1	3	7	20	44
Person J	4	5	0	0	1	2	4	13	20
Person K	9	44	2	2	1	6	5	24	76
Person L	9	26	3	5	2	5	8	20	56

Findings of the activity levels from this questionnaire, required additional data which were coming from the interviews to explore academic entrepreneurship activity levels of the participants. These findings will be discussed in the next section.

4.2.2. Results from the Interviews

The second part of the findings is derived from data gathered from the interviews conducted with the twelve female academicians and the analysis of their interview data to bring out common themes between individual narratives.

4.2.2.1. Demographics, Personal Characteristics and Academic Status

When we consider the connection between the demographic characteristics in terms of the data collected from the questionnaire with the data collected from the interview, we observe some interesting findings. Research shows that involvement within entrepreneurial activities varies by academic discipline (Owen-Smith and Powell, 2003; Abreu and Grinevich, 2013; Siegel and Wright, 2015; Neves and Brito, 2020; Hayter et al., 2022). Academicians in the biological sciences, natural sciences, and engineering are more likely to participate in formal commercial academic entrepreneurship activities, such as filing patents, licensing technologies, or establishing spin-off companies. In contrast, those in the arts, social sciences, and humanities tend to engage in informal and noncommercial forms, including consulting, providing informal advice, or contributing to community development. (Ackers et al., 2015; Hughes et al., 2016).

With this in mind, one can presuppose that the academicians coming from the STEM related research areas would be most inclined to academic entrepreneurship endeavors based on previous research (Cuningham et al, 2024). In this study, the only person who calls herself an entrepreneur right away, without any definition of the academic entrepreneurship shared and discussed, is actually not from STEM sciences. The academician in question is from social sciences, has a spin off company and when asked about her involvement in academic entrepreneurship she expresses her inclination to work on the applied rather than theoretical side of research.

Age is another factor widely studied within academic entrepreneurship research. These studies based on life cycle models suggest that academic entrepreneurship

increases with age (Siegel and Wright, 2015; Zacher et al., 2019). According to these models, researchers in the early stages of their careers tend to focus on publishing to establish themselves a reputable place among their more experienced colleagues. On the other hand, senior academicians have more time and stronger connection of collaborators as well as more time to investigate their chances in commercialization of their research outcome (Carayol, 2007; Link et al., 2007; Stephan et al., 2007). Research also highlights that senior academics are more likely to have the time to engage in entrepreneurial activities that are partially based on tacit knowledge, and therefore require a greater degree of personal involvement, such as spinouts and consultancy (Klofsten and Jones-Evans, 2000; Shane, 2004). Data coming from two of the three senior and more experienced academicians supports these findings in terms of their actions and/or intentions of becoming involved in academic entrepreneurship in the form of consultancy services. For example, Person H indicates that she will do consulting if she finds the project special.

Senior academics also have wider networks in business and industry, allowing them to engage in more informal entrepreneurial activities without using the services of the university TTO (Link et al., 2007; Fini et al., 2010). While Person F rates her intentions of becoming an academic entrepreneur 8 or 9 out of 10, she mentions several institutions such as government and non-governmental institutions asking for consultancy services as well as informal advice based on her research area, confirming the impact of wider networks.

For example, I can say that I have made contributions in this area (migration), you know, to non-university environments, but they want us to share our knowledge as academics... A real environment of cooperation is emerging between the university and the state and semi-governmental institutions. This seemed meaningful to me personally. I have been asked for support on these issues more than ever before. (Person F)

Among the participants, the most salient attitude towards entrepreneurship activities was expressed by associate professors. They are one step behind the top academic title and they tend to give priority to activities that are supportive of their standing in the tenure and promotion criteria, for example, publishing in academic journals. The rest of the academic activities are waiting to be considered later, after they receive the title.

I am also not going for a TUBİTAK project. I will act strategically. I do a lot of refereeing at TUBİTAK. But I am not writing TUBİTAK projects. I can't spend time writing right now anyway. I won't write until I get my professor title. I know a lot of people who act likewise. (Person L)

Person D is another example of an associate professor postponing activities that does not help her achieve the professorship title.

I really didn't make such an attempt. I mean, now, because of this, you might say "Are you lazy?" I'm not lazy, actually, but I'm in a situation right now. I'm thinking about my academic ranking as much as possible. I'm trying to, I don't know, publish as much as possible. I'm trying to get my professorship. (Person D)

Person I, on the other hand, has got her professorship recently and she is thinking about writing a book that will be about the data she gathered from years of research – now that she got her academic title and doesn't need to publish desperately. While some of these participants are not at the beginning of their careers, they have a lot of research experience under their belt, yet they are still behind in achieving the ultimate professorship title and this makes them channel their efforts on publishing rather than commercializing their research and/or transferring their knowledge and experience through other forms of spillover activities.

Even though the rest of the participants did not have administrative titles when the interviews were conducted, they used to have one previously or they actually have administrative responsibilities without any titles within their departments. Workload is the most mentioned barrier to academic entrepreneurship activities among this study's participants. It is interesting to see that while these additional administrative tasks increase their workload, most of the participants also mention their educational value in terms of managing human capital, a budget, marketing strategy, and teamwork. All of these knowledge, skill and abilities are also complementary to entrepreneurial competencies (Steira et al., 2024; Botella-Carrubi et al, 2022). In the quotes below, participants talk about their administrative experiences. While Person D talks about the social side of her job, Person I talks about learning to understand the perspective of human resources.

For example, the (administrative) job, you know, it increases my workload, but you know, going out of the department and meeting new people is something different...I'm like, I'm stuck in the department, like a guinea pig, that's what they say in America. They say "Don't be a lab rat", after all, we love these experiments at labs, you know, running around etc., but going out, you know, there are definitely different things...projects, training students, when you get stuck somewhere, even coming here and meeting new people, their perspectives really make me happy, to be honest.

(Person D)

I am learning a lot. I don't know, personnel management...we did something like that for a while, I mean, I felt like a human resources specialist, it was an enjoyable experience, a little bit about the relations of the personnel her, we listened to everyone, etc. I mean these are important because I really think that I can't manage people well as a good manager because I used to think everyone knows their own responsibilities and should do their job anyway. It doesn't work that way. (Person I)

As for the marital status, interviewees' caretaking responsibilities towards their parents and/or their nuclear family and the impact of these responsibilities were mostly mentioned when they were talking about gender related barriers to academic entrepreneurship endeavors, as well as regrets and/or failures career-wise. For example, when she was asked about potential barriers to pursuing entrepreneurship, Person B replied as "My biggest problem is something like this, it's a bit indirect, but generally these family responsibilities fall more on women's shoulders, I'm sure it will be an obstacle". Person I also shared her experiences during her early career, emphasizing the struggle and stress she had learning to teach while she had to prove herself within the department by making publications besides trying to take care of her young family.

I came from America, a few weeks later I started teaching. And I taught two courses; one was a graduate course and the other was an undergraduate course. I mean, preparing them, entering the classroom for the first time, I mean, they did not tell us anything about teaching during my doctorate. It was a bit challenging for me. Plus, then, I had to publish on one hand, if there was no research there was no publication and there were responsibilities like raising a family and children. Of course, they were very depressing. (Person I)

Person C also mentions family responsibilities and points out that she would not be attempting to pursue an entrepreneurship if she did not have the money and resources

to send her kid to kindergarten and hire help for household jobs and daily errands. One could sense during the interviews that all of the participants were smart, independent and resourceful women and although there were no direct questions regarding their spouses, a couple of them mentioned how supportive their husbands were especially during their doctorate studies.

However, they were all, very clearly, the ultimate caretaker of kids and family and sometimes the one who had to sacrifice greater academic success because of that. Person F explains her early career decision and choice of family over reputation in the following quote.

I said, "I can't come,". It was not possible, I would go there for 3 years, I would leave my children here, I would leave my husband. Even if I took my children, the schools there and here cannot even be compared. I had a mother and father to take care of. I made a choice as a female academician. I think about this from time to time because it was actually a great opportunity for a person working about Central Asia to live in one of those countries in terms of their professional and career advancement. (Person F)

As the definition and the boundaries of academic entrepreneurship activities change, so does the form and level of risk. Person G, for example, is "Rarely" taking risks yet her intention to be involved with academic entrepreneurship is 10 out of 10. She explains risk in academic entrepreneurship as:

What I invest in and what I lose is important. Because if I lose more than I invest, I will probably back down a little. Because as I said in the survey, I don't like taking risks at all. If I don't get a result, I will lose a lot of time. Yes, it is a hundred percent experience, but a lot of time will be lost. Because you will really need to give it your attention, time, effort, etc. ...if you don't have a strong funding, if you have to put a lot from your own resources, it seems to me that you may lose money. (Person G)

Person K defines herself as a non-risk taker, and she does not mention any intention to pursue academic entrepreneurship during the interview, yet she scores the highest point overall in the academic entrepreneurship activities questionnaire. She is a very good example of a female academician whose curiosity, problem solving skills and motivation to learn and do new things overcome her risk-taking attitude.

4.2.2.2. Awareness about Academic Entrepreneurship

Table 6, summarizes the answers of the participants to the Academic Entrepreneurship Activity Questionnaire and the interview data regarding their self-perceptions of being an academic entrepreneur as well as their intentions of becoming one in the future. This table is related to the first part of the analysis as much as the second part of the findings for it is the most important data regarding the awareness of the participants in terms of their knowledge of and self-perceptions in academic entrepreneurship.

It can be seen from the table that Person K who does not “see herself as an entrepreneur” has the highest overall score in academic entrepreneurship activities whereas Person D who stated that she “did not have such an attempt”, scored the third highest point overall. Person C defines herself as already an entrepreneur, but scores the second lowest on the overall score. These discrepancies within the data obtained and mentioned above is confirmation of the lack of awareness in terms of academic entrepreneurship activities and the participants’ self-perception of their standing as a potential academic entrepreneur.

Table 6. Participant Self-Perceptions and Academic Entrepreneurship Activities Involvement Compared

INTERVIEW ID	INTERVIEW QUESTION #6	INTERVIEW QUESTION #12	ACADEMIC ENTREPRENEURSHIP ACTIVITIES (QUESTIONNAIRE)								
	Self-perception as entrepreneur (0-10)	Intention to be involved in AE	People Based Activities (0-9)	PBA Points (0-54)	Community Based Activities (0-4)	CBA Points (0-24)	Commercialization Activities (0-4)	CA Points (0-24)	Problem Solving Activities (0-10)	PSA Points (0-60)	Total Points (0-156)
Person A	1	"Maybe"	5	9	2	2	1	1	6	14	26
Person B	2	7,5	4	4	0	0	0	0	6	22	26
Person C	"I am already an entrepreneur"	7,5	8	10	2	2	3	4	3	3	19
Person D	"I did not have such an attempt"	5	7	22	1	1	0	0	6	27	50
Person E	6	8	6	17	2	3	1	2	6	20	42
Person F	"I have written a project and managed that project"	8	4	4	1	1	0	0	2	2	7
Person G	"I do not"	10	4	9	1	4	0	0	4	7	20
Person H			7	15	2	2	1	1	8	17	35
Person I	3,5	7,5	8	17	2	4	1	3	7	20	44
Person J	"Nearly 0 attempt"	"It will go on like this"	4	5	0	0	1	2	4	13	20
Person K	"I do not see myself as an entrepreneur"		9	44	2	2	1	6	5	24	76
Person L	6	8,5	9	26	3	5	2	5	8	20	56

Within interview data there is more proof of that the confusion and lack of understanding what academic entrepreneurship implies and necessitates from the perspective of the participants.

I cannot think of anything really. It might be the academic version of entrepreneurship. I first thought industrial work, I really did not understand what it is about. It might be things that are innovative, that could be defined as breakthrough in academic subject matter. (Person C)

As you can see in the quote above, an example of such is Person C is one of the founders of a spin off firm based on her specialization and defines herself as an entrepreneur yet she cannot find words to define the concept. Person D also hesitates before asking a question back when asked about academic entrepreneurship, “When you say academic entrepreneurship, do you mean something like founding a company?” Person D is working in life sciences and her research is bound to result in certain products, however her notion of an academic entrepreneurship activity is only founding a company. Person F indicates that she had never heard of academic entrepreneurship until this interview while Person L says:

I mean, I know that in our profession, academicians are very much interested in entrepreneurship, and entrepreneurship is different from academic entrepreneurship. I mean, I did never use it side by side or I do not remember thinking about it too much. (Person L)

4.2.2.3. Definition of Academic Entrepreneurship

As explained earlier, the participants of this study were asked to complete an academic entrepreneurship activities questionnaire where they are asked to mark the frequency of their involvement with activities that extend the scope of academic entrepreneurship beyond those solely involve commercialization, namely; people-based, community-based, and problem-solving activities. The comparison of activity points with interviewee’s self-perception as an academic entrepreneur allows us to target the discrepancy caused by conceptual limitations in the definition of academic entrepreneurship. For example, two out of three participants who have scored the highest points in overall academic entrepreneurship activities, Person D and Person K, responded the Interview Question 6: “How much of an academic entrepreneur do you define yourself to be on a scale from 0 to 10 ('0' being 'None' and '10' being 'Totally’)” as; “I did not have such an attempt” (Person D and “I do not see myself as an entrepreneur”.

Even though most of the participants did not have a clear-cut idea of what academic entrepreneurship actually is, the coding of the transcriptions of the interview data, with a broader perspective on the subject matter, showed that the definitions and experiences are categorized under three themes: (1) Output: Explaining “What” are being done or intended to be done under the umbrella term academic entrepreneurship, (2) Input: Explaining the characteristics of “Who” will be doing the academic entrepreneurship activities and “Where” regarding the academic entrepreneurship ecosystem which include the academic context, institutions, stakeholders, and finally (3) Process: Explaining “How” generation of innovative ideas result in knowledge spillover with allocating and seizing opportunities and resources. It was not easy to place “Barriers and Support Mechanisms” under one category, because they were both strongly related to where and how academic entrepreneurship activities occur. However, due to the fact that majority of the interview data from the participants regarding these two concepts fell under the ecosystem theme, the findings related to them will be considered within the “Input” category.

4.2.2.4. Output

Within the framework of what is considered as an academic entrepreneurship activity, three themes –aligned with what is presented in Figure 1 in Abreu and Grinevich’s (2013) activity categories– have emerged. Before they were introduced with a definition, participants described academic entrepreneurship with commercial activities. Within examples of commercial activities, namely spin offs, patents and licenses, they mainly chose to associate the concept with a spin off company. Person A’s idea of an output is something corporate while Person C thinks academic entrepreneurship has to have commercial implications. Person G explains the output as the transformation of the low-scale work they do at the department put into practice on an industrial scale through a start-up.

These three examples, chosen among others very much like them, indicate that participants’ initial understanding of an academic entrepreneurship activity is founding a company, with a commercial output.

In addition to these thoughts and comments about company formation, some of the participants also proposed the activity of consulting services. These services may or may not be directed to the customers within the working capital system of the university so they were placed under the theme, informal commercial activities. Person B and Person K exemplify their consultancy services when talking about academic entrepreneurship while Person F, below, gives a detailed definition of the way consultancy can be done by an academician as knowledge spillover to a third party.

...may be an academician affiliated with METU takes the initiative to go to a company in TEKNOKENT to give lectures apart from his/her own academic studies, etc., and asks, "I am doing something like this, how can I contribute to you or how can you support me?", independent of his own department, faculty or rectorate. (Person F)

Participants were actually more involved with consulting services and contract research although they theoretically thought academic entrepreneurship is about founding a company. They were eager to share their experiences as such during the interview.

No, consulting is not the first thing that comes to mind. Although academicians are very much involved with consulting, that sort of activities does not sound like entrepreneurship. (Person E)

Finally, under the output category, majority of the activities fell under the theme of non-commercial and/or societal. It may be because majority of the participants defined their research focus falling under humanities and social sciences. There is growing research suggesting that academicians in humanities, arts and social sciences tend to focus on the types of activities focusing on social welfare and positive societal change (Mars and Rios-Aguilar, 2010; Kloftsen et al., 2019; Cunningham et al., 2024).

...it may also be using your knowledge from your academic area to pursue entrepreneurship like opening a lab, forming reading groups (Person A)

AE can be academicians on their own or with a group of academicians being more active in their jobs. This being more active may include activities like

publications, being a part of research projects, getting involved in collaborations with other universities, and being a part of university-industry collaborations. (Person F)

It actually turned into a full societal development project. Even the name is: Kommagene Nemrut Protection and Development Program. Because there are almost ten minor projects in it. There are projects, plans at the upper scales; some of them are research projects, some of them are architectural projects. (Person H)

Entrepreneurship and academia...Like, I mean, something that serves the society more, that is, the social aspect is more prominent, or I can say it is about creating something. Maybe something like offering a service to the outside world and sharing it with a wider audience comes to my mind. (Person I)

I can think of its creation as an example of academic entrepreneurship. It is something that did not exist before and it is something useful. But of course, this is a non-profit organization, but I think we can still call it entrepreneurship. I mean, I thought at the time that this kind of more innovative changes in the academic program or the establishment of new disciplines could actually be described as academic entrepreneurship. (Person J)

Above, there are some examples from the quotes of the participants which fall under non- commercial/societal academic entrepreneurship activities similar to those exemplified in Abreu and Grinevich (2013) study as informal advice, public lectures, community development, joint research and joint publications.

4.2.2.5. Input

The themes related to the agent who will be involved in the academic entrepreneurship activities, and the environment where those activities blossom and develop will be examined in the input category.

Human capital is in the heart of action within the academic entrepreneurship framework – whether they are academicians, PhD students, and alumni. Particularly the personal characteristics, motivations and the entrepreneurial skill sets define the entrepreneurs and potential entrepreneurs.

Person A, for example defines the academic entrepreneur, below, as some business person and Person B is reluctant to academic entrepreneurship because she has to do

constant multitasking. Person K, on the other hand, defines herself as risk-averse and very conservative and therefore she thinks she had never thought of becoming an entrepreneur.

I mean, I don't have a negative opinion about academics who establish companies right now, but I think it's a bit more like that, you know, the idea of being a person who works at their desk, who reads, thinks, writes, I think it's about being away from that image of a person who runs from meeting to meeting, who worries about, I don't know, how can we get a patent, how can we turn this into money, etc. (Person A)

While the motivation behind Person C's academic entrepreneurship endeavor is her partner, Person E is inspired by her fellow academicians at METU.

My partner is a very close friend of mine, he got involved because he made an investment here. He said he would make it very easy for me. I didn't have the courage on my own. (Person C)

I think METU is not bad in these things. Because there is a good working environment here, in my opinion. I mean, there are really good academicians. Good things are happening. They are good examples for us. So, if they can get this, you say, I can get it too, and you start researching, too. (Person E)

A considerable number of participants mentioned their lack of entrepreneurial skills and/or training related to these skills. Person B, for example, quotes her deficiency of managing a budget, training and motivating employees and working with a completely new set of rules and regulations. Meanwhile, Person E is trying to develop a project management skill set by reading books and taking courses from open sources about the subject matter.

I mean, we don't know the legislation, the European Union legislation; and the European Union legislation is very complicated, we don't know how to manage the budget in these projects, we don't know how to talk in a company. I mean, you take people and bring them at a level in a subject they have never done before, we don't know that. (Person B)

By the way, this is something I have been thinking about lately. I mean, sometimes I say "Let me read a book in this field". I mean, I think I want to do this because I don't have a formation in the Management. So, I've been searching for that lately. Also, I am searching for courses on open sources. In

a way, these are related to project management, similarly, these can be related to entrepreneurship. When I look at entrepreneurship from this perspective, it really should be. (Person E)

Under the theme of the entrepreneurial ecosystem; the participants' experiences with institutions, stakeholders, the support mechanisms that encourage potential entrepreneurs as well as barriers that discourage them to pursue academic entrepreneurship were placed. While the participants were generally happy and proud to be a part of METU, there was also a sense of resentment because their research and teaching efforts are not appraised well enough, at least not as much as published articles in reputable journals.

If you can apply and be granted for a project funding, that's good, but I think the tenure and promotion criteria revolve around publishing articles on Q1, Q2 journals; that is when you are a good researcher from the university's perspective. (Person F)

In other words, the more contributions were made to articles and publications, the more those numbers increased, the better the work academics for the university. (Person J)

As a part of the ecosystem and also as a support mechanism for academic entrepreneurship, the participants mainly emphasized the role of ODTÜ TEKNOKENT. Some of the quotes below show the importance and impact of it related to the entrepreneurship endeavors the academicians pursue or planning to pursue.

The first thing that comes to my mind when I think about academic entrepreneurship is the ODTÜ TEKNOKENT, actually. That is the place we see from our windows every day and it is something that is always in our lives. (Person B)

But if it won't happen at METU, it probably won't happen anywhere else because there is ODTÜ TEKNOKENT here. METU is very good at these kinds of things, really. (Person E)

Other institutions and support mechanisms within the ecosystem are TÜBİTAK, EU and other international foundations as they are the ultimate funding organizations for

this study's participants. The importance of funding and support from these organizations are of utmost importance for the academicians to pursue their research and also run their labs and recruit PhD students. EU projects that require international collaborations among the faculty are also found inspiring. Person D and Person J point out to the fact that TÜBİTAK is supportive and that they are content with the way they are funded through. Person B exemplifies EU project funds as more supportive. Person A and Person I also received support from the Newton Fund in England and they were benefited from it both in terms of finances and collaborations.

I have received a scholarship from Newton Fund in England in 2016-2017....I was the project's principal investigator. I also had colleagues at a university in England with whom I worked. I mean, we still work with that group, even though the project is over. That thing, it was important. (Person I)

AGEP (Academic Development Program) is a popular support mechanism that brings academicians together and creates a network of people coming from different disciplines and research areas, setting a stage for multi-disciplined collaborations. Several participants emphasized the impact of AGEP on their successful orientation to the university as well as introduction to the other faculty which led to joint publishing and other collaborations.

AGEP orientation is very, very successful. It already provides you with a comfortable environment there. Then there are things in thematic areas. There is TEKPOL's seminars. Applied Mathematics Institute has its own seminars. It has workshops in some special areas. Then there are TÜBİTAK's trainings. Springer's trainings. If you can attend each of these. Actually, learning other fields is not bad at all. I think it provides a relationship with them. If you are open to it. If you don't say "I'm going to waste time on this". If you can spend some time on them. (Person E)

The university has a program called AGEP (Academic Development Program). As you may have heard, because of this program, we have known everyone who started working at this university, that is, since 2009. Because that program is at our hands and because of the activities we have done in this program, I have met a lot of people from all five faculties. (Person K)

In terms of barriers within the entrepreneurship ecosystem, the participants bring up a variety of issues such as the complexity of forming a multitasking group and maintaining its efficiency to pursue academic entrepreneurship.

From time to time, some things come to my mind, but then you need very different people; there is the competition part, there is the language therapy part, there is an education part; each of them needs a separate group, I don't really get into that at the moment. (Person A)

Our professors, I mean, they probably do not want to waste that time. It also requires starting from scratch every time, even if it is not from the very beginning. It also makes the things bigger; it makes the team bigger. It makes the team on the collaboration side bigger. That seems a bit difficult. (Person J)

Heavy workload was one of the most emphasized barriers to pursue any work outside the teaching and research. One of many examples from the interview data is shared below. Here, the participant is stressed because she has to manage a lot of things at the same time. The participants have teaching responsibilities, majority of them has at least two courses to give per semester. They have masters and PhD students and supervise these students' theses. Some of the participants have lab or research groups and they have to allocate time to follow up the work going on within those groups. One of the participants mentioned that she and her colleagues are finding it hard to say "No" and because she cannot do so prefer to stay out of her office to complete her urgent work for when she is present at her office surely somebody finds her and gives her a job that nobody takes.

I couldn't do well (during the project) in a period where I had a managerial duty, a heavy workload, a family, a job, and so many responsibilities. In short, rather than time constraints –time was also very limited, yes– I could not do my other duties well due to the stress of having to learn too many different things at the same time and the anxiety of not being able to do them well. (Person B)

Bureaucracy and time are the next two popular barriers in academic entrepreneurship. Many of the participants dread the bureaucracy to apply for grants and funds and they think especially TÜBİTAK funds sometimes do not worth the time spent preparing the paperwork necessary. One of the participants, in detail, talked about her EU Project where the bureaucracy and the legislations were so intricate and confusing that they nearly had to pay one of the employees in the project from their own pockets. Time is also very valuable for the academicians. The majority of the participants mention that they work all the time; on the weekends, at

home after everyone goes to sleep. Those that mention being an academician means working all the time, actually do not complain about it, but still, you can sense that the need time management skills in addition to a better work-life balance to make up some time to do additional work such as academic entrepreneurship. “First of all, there is a lot of bureaucratic work involved. Plus, I don't have much time. I mean, I shouldn't neglect my work here, at the university”, says Person C when she is asked about her motivations towards academic entrepreneurship.

The need to fund projects was mentioned before as an important support system in the academic entrepreneurship ecosystem. Financial constraints are emphasized by almost all participants to pursue academic entrepreneurship. Not only their expectancy to earn some money apart from their salary, but also financial constraints lead to lack of resources for their research. Especially two participants whose researches have potential for an innovative product mentioned how expensive are raw materials, chemicals, lab equipment.

This and of course, finance, after all, how will these studies be supported? For instance, we have a biological question, we will do this, we will do that, etc. Well, if we cannot get support, it remains where it is started because our field is very expensive. (Person D)

...these are also things that require resources, although these are also things that bring support from outside. We are at a state university, our resources are limited, you have to give up certain things. (Person K)

Lack of collaboration between different departments is mentioned as one of the barriers. The participants think this is because there is a competition between departments as well as between academicians. Some participants also suspect that being a woman may cause failing of collaborations especially with male-dominated departments. On the other hand, some participants suspect this lack of collaborations is the result of introverted personality character of the academicians in general. They describe their ideal working environment working alone, quietly on their research and publications at their offices. The cause-and-effect relationship of lack of collaborations needs further work and a wider range of responses to figure out the underlying factors.

I really believe in collaborative work. But it can be hard for some fields to accept you. In other words, it can be difficult for computer science to accept a statistician. There can be a mindset of “I mean, we already do this...” (Person E)

Daily errands at work that add up and fill up the office hours is the barrier in front of several participants to pursue academic entrepreneurship. So much so that sometimes they cannot even remember completing one solid job. These errand include departmental administrative jobs, student affairs, reading and signing documents and the like.

I mean, I want to write the book, I am very excited about it, but on the other hand, when I came to the office this morning I have been trying to finish a refereeing for a journal abroad. (Person I)

Institutional policies and rules sometimes stand as a barrier in front of academic entrepreneurship. Although all of the participants are happy and proud to be teaching and researching at METU, they also mention sometimes university policy is an inhibitor of relationship and knowledge exchange between faculty and third parties outside the university setting.

In METU, we are of course somewhat protected and closed, I think. This is a security issue in terms of establishing a connection with the society. You want to organize an event. We have a roundtable meeting every year. You register for the meetings in advance. Of course, you can join on the last minute, that is, before you register. In other words, we do something according to that registration, but sometimes there are problems. We have an event. We want more people to attend, but sometimes such situations occur. (Person L)

4.2.2.6. Process

The final category is the process where the participants defined their academic entrepreneurship experiences and future plans according to series of events that begin with blossoming of an innovative idea, allocating and seizing financial and human resources, and end with an academic entrepreneurship activity. The quotes below are shared because they each describe a different aspect of the process. In the first quote, for example, Person B talks about an experience which is surprising and nice which formed a basis for her approach to university-industry collaborations

afterwards. In another example, Person D, is explaining a process in which different disciplines and perspectives come together and produce together.

It didn't happen directly, but it happened like this: I was appointed as a KOSGEB referee for a company. In fact, it was the first time I got the idea that academia and industry could get closer like this. That was 12-13 years ago. I really enjoyed it, unexpectedly. It was very enjoyable. (Person B)

I had another TUBITAK project initiative with a professor from the material science department. For example, they produce biomaterials. Let's say we look at how the cells behave in this biomaterial and after that, if the product really works, it will be placed in the arm and it will improve the nerve compression of the person by thirty percent. Then, when we felt that there was a lack of a medical academician, for example, he contacted someone else. Now that person brings a completely different perspective. (Person D)

In the following quote, Person E describes a series of events that starts with a rejection and ends with a project coming alive. Although along the way some sacrifices are made to realize the project, the researcher's resilience pays off, as alternative solutions to her problems were created.

I got rejected by TUBITAK etc. So, while I was setting up a lab here, I started talking to a few people. I contacted a technology company to ask if they would sponsor us...it was more like help in other ways instead of getting this type of infrastructure. The offered solutions would not work for me at all. So, I couldn't set up that lab the way I wanted. But of course, we still continue to do this; "Let's not work with that much data and work on more preliminary examples." (Person E)

Person D, below, exemplifies the importance of time during the process of potential academic entrepreneurship activities. Loss of time can result in a negative effect on morale as well as on the project's budget as you can see in her quote.

You may be following up on the things you wrote with great motivation, but missing a deadline can cause a drastic change in morale, because you will have to wait another 6 months. ...after it (the project) is accepted and funded, at least since I don't have a laboratory right now, I will need a physical laboratory or a physical space. I think this may be a problem to be able to do the analyses or to place the device. For the devices, since we buy everything from abroad, you write the project in euros. The numbers change drastically in the next six months after you write the project. (Person G)

While Person I, explains her enthusiasm to start new research after a productive conference, Person K finds pleasure in discovering and problem solving. Finally, Person H describes the educational aspect of the process. Based on these quotes, one can assume that they can be motivated by different factors to initiate academic entrepreneurship.

I went to Munich two or three weeks ago, for a conference, I was really excited about those projects. I was like, "Oh look, I'm in the right place, let me go home and do something like this right away". (Person I)

They [academicians from different departments] were explaining their situation, I notice a problem there and discuss how we can solve this problem, and together you discover things while brainstorming – that gives me great pleasure. There doesn't have to be an incentive at the end, it really gives me pleasure in the sense of the process itself. (Person K)

That process was very educational for me. The most important thing is not only the scientific research you do, I used to spend forty percent of my time on research, the sixty percent to coordination with institutions, third parties, partners, stakeholders are to ensure their participation, to warm them up to this project. It was such a process. (Person H)

All of these findings will be discussed within the scope of existing literature in academic entrepreneurship in the following section along with policy implications and concluding comments.

CHAPTER 5

DISCUSSION

Academic entrepreneurship started out as a dynamic intersection between academia and industry and in the last couple of decades, gained significant attention for its potential to drive innovation and economic growth as well as societal change. This discussion section delves into the findings derived from twelve semi-structured, in-depth interviews with female academicians at METU to explore the multifaceted concept of academic entrepreneurship through the participants' unique perspectives. Through the interview data, these women's awareness (or lack of awareness), hesitations, motivations, challenges regarding academic entrepreneurial activities are revealed through a spectrum of categories and themes; from the commercialization of their research and the creation of spin-offs to collaborating within broader innovation ecosystems and community development endeavors. By interpreting their narratives, this part of the thesis aims to contextualize the findings within existing theoretical frameworks and offer new insights into the evolving nature of academic entrepreneurship.

Through the rich qualitative data collected, several critical themes emerge, shedding light on the academic entrepreneurship conceptualization, and factors that influence academic entrepreneurship among the female faculty. These themes include the different entrepreneurial output mechanisms such as commercial, informal commercial, and noncommercial/societal academic entrepreneurship activities, the input or initiators of these activities such as the human capital and the entrepreneurial ecosystem, and finally, the process that facilitates the relationship and action between all other aspects within the framework of academic entrepreneurship such as institutional support and industry partnerships. This section also examines the barriers faced by potential academic entrepreneurs, including resource and time

limitations, bureaucratic constraints, and differences in approach and the work values and priorities between academia and business. By juxtaposing these findings with existing literature, this discussion seeks to contribute to a nuanced understanding of how female academicians navigate the entrepreneurial landscape at METU and identify practical implications for fostering more effective academic entrepreneurship endeavors in the future.

5.1. The Academic Entrepreneur

The characteristics and the motivations of the academic entrepreneur that initiate the entrepreneurship activity, by contributing to the greater good of economy and society by sharing the scientific foundations and breakthroughs in their research, is an important subject within the academic entrepreneurship research (Etzkowitz, 1998; Louis et al., 2001; Tomy and Pardede, 2020; Neves and Brito, 2020; Hayter et al., 2022).

The findings from the data obtained in this study, both from the questionnaires and the interviews were mostly aligned with the literature. (Douglas and Shephard, 2002; Zhao et al., 2005; Lockett and Wright, 2005). Those academicians who defined themselves less risk averse, had higher intentions to pursue academic entrepreneurship in the future as in the case of Person C, Person E, and Person L. They were also the academicians who identified themselves with the role of an entrepreneur as is the case with Person C who states that she is already an entrepreneur. In conclusion, it can be observed in the METU case that risk taking attitude is linked with academic entrepreneurship.

In addition to the risk-taking attitude, some personality characteristics derived from the big five inventory: Extraversion and Neuroticism are also closely linked to the entrepreneurial actions (Brandstätter, 1997; Zhao and Seibert, 2006; Zhang et al., 2009; Antoncic et al., 2015). While Extraversion promotes the social side of the entrepreneur by channeling their interests and energies towards the outer world of people and things rather than the inner world of subjective experience, Neuroticism is associated by emotional stability of the entrepreneur; their predictability and

consistency in emotional reactions, and predisposition to psychological distress (John and Srivastava, 1999). While Person B and Person L complied with the literature on their dispositions within these dimensions, showing above the average intentions to pursue academic entrepreneurship in the future, Person D showed an average intention although she possessed the necessary ingredients of personal characteristics in her disposition. This may be the result of her priorities to promote to professorship in the near future and concentrate on the mechanism that will ease her way to that objective rather than exerting her efforts on other endeavors, as she had stated in her interview. In conclusion, the personality characteristics of the participants were partially affecting their intentions to pursue academic entrepreneurship.

5.2. Awareness

Awareness among academicians is critical for seizing opportunities in academic entrepreneurship, as it shapes their ability to recognize the commercial and societal potential of their research (Neves and Brito, 2020; Nilsson, 2021; p.100). This awareness relies upon multiple factors, including exposure to entrepreneurial education, institutional culture, and access to information about industrial trends, funding and other support mechanisms (Clarysse et al., 2011; Wood, 2011; Abreu and Grinevich, 2013). Academicians who are informed about intellectual property rights, market needs, and pathways for technology and knowledge transfer are better equipped to identify and act on opportunities (Neves and Brito, 2020; Guinti and Duberley 2023). Additionally, interactions with entrepreneurial role models, participation in interdisciplinary collaborations, and institutional incentives such as incubators or innovation grants can enhance their entrepreneurial awareness (Di Grigorio and Shane, 2003; Fini et al., 2010; Bozeman et al., 2012).

Conversely, a lack of awareness on the part of the potential academic entrepreneurs may result from limited exposure to entrepreneurial ecosystems, rigid academic norms, or a lack of institutional support, hindering their ability to engage effectively in entrepreneurial activities (Davey et al., 2016; Miller et al., 2018; Müller-Weiland et al., 2019). Therefore, fostering a culture of awareness through targeted training,

mentorship, and strategic communication can significantly empower academicians to contribute to academic entrepreneurship.

Awareness of the academic entrepreneurship and opportunities linked with such endeavors among the participants were surprisingly quite low. The comparison between the data obtained from the academic entrepreneurship activity questionnaire and participants' own self perceptions of being an academic entrepreneur based on their interview responses was a proof of this lack of awareness. While, for example, Person D stated that she “never had such an attempt”, meaning an attempt at pursuing academic entrepreneurship, she scored one of the highest scores in overall academic entrepreneurship activities. She, also talks about her attempts of collaborating with academicians from different research areas and disciplines to develop a product that might ease the physical problems of people with muscle contraction and another attempt at a TÜBİTAK funded research with a former student about dietary habits. Similarly, Person K, does not see herself as an entrepreneur, but she scores the highest point in the previously mentioned questionnaire. In conclusion, findings suggest that these participants were generally unaware of the fact that they were involved with academic entrepreneurship activities and/or prerequisites of those activities such as taking part in networks and collaborations. They just did not perceive such activities as academic entrepreneurship. Thus, they do not seek more opportunities similar to those mentioned, because the idea of academic entrepreneurship equals to forming spin off companies, that being the traditional outcome of academic entrepreneurship endeavors.

5.3. Definition and the Framework of Academic Entrepreneurship

In addition to the incongruences mentioned above, the participants in this study had a very limited idea about the definition and the scope of academic entrepreneurship. A number of them mentioned they did not have any idea of what it means until they were approached to be recruited in an interview for a study about academic entrepreneurship. Some other participants heard about the concept, but never really thought about looking for a deeper understanding and showed no enthusiasm towards

pursuing such activities. Still others, thought that academic entrepreneurship is about founding a firm –through a Technopolis most of the time– and that their area of research is not suitable for such endeavors, because their research are is different than that of engineering studies.

A number of the participants considered consulting services as a possible academic entrepreneurship or secondary type of academic entrepreneurship activity. Meanwhile, most of the participant have been engaged in providing consulting services to third parties such as firms, governmental and non-governmental organizations. Even though, in the literature, consultancy services are regarded as preliminary stages of a broader strategy to expand one’s research and academic activities such as labs or research groups along the way to further possess academic and commercial incentives (Franzoni and Lissoni, 2006; Abreu and Grinevich, 2013), participants of this study were reluctant to call these services as academic entrepreneurship.

Again, almost all of the participants were engaged in joint research project and/or publications both within the national (e.g. TÜBİTAK Projects) and international (e.g. EU Projects) scientific networks. These projects aim to fund PhD students, labs, equipment and help academicians reach their tenure and promotion goals. In fact, these collaborations help universities and academicians gain visibility, reputation and prestige within scientific circles. Therefore, they are considered to promote commercial gains indirectly (Landry et al., 2006; Jain et al., 2009).

Table 7 is the compilation of the categories and themes that were emerged during the analysis of the data obtained from the interviews about the definition of academic entrepreneurship. Please note; that along with “what” is to be considered as academic entrepreneurship; the framework includes “who” is the primary facilitator of such activities and “how” academic entrepreneurship activities come alive, through “which” processes. This comprehensive framework summarizes the key factors in academic entrepreneurship such as research impact, human capital, institutional support, collaboration networks, policy and culture.

Table 7. The Academic Entrepreneurship Framework

CATEGORIES	THEMES	AE ACTIVITIES(Examples) & ACTORS & OTHER RELATED CONCEPTS	KEY CONCEPTS
OUTPUT	Commercial	Patents	Forms of most common activities defined as AE. Tangible, quantifiable outcomes. Most studied among AE researchers.
		Licenses	
		Spin off company	
	Informal Commercial	Consultancy	Common, less acknowledged activities defined as AE. Tangible, quantifiable outcomes are less applicable, more difficult. Research focus is on the perspective of the commercial partner rather than the academicians.
		Contract Research	
	Non-Commercial and/or Societal	Informal Advice	Activities performed by academicians, but are not considered within boundaries of traditional AE definitions. Intangible outcomes, indirect financial rewards for the institution and the academician such as reputation, prestige, influence and societal benefits. Less, relatively new research because of the difficulty to measure/to analyze.
		Public Lectures	
		Community Development	
		Joint Research	
	INPUT	Human Capital	Personal Characteristics
Motivation			
Entrepreneurial Skills			
Ecosystem		Institutions	Network of and interaction between individuals, institutions, resources, and policies within a university or research environment that facilitates the creation and growth of AE. Considerable amount of research, especially critical for policy development.
		Stakeholders	
		Support Mechanisms	
		Barriers	
PROCESS		Generation of innovative idea(s)based on academic work	
	Allocating and seizing resources		
	Knowledge spillover		

Source: Author

CHAPTER 6

POLICY RECOMMENDATIONS AND CONCLUSION

Existing literature on academic entrepreneurship and highlights its significance in bridging research with industry to enhance economic growth, and societal impact. It also suggests that gender gaps persist, influencing access to entrepreneurial resources, networks, and support systems for female academics. Exploring these perceptions and experiences provides critical insights into structural and cultural barriers that challenge equitable participation of women. Policymakers can leverage this understanding to design targeted interventions, such as mentorship programs, funding opportunities, and institutional policies, aimed at empowering female faculty and promoting gender equity in academic entrepreneurship.

6.1. Policy Recommendations

Academic entrepreneurship plays a pivotal role in bridging the gap between academic research and societal impact, transforming the knowledge generated at the university settings into tangible innovations and ventures. For potential academic entrepreneurs understanding and engaging in academic entrepreneurship is particularly important, as it empowers them to translate their expertise into economic and social value.

Despite its potential, the concept and practice of academic entrepreneurship remain underexplored among many female academicians, as can be seen from the narratives of the participants in this study. This is a common problem often due to limited awareness of entrepreneurial opportunities and resources available within their institutions. This lack of awareness hinders the development of a more inclusive

entrepreneurial ecosystem, where diverse perspectives can drive innovation and progress.

Table 8. Policy Implications

POLICY FOCUS		POLICY RECOMMENDATION	POLICY OBJECTIVES	FOUNDATIONS	POLICY TOOLS
OUTPUT	Commercial	Promoting awareness of the faculty about a wider range of AE opportunities Development of informal IP and creating new forms of entrepreneurial ventures	To increase the chances of academicians, regardless of their research area or discipline, to become involved with a range of AE opportunities To work on new forms of organizational structures, systems and management styles that support new forms of AE ventures	The question of whether a university is effective in AE arena Competitive pressure leading to benchmarking academic entrepreneurship on metrics	Awareness campaigns through AE fairs, newsletters and webinars Policy advocacy and regular training on IP, patent processes, licensing and other forms of direct and indirect commercialization of research output
	Informal Commercial	Diversifying the benchmarking of the academic entrepreneurship metrics	To introduce new methods and measurement metrics to delve into and understand data regarding AE outcomes with different output themes	Pressure to fund research	Recognition and rewards adopted by universities to promote AE activities and AE research among the faculty
	Non-Commercial and/or Societal	Identifying and expressing the non-commercial and/or societal impact of faculty research Encouraging scholarly interest in academic entrepreneurship in humanities and social sciences	To underline the importance of indirect commercial and societal impact of faculty research To promote AE research among faculty from different disciplines so that the framework, aspects and conceptualization of the phenomenon is better understood at different levels	Pressure to link research outcomes to commercial outcomes Strategic decision of university administrators and/or governments	Dedicated innovation and entrepreneurship centers that provide faculty with constant resources, advice and networking opportunities. Employment of a strategy by the university to encourage positive discrimination of the academicians, disciplines and/or areas of research that are least represented in AE
INPUT	Human Capital	Understanding the underlying personal characteristics, values, attitudes and motivations of the faculty Promoting the positive aspects of the role of the academicians such as problem solving skills, curiosity, openness to new experiences.	To promote the understanding of the personal differences in attitudes towards AE and present motivational schemes and programs in accordance with these differences	Effects of personality factor, belief systems, educational and family background, socio economic status on role as an entrepreneur	Mentorship and role modelling by experienced faculty through sharing their journeys and stories that would encourage their colleagues Highlighting of success stories through seminars and case studies Entrepreneurial education programs that can be integrated to the orientation and faculty development programs
	Ecosystem	Institutional infrastructure development New and improved funding mechanisms Promoting interdisciplinary collaborations	To provide the physical and organizational infrastructure for AE activities To facilitate research commercialization grants, seed funding, and partnerships to reduce financial barriers for entrepreneurial initiatives To facilitate research across different disciplines,	Non-human actors of the entrepreneurship realm as well as the mechanisms and challenges that shape the entrepreneurial context	Hubs, incubators, accelerators, and centers within the university which offer shared resources, mentorship and networking Targetted funding programs Interdisciplinary collaboration platforms where students, researchers and industrial professionals come together
PROCESS		Identifying the bottlenecks and enabling flow of transfer	To provide a smooth transition from research to knowledge spillover through different and effective forms of AE	Key continuous processes such as idea generation, assessment of potential markets and feasibility, resource management, creation and sustainability	A systematic and regular gap analysis study to explore needs of the faculty in terms of AE

Source: Author

Raising awareness about academic entrepreneurship opportunities among academicians, and specifically female faculty is essential to foster their participation

and contribution to this process. Enhanced understanding of the pathways, benefits, and resources related to entrepreneurship can help break down barriers that have historically limited their involvement in science.

Policy recommendations in this regard should focus on creating targeted initiatives, such as tailored workshops, mentorship programs, and improved access to funding and institutional support. By addressing these gaps, METU and other research universities can; not only empower its faculty but also enrich their innovation ecosystems, promoting equitable and sustainable economic and societal development.

In Table 8, policy implications on the derived categories and themes from this study and the literature as well as the expected objectives to overcome the barriers that the participants perceive, are shared. These are based on the fact that academic entrepreneurship is indeed a necessary tool to introduce knowledge and research produced within the universities to the industrial partners and the community. They also point out to the fact that these activities we call academic entrepreneurship are more diverse in their foundations and outcomes than already perceived. Therefore, it is of utmost importance to inform and train faculty with a variety of research focus and academic discipline.

6.2. Conclusion

Since the enactment of the Bayh–Dole Act in the USA in 1980, there has been a substantial rise in the commercialization of science and other forms of university technology transfer (Siegel and Wright, 2015). An increase in university licensing, patenting and start-up creation in the United States has also been observed in many other countries (Grimaldi et al., 2011). These commercialization activities have come to be known as ‘academic entrepreneurship’. Academic entrepreneurship has certain features other than that of more traditional forms of entrepreneurship, specifically regarding the emergence of entrepreneurial ventures from traditionally noncommercial contexts, where the academic usually continues to work for the university, and the ownership of intellectual property (IP), which often lies, at least in part, with the university.

As is noted by Siegel, Waldman, Atwater, and Link (2003), academics and others involved in the research at the university who engage in entrepreneurship have traditional scientific norms, standards and values, unlike many conventional entrepreneurs. This makes them sometimes vulnerable at other times stronger in terms of their stamina to pursue academic entrepreneurship.

Some people also argue that the academic entrepreneurship notion is too much relied on the relationship between research and third mission of the universities which is the economic growth and that this narrows down the number of opportunities for informal and non-commercialized forms of possible academic entrepreneurship endeavors.

In the scope of these perspectives, this study puts forth a framework for the concept academic entrepreneurship based on the existing literature and the interview data obtained from twelve female academicians at METU. The sample consisted of women only, because they are traditionally less represented in entrepreneurship and their perspective can also motivate researchers to focus on minorities and less represented groups. Since education is becoming more and more privatized, it is becoming a luxury for most people. A significant number of interviewees had an academician in their family and/or relations circle which makes them privileged both in terms of role models and socio-economic status. This selective socio-economic status may be a limitation in our case, but may provide a future research objective to focus on.

It is the network of and interaction between individuals, institutions, resources, and policies within a university or research environment that facilitates the creation and growth of academic entrepreneurship. As a flagship of teaching and research among Türkiye's universities, METU seems to possess the required elements in the ecosystem, and the interactions between them. Some examples of those elements and interactions that are emphasized by the interviewees are shared below.

The Academic Development Program (AGEP) is designed to facilitate the adaptation of new faculty members who have joined METU and are at the beginning of their

academic careers, and to increase the effectiveness of their activities in the fields of education, research and social service. AGEP has two main objectives: (1) to introduce the opportunities (research and collaboration opportunities) of METU to new faculty members who have joined AGEP and are at the beginning of their academic careers; and to inform them about effective teaching, thus accelerating their adaptation to the University and increasing their academic activities in the fields of education, research and social service (2) to increase the participation of qualified young faculty members at METU by announcing AGEP and the contributions it will provide. Faculty who has been appointed as assistant professors at METU in the last 3 years take part in AGEP and those who complete the program are provided with a budget to support their academic studies as well as access to services that will support their academic development. AGEP participants are required to attend at least 80% of the AGEP Modules, which are approximately 50 hours in total, and to make a final presentation on the education, research or social service they will prepare within the framework of the program in order to complete the program. The total duration of AGEP (including optional meetings with the mentor academicians and participation in social activities) is planned not to exceed 90 hours. In addition to the research project proposal preparation support provided to faculty members by the ODTÜ TEKNOKENT Project Management and Consultancy Office for the Horizon Europe Program and the subsistence support provided for participation in Horizon Europe Projects' networking events and/or project writing meetings; up to 85,000 TL support is provided from the BAP (Scientific Research Projects) budget for our AGEP participants.

AGEP is a very good orientation program and several participants also mentioned that it was a good opportunity to meet people from other departments and form multidisciplinary collaborations.

ODTÜ TEKNOKENT is another prominent part of the entrepreneurship ecosystem at METU. The brief history and contributions of the technopark at METU is provided in the Introduction part of the thesis, but it is also necessary to mention that it is the most important stakeholder mentioned among the interviewees regardless of their disciplines and research area. Although the academicians from Humanities, Arts

and Social Sciences find it difficult to position themselves there; ODTÜ TEKNOKENT is crucial in terms of university-industry collaborations.

A number of participants point out to their interactions with the Technology Transfer Office at METU. Relationships with and information coming from the TTO seems important for them and these participants relied on the information and guidance coming from the TTO to pursue potential academic entrepreneurship activities.

The university provides an orientation program (AGEP) and facilitates interactions between the faculty. Some of the interviewees mentioned the need to be trained on things like budget, human resources management, early in their careers. This expectation of an academic entrepreneurship program designed to introduce the necessary knowledge, skill and abilities to METU faculty members could be assembled within AGEP. There are 37 research centers operating under the rectorate. Two of this study's participants had administrative duties within the research centers. During the interviews, while brainstorming about how to increase knowledge spillover from these structures to third parties outside the university, it became evident that a needs assessment in terms of their organizational structures, budget and staff needs as well as public relations facilitation with the outside world could improve many of the processes within the centers. The university policy regarding tenure and promotion criteria, working capital, budget (e.g. conference budget), human resources policies could be reviewed for strategical development as many of the participants mentioned these issues with resentment and found them discouraging.

6.2.1. Limitations of the Study

There are a number of limitations to this study. The first one is the recruitment size and diversity. The number of female faculty to be interviewed, was planned to be more than twenty, including a greater number of female faculty from the engineering departments. Unfortunately, very small number of academicians returned to the emails explaining the purpose and process of the study.

Lack of male faculty may be another limitation of this study. They too, could be included in this study to better explain the gender gap, if any. Including male faculty in the study could also increase the sample size. Moreover, male faculty's involvement with entrepreneurial activities could provide a wider scope of experiences.

6.2.2. Suggestions for Future Research

Although METU is a very good place to start studying academic entrepreneurship, other universities in the Entrepreneurial and Innovative University Index could provide both a gap analysis between state and foundation universities and explore a deeper understanding between the nurturing mechanisms and drivers of academic entrepreneurship from other organizational cultural perspectives.

As the universities continue to evolve and implement strategies for the broadening range of academic entrepreneurship activities, they also need to adopt mechanisms to assess whether these activities are successful or not. While there are measures to assess the effectiveness of universities and TTOs in terms of patenting, licensing and spin off formation, there is a need to develop convincing measures for new forms of academic entrepreneurship activities.

Commercialization costs and risks are high for the potential academic entrepreneur, so universities have to adapt their promotion and tenure policies, the incentive and any other support system available for academicians so that such activities are valued.

International collaborations in the form of academic mobility are very important. These interactions between faculty from different universities tend to maintain the network of relationships and promote academic entrepreneurship.

Widening the boundaries of the academic entrepreneurship concept also results in an increase in the complexity of formulating and implementing strategies for academic entrepreneurship. Numerous theories and concepts from organizational behavior,

organizational theory, industrial and organizational psychology, organizational culture, human resources management, ethics and social responsibility could be adopted within academic entrepreneurship research.

Finally, AI and its relationship with the future of work in academical settings will bring some opportunities. It is quite impossible to envision the incoming changes and their effect of economy and society. It is almost evident, though, that AI will shape the level of expertise required from certain professions. New online learning environments involving AI do not sound like science fiction now, so it might be a future research topic to explore this relationship within academic entrepreneurship framework.

REFERENCES

- Acker, J. (1992). From sex roles to gendered institutions. *Contemporary Sociology*, 21(5), 565-569. <https://doi.org/10.2307/2075528>
- Ackers, H. L., Coey, C. T. A., Jons, H., Millard, D. M., Kupiszewska, D., Kupiszewski, M., H. Perista, P. Perista & Vinck, D. (2015). Mapping the population, careers, mobilities and impacts of advanced research degree graduates in the Social Sciences and Humanities. POCARIM final report. Accessed 11 December 2024 from <https://salford-repository.worktribe.com/output/1564892/pocarim-final-report>
- Abreu, M. & Grinevich, V. (2013). The nature of academic entrepreneurship in the UK: widening the focus on entrepreneurial activities. *Research Policy*, 42(2), 408-422. <https://doi.org/10.1016/j.respol.2012.10.005>
- Abreu, M., & Grinevich, V. (2017). Gender patterns in academic entrepreneurship. *Journal of Technology Transfer*, 42(4), 763–794. <https://doi.org/10.1007/s10961-016-9543-y>
- Agrawal, A. & Henderson, R. (2002). Putting patents in context: exploring knowledge transfer from MIT. *Management Science*, 48(1), 44-60. <https://doi.org/10.1287/mnsc.48.1.44.14279>
- Antoncic, B., Bratkovic kregar, T., Singh, G., & Denoble, A. F. (2015). The Big Five Personality–Entrepreneurship Relationship: Evidence from Slovenia. *Journal of Small Business Management*, 53(3), 819–841. <https://doi.org/10.1111/jsbm.12089>
- Aydinoglu, A.U., Dogan, G. & Taskin, Z. (2017). Research data management in Turkey: perceptions and practices. *Library Hi Tech*, 35(2), 271-289. <https://doi.org/10.1108/LHT-11-2016-0134>

- Block, J., Sandner, P. and Spiegel, F. (2015). How do risk attitudes differ within the group of entrepreneurs? The role of motivation and procedural utility. *Journal of Small Business Management*, 53(1), 183-206. <https://doi.org/10.1111/jsbm.12060>
- Brandstätter, H. (1997). Becoming an entrepreneur: a question of personality structure? *Journal of Economic Psychology*, 18(2-3), 157-177. [https://doi.org/10.1016/S0167-4870\(97\)00003-2](https://doi.org/10.1016/S0167-4870(97)00003-2)
- Bryman, A. and Bell, E. (2015) *Business Research Methods*. Oxford University Press, Oxford.
- Botella-Carrubi, D., Ribeiro-Navarrete, S., Ulrich, K. and Blanco González-Tejero, C. (2024). The role of entrepreneurial skills as a vehicle for business growth: a study in Spanish start-ups. *Management Decision*, 62(8), 2364-2387. <https://doi.org/10.1108/MD-02-2022-0161>
- Bozeman, B., Fay, D. & Slade, C.P. (2013). Research collaboration in universities and academic entrepreneurship: the-state-of-the-art. *Journal of Technology Transfer*, 38(1) 1-67. <https://doi.org/10.1007/s10961-012-9281-8>
- Cansız, M. (2016). *Türkiye’de Akademik Girişimcilik*. Ankara: Kalkınma Bakanlığı.
- Carayol, N. (2007). Academic incentives, research organization and patenting at a large french university. *Economics of Innovation and New Technology*, 16(2), 119-138. <https://doi.org/10.1080/10438590600982855>
- Clark, B. R. (1998). *Creating Entrepreneurial Universities: Organizational Pathways of Transformation*. Pergamon.
- Clark, B. R. (1998). The entrepreneurial university: demand and response. *Tertiary Education and Management*, 4(1), 5-16. <https://doi.org/10.1080/13583883.1998.9966941>
- Clarysse, Tartari, B. V. & Salter, A. (2011). The impact of entrepreneurial capacity, experience and organizational support on academic entrepreneurship. *Research Policy*, 40(8), 1084-1093. <https://doi.org/10.1016/j.respol.2011.05.010>

- Colyvas, J. A. (2012). Performance metrics as formal structures and through the lens of social mechanisms: when do they work and how do they influence? *American Journal of Education*, 118(2), 167-197. <https://doi.org/10.1086/663270>
- Cunningham, J.A., Miller, K. & Perea-Vicente, J.L. (2024). Academic entrepreneurship in the humanities and social sciences: a systematic literature review and research agenda. *Journal of Technology Transfer*, 49(5), 1880–1913. <https://doi.org/10.1007/s10961-024-10136-z>
- Davey, T., Rossano, S. & van der Sijde, P. (2016). Does context matter in academic entrepreneurship? The role of barriers and drivers in the regional and national context. *Journal of Technology Transfer*, 41(1), 1457–1482. <https://doi.org/10.1007/s10961-015-9450-7>
- Ding, W. W., Murray, F. & Stuart, T. E.(2006). Gender differences in patenting in the academic life sciences. *Science*, 313(5787), 665-667. <https://www.science.org/doi/10.1126/science.1124832>
- Dess, G.G., Ireland, R.D., Shaker, Z., Floyd S.W., Janney, J.J. & Lane P.J. (2003). Emerging issues in corporate entrepreneurship. *Journal of Management*, 29(3), 351-378. [https://doi.org/10.1016/S0149-2063\(03\)00015-1](https://doi.org/10.1016/S0149-2063(03)00015-1)
- Di Gregorio, D. & Shane, S. (2003). Why do some universities generate more start-ups than others? *Research Policy*, 32(2), 209-227. [https://doi.org/10.1016/S0048-7333\(02\)00097-5](https://doi.org/10.1016/S0048-7333(02)00097-5)
- Douglas, E. J., & Shepherd, D. A. (2002). Self-employment as a career choice: attitudes, entrepreneurial intentions, and utility maximization. *Entrepreneurship Theory and Practice*, 26(3), 81-90. <https://doi.org/10.1177/104225870202600305>
- Dwyer, P. D, Gilkeson, J. H. & List, J. A, (2002). Gender differences in revealed risk taking: evidence from mutual fund investors, *Economics Letters*, 76(2), 151-158. [https://doi.org/10.1016/S0165-1765\(02\)00045-9](https://doi.org/10.1016/S0165-1765(02)00045-9)
- Etzkowitz, H. (1983) Entrepreneurial scientists and entrepreneurial universities in American academic science. *Minerva* 21(1), 198–233. <https://doi.org/10.1007/BF01097964>

- Etzkowitz, H (1998). Triple helix of innovation: introduction. *Science and Public Policy*, 25(6), 358-364. <https://doi.org/10.1093/spp/25.6.358>
- Etzkowitz, H., Webster, A., Gebhardt, C., & Terra, B. R. C. (2000). The future of the university and the university of the future: Evolution of the ivory tower to entrepreneurial paradigm. *Research Policy*, 29(2), 313-330. [https://doi.org/10.1016/S0048-7333\(99\)00069-4](https://doi.org/10.1016/S0048-7333(99)00069-4)
- Etzkowitz, H and Klofsten, M. (2005). The innovating region: toward a theory of knowledge-based regional development. *R&D Management*, 35(3), 243-255. <https://doi.org/10.1111/j.1467-9310.2005.00387.x>
- European Institute for Gender Equality (2016). EIGE in brief. <https://eige.europa.eu/resources/EIGE%20in%20brief%202016.pdf>
- European Commission (1995, December 20). *Green Paper on Innovation*. <https://cordis.europa.eu/article/id/5321-european-commission-presents-green-paper-on-innovation>
- Fini, R., Lacetera, N. & Shane, S. (2010). Inside or outside the ip system? Business creation in academia. *Research Policy*, 39(8), 1060-1069. <https://doi.org/10.1016/j.respol.2010.05.014>
- Franzoni, C., & Lissoni, F. (2009). Academic entrepreneurs: critical issues and lessons for Europe. In A. Varga (ed.) *Universities, knowledge transfer and regional development: Geography, entrepreneurship and policy* (pp.163-190). Cheltenham: Edward Elgar.
- Gendron-Carrier, N. (2023). Prior work experience and entrepreneurship: the careers of young entrepreneurs. *IZA Discussion Paper*, No: 16145. <http://dx.doi.org/10.2139/ssrn.4450978>
- Giunti, G., & Duberley, J. (2023). Academic entrepreneurship: work identity in contexts. *Entrepreneurship & Regional Development*, 35(5-6), 532-552. <https://doi.org/10.1080/08985626.2023.2178676>

- Goel, R.K., Göktepe-Hultén, D. & Ram, R. (2015). Academics' entrepreneurship propensities and gender differences. *Journal of Technology Transfer*, 40(1), 161–177. <https://doi.org/10.1007/s10961-014-9372-9>
- Grimaldi, R., Kenney, M., Siegel, D. S. & Wright, M. (2011). 30 years after Bayh–Dole: Reassessing academic entrepreneurship. *Research Policy*, 40(8), 1045–1057. <https://doi.org/10.1016/j.respol.2011.04.005>
- Gulbrandsen, M., & Thune, T. (2017). The effects of non-academic work experience on external interaction and research performance. *Journal of Technology Transfer*, 42(1), 795–813. <https://doi.org/10.1007/s10961-017-9556-1>
- Guerrero, M., Cunningham, J. A., & Urbano, D. (2015). Economic impact of entrepreneurial universities' activities: An exploratory study of the United Kingdom. *Research Policy*, 44(3), 748–764. <https://doi.org/10.1016/j.respol.2014.10.008>
- Guerrero, M., Urbano, D., Fayolle, A., Klofsten, M. & Mian, S. (2016). Entrepreneurial universities: emerging models in the new social and economic landscape. *Small Business Economics*, 47(1) 551–563. <https://doi.org/10.1007/s11187-016-9755-4>
- Haeussler, C. & Colyvas, J. A. (2011). Breaking the ivory tower: academic entrepreneurship in the life sciences in UK and Germany. *Research Policy*, 40(1), 41–54. <https://doi.org/10.1016/j.respol.2010.09.012>
- Harding, S. (1996). *The Science Question in Feminism*. Cornell University Press, New York.
- Harris, M.L., Gibson, S.G. & Mick, T.D. (2009), Examining the relationship between personality and entrepreneurial attitudes: evidence from US college students, *Small Business Institute Journal*, 3(1), 21–53.
- Hayter, C.S., Nelson, A.J., Zayed, S. & O'Connor, A.C. (2018). Conceptualizing academic entrepreneurship ecosystems: a review, analysis and extension of the literature. *Journal of Technology Transfer*, 43(4), 1039–1082. <https://doi.org/10.1007/s10961-018-9657-5>

- Hayter, C.S., Fischer, B. & Rasmussen, E. (2022). Becoming an academic entrepreneur: how scientists develop an entrepreneurial identity. *Small Business Economy*, 59(1), 1469–1487. <https://doi.org/10.1007/s11187-021-00585-3>
- Henderson, R., Jaffe, A. B. & Trajtenberg, M. (1998). Universities as a source of commercial technology: a detailed analysis of university patenting, 1965–1988. *The Review of Economics and Statistics*, 80(1)119–127. <https://doi.org/10.1162/003465398557221>
- Hornsby, J., Kuratko, D., Shepherd, D. & Bott, J. (2009). Managers’ corporate entrepreneurial actions: examining perception and position. *Journal of Business Venturing*, 24 (3), 236-247. <https://doi.org/10.1016/j.jbusvent.2008.03.002>
- Hughes, A., Lawson, C., Salter, A., Bullock, A., & Hughes, R. B. (2016). The changing state of knowledge exchange: UK academic interactions with external organisations 2005–2015. Accessed 10 December 2024 from https://eprints.lancs.ac.uk/id/eprint/145906/1/NCUB_The_Changing_State_of_Knowledge_Exchange_Feb16_WEB.pdf
- Iorio, R., Labory, S. & Rentocchini, F. (2017). The importance of pro-social behaviour for the breadth and depth of knowledge transfer activities: an analysis of Italian academic scientists. *Research Policy*, 46(2), 497-509. <https://doi.org/10.1016/j.respol.2016.12.003>
- Jain, S., George, G. & Maltarich, M. (2009). Academics or entrepreneurs? Investigating role identity modification of university scientists involved in commercialisation activity. *Research Policy*, 38(6), 922–935. <https://doi.org/10.1016/j.respol.2009.02.007>
- Jensen, R. A., Thursby, J. G. & Thursby, M. C. (2003). Disclosure and licensing of university inventions: ‘The best we can do with the s**t we get to work with’. *International Journal of Industrial Organization*, 21(9), 1271-1300. [https://doi.org/10.1016/S0167-7187\(03\)00083-3](https://doi.org/10.1016/S0167-7187(03)00083-3)
- John, O. P. & Srivastava, S. (1999). The Big-Five trait taxonomy: History, measurement, and theoretical perspectives. In *Handbook of Personality: Theory and Research* (pp.102-138) Guilford.

Keller, E. F. (1985). *Reflections on Gender and Science*. Yale University Press, New Haven, Connecticut.

Kirzner, I. (1973). *Competition and Entrepreneurship*. The University of Chicago Press, Chicago.

Klofsten, M., Fayolle, A., Guerrero, M., Sarfraz Mian, S., Urbano, D. & Wright, M. (2019).

The entrepreneurial university as driver for economic growth and social change - key strategic challenges. *Technological Forecasting and Social Change*, 141(1), 149-158 <https://doi.org/10.1016/j.techfore.2018.12.004>

Klofsten, M., Jones-Evans, D. (2000). Comparing academic entrepreneurship in Europe – the case of Sweden and Ireland. *Small Business Economics*, 14(4), 299–309. <https://doi.org/10.1023/A:1008184601282>

Kuratko, D., Morris, M. & Schindehutte, M. (2015). Understanding the dynamics of entrepreneurship through framework approaches. *Small Business Economics*, 45, 1-13. <http://dx.doi.org/10.1007/s11187-015-9627-3>

Landry, R., Amara, N. & Rherrad, I. (2006) Why are some university researchers more likely to create spin-offs than others? Evidence from Canadian universities. *Research Policy* 35(10), 1599–1615. <https://doi.org/10.1016/j.respol.2006.09.020>

Liang, J., Wang, H. & Lazear, E. P. (2018). Demographics and entrepreneurship. *Journal of Political Economy*, 126(S1), 140-196. <https://doi.org/10.1086/698750>

Link, A. N., Siegel, D. S. & Bozeman, B. (2007). An empirical analysis of the propensity of academics to engage in informal university technology transfer. *Industrial and Corporate Change*, 16(4), 641–655. <https://doi.org/10.1093/icc/dtm020>

Lockett, A & Wright, M. (2005). Resources, capabilities, risk capital and the creation of university spin-out companies. *Research Policy*, 34(7), 1043-1057. <https://doi.org/10.1016/j.respol.2005.05.006>

- Lockett, A., Wright, M. & Wild, A. (2014). The institutionalization of third stream activities in U.K. higher education: the role of discourse and metrics, *British Journal of Management*, 26(1), 78-92. <https://doi.org/10.1111/1467-8551.12069>
- Louis, K.S., Jones, L.M., Anderson, M.S., Blumenthal, D., & Campbell, E. G. (2001). Entrepreneurship, secrecy, and productivity: a comparison of clinical and non-clinical life sciences faculty. *The Journal of Technology Transfer*, 26(1), 233–245 <https://doi.org/10.1023/A:1011106006976>
- Markman, G. D., Phan, P. H., Balkin, D.B. & Gianiodis, P. T. (2005). Entrepreneurship and university-based technology transfer. *Journal of Business Venturing*, 20(2), 241-263. <https://doi.org/10.1016/j.jbusvent.2003.12.003>
- Marlow, S. (2019). Gender and entrepreneurship: past achievements and future possibilities. *International Journal of Gender and Entrepreneurship*, 12(1), 39-52. <https://doi.org/10.1108/IJGE-05-2019-0090>
- Mars, M.M. & Rios-Aguilar, C. (2010) Academic entrepreneurship (re)defined: significance and implications for the scholarship of higher education. *Higher Education*, 59(1) 441–460. <https://doi.org/10.1007/s10734-009-9258-1>
- Martin, B. R. (2012). Are universities and university research under threat? Towards an evolutionary model of university speciation. *Cambridge Journal of Economics*, 36(3), 543–565. <http://doi.org/10.1093/cje/bes006>
- McCrae, R. R., & Costa, P. T., Jr. (2003). *Personality in adulthood: A five-factor theory perspective* (2nd ed.). Guilford Press. <https://doi.org/10.4324/9780203428412>
- Mickey, E. L., & Smith-Doerr, L. (2022). Gender and innovation through an intersectional lens: re-imagining academic entrepreneurship in the United States. *Sociology Compass*, 16(3), e12964. <https://doi.org/10.1111/soc4.12964>
- Miller, K., Alexander, A., Cunningham, J. A. & Albats, E. (2018). Entrepreneurial academics and academic entrepreneurs: a systematic literature review.

International Journal of Technological Management, 77(1-3), 9-37.
<https://doi.org/10.1504/IJTM.2018.091710>

Monroe K, Ozyurt S, Wrigley T, Alexander A. (2008). Gender equality in academia: bad news from the trenches, and some possible solutions. *Perspectives on Politics*, 6(2). 215-233. <https://doi.org/10.1017/S1537592708080572>

Murray, F. (2004). The role of academic inventors in entrepreneurial firms: sharing the laboratory life. *Research Policy*, 33(4), 643-659. <https://doi.org/10.1016/j.respol.2004.01.013>

Murray, F. & Leigh, L. (2007). Buying science and selling science: gender differences in the market for commercial science. *Industrial and Corporate Change*, 16(4), 657-689, <https://doi.org/10.1093/icc/dtm021>

Muscio, A. & Vallanti, G. (2024). The gender gap in PhD entrepreneurship: Why balancing employment in academia really matters, *Research Policy*, 53(1), 104907, <https://doi.org/10.1016/j.respol.2023.104907>

Müller-Weiland, R., Muschner, A. & Schraudner, M. (2019). Academic entrepreneurship: phase-specific constraints and needs. *Journal of Enterprising Communities: People and Places in the Global Economy*, 13(3), 353-371. <https://doi.org/10.1108/JEC-01-2019-0006>

Narayanan, V.K., Yang, Y. & Shaker Z. A.(2009). Corporate venturing and value creation: A review and proposed framework. *Research Policy*, 38(1), 58-76. <https://doi.org/10.1016/j.respol.2008.08.015>

Neves, S. & Brito, C. (2020). Academic entrepreneurship intentions: a systematic literature review. *Journal of Management Development*, 39(5), 645-704. <https://doi.org/10.1108/JMD-11-2019-0451>

Ní Laoire, C., Linehan, C., Archibong, U., Picardi, I. and Udén, M. (2021), Context matters: problematizing the policy-practice interface in the enactment of gender equality action plans in universities. *Gender Work Organ*, 28(2) 575-593. <https://doi.org/10.1111/gwao.12594>

- Nikou, S., Brännback, M., Carsrud, A. L., & Brush, C. G. (2019). Entrepreneurial intentions and gender: Pathways to start-up. *International Journal of Gender and Entrepreneurship*, 3(11), 348–372. <https://www.emerald.com/insight/content/doi/10.1108/IJGE-04-2019-0088/full/pdf?title=entrepreneurial-intentions-and-gender-pathways-to-start-up>
- Nilsson, N. (2021). *The Entrepreneurial Process. Seeing and Seizing Opportunities*. Routledge.
- O'Connor P. (2020). Why is it so difficult to reduce gender inequality in male-dominated higher educational organizations? A feminist institutional perspective. *Interdisciplinary Science Reviews*, 45(2), 207-228. <https://doi.org/10.1080/03080188.2020.1737903>
- O'Shea, R., Allen, T., O'Gorman, C., & Roche, F. (2004). Universities and technology transfer: A review of academic entrepreneurship literature. *Irish Journal of Management*, 25(2), 11–29.
- O'Shea, R.P., Allen, T.J., Morse, K.P., O'Gorman, C. and Roche, F. (2007). Delineating the anatomy of an entrepreneurial university: the Massachusetts Institute of Technology experience. *R&D Management*, 37(1)1-16. <https://doi.org/10.1111/j.1467-9310.2007.00454.x>
- Owen-Smith, J. & Walter W Powell, W.W. (2003). The expanding role of university patenting in the life sciences: assessing the importance of experience and connectivity. *Research Policy*, 32(9), 1695-1711. [https://doi.org/10.1016/S0048-7333\(03\)00045-3](https://doi.org/10.1016/S0048-7333(03)00045-3).
- Ozasir Kacar, S., Essers, C., & Benschop, Y. (2023). A contextual analysis of entrepreneurial identity and experience: women entrepreneurs in Turkey. *Entrepreneurship & Regional Development*, 35(5–6), 460–481. <https://doi.org/10.1080/08985626.2023.2189314>
- Patton, M.Q., (2002). *Qualitative research & evaluation methods*. (3rd. ed.). California: Sage.
- Patton, M. Q. (2012). A utilization-focused approach to contribution analysis. *Evaluation: The International Journal of Theory, Research and Practice*, 18(3), 364–377. <https://doi.org/10.1177/1356389012449523>

- Perkmann, M., Salandra, R., Tartari, V., McKelvey, M. & Hughes, A. (2021). Academic engagement: A review of the literature 2011-2019. *Research Policy*, 50(1)1-20. <https://doi.org/10.1016/j.respol.2020.104114>
- Phan, P., Ucbasaran, D. & Tan, W-L. (2009). Corporate entrepreneurship: current research and future directions. *Journal of Business Venturing*, 24(3), 197-205. <http://dx.doi.org/10.1016/j.jbusvent.2009.01.007>
- Rammstedt, B. & John, O. P. (2007). Measuring personality in one minute or less: A 10-item short version of the Big Five Inventory in English and German, *Journal of Research in Personality*, 41(1), 203-212. <https://doi.org/10.1016/j.jrp.2006.02.001>
- Rauch, A. & Frese, M. (2000). Psychological approaches to entrepreneurial success. A general model and an overview of findings. In C.L. Cooper & I.T. Robertson (Eds.), *International Review of Industrial and Organizational Psychology* (pp. 101-142). Chichester: Wiley.
- Richardson, S. S. (2010). Feminist philosophy of science; history, contributions and challenges. *Synthese*, 117(3), 337-362. <https://doi.org/10.1007/s11229-010-9791-6>
- Rivera, L. A. & Tilcsik, A. (2019). Scaling down inequality: rating scales, gender bias, and the architecture of evaluation. *American Sociological Review*, 84(2), 248-274. <https://doi.org/10.1177/0003122419833601>
- Roberts, E.B. (1991). *Entrepreneurs in High Technology. Lessons from MIT and Beyond*. Oxford University Press, New York and Oxford.
- Robnett, R. D. (2016). Gender bias in STEM fields: variation in prevalence and links to STEM self-concept. *Psychology of Women Quarterly*, 40(1), 65-79. <https://doi.org/10.1177/0361684315596162>
- Rosa, P., & Dawson, A. (2006). Gender and the commercialization of university science: academic founders of spinout companies. *Entrepreneurship & Regional Development*, 18(4), 341-366. <https://doi.org/10.1080/08985620600680059>

- Rothaermel, F. T., Agung, S. & Jian, L. (2007). University entrepreneurship: a taxonomy of the literature. *Industrial and Corporate Change*, 16(4), 691-791. <https://dx.doi.org/10.1093/icc/dtm023>
- Ryser, V-A. (2015). *Psychometric properties of extra- short Big Five personality measures in multi-topic surveys: documenting personality traits in the SHP and MOSAiCH* (Paper No:2015-5) FORS Working Paper Series, Lausanne: FORS.
- Schumpeter, J.A.(1934). *The Theory of Economic Development*. Harvard University Press, Cambridge, MA.
- Scott, J. W.(1986). Gender: a useful category of historical analysis. *American Historical Review*, 91(5), 1053-1075. <https://doi.org/10.2307/1864376>
- Shane, S.(2003). *A General Theory of Entrepreneurship: The Individual Opportunity Nexus*. Edward Elgar, Cheltenham, UK/Northampton, MA, USA.
- Shane, S., 2004. *Academic Entrepreneurship: University Spinoffs and Wealth Creation*. Edward Elgar, Cheltenham, UK/Northampton, MA, USA.
- Siegel, D.S., Waldman, D. A., Atwater, L. E. & Link, A. N. (2003). Commercial knowledge transfers from universities to firms: improving the effectiveness of university–industry collaboration. *The Journal of High Technology Management Research*, 14(1), 111-133. [https://doi.org/10.1016/S1047-8310\(03\)00007-5](https://doi.org/10.1016/S1047-8310(03)00007-5)
- Siegel, D.S. and Wright, M. (2015), Academic Entrepreneurship: Time for a Rethink?. *British Journal of Management*, 26(4), 582-595. <https://doi.org/10.1111/1467-8551.12116>
- Sinell, A., Müller-Wieland, R. & Muschner, A. (2018). Gender-specific constraints on academic entrepreneurship and engagement in knowledge and technology transfer. *Technology Innovation Management Review*, 8(2), 15-26. <https://doi.org/10.22215/timreview/1136>
- Spigarelli, F., Cavicchi A. & Rinaldi, C. (2017). Universities' third mission and the entrepreneurial university and the challenges they bring to higher education

institutions. *Journal of Enterprising Communities: People and Places in the Global Economy*, 11(3), 354-372. <https://doi.org/10.1108/JEC-01-2017-0006>

Steira, I., Wigger, K. & Rasmussen, E. (2024). Variety of entrepreneurial skills measured in the entrepreneurship education literature. *Education + Training*, 66(7), 755-776. <https://doi.org/10.1108/ET-09-2023-0374>

Stephan, P. E., Gurmu, S., Sumell, A. J., & Black, G. (2007). Who's patenting in the university? Evidence from the survey of doctorate recipients. *Economics of Innovation and New Technology*, 16(2), 71-99. <https://doi.org/10.1080/10438590600982806>

Stephan, P.E. & El-Ganainy, A. (2007) The entrepreneurial puzzle: explaining the gender gap. *Journal of Technology Transfer*, 32(1), 475-487. <https://doi.org/10.1007/s10961-007-9033-3>

Stephan, P. E., Gurmu, S., Sumell, A. J. & Black, G. (2007). Who's patenting in the university? Evidence from the survey of doctorate recipients. *Economics of Innovation and New Technology*, 16(2), 71-99. <https://doi.org/10.1080/10438590600982806>

Stoller, R. J. (1968). *Sex and Gender: On the Development of Masculinity and Femininity*. Science House.

Stuart, T.E., & Ding, W.W. (2006). When do scientists become entrepreneurs? The social structural antecedents of commercial activity in the academic life sciences. *American Journal of Sociology*, 112(1), 97 - 144. <https://doi.org/10.1086/502691>

Sullivan, D.M. & Meek, W.R. (2012), Gender and entrepreneurship: a review and process model, *Journal of Managerial Psychology*, 27(5), 428-458. <https://doi.org/10.1108/02683941211235373>

Tomy, S. & Pardede, E. (2020). An entrepreneurial intention model focussing on higher education, *International Journal of Entrepreneurial Behavior & Research*, 26(7), 1423-1447. <https://doi.org/10.1108/IJEBr-06-2019-0370>

Thursby, J.G., Thursby, M.C. (2005). Gender patterns of research and licensing activity of science and engineering faculty. *Journal of Technology Transfer* 30(4), 343-353. <http://link.springer.com/10.1007/s10961-005-2580-6>

- Ulrichsen, T. (2009, October 8). *Knowledge exchange: diversity, infrastructure and impact presentation*. AURIL Annual Conference, Bristol.
- Urbano, D., & Guerrero, M. (2013). Entrepreneurial universities: socioeconomic impacts of academic entrepreneurship in a European Region. *Economic Development Quarterly*, 27(1), 40-55. <https://doi.org/10.1177/0891242412471973>
- Urbano, D., Turro, A., Wright, M. & Shaker, Z. (2022). Corporate entrepreneurship: a systematic literature review and future research agenda. *Small Business Economics*, 59(4), 1541-1565. <https://link.springer.com/10.1007/s11187-021-00590-6>
- Wajcman, J. (2007). From Women and technology to gendered technoscience. *Information, Community and Society*, 10(3), 287-298. <https://doi.org/10.1080/13691180701409770>
- Wiedman, C. (2020). Rewarding collaborative research: role congruity bias and the gender pay gap in academe. *Journal of Business Ethics*, 167(4), 793-802. <https://doi.org/10.1007/s10551-019-04165-0>
- Whittington, K.B. & Smith-Doerr, L. (2005). Gender and commercial Science: women's patenting in the life sciences. *Journal of Technology Transfer*, 30(4), 355-370. <https://doi.org/10.1007/s10961-005-2581-5>
- Wood, M.S. (2011). A process model of academic entrepreneurship. *Business Horizons*, 54(2), 153-161. <https://doi.org/10.1016/j.bushor.2010.11.004>
- Wooten, K. C., Timmerman, T. A. & Folger, R. (1999). The use of personality and the five-factor model to predict new business ventures: from outplacement to start-up. *Journal of Vocational Behavior*, 54(1), 82-101. <https://doi.org/10.1006/jvbe.1998.1654>
- Wright, M., Lockett, A., Clarysse, B. & Binks, M. (2006). University spin-out companies and venture capital. *Research Policy*, 35(4), 481-501. <https://doi.org/10.1016/j.respol.2006.01.005>

- Wurth, B., MacKenzie, N.G. & Howick, S. (2024). Not seeing the forest for the trees? A systems approach to the entrepreneurial university. *Small Business Economics*, 63(2) 1–24. <https://doi.org/10.1007/s11187-023-00864-1>
- Zacher, H., Rudolph, C. W., Todorovic, T. & Ammann, D. (2019). Academic career development: a review and research agenda. *Journal of Vocational Behavior*, 110(B), 357-373. <http://dx.doi.org/10.1016/j.jvb.2018.08.006>
- Zeffane, R. (2015). Gender, trust and risk-taking: a literature review and proposed research model. *Journal of Enterprising Communities: People and Places in the Global Economy*, 9 (3), 221-232. <https://www.emerald.com/insight/content/doi/10.1108/JEC-03-2014-0004/full/html>
- Zhang, Z., Zyphur, M. J., Narayanan, J., Arvey, R. D., Chaturvedi, S., Avolio, B. J., Lichtenstein, P. & Larsson, G. (2009). The genetic basis of entrepreneurship: Effects of gender and personality. *Organizational Behavior and Human Decision Processes*, 110(2), 93-107. <https://doi.org/10.1016/j.obhdp.2009.07.002>
- Zhao, H., Seibert, S. E., & Hills, G. E. (2005). The mediating role of self-efficacy in the development of entrepreneurial intentions. *Journal of Applied Psychology*, 90(6), 1265–1272. <https://doi.org/10.1037/0021-9010.90.6.1265>
- Zhao, H., & Seibert, S. E. (2006). The Big Five personality dimensions and entrepreneurial status: a meta-analytical review. *Journal of Applied Psychology*, 91(2), 259–271. <https://doi.org/10.1037/0021-9010.91.2.259>
- Zhao H., Seibert, S. E., & Lumpkin, G. T. (2010). The relationship of personality to entrepreneurial intentions and performance: a meta-analytic review. *Journal of Management*, 36(2), 381-404. <https://doi.org/10.1177/0149206309335187>

APPENDICES

A. APPROVAL OF THE METU HUMAN SUBJECTS ETHICS COMMITTEE

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

 ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY

DİMLUPINAR BULVARI 06800
ÇANKAYA ANKARA/TURKEY
T: +90 312 210 22 91
F: +90 312 210 79 59
uezm@metu.edu.tr
www.ueam.metu.edu.tr

18 OCAK 2024

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Prof. Dr. Özlem ÖZDEMİR YILDIRIM

Danışmanlığımı yürüttüğünüz Gaye ÖZPİNECİ'nin "*WOMEN ACADEMICIANS AND ACADEMIC ENTREPRENEURSHIP: A QUALITATIVE STUDY/ KADIN AKADEMİSYENLER VE AKADEMİK GİRİŞİMCİLİK ÜZERİNE NİTEL BİR ARAŞTIRMA*" başlıklı araştırmanız İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek 0156-ODTÜİAEK-2024 protokol numarası ile onaylanmıştır

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Ş. Halil TURAN
Başkan

Prof.Dr. İ. Semih AKÇOMAK
Üye

Doç. Dr. Ali Emre Turgut
Üye

Doç. Dr. Ş. İrfan SEVİNÇ
Üye

Doç.Dr. Murat Perit ÇAKIR
Üye

Dr. Öğretim Üyesi Süreyya ÖZCAN KABASAKAL
Üye

Dr. Öğretim Üyesi Müge GÜNDÜZ
Üye

B. CODE BOOK

NO	PARENT CODE	CODE	NO	PARENT CODE	CODE	NO	PARENT CODE	CODE
	Barriers			Entrepreneur		50		Tenure&promotion criteria
1		Working space	25		Personal characteristics	51		Mentorship
2		Funding	26		Tenure	52		Academic networks (international)
3		Family/Care-taking responsibilities	27		Role model	53		Academic networks (national)
4		Bureaucracy	28		Support mechanisms		Outcomes & Implications of AE	
5		Work load	29		Political correctness	54		Student recruitment
6		Ethical concerns	30		Self-efficacy	55		Research funding
7		Lack of experience	31		Awareness	56		Societal benefits
8		Background	32		Intentions	57		Influence
9		Lack of entrepreneurship	33		Title	58		Prestige
10		Staff	34		Gender	59		Reputation
11		Role incongruity	35		Age	60		Promote economic development
12		Time		Facilitators/Drivers		61		Access to equipment
	Context		36		Academic Networks	62		Knowledge spillover
13		Subject Matter (STEM vs HASS)	37		Scholarships		Activities & Forms of AE	
14		International	38		Multidisciplinary collaborations	63		Form/run consultancy
15		Departmental	39		Personal contacts	64		Spun-out company
16		Institutional	40		Private donors	65		Patenting
17		National	41		Competitive Pressure	66		Licensed research
	Human Capital		42		Strategies	67		Employee training
18		Academics	43		Incentives	68		Sitting on advisory boards
19		'Star scientists'	44		Governance strategies	69		Attending conferences
20		Alumni	45		Academic mobility	70		Curriculum development
21		Department staff	46		Funding	71		Enterprise education
22		University staff	47		Local environment	72		Standard-setting forums
23		Students	48		Research strenght of the university	73		Participating in networks
24		PhD student	49		Recruitment strategies	74		Student placements

(cont'd)

NO	PARENT CODE	CODE	NO	PARENT CODE	CODE	NO	PARENT CODE	CODE
75		Giving invited lectures	102		Citizens		University and Academicians	
76		Public exhibitions	103		Public institutions	128		Gender Effect
77		Community based sports	104		Government	129		Difference of METU
78		School projects	105		Industry partners	130		Impact of Politics
79		Lectures for community	106		TTO	131		Comparison between Turkey and Abroad
80		Setting of physical facilities	107		University	132		Societal Expectancies
81		Consultancy services	108		Entrepreneurship centers	133		Responsibilities
82		Contract research		Outcome/Success Factors, Process, Ecosystem (cont'd)		134		Brainstorming on Academic Performance Metrics
83		Joint research	109		Incubators	135		Performance and Organizational Expectance
84		External secondment	110		Research park	136		Performance Self-perception
85		Hosting personnel	111		Technopark	137		Purpose of Academicians
86		Joint publications	112		Science park	138		Purpose of University
87		Prototyping and/or testing	113		Accelerator programmes		Job Characteristics	
88		Research consortia		Academic History (Career)		139		Voluntary Work
89		Informal advice	114		Comparison Between Early Career and Now	140		Job Context
	Novel Areas and Future Studies		115		Motivation to Become	141		Effect of Tenure
90		Automatization/Digitalization	116		Motivation to Continue	142		Lessons Learned
91		Social Networks		Academic Entrepreneurship		143		Failure/REsentment
92		Groupthink	117		Impact on Others	144		Success
93		Ethics	118		Brainstorming about AE	145		Dislike
94		Human Resources Management	119		Role Model Person/AE	146		Like
95		Organizational Theory	120		Intention to Continue/Do AE	147		Amount of Work
96		Organizational Behavior	121		Support	148		Comparison to Other jobs
97		New empirical analyses of outcomes	122		Challenges	149		Disadvantage
98		Theory Development	123		Enablers	150		Advantages
	Outcome/Success Factors, Process, Ecosystem		124		Self As Entrepreneur		Personal Characteristics	
99		Stakeholders	125		Experience	151		Job Fit
100		SMEs	126		Definition	152		Weaknesses
101		NGOs	127		Projects	153		Strengths
						154		Interests

C. INTERVIEW QUESTIONS

No	QUESTION	OBJECTIVE
Part 1 - Academic History		
1	Can you tell me a little bit about your academic history?	To have an introduction and a brief summary of the interviewee's background
2	Why did you become an academician? Why not another job?	To understand the motivation behind and initial expectations from interviewee's academic career
3	Who/what influenced you to become an academician/researcher?	To find out about the role model(s) and specific benchmarks initiating interviewee's academic career
Part 2 - Academic Entrepreneurship (AE)		
4	What is academic entrepreneurship?	To understand what AE means to the interviewee
Given that; AE is the 'Efforts and activities that universities and their industry partners undertake in hopes of commercializing the outcomes of faculty research' (Wood, 2011),		
5	Did you ever become involved in academic entrepreneurship?	To find out about their personal experiences of academic entrepreneurship
If your answer to Question 5 is a 'Yes',...		
6	How much of an academic entrepreneur do you define yourself to be on a scale from 0 to 10 ('0' being 'None' and '10' being 'Totally'?)	To understand the interviewee's self-perception of defining herself as an entrepreneur
7	What were your academic entrepreneurship experiences like?	To understand the specific nature of the interviewee's AE experiences and the processes she went through during those experiences
8	What were the barriers and enablers in your endeavor?	To understand the support mechanisms and challenges during the academic entrepreneurship experience(s)
9	What were the lessons learned through the AE experience(s)?	To understand what entrepreneurial experience's contribution(s) is/are to the knowledge, skill, abilities, and other characteristics of the interviewee

(cont'd)

No	QUESTION	OBJECTIVE
10	Do you intend to pursue AE?	To understand the intentions and motivation of the interviewee for more AE experiences
	If your answer to Question 5 is a 'No',...	
11	If you were not involved in academic entrepreneurship, what is/are the reason(s)?	To understand the barriers to pursuing academic entrepreneurship
12	What is your intention to get involved in AE on a scale from 0 to 10 ('0' being 'Very Unlikely' and '10' being 'Very Likely')	To understand the intentions and motivation of the interviewee for future AE experiences
Part 3 - University and Academics		
13	What do you think is the main purpose of the university?	To understand interviewee's perceptions of the prior mission of university
14	What do you think is the most important job of academics?	To understand the self-perception of the interviewee's job description
15	What makes you feel like you have done a 'good job' being an academician/teacher/researcher)?	To understand the self-perception of the interviewee's job performance
16	What do you think about the institution's (METU) definition of a 'good job' being an academician?	To understand interviewee's perceptions of job performance from institutional perspective
17	What do you think are the expectations of the society from the academicians?	To understand interviewee's perceptions of job performance from societal perspective
Part 4 - Job Characteristics		
18	What are the advantages and disadvantages of being an academician/researcher as observed by self	To understand interviewee's perceptions of pros and cons of job
19	What are the characteristics of the job as an academician/researcher that matches with your personal characteristics?	To understand interviewee's job fit

(cont'd)

No	QUESTION	OBJECTIVE
20	Can you please indicate whether you have engaged in the following activities or not in the last two semesters?	To find out about the interviewee's work load
	Teaching (If you did, how many courses did you teach?)	
	Research (Lab, paper, projects, etc.)	
	Administrative activities	
	Outreach activities	
	Number of students you are supervising their theses this semester	
21	What did you enjoy doing the most, at work, last week?	To understand the interviewee's job's positive motivational factors
22	What did you despise doing the most, at work, last week?	To understand the interviewee's job's negative motivational factors
23	How do you define your biggest success career-wise?	To find out about the interviewee's sense of achievement/competence factors
24	How do you define your biggest failure and/or regret career-wise?	To find out about the interviewee's lack of achievement factors
	Part 5 - Personal Characteristics	
25	What are your personal characteristics that prove most useful in your job as an academician/researcher?	To understand the interviewee's role congruity/incongruity
26	What are your personal characteristics that are least useful in your job as an academician/researcher?	

D. THE QUESTIONNAIRE

Demographics	
1. In which age group do you belong? a. 18-24 b. 25-34 c. 35-44 d. 45-54 e. 55-64 f. 65 or older	6. What is the highest level of education you have completed? a. Bachelor's Degree b. Master's Degree c. Doctoral Degree d. Post-Doc
2. What is your gender? a. Female b. Male c. Non-binary d. Prefer not to say e. Other. Please, specify ...	7. What is your current employment status? a. Full-time employment b. Part-time employment c. Unemployed d. Student e. Retired f. Other. Please, specify
3. What is your marital status? a. Single b. Married c. Divorced d. Widowed e. Separated	8. What is your academic title? a. Research Assistant b. Teaching Assistant c. Project Assistant d. Post-Doc e. Lecturer f. PhD Lecturer g. Assistant Professor h. Associate Professor i. Full Professor j. Other. Please, specify ...
4. How many people are in your household other than you? a. None b. 1 c. 2 d. 3 e. 4 or more	9. Do you possess any administrative titles? a. Yes. Please, specify... b. No
5. How many of the people in your household are children? a. None b. 1 c. 2 d. 3 e. 4 or more	10. What is your approximate monthly household income? a. Under 20.000-TL b. 20.000-50.000-TL c. 50.000-100.000-TL d. 100.000-150.000-TL e. 150.000-TL or more f. Prefer not to say

Risk Taking Attitude							
QUESTION	Never (Risk Averse)	Rarely (Less than 10% of the time)	Occasionally (About 30% of the time)	Sometimes (50% of the time)	Frequently (About 70% of the time)	Usually (About 90% of the time)	Every Time (Risk-Seeker)
Where do you see yourself on the scale; in terms of your risk-taking preference?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

(cont'd)

Personality Measure							
I see myself as someone who...	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
... is reserved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... is generally trusting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... does a thorough job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... is relaxed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... has active imagination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... is outgoing, sociable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... tends to find fault with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Personality Measure (continued)							
I see myself as someone who...	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
... tends to be lazy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gets nervous easily	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... has artistic interests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

(cont'd)

People Based Activities							
QUESTIONS	Never	Rarely (Less than 10% of the time)	Occasionally (About 30% of the time)	Sometimes (50% of the time)	Frequently (About 70% of the time)	Usually (About 90% of the time)	Every Time
Giving invited lectures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student placements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participating in networks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Standard-setting forums	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enterprise education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Curriculum development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attending conferences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

People Based Activities (continued)							
QUESTIONS	Never	Rarely (Less than 10% of the time)	Occasionally (About 30% of the time)	Sometimes (50% of the time)	Frequently (About 70% of the time)	Usually (About 90% of the time)	Every Time
Sitting on advisory boards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employee training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

(cont'd)

Community Based Activities							
QUESTIONS	Never	Rarely (Less than 10% of the time)	Occasionally (About 30% of the time)	Sometimes (50% of the time)	Frequently (About 70% of the time)	Usually (About 90% of the time)	Every Time
Lectures for community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community-based sports	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public exhibitions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Commercialization Activities							
QUESTIONS	Never	Rarely (Less than 10% of the time)	Occasionally (About 30% of the time)	Sometimes (50% of the time)	Frequently (About 70% of the time)	Usually (About 90% of the time)	Every Time
Licensed research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patenting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spun-out company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Form/run consultancy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

(cont'd)

Problem Solving Activities							
QUESTIONS	Never	Rarely (Less than 10% of the time)	Occasionally (About 30% of the time)	Sometimes (50% of the time)	Frequently (About 70% of the time)	Usually (About 90% of the time)	Every Time
Informal advice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research consortia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prototyping and/or testing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Joint publications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hosting personnel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
External secondment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Joint research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Problem Solving Activities (continued)							
QUESTIONS	Never	Rarely (Less than 10% of the time)	Occasionally (About 30% of the time)	Sometimes (50% of the time)	Frequently (About 70% of the time)	Usually (About 90% of the time)	Every Time
Contract research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consultancy services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Setting of physical facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

E. SUMMARY / TÜRKÇE ÖZET

Modern üniversitenin tarihi zengin ve ilginç bir yolculuğu anlatır. Başlangıçta klasik bir dini eğitim veren ilk eğitim kurumları, bu yolculuğun sonunda, günümüzde karşılaştığımız daha karmaşık yapıdaki, laik ve araştırma odaklı bilgi merkezlerine dönüşene kadar üniversiteler epeyce değişim geçirmişlerdir. Söz konusu değişim ve dönüşüm halen devam etmektedir.

Üniversitelerin örgütsel yapısı, işlevi ve çevreye etkisi zamanla değiştikçe üniversite öğretim üyelerinin rolü de değişmeye başlamıştır. Akademisyenler de yüksek öğretim kurumlarının ilk varoluş zamanlarındaki rollerinden sıyrılarak, günümüzün araştırmacılarına, eğitimcilerine ve toplumun gelişimine katkı sağlayan kimselere dönüşmüşlerdir. 19. yüzyılda üniversitelerin özerklik kazanmasıyla ve Wilhelm von Humboldt'un Almanya'da araştırma üniversitesi modelini kurmasıyla, akademisyenler bağımsız araştırma ve entelektüel sorgulama yapmaya teşvik edilmişlerdir. Akademi'deki bu değişim, öğretim odaklı rollerden, özgün bilgi üretmeyi vurgulayan rollere doğru bir dönüşümü işaret ederken, 20. yüzyılda, üniversiteler kamu hizmetini ve ekonomik ilerlemeyi benimsedikçe akademisyenlerin rolü daha da gelişmiştir.

Üniversitenin üçüncü misyonu olan ekonomik kalkınma, tam da bu zamanlarda, araştırma ve öğretime ek olarak girişimci üniversite kavramının ortaya çıkmasına yol açmıştır. Bu kavram, yalnızca üniversitelerin yapısal ve örgütsel gelişimiyle değil, aynı zamanda bölgesel veya ulusal kalkınma ekonomisi ile de ilişkilendirilebilir. Söz konusu kavram aynı zamanda üniversitelerin ve öğretim üyelerinin mali durumlarının iyileştirilmesine ve araştırma faaliyetlerinin fonlanmasına da katkıda bulunma amacıyla girişimci faaliyetlerin sürdürüldüğü bilgi tabanlı inovasyonun ortaya çıkmasını da sağlamıştır. (Etzkowitz ve diğerleri, 2000).

Bu etkenler, üniversitelerde akademisyenler ve onların öğrencileri tarafından yürütülen araştırmaların yeni fikirlere dönüşmesine hız kazandırmaktadır. Girişimci

çabaları da başlatan bu fikirler ve temel teknolojilerden oluşan yenilikler, 'akademik girişimcilik' teriminin ortaya çıkmasına yol açar. Wood (2011), akademik girişimciliği "üniversitelerin ve endüstri ortaklarının akademik araştırmalarının sonuçlarını ticarileştirme umuduyla gerçekleştirdikleri çabalar ve faaliyetler" olarak tanımlar (Wood, 2011, s. 153). Shane (2003) ise, girişimciliğin “daha önce var olmayan, yeni mal ve hizmetler, örgütlenme biçimleri, pazarlar, süreçler ve hammaddeler sunmak amaçlı fırsatların keşfi, değerlendirilmesi ve kullanılması” anlamına geldiğini belirtmektedir (Shane, 2003, s.4). Bu iki tanıma ek olarak, literatürde, “akademik girişimcilik” kavramının birçok tanımı bulunmaktadır ancak genel olarak kabul görmüş, daha kapsamlı bir tanıma ve bu tanıma ilişkin kavramların daha net bir şekilde anlaşılmasına ihtiyaç duyulmaktadır (Abreu ve Grinevich, 2013; Siegel ve Wright, 2015; Hayter vd., 2018; Klofsten ve Jones-Evans, 2000; Cunningham vd., 2024). Akademik girişimcilik nispeten yeni bir olgu olduğundan, akademik girişimcilik olarak kabul edilen faaliyetlerin kavramsallaştırılmasında, insan sermayesi ile diğer paydaşlar arasındaki etkileşimi içeren ekosistemi ve akademik girişimciliğin oluşma ve devam etme sürecini kolaylaştıran destek sistemlerini tanımlamada da hala boşluklar bulunmaktadır (Guerrero vd., 2016; Hayter vd., 2018; Guinti ve Duberley, 2023; Cunningham vd., 2024).

Üniversitenin amacı ve yapısı ile paydaşları ve çevresine katkısı değişim geçiredursun; öte yandan, üniversite ortamlarındaki kadın akademisyenlerin hikayesi ve bilgi üretimi ile bilginin yaygınlaşmasına katılımları da bir o kadar dikkate değer bir yolculuktur. Biyolojik cinsiyetten farklı olarak toplumsal cinsiyet kavramının 20. yüzyılın ortalarında akademik söyleme dahil edilmesinden çok önce (Stoller, 1968; Scott, 1986; Acker, 1992), kadınlar bilimsel alanda kendilerine yer edinmek için çabalamaktaydılar. Önceleri, kadınların akademide erişebildikleri fırsatlar, erkek meslektaşları arasında daha az popüler olan faaliyetlerle sınırlıydı ve bu faaliyetleri üstlenebildiklerinde aldıkları ücretler de oldukça düşüktür. Bunlara ek olarak, erkek egemen akademik dünyada yol almaya çalışan ilk kadın akademisyenler, kurumsal engellerden tutun da toplumsal önyargılara kadar uzanan türlü zorluklarla da sıklıkla karşı karşıya kalmışlardır (Richardson, 2010; Rivera ve Tilcsik, 2019; Wiedman, 2020).

Cinsiyet kavramının ortaya çıkışı ve akademide görev alan kadınların gelişen rolü, akademik girişimcilikteki birkaç temel eğilimle de bağlantılıdır. Bu bağlantı aynı zamanda akademik araştırmayı toplumsal etki ve ekonomik kalkınma ile dengelemeye yönelik devam eden çabaları yansıtır (Clark, 1998). Örneğin, Avrupa Komisyonu'nun araştırma ve inovasyonda cinsiyet eşitliğiyle ilgili stratejisi ve önerileri (EIGE, 2016); bilimsel kariyerlerde eşitliği, karar alma süreçlerinde cinsiyet dengesini ve araştırma ve inovasyonun içeriğine cinsiyet boyutunun dahil edilmesini amaçlamaktadır. Genel olarak girişimcilik uygulamalarında olduğu gibi, akademik bağlamdaki girişimcilik de erkekler tarafından domine edilmektedir. Erkeklerin egemen olduğu bu alanda hem kadınların akademik girişimciliğe yaklaşımları hem de deneyimleri, yeterince temsil edilmeyen gruplar için değerli bir veri kaynağıdır. Bu nedenle, kadın öğretim üyelerinin akademik girişimcilik faaliyetlerine yönelik tutumları ve katılımları, akademik girişimcilik araştırmaları içerisinde çok önemli bir bölümü oluşturmaktadır.

Bu çalışmanın tohumları, Orta Doğu Teknik Üniversitesi'ndeki (ODTÜ) farklı fakülte ve bölümlerden dört kadın akademisyenle yapılan ve kadınların akademik girişimcilik konusunda yaşadıkları zorlukları ve destek mekanizmalarını nasıl algıladıkları sorusunu yanıt arayan pilot çalışmayla atılmıştır. Çevresel faktörler, öz motivasyon ve iş birlikleri, yapılan görüşmelerin transkripsiyonlarının analizinde ortak temalar olarak ortaya çıkarken, görüşülen kişilerin neredeyse tamamının akademik girişimciliğin tanımı ve sınırları konusunda net bir fikre sahip olmadıkları da gözlemlenmiş ve not edilmiştir. Bu nedenle, akademik girişimciliği teşvik eden ve/veya tüm paydaşlarla birlikte hayata geçirilmesine olanak sağlayan unsurları anlamak için öncelikle bu kavramın tanımı ve sınırlarının incelenmesi gerektiği açıkça ortaya çıkmıştır. Bu çerçevede, bu tez çalışmasının amacı, (1) "akademik girişimcilik" teriminin kavramsallaştırılmasını keşfetmek, (2) kadın akademisyenlerin akademik girişimcilik algısının ne olduğunu anlamak ve (3) akademik girişimcilik için etkili bir üniversite ekosisteminin geliştirilmesine katkıda bulunmak üzere politika önerilerinde bulunmaktır. Bu amaçları gerçekleştirerek; kadın öğretim üyeleri arasında akademik girişimciliği teşvik etmek için ODTÜ örneğinde olası zorlukların ve destek mekanizmalarının araştırılmasına da katkıda bulunulacağı öngörülmektedir.

Girişim sermayesinin yükselişi ve 1980 yılında Amerika Birleşik Devletleri'nde Bayh-Dole Yasası'nın kabulü, üniversiteleri bilimsel bulgularını ticarileştirmeye teşvik etmiştir. Bilim insanı ve mühendis sayısının artması, bu insanların üniversite ve sanayi arasında mekik dokumaları ile bilgisayar, biyoteknoloji ve nanoteknolojideki teknolojik ilerlemeler, girişimci üniversite kavramının ortaya çıkmasına yol açmıştır (Clark, 1998; Etzkowitz vd., 2000; Siegel ve Wright, 2015). Yukarıda sunulan tüm faktörlerin bir sonucu olarak; patent, lisans gibi girişimci faaliyetler ve kuluçka merkezleri, bilim parkları ve teknoloji transfer ofisleri (TTO) gibi girişimci ekosistemler, bilim insanları için kampüs yaşamının önemli bir parçası haline gelmiştir. Akademik ortamlardaki bu ticarileştirme faaliyetleri genel olarak 'akademik girişimcilik' olarak anılmaktadır (Wright vd., 2006; Wood, 2011; Urbano vd., 2022).

Türkiye'de ise bu süreç, 2000'li yılların başında çeşitli inovasyon ve Ar-Ge politikalarının uygulamaya konulmasıyla ivme kazanmıştır (Cansız, 2016, s.25). 4691 sayılı Teknoloji Geliştirme Bölgeleri Kanunu'nun yürürlüğe girmesi, üniversite-sanayi iş birliklerini artırmıştır. Bu iş birlikler aynı zamanda akademik girişimcilik faaliyetlerine de zemin hazırlamıştır. Sanayi ve Teknoloji Bakanlığı istatistiklerine göre, Kasım 2024 itibarıyla Türkiye genelinde 91 Teknoloji Geliştirme Bölgesi bulunmakta, 13 tane daha da inşa edilmektedir. Bu bölgelerdeki 11.158 firmanın 2.160'ında bir akademisyen ortak bulunmaktadır. Türkiye'de girişimci üniversite modeli, YÖK tarafından Girişimci ve Yenilikçi Üniversite Endeksi'nin 2012 yılında uygulamaya konulmasıyla daha da görünür hale gelmiştir. Bu endeks, (1) Bilimsel ve teknolojik araştırma yetkinliği, (2) Fikri mülkiyet havuzu, (3) İş birliği ve etkileşim ve (4) Ekonomik ve sosyal katkı olmak üzere 4 boyut altında 24 göstergeden oluşmaktadır. ODTÜ, söz konusu endeksin ilk yayımlandığı tarihten bu yana, Türkiye genelindeki diğer üniversitelere göre önemli bir farkla zirvede yer almaktadır.

Girişimci üniversite, akademik girişimcilik faaliyetleri ve bu faaliyetleri çevreleyen ekosistem dünyada ve Türkiye'de gelişirken, "akademik girişimcilik" alanındaki araştırmalar ve yayınlar da artmaktadır (Rothermael vd., 2007; Hayter vd., 2018; Neves ve Brito, 2020; Aydınoglu vd., 2022). Girişimci üniversite üzerine yapılan

arařtırmalar, üniversitelerin mevcut yapılarının ve misyonlarının doğal evrimine iřaret etmekte ve üniversite ortamlarında girişimcilik faaliyetlerini teşvik etmenin ekonomik ve toplumsal kalkınmayı teşvik etmek anlamına geldiğini belirtmektedir (Etzkowitz ve Kloftsten, 2005; Urbano ve Guerrero, 2013).

Akademik girişimciliğe yönelik geleneksel yaklaşım, Teknoloji Transfer Ofisleri (TTO) aracılığıyla lisans ve patentler yoluyla üniversite arařtırmalarının ticarileştirilmesini içermektedir (Lockett vd., 2014). Akademik girişimciliğe yönelik bu erken yaklaşımlar, bu tür çabaların üniversite için finansal bir kaynak işlevi gördüğü görüşünü desteklemektedir; ancak son yıllarda üniversite arařtırmalarının toplumsal gelişime nasıl katkıda bulunduğuna da odaklanılmaya başlanmıştır.

Alandaki mevcut literatüre dayanarak, bu çalışmanın temel amacı "akademik girişimcilik" kavramını ODTÜ'deki kadın akademisyenlerin bakış açısından arařtırmaktır. Mevcut literatürde girişimcilik arařtırmalarından ödünç alınan veya akademik girişimcilik hakkındaki erken dönem çalışmalara dayanan birçok tanım bulunmasına rağmen (Wood, 2011; Abreu ve Grinevich, 2013; O'Shea vd., 2004), daha kapsamlı bir kavramsallaştırmaya hâlâ ihtiyaç var gibi görünmektedir. Bu ihtiyaç, mevcut literatürün akademik girişimciliği, üniversiteye, öğretim üyelerine ve topluma görünür ve sayılabilir bir katkısı olan akademik veya teknolojik bir şirketin kurulması (spin-off) ve geliştirilmesi ile eşitleme eğiliminden kaynaklanmaktadır (Di Gregorio ve Shane, 2003; Murray, 2004; O'Shea vd., 2007; Stuart ve Ding, 2006; Wright vd., 2006). Öte yandan, bu kapsamda yer almayan ancak üniversiteye, öğretim üyelerine ve topluma; prestij, itibar ve toplumsal gelişme gibi dolaylı, bazen de indirekt maddi faydalar sağlayan alternatif akademik girişimcilik faaliyetlerinin bulunduğunu gösteren arařtırmalar bulunmaktadır (Abreu ve Grinevich, 2013; Guerrero ve diğerleri, 2015; Perkmann ve diğerleri, 2021; Wurth ve diğerleri, 2024).

Literatürde "akademik girişimciliğe" yönelik çalışmalara farklı yaklaşımlar da bulunmaktadır. Bu yaklaşımlar şunları içerir; (1) Akademik girişimcilik kapsamında değerlendirilen faaliyetler, (2) Akademik girişimcilik faaliyetini karar alma, başlatma, geliştirme ve sürdürmede etken olan insan faktörü, (3) Akademik

girişimcilik faaliyetinin geliştiği bir üniversite veya araştırma ortamındaki bireylerden, kurumlardan, kaynaklardan ve politikalardan oluşan ekosistem ve (4) Bir akademik araştırmayı bir girişime dönüştüren aktörler ve içinde faaliyet gösterdikleri ekosistem arasındaki ilişkiden etkilenen süreç (Di Gregorio ve Shane, 2003; Etzkowitz ve Klofsten, 2005; Link ve diğerleri, 2007; Guerrero ve diğerleri, 2016; Hayter ve diğerleri, 2018; Giunti ve Duberley, 2023).

Kadınların akademik girişimciliğe katılımı, cinsiyet, eğitim ve inovasyonun kritik bir kesişimini temsil eder. Üniversiteler giderek daha fazla dışarıya bilgi aktarımı ve araştırmanın ticarileştirilmesine odaklandıkça, akademiden kaynak alan girişimcilik faaliyetlerine kadınların katılımı da önemli olmaya başlamıştır. Bu alanda gün geçtikçe daha fazla varlık göstermelerine rağmen, özetin giriş bölümlerinde de açıklandığı gibi, kadın akademisyenler bazı zorluklarla karşı karşıyadır. Bütün bunlara rağmen, kadın akademisyenler, girişimci ekosistemlerde, inovasyonu ve kapsayıcılığı geliştirmeye yönelik çeşitli bakış açıları ve liderlik stillerini de beraberlerinde getirmişlerdir. Akademik girişimcilik alanında kadın akademisyenlerin katkılarını, yaşadıkları zorlukları ve önlerine çıkan fırsatları inceleyen çalışmalar, cinsiyet dinamiklerinin girişimcilik başarısını, akademik ve toplumsal ilerleme üzerindeki daha geniş etkiyi nasıl etkilediğini de aydınlatmaktadır. Bu çalışmalardan birkaçını örneklendirmek gerekirse; örneğin, Muscio ve Vallanti (2024), öğretim üyelerinin bileşiminin kadın öğrencilerin iş odaklı araştırmaya ve araştırmalarının ticarileştirilmesine yönelik tutumları üzerinde önemli bir etkiye sahip olduğunu ve bunun da girişimcilik niyetlerini ve bir iş kurma olasılıklarını etkilediğini gösteren bir araştırma yürütmüştür. Ayrıca, mevcut literatür kadınların aynı cinsiyetten rol modelleriyle etkileşimden ve kadınların daha adil temsil edildiği bir çalışma ortamından da olumlu anlamda etkilendiklerini göstermektedir. Böyle bir ortam cinsiyet engellerini azaltmakta ve kadınların bir girişim başlatma yetenekleri konusunda daha kendinden emin olmalarını sağlamaktadır (Nikou vd., 2019). Bunlara ek olarak, öğretim üyeleri arasında akademik girişimcilik açısından toplumsal cinsiyet farkını analiz eden araştırmacılar, kadınlar ve erkekler arasında yan şirket kurma (spinout) faaliyetlerinde önemli bir fark olduğunu ve bunun: (1) daha az kıdemli pozisyona sahip olmak, (2) sağlık bilimleri, sosyal bilimler, beşeri bilimler ve eğitim alanlarında çalışmak, (3) bir

işletmeyi yönetme konusunda daha az deneyime sahip olmak ve (4) araştırmanın ticarileştirmesi konusunda kararsız hissetmek gibi faktörlerden kaynaklandığını ortaya koymuşlardır (Abreu ve Grinevich, 2017). Akademik girişimcilikteki cinsiyet farkını inceleyen araştırmaların diğer bir kısmı ise; kadın öğretim üyelerinin daha az görünür olmalarına, profesyonel ağlardan dışında kalmalarına ve genel olarak cinsiyet ayrımcılığına odaklanmaktadır (Murray ve Graham 2007; Stephan ve El-Ganainy 2007).

Her ne kadar akademik girişimciliğin kavramsallaştırılması ve sınırlarının yeniden düzenlenmesi gerekli olsa da bu tür çabaların başlatılmasını ve sürdürülmesini açıklayan tek boyut kavramın tanımı değildir. Akademik girişimciler ve onların kişilik özellikleri, tutumları ve sahip oldukları değerler de bu faaliyetler kapsamında önemli bir rol oynamaktadır. Bu nedenle, akademik girişimcilik konusunda yürütülen bazı çalışmalarda kimi araştırmacılar kavram içindeki sınırlara ve sonuç olarak ortaya çıkan ürüne odaklanmayı tercih ederken, diğerleri girişimcilere, onların kişilik özelliklerine ve tutumlarına odaklanmayı seçmektedir (Zhao vd., 2010; Iorio vd., 2017; Neves ve Brito, 2020; Hayter vd., 2022).

Girişimcilik faaliyetleri sonuç açısından bakıldığında büyük miktarda belirsizlik içerdiğinden, riskten kaçınma tutumuna sahip olan bireylerin herhangi bir akademik girişimcilik faaliyetini tercih etmeleri beklenmez. Araştırmalar, bireylerin risk alma tutumunun girişimci niyetlerini tahmin edebileceğini desteklemektedir (Zhang vd., 2009; Zeffane, 2015; Neves ve Brito, 2020). Örneğin; Douglas ve Shepherd (2002) tarafından yapılan bir araştırmaya göre, girişimci bir kariyer peşinde koşmak isteyen bireyler, halihazırda faaliyet gösteren bir şirkette güvenli bir istihdam bulmak isteyenlere göre daha az riskten kaçınmaktadır. Benzer şekilde, risk almayı içeren kişilik özelliğinin de Zhao ve meslektaşları (2005) tarafından yapılan bir meta-analitik incelemede girişimci niyetle ilişkili olduğu bulunmuştur.

Akademik girişimcilik genellikle zengin, betimleyici anlatılar aracılığıyla en iyi şekilde anlaşılabilir karmaşık sosyal, kültürel ve kurumsal faktörler tarafından şekillendirilmektedir. Bu nedenle, bu çalışmada metot olarak kullanılan nitel yaklaşım katılımcıların benzersiz bakış açılarının, zorluklarının ve motivasyonlarının

keşfedilmesine yol açmıştır. Yapılan görüşmeler, kadın akademisyenlerin yaşam deneyimlerini paylaşımları ve nicel yöntemlerle gözden kaçabilecek nüansları vurgulamaları için bir platform sağlamıştır. Yaklaşımımız ayrıca katılımcıların çeşitli ve bağlama özgü gerçekliklerini yakalamamızı ve cinsiyet dinamiklerinin akademi girişimcilik faaliyetleriyle nasıl kesiştiğine dair içgörüler sunmamıza da fırsat vermiştir. Nitel yöntem, kadın akademisyenlerin bakış açılarına öncelik vererek, girişimcilik çabalarına katılımı etkileyen algıları, önlerine çıkan engeller ve destek mekanizmaları hakkında daha derin bir anlayış geliştirmemize yardımcı olmuştur.

Çalışmamız kapsamında, katılımcılarla yapılan görüşmelerin yanı sıra, demografik ve kişilik özelliklerini, risk alma tutumlarını ve akademik girişimcilik faaliyetlerine yönelik hareketlerini anlamaya yönelik bir de anket doldurmaları istenmiştir. Anketten elde edilen demografik bilgiler, bu çalışmanın katılımcılarını yaş, gelir düzeyi, eğitim, medeni durum ve istihdam gibi belirli kriterlere göre kategorize etmek için kullanılmıştır. Girişimcilik araştırmasındaki tüm demografik özellikler arasında yaş, cinsiyet ve iş deneyimi en belirgin etmenler olarak tanımlanmaktadır (Sullivan ve Meek, 2012; Liang ve diğerleri, 2018; Marlow, 2019; Gendron-Carrier, 2023). Katılımcıların risk alma tutumları, "Risk alma tutumu açısından kendinizi nasıl algılıyorsunuz?" sorusunun 1 (Riskten Kaçınan) ile 7 (Risk Arayan) arasında belirleyen bir ölçekte, tek bir soruyla araştırılmıştır. Risk alma tutumu, girişimciliğe yönelik kişisel motivasyonlarla ilgili en önemli faktörlerden biri olarak öne çıktığından bu veriye ilişkin bir sorgulama yapılmıştır (Block ve diğerleri, 2015; Neves ve Brito, 2020).

Çalışmamızda, katılımcıların kişilik özelliklerini anlamak üzere, bu özellikleri beş temel boyuta göre değerlendiren Büyük Beş Envanteri'nin (Big Five Inventory) kısaltılmış bir versiyonu (BFI-10) kullanılmıştır. Envanter, sıfatlar ve eylemlere dayalı on ifade içermekte; her bir ifade bir boyutla ilgili olup katılımcılar kendilerini en iyi tanımlayan durumu Likert tipi bir ölçekte 1 (Kesinlikle Katılmıyorum) ile 7 (Kesinlikle Katılıyorum) arasında işaretlemek suretiyle yanıtlama yapmışlardır.

Akademik bilgiyi ticarileştirmenin popülaritesiyle uyumlu olarak, akademik girişimciliği teşvik eden faktörlere yönelik artan bir araştırma ilgisi bulunmaktadır.

Bu faktörleri incelemek için kullanılan yöntemler çeşitlilik gösterse de odak noktası alanın içerisinde oldukça küçük bir faaliyet yelpazesi olmuştur. Bu faaliyetler akademisyenler tarafından TTO'ya yapılan buluş bildirimleri (Thursby ve Thursby, 2005), patentleri (Agrawal ve Henderson, 2002; Henderson ve diğ., 1998; Owen-Smith ve Powell, 2003; Stephan ve diğ., 2007), yan firmaları (spin-off) (Di Gregorio ve Shane, 2003; Murray, 2004; O'Shea ve diğ., 2007; Stuart ve Ding, 2006; Wright ve diğ., 2006) ve araştırma çıktılarının lisanslanmasını (Jensen ve diğ., 2003; Markman ve diğ., 2005; Siegel ve diğ., 2003) içermektedir. Bu nispeten sınırlı odaklanmanın birkaç nedeni bulunmaktadır. Her şeyden önce, bu faaliyetler girişimcilik üzerine daha geniş bir literatürde yıllarca analiz edilen resmi ve ticari faaliyetleri kapsamaktadır. İkinci olarak, bu faaliyetler oldukça somuttur, bu nedenle ölçülmeleri kolaydır ve ekonomik etkileri, gayri resmi olan ve "radar altında" gerçekleşen faaliyetlerin aksine tahmin edilebilir. Bütün bunlara rağmen, akademik girişimcilik faaliyetlerinin sınırlarını genişleten çalışmalar da vardır (Klofsten ve Jones-Evans, 2000, Abreu ve Grinevich, 2013; Siegel ve Wright, 2015).

Bu tez çalışması, akademik girişimciliğin, tüm faaliyet ve fırsat yelpazesine sınırlı bir bakış açısına sahip olanlar için ne anlama geldiğini daha iyi anlamak ve tanımlamak amacıyla, bu genişletilmiş odak noktasını ve faaliyet çeşitliliğini keşfetmek istemektedir. Bu nedenle, katılımcılardan anketin akademik girişimcilik faaliyetlerine yönelik kısmını, söz konusu faaliyetlerdeki deneyimlerinin var olup olmamasına ve olması halinde gerçekleşme sıklığına göre dört boyut altında doldurmaları istenmiştir; sıklık ölçeği 0 (Asla) ile 6 (Her Zaman) arasında değişmektedir. Ankette listelenen faaliyetler, Abreu ve Grinevich (2013) tarafından yapılan ve Ulrichsen (2009)'dan uyarlanan çalışmadan türetilmiştir. Aşağıdaki tabloda yukarıda açıklanan boyutların ve faaliyetlerin listesi bulunmaktadır.

Görüşmelerin içeriğinin tasarımında, görüşme rehberi tekniğinin standart bir formatla birleştirilmesi yoluna gidilmiştir. Bu, araştırmacının belirli faktörleri daha derinlemesine incelemesine olanak tanırken, her görüşmeciyi aynı temel soruların sorulmasını mümkün kılmıştır (Patton, 2012). Görüşme rehberindeki yirmi altı soru, çıktı, insan sermayesi, ekosistem ve süreç gibi literatürdeki akademik girişimcilik çalışmalarıyla ilgili çok çeşitli temel kavramları keşfetmek için seçilmiş olup bu

sorular beş ana başlık altında listelenmişlerdir: (1) Akademik Geçmiş, (2) Akademik Girişimcilik, (3) Üniversite ve Akademisyenlik, (4) Akademisyenlik İşinin Özellikleri ve (5) Kişisel Özellikler.

Tablo 1.1 Ankette Bulunan Girişimcilik Faaliyetlerinin Listesi

BOYUT	ETKİNLİK
İnsan-Odaklı	Çalışan eğitimi
	Öğrenci yerleştirmeleri
	Müfredat geliştirme
	Konferanslara katılma
	Standart belirleme komisyonları
	Ağlara katılma
	Danışma kurullarında görev alma
	Davetli dersler verme
	İş hayatına ve kurumsal yönetime yönelik eğitim verme
	Ticarileştirme
Patentleme	
Spin out şirket kurma	
Danışmanlık	
Toplum-Odaklı	Topluma açık dersler verme
	Okul projeleri
	Toplum odaklı spor faaliyetleri
	Kamuya açık sergiler
Problem Çözme	Gayriresmi tavsiye
	Araştırma konsorsiyumları
	Prototip oluşturma ve/veya test etme
	Ortak yayın yapma
	Personel ağırlama
	Dış görevlendirme
	Ortak araştırma
	Sözleşmeli araştırma
	Danışmanlık hizmetleri
	Fiziksel tesislerin düzenlenmesi

Görüşülen kişilerin çoğunluğu kolayda örneklem yöntemiyle belirlenmiş olsa da bir kısım katılımcılar da meslektaşlarının çalışma için iyi bir bilgi kaynağı olabileceğini düşünen, daha önce görüşülen akademisyenler tarafından önerilmiştir. Bu nedenle, kartopu örneklemesinin de araştırmada kullanıldığı söylenebilir.

Akademik girişimcilik literatüründe bulunan tanımlar ve yaklaşımlar üzerine inşa edilen bu çalışmada bulguların analizi ve sunumu iki bölümden oluşmaktadır. Birinci bölüm anketten toplanan veriler ve bu verilerin görüşmeden sağlanan verilerle karşılaştırılmasından oluşmaktadır ve yapılandırılmış bölüm olarak adlandırılmaktadır. Toplam katılımcı sayısı az olduğundan ve araştırma sorularını keşfetmek için birincil yöntem olarak nitel bir yaklaşım tercih edildiğinden, anketten toplanan veriler karmaşık istatistiksel analizlerde kullanılmaktan ziyade esas olarak katılımcıları kategorize etmek için kullanılmıştır. Bu kategoriler, katılımcıların akademik girişimciliğe yönelik demografik özellikleri, kişilik faktörleri, risk alma tutumları, öz algıları ve niyetlerinin etkisini gösteren görüşme verileriyle birlikte herhangi bir örüntü oluşup oluşmadığını araştırmak üzere değerlendirilmiştir.

Analizin ikinci kısmı, katılımcıların yarı yapılandırılmış görüşme sorularına verdikleri yanıtlardan elde edilen verilere dayanmaktadır. Analizin bu kısmı, nitel analizleri kolaylaştırmak için tasarlanmış bir yazılım olan MAXQDA tarafından desteklenmiştir. MAXQDA üzerindeki kodlama süreci, akademik girişimcilik faaliyetleri ve yaklaşımları hakkındaki mevcut literatürle uyumlu temalar olarak ortaya çıkan temel kavramların yanı sıra eldeki vakaya özgü temaların tanımlanmasına yol açmıştır.

Katılımcıların demografik bilgileri değerlendirildiğinde; görüşülen kadın akademisyenlerin çoğunluğunun Fen Edebiyat Fakültesi'nden olduğu görülebilir. ODTÜ Araştırma Bilgi Sistemi'ne göre, bu fakültede çalışan 552 araştırmacı vardır. Fakültelerin cinsiyete göre dağılımı %53,3 erkek ve %46,7 kadındır. Bu fakültede görev yapan dört kadın akademisyenin hepsi farklı araştırma alanlarından gelmektedir. Araştırmaya katılan on iki akademisyenden dördü profesör, biri araştırma görevlisidir. Geri kalan katılımcıların doçent olarak görev yapmaktadırlar. Çalışmaya katılanların yarısından fazlası, öğretim ve araştırma iş sorumluluklarının yanı sıra ODTÜ'de idari bir görev de almış bulunmaktadırlar. Bu idari sorumluluklar; fakülte dekanı, dekan yardımcısı üniversite bağlamındaki otuz bir araştırma merkezinden ikisinin müdürlüğü gibi farklı düzeyde ve çeşitliliktedir. Ayrıca, bu çalışmadaki kadın akademisyenlerin biri hariç hepsinin medeni hali “Evli”dir. Katılımcılardan yalnız bir tanesinin medeni hali “Boşanmıştır”.

Arařtırmalar, riskten kaınan insanların giriřimcilięe karřı daha mesafeli olduęunu ve risk alma tutumunun giriřimcilik niyetini tahmin edebileceęini gstermektedir (Douglas ve Shephard, 2002; Zhao ve dięerleri, 2005). Ancak alıřmamızda, grřlen kiřilerin nemli bir kısmının risk almaktan hořlanmadıklarını belirtmiř olmalarına raęmen gelecekte akademik giriřimcilik faaliyetinde bulunma ve srdrme niyetleri ortalamanın zerindedir. Bunun, grřlen kiřilerin akademik giriřimcilięe iliřkin algılarının bařlangıta oęunlukla para kaybetme riski daha yksek olan bir yan řirket kurmak olmasıyla ilgili olabileceęi tahmin edilmektedir.

Literatrde paylařılan bilgiler ve BFI-10 sonuları ile karřılařtırıldıęında alıřmamızda iki ilgin sonu yer almaktadır. Kiři D kendini "Bazen" risk alan biri olarak tanımlamaktadır, "Dıřa Dnklk" puanı "Gl Pozitif" ve "Nevrotiklik" puanı "Biraz Negatif"tir. Mevcut literatre dayalı olarak kiřisel zellikleri ve risk alma tutumu akademik giriřimcilik iin iyi bir aday olduęunu gsterse de ne z algısı ne de giriřimci olma niyeti grřme esnasında belirtilmiř ve gzlemlenmiřtir. Kiři H ise kendini "Sık sık" risk alan biri olarak tanımlamaktadır, "Dıřa Dnklk" puanı "Olumlu" ve "Nevrotiklik" puanı "Biraz Pozitif"tir. Akademik giriřimcilięi srdrme konusundaki kendi z algıları ve niyetleri sorulduęunda, ncelikle giriřimcilik fikrinden pek hořlanmadıęı, akademik giriřimcilięin aslında "Yanlıř" olduęunu dřndę anlařılmaktadır. Daha sonra, byle bir abaya karřı tutumu, grřme sırasında byle bir faaliyetin toplumsal etkisi gndeme getirilene kadar olumsuz kalmıřtır. Bu dnm noktasından sonra, daha olumlu bir duruř sergilemiřtir. Bu zel rnekten ve dięer birka grřmede de kiřinin kendine, politik ve ideolojik duruřuna sadık kalmak abasının akademik giriřimcilik niyetine etkisi gzlenmiřtir.

Mlakatlardan toplanan zengin nitel veriler aracılıęıyla, akademik giriřimcilik kavramsallařtırmasına ve kadın ęretim yeleri arasında akademik giriřimcilięi etkileyen faktrlere ışık tutan birka kritik tema ortaya çıkmaktadır. Bu temalar, ticari, gayri resmi ticari ve ticari olmayan/toplumsal akademik giriřimcilik faaliyetleri gibi farklı giriřimci ıktı mekanizmalarını, insan sermayesi ve giriřimcilik ekosistemi gibi bu faaliyetlerin girdisini ve/veya bařlatıcılarını ve son olarak kurumsal destek ve endstri ortaklıkları gibi akademik giriřimcilik erevesindeki dięer tm ynler arasındaki iliřkiyi ve eylemi kolaylařtıran sreci

içermektedir. Bu bölüm ayrıca kaynak ve zaman kısıtlamaları, bürokratik kısıtlamalar ve akademi ile iş dünyası arasındaki yaklaşım farklılıkları ve çalışma değerleri ve öncelikleri de dahil olmak üzere potansiyel akademik girişimcilerin karşılaştığı engelleri incelemektedir. Bu bulguları mevcut literatürle bir araya getirerek, bu tartışma, kadın akademisyenlerin ODTÜ'deki girişimcilik ortamında nasıl hareket ettiklerine dair ayrıntılı bir anlayışa katkıda bulunmayı ve gelecekte daha etkili akademik girişimcilik çabalarını teşvik etmek için pratik çıkarımları belirlemeyi amaçlamaktadır. Bu amaç doğrultusunda ve çalışma ışığında akademik girişimcilik kavramını belirleyen unsurları içeren aşağıdaki tabloda paylaşılan çerçeve çizilebilmiştir. Bu tablo akademik girişimciliğin tanımı hakkında yapılan görüşmelerden elde edilen verilerin analizi sırasında ortaya çıkan kategorilerin ve temaların derlemesidir. Tabloda; akademik girişimcilik olarak kabul edilenin "Ne?" olduğunun yanı sıra, bu tür faaliyetlerin birincil kolaylaştırıcısının "Kim?" olduğunu ve akademik girişimcilik faaliyetlerinin "Hangi?" süreçler aracılığıyla "Nasıl?" canlandığını da içerir. Bu kapsamlı çerçeve, araştırma etkisi, insan sermayesi, kurumsal destek, iş birliği ağları, politika ve kültür gibi akademik girişimcilikteki temel faktörleri de özetlemektedir.

Akademik girişimcilik, akademik araştırma ile toplumsal etki arasındaki boşluğu kapatmada, üniversite ortamlarında üretilen bilgiyi somut yeniliklere ve girişimlere dönüştürmede önemli bir rol oynar. Potansiyel akademik girişimciler için akademik girişimciliği anlamak ve buna katılmak özellikle önemlidir, çünkü bu onlara uzmanlıklarını ekonomik ve sosyal değere dönüştürme gücü verir.

Potansiyeline rağmen, akademik girişimcilik kavramı ve uygulaması, bu çalışmadaki katılımcıların anlatılarından anlaşıldığı üzere, birçok kadın akademisyen arasında yeterince araştırılmamıştır. Bu, genellikle kurumları tarafından sağlanan bilginin mevcut girişimcilik fırsatları ve kaynakları konusunda yarattığı sınırlı farkındalık nedeniyle yaygın bir sorundur. Bu farkındalık eksikliği, çeşitli bakış açılarının inovasyonu ve ilerlemeyi yönlendirebileceği daha kapsayıcı bir girişimcilik ekosisteminin gelişimini engeller.

Akademisyenler ve özellikle kadın akademisyenler arasında akademik girişimcilik fırsatları hakkında farkındalığı artırmak, bu sürece katılımlarını ve katkılarını teşvik

etmek için önemlidir. Girişimcilikle ilgili yollar, faydalar ve kaynaklar hakkında gelişmiş anlayış, tarihsel olarak bilime katılımlarını sınırlayan engelleri ortadan kaldırmaya yardımcı olabilir.

Tablo 1.2. Akademik Girişimcilik Yaklaşımları Çerçevesi

AKADEMİK GİRİŞİMCİLİK (AG) YAKLAŞIMLARI			
KATEGORİ	TEMA	AG FAALİYETLERİ (ÖRNEKLER) & AKTÖRLER & DİĞER İLGİLİ KAVRAMLAR	ANAHTAR YAKLAŞIMLAR
ÇIKTI	TİCARİ	Patent	En sık rastlanan AG faaliyetleri Gözle görülen, sayılabilen çıktılar AG konusunda araştırmacıların en çok odaklandıkları unsurlar
		Lisans	
		Yan Şirket (spin off)	
	GAYRİRESMİ TİCARİ	Danışmanlık	Sıklıkla yapılan ama az takdir edilen AG faaliyetleri Daha az gözle görülen ve sayılabilen çıktılar mevcuttur Araştırma akademisyenlerden ziyade ticari ortağın bakış açısına odaklanmıştır
		Sözleşmeli Araştırma	
	TİCARİ OLMAYAN VE/VEYA TOPLUMSAL KATKI	Gayiresmi Tavsiye	Akademisyenler tarafından gerçekleştirilen ancak nadiren AG faaliyetleri çerçevesinde değerlendirilen faaliyetler Çoğunlukla akademisyen ve bağlı bulunduğu kurum için gözle görülmeyen ve tanınırlık, prestij, sosyal etki ve katkı gibi indirekt mali getirileri olanın çıktılar vardır Ölçülüp analiz edilmeleri nispeten daha zor olduğundan daha az ve yeni yeni araştırmalar yapılan faaliyetlerdir.
		Kamuya Açık Dersler	
		Public Development	
		Ortak Araştırma Yapma	
Ortak Yayın Yapma			
GİRDİ	İNSAN SERMAYESİ	Kişilik Özellikleri	Kişisel, psikolojik karakteristik özellikler ile kişinin motivasyonları bir AG fırsatını fark etmede ve bu girişimi başlatmada önemli olarak tanımlanmıştır. Bu konuda girişimcilik literatüründe belirgin sayıda çalışma varken, akademik girişimcilik literatüründe nispeten daha az çalışılan bir konudur.
		Motivasyon	
		Girişimcilik Becerileri	
	EKOSİSTEM	Kurumlar	
		Paydaşlar	
		Destek Mekanizmaları	
		Engeller	
SÜREÇ		Akademik Çalışmalar Üzerine Geliştirilmiş İnovatif Fikirler	
		Kaynakların Belirlenmesi ve Kullanılması	
		Bilgi Aktarımı	

Kaynak: Yazar

Bu bağlamdaki politika önerileri, daha kapsamlı faaliyetler çerçevesinde özel atölyeler, mentorluk programları ve fon ve kurumsal desteğe daha iyi erişim gibi hedefli girişimler yaratmaya odaklanmalıdır. Buradaki boşlukları ele alarak, ODTÜ ve diğer araştırma üniversiteleri; yalnızca öğretim üyelerini güçlendirmekle kalmayıp aynı zamanda yenilik ve girişimcilik ekosistemlerini zenginleştirerek eşitlikçi ve sürdürülebilir ekonomik ve toplumsal kalkınmayı teşvik edebilir. Aşağıdaki tabloda hem bu çalışmadan hem de literatürden türetilen kategorilere ve temalara odaklanan ve katılımcıların var olduğunu algıladıkları engellerin çoğunu aşmak için beklenen

hedeflere odaklanan politika önerileri paylaşılmıştır. Bu öneriler, akademik girişimciliğin üniversiteler içinde üretilen bilgi ve araştırmayı endüstriyel ortaklara ve topluma tanıtmak için gerçekten gerekli bir araç olduğu gerçeğine dayanmaktadır. Ayrıca, akademik girişimcilik olarak adlandırdığımız bu faaliyetlerin, algılanandan daha çeşitli temellere ve sonuçlara sahip olduğuna da işaret etmektedirler. Bu nedenle, çeşitli araştırma odakları ve akademik disiplinlerden öğretim üyelerini eşit şekilde bilgilendirmek ve eğitmek son derece önemlidir.

Bir üniversite veya araştırma ortamındaki bireyler, kurumlar, kaynaklar ve politikalar arasındaki ağ ve etkileşim, akademik girişimciliğin yaratılmasını ve büyümesini kolaylaştırır. Türkiye'de öğretim ve araştırmanın amiral gemisi olan ODTÜ, ekosistemde gerekli unsurlara ve bunlar arasındaki etkileşimlere sahiptir. Mülakat yapılan akademisyenler tarafından vurgulanan bu unsur ve etkileşimlerden en önemlileri Akademik Gelişim Programı (AGEP) ve ODTÜ TEKNOKENT'in varlığıdır. AGEP, ODTÜ'ye katılan ve akademik kariyerinin başında olan yeni öğretim üyelerinin uyumunu kolaylaştırmak ve eğitim-öğretim, araştırma ve toplumsal hizmet alanlarındaki faaliyetlerinin etkinliğini artırmak amacıyla tasarlanmıştır. ODTÜ TEKNOKENT ise Türkiye'de türünün ilk bilim parkı olmasının yanı sıra; Yeni Fikirler Yeni İşler (YFYİ) gibi hızlandırıcı programlar, Animasyon Teknolojileri ve Oyun Geliştirme Merkezi (ATOM) kuluçka merkezleri, finansal bir araç olarak oluşturulan hızlandırıcı ve yatırımcı Büyüme Devresi (Growth Circuit), akademik birikimin ticarileştirilmesi için ODTÜ Teknoloji Transfer Ofisi, şirketler arası iş birliğini teşvik etmek için Savunma, Bilgi Teknolojileri ve Sağlık Kümelenmeleri ve uluslararası iş birliğini artırmak için yurt dışında irtibat ofisleri gibi faaliyetlerle gerçekleştirilmektedir.

ODTÜ akademik girişimciliği incelemek için iyi bir başlangıç olsa da Girişimci ve Yenilikçi Üniversite Endeksi'ndeki diğer üniversiteler hem devlet ve vakıf üniversiteleri arasındaki farkları gözlemlemek için iyi bir analiz fırsatı sağlayabilir hem de akademik girişimciliğin diğer örgütsel kültürel perspektiflerden destekleyici mekanizmalarla motivasyonlar arasında daha derin bir bağ kurabilir.

Üniversiteler akademik girişimcilik faaliyetlerinin genişleyen yelpazesi için stratejiler geliştirmeye ve uygulamaya devam ederken, bu faaliyetlerin başarılı olup

olmadığını değerlendirmek için mekanizmalar benimsemeleri de gerekir. Üniversitelerin ve TTO'ların patentlenme, lisanslama ve yan kuruluş oluşturma açısından etkinliğini değerlendirmek için ölççekler olsa da yeni akademik girişimcilik faaliyetleri biçimleri için de bunlara benzer ölççeklerin geliştirme ihtiyacı mevcuttur.

Tablo 1.3. Akademik Girişimcilik Ekosisteminin Etkinleştirilmesine Yönelik Politika Önerileri

AKADEMİK GİRİŞİMCİLİK (AG) YAKLAŞIMLARINA YÖNELİK POLİTİKA ÖNERİLERİ				
POLİTİKANIN ODAĞI	POLİTİKA ÖNERİSİ	POLİTİKANIN AMACI	KAYNAK	POLİTİKA ARAÇLARI
ÇIKTI	Ticari Akademisyenleri daha geniş bir AG fırsatları yelpazesi hakkında farkındalığını teşvik etmek	Araştırma alanları veya disiplinleri ne olursa olsun akademisyenlerin çeşitli AG fırsatlarına dahil olma şanslarını artırmak	Bir üniversitenin AG konusunda yeterince etkili olup olmadığı sorusu	AG faaliyetleri, haber bültenleri ve web seminerleri aracılığıyla farkındalık kampanyaları
	Gayriresmi Ticari Gayriresmi fikri mülkiyetin geliştirilmesi ve yeni girişimcilik biçimlerinin oluşturulması	Yeni AG girişim biçimlerini destekleyen yeni örgütsel yapılar, sistemler ve yönetim stilleri üzerinde çalışmak	Rekabet baskısı, akademik girişimciliğin mevcut ölçme kriterlerine göre değerlendirilmesi ve bu kriterlerin sınırlı kapsayıcılığı	Fikri mülkiyet, patent süreçleri, lisanslama ve araştırma çıktıların doğru ve dolaylı ticarileştirilmesinin diğer biçimleri hakkında politika savunuculuğu ve düzenli eğitim
	Ticari Olmayan ve/veya Toplumsal Katkı Akademik girişimcilik ölçütlerinin kıyaslamasının gerçekleştirilmesi Akademisyenlerin araştırmalarının ticari olmayan ve/veya toplumsal etkisinin belirlenmesi ve ifade edilmesi Beşeri bilimler ve sosyal bilimlerde akademik girişimciliğe yönelik akademik ilginin teşvik edilmesi	Farklı çıktı temalarıyla AG sonuçlarına ilişkin verileri derinlemesine incelemek ve anlamak için yeni yöntemler ve ölçüm metrikleri sunmak Fakülte araştırmalarının dolaylı ticari ve toplumsal etkisinin önemini vurgulamak AG araştırmasını farklı disiplinlerden gelen fakülte üyeleri arasında teşvik etmek, böylece mevcut olgunun çerçevesi, yönleri ve kavramsallaştırmasına ilişkin farklı düzeylerde daha iyi anlaşılmasını sağlamak	Araştırmayı finanse etme baskısı Araştırma sonuçlarını ticari sonuçlarla ilişkilendirme baskısı Üniversite yöneticilerinin ve/veya hükümetlerin akademik araştırma odakları konusunda stratejik kararları	Üniversiteler tarafından AG faaliyetlerini ve AG araştırmalarını öğretim üyeleri arasında teşvik etmek için benimsenen takdir ve ödüller Öğretim üyelerine sunulan süreli kaynaklar, tavsiyeler ve ağ kurma fırsatları sağlayan özel inovasyon ve girişimcilik merkezleri Üniversite tarafından AG'de en az temsil edilen akademisyenlerin, disiplinlerin ve/veya araştırma alanlarının pozitif ayrımcılığı teşvik etmek için strateji geliştirilmesi
GİRİDİ	İnsan Sermayesi Girişimcinin temel kişisel özelliklerinin, değerlerinin, tutumlarının ve motivasyonlarının anlaşılması Problem çözme becerileri, merak, yeni deneyimlere açıklık gibi akademisyenlerin olumlu yönlerinin teşvik edilmesi	AG'ye yönelik tutumlardaki kişisel farklılıkların anlaşılmasını teşvik etmek ve bu farklılıklara uygun motivasyon şemaları ve programları sunmak	Kişilik faktörü, inanç sistemleri, eğitim ve aile geçmişi, sosyoekonomik statünün girişimci rolü üzerindeki etkileri	Deneyimli öğretim görevilerinin meslektaşlarını cesaretlendirecek girişimcilik tecrübe ve hikayelerini paylaşarak mentorluk ve rol modellik yapmaları Seminerler ve vaka çalışmaları aracılığıyla başarı hikayelerinin vurgulanması Oryantasyon ve öğretim görevlisi geliştirme programlarına entegre edilebilen girişimcilik eğitim programları
	Ekosistem Kurumsal altyapıyı girişimci üniversite kavramına uygun şekilde geliştirme Yeni ve geliştirilmiş fonlama mekanizmalarının çalışılması Disiplinlerarası işbirliklerini teşvik edilmesi	AG faaliyetleri için fiziksel ve organizasyonel altyapıyı sağlamak Girişimci faaliyetler için finansal engelleri azaltmak amacıyla araştırma ticarileştirme hibelerini, tohum finansmanını ve ortaklıkları kolaylaştırmak Farklı disiplinler arasında araştırmayı kolaylaştırmak	Girişimcilik alanının diğer aktörleri ve girişimcilik bağlamını şekillendiren mekanizmalar ile zorluklar	Deneyimli öğretim görevilerinin meslektaşlarını cesaretlendirecek deneyim ve hikayelerini paylaşarak mentorluk ve rol modellik yapmaları Seminerler ve vaka çalışmaları aracılığıyla başarı hikayelerinin vurgulanması Oryantasyon ve öğretim görevlisi geliştirme programlarına entegre edilebilen girişimcilik eğitim programları
SÜREÇ	Darboğazların belirlenmesi ve bilgi transfer akışının sağlanması	AG'nin farklı ve etkili uygulamaları aracılığıyla araştırmadan dışarıya bilgi aktarımına sorunsuz bir geçiş sağlamak	Fikir üretimi, potansiyel pazarların ve fizibilitenin değerlendirilmesi, kaynak yönetimi, yaratma ve sürdürülebilirlik gibi temel süreçler	Akademisyenlerin AG açısından ihtiyaçlarını tespit etmek için sistematik ve düzenli bir ihtiyaç analizi çalışması

Kaynak: Yazar

F. THESIS PERMISSION FORM / TEZ İZİN FORMU

(Please fill out this form on computer. Double click on the boxes to fill them)

ENSTİTÜ / INSTITUTE

- Fen Bilimleri Enstitüsü / Graduate School of Natural and Applied Sciences
- Sosyal Bilimler Enstitüsü / Graduate School of Social Sciences
- Uygulamalı Matematik Enstitüsü / Graduate School of Applied Mathematics
- Enformatik Enstitüsü / Graduate School of Informatics
- Deniz Bilimleri Enstitüsü / Graduate School of Marine Sciences

YAZARIN / AUTHOR

Soyadı / Surname : ÖZPİNECİ
Adı / Name : Gaye
Bölümü / Department : Bilim ve Teknoloji Politikası Çalışmaları / Science and Technology Policy Studies

TEZİN ADI / TITLE OF THE THESIS (İngilizce / English):

Women academicians and academic entrepreneurship: a qualitative study

TEZİN TÜRÜ / DEGREE: Yüksek Lisans / Master Doktora / PhD

1. Tezin tamamı dünya çapında erişime açılacaktır. / Release the entire work immediately for access worldwide.
2. Tez iki yıl süreyle erişime kapalı olacaktır. / Secure the entire work for patent and/or proprietary purposes for a period of two years. *
3. Tez altı ay süreyle erişime kapalı olacaktır. / Secure the entire work for period of six months. *

* Enstitü Yönetim Kurulu kararının basılı kopyası tezle birlikte kütüphaneye teslim edilecektir. / A copy of the decision of the Institute Administrative Committee will be delivered to the library together with the printed thesis.

Yazarın imzası / SignatureTarih / Date

(Kütüphaneye teslim ettiğiniz tarih. Elle doldurulacaktır.)
(Library submission date. Please fill out by hand.)

Tezin son sayfasıdır. / This is the last page of the thesis/dissertation.