Branding Makes You Stand Out

The impact of science/engineering graduates' personal branding and perceived external marketability on perceived employability

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Branding Makes You Stand Out

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Two years ago, I was penning my motivation letter to apply for the management of technology Master's program at TU Delft. Now I'm even nearing graduation. Looking back on these two years of schooling, the Covid-19 pandemic, lockdowns, online classes and exams all hindered my efforts to adjust to everything here when I arrived in the Netherlands. But fortunately, all the difficulties have also made me more resilient and tenacious. I will never forget the kind help I received from my family, friends and supervisors during this period.

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Abstract

With the trend of work-from-home and flexible working arising from the Covid-19 virus pandemic becoming increasingly popular, personal branding will play a growing role in the workplace. Practitioners in a few industries, such as public relations, have been at the forefront of personal branding and will continue to attract people from other industries and even graduates to start focusing on building and managing their personal brands. In the near future, personal branding may become mandatory for graduate job seekers and even further popularized in university and college vocational education.

Previous studies have shown that personal branding can help improve graduates' employability, which is done through a three-stage approach: firstly, establishing their brand identities, then positioning their brands to the audiences, and finally checking how well it matches the company's brand for which they are seeking employment. This study conducted empirical research on 80 science/engineering graduates no more than two years ago to determine the level of correlation between each of the three and their perceived employability through PLS-SEM analysis. On this basis, the study also explored whether and to what extent perceived external marketability plays a role in the impact of personal branding on perceived employability.

The PLS-SEM analysis results show that the conceptual model is a good fit. According to our research, the impact of graduates' core personal brand identity and personal brand positioning on perceived employability is not significant. This finding makes us think about whether the current personal branding guidelines, which generally focus on improving personal brand positioning, are really useful. The study also found that extended personal brand identity had a direct contribution to graduates' perceived employability. The most important finding is that the fit between personal brand and company brand makes the most difference for graduates' perceived employability, and perceived external marketability also plays a significant mediating role. This reveals that future graduates should look more into their brand fit with the preferred company when seeking employment.

This study provides valuable new insights into the impact of personal branding on the perceived employability of science/engineering graduates. Although the results are encouraging, future researchers can build on this study with longitudinal or cross-sectional follow-up studies.

Contents

1 Introduction

1.1 Background

Nowadays, information technology makes it easy for everyone to know other people's preferences. People post about themselves every day or even every hour on social platforms such as Twitter, Facebook, Youtube, Instagram, and LinkedIn. Through a person's profile and preferences for clothing, transportation, consumption, and cultural products (like books, magazines, and movies, etc.), we can infer personal information such as his style of action, political views, and even sexual orientation. As a result, all of this relevant information that makes up a person's personal image ultimately helps us form an overall evaluation of them.

However, two reasons suggest that the long-standing concept of "personal image" may be becoming obsolete. The personal image often derives to a large extent from the first impression made upon first contact. As a result, it is often assumed that this deep, lasting, but potentially false personal image is difficult to change (Poon Teng Fatt, 1997). However, people can actually be more proactive in controlling the amount and content of information they want to display to the public. For example, they can set different access rights for each item in their profile or post different content on different platforms to shape different self-personas. In addition to this, they can also interact with their followers under their posts, and these interactions help to correct any false impressions that followers may have (Hennessy, 2018).

Second, employers are increasingly checking out candidates' posts on social platforms outside of traditional interviews to help assess whether they should be hired. The process by which a person begins to control their personal image actively and expects to "sell" themselves to their ideal employer in the job market has many similarities to the process by which a company promotes a particular brand of product or service and expects to develop the market and expand sales. Under this circumstance, it would be more appropriate to use the term "personal brand" instead of "personal image".

Although the construct of "personal brand" seems new, Peters (1997) has actually been calling for people to build their personal brands for a long time, as he said, "We are CEOs of our own companies." Since then, a plethora of books, websites, courses and consulting services on personal branding have emerged to the point of being overwhelming (Bendisch et al., 2007; Cooper, 2014; Hennessy, 2018; Kaputa, 2006; Schawbel, 2009). These books acknowledge that personal branding will allow the owner to stand out in an increasingly crowded marketplace as a differentiating force. There are two main reasons

for these phenomena. First, good personal branding can expand the employee's visibility, making him memorable to those who have contacted them (Khedher, 2015). Furthermore, it also guarantees credibility to those unfamiliar with him, as a distinct personal brand is usually the result of the joint force of willingness to self-improve and planned effort (Khedher, 2015). As a result, nowadays personal branding plays an increasing role in the workplace.

The Covid-19 pandemic has made personal branding even more important. As the pandemic led to a global downturn in economic development, many SMEs were overwhelmed and closed down, and those that have managed to survive have undergone digital transformation. As a result, the increasing unemployment has made competition within the labor market more intense (Capela, 2021). Since more people use the Internet to engage digitally with others, job seekers are inevitably relying more on online platforms like LinkedIn than offline career fairs to find jobs (Nagel, 2020). In a sea of candidates selling their experience and skills to recruiters, candidates who are good at personal branding tend to be at the front of the line and thus have more opportunities for exposure (Capela, 2021).

The Covid-19 pandemic further contributed to the development of personal branding for employees as well (Gringarten, 2020). Since people no longer visit the offices but communicate directly with their clients online, the customer experience relies more on the personal impressions made by employees in email correspondence than on the accessibility of the office (or store), the luxury of the decoration, the endless queues of people, etc. In such situations, the personal brand plays a more important role than before when collaborating with external people, while the brand effect of the company is diminished. Therefore, the study of personal branding in the workplace is becoming an emerging area of research.

1.2 Research Focus

This research, i.e., the Master's thesis, is part of the Management of Technology (MoT) program curriculum at Delft University of Technology. MoT students need to explore how companies can utilize technology to drive improved results by designing and developing products & services. For companies in all industries, recruiting the most valuable graduates will have long-term benefits for their growth. By investigating the impact of graduate personal branding on perceived employability, we expect to identify the most critical influencing factors and thereby provide recommendations on how companies can use technology to identify the candidates who perform best at this point. Therefore, this study focuses on the most critical factors/dimensions of the personal branding of (science/engineering) graduates.

Scholars in various countries are researching personal branding in the workplace. However, most existing research focused on either the effects of corporate executives' personal branding (Chen & Chung, 2016; Schlosser et al., 2017), or the link between employees' personal branding and their career success (Gorbatov et al., 2019; Kaputa, 2006; Schawbel, 2009). In contrast, research conducted on the impact of graduates' personal branding on their perceived employability is not too much (Zamudio et al., 2014). Furthermore, even much fewer studies have been conducted on the personal branding of graduates majoring in science/engineering-related fields (Hanifa, 2021). Since graduates of these majors tend to focus more on practical skills than on building and maintaining their personal brand, it is necessary to study how and to which extent their personal branding affects their perceived employability.

In addition, we believe that graduates' self-confidence in their job search will also play a role in this. We use the term "perceived external marketability" (PEM) to refer to self-confidence when searching for a job, as PEM measures the extent to which a person believes he or she is valuable to their future employers (Eby et al., 2003). Therefore, it can be argued that good personal branding will promote graduates' perceived employability as well as their self-confidence (PEM), while the improvement of PEM will also play a role in the improvement of perceived employability. In other words, PEM is likely to play a mediating effect between graduates' personal branding and their perceived employability.

Considering that graduates have been struggling more than ever to find work during the Covid-19 pandemic, the study has become increasingly essential and valuable. Therefore, this study focuses on bringing graduates' adequate and effective personal branding and employers' decision-making in reference to candidates' personal brands to a cross-section, where graduates' perceived employability is maximized/employers hire the most suitable candidates, as shown in Figure 1.

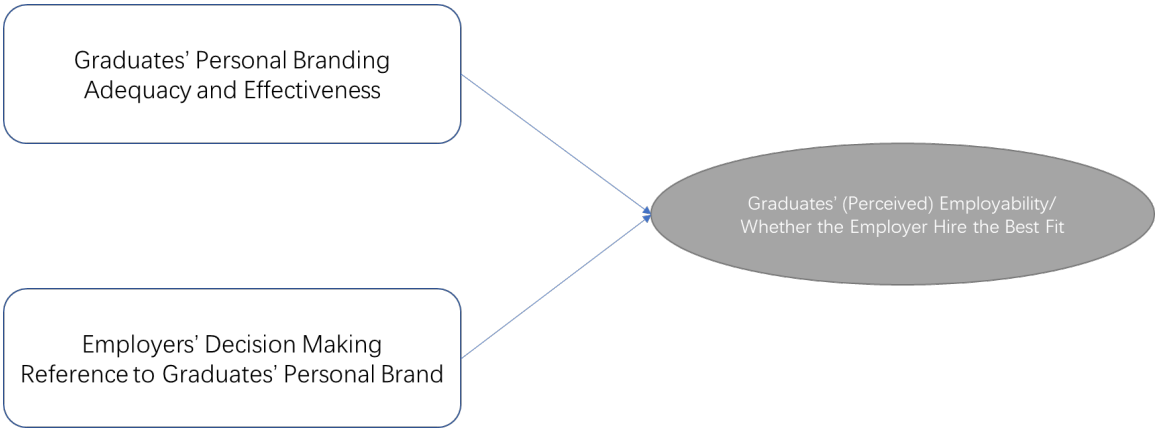

Figure 1: Research focus

1.3 Research Objective

Based on the research focus discussed above, the main research objective of this thesis is to identify how science/engineering graduates can enhance their perceived employability through personal branding and, where possible, derive differentiated insights based on segmentation (male/female, Dutch/international students, hunting a job/having found a job, etc.). Besides that, it is understood that personal branding is heavily influenced by the culture of the countries in which people grow up and live. However, due to this research project's time and financial constraints, this paper will mainly focus on graduates from Dutch universities.

The following sub-goals should also be accomplished to achieve the main research objective.

- Demonstrate the positive impact that personal branding has on perceived employability.
- Develop a model including personal branding, perceived employability, and perceived external marketability.
- Find out the key variables that play an important role in the perceived employability of graduates based on the validation and analysis of the model.
- Based on completing the four previous sub-goals, advise graduates on building their brand to maximize their perceived employability and advise employers on making better hiring decisions based on candidates' personal brands.

1.4 Research Questions

The main research question is defined to achieve the research objectives.

Main research question

How can science/engineering graduates increase their perceived *employability through building a personal brand?*

In order to answer the main research question, several sub-research questions will be asked and answered first to answer the main research question ultimately.

Sub research questions

1. *What dimensions influence the personal branding of science/engineering graduates? To what extent do these dimensions influence their personal branding?*
2. *Does perceived external marketability mediate the relationship between science/engineering graduates' personal branding and their* perceived *employability? And to what extent?*
3. *Does the impact of personal branding on* perceived *employability vary by gender, nationality and current status (last year of university/already graduated) of graduates?*

1.5 Research Methodology

The research methodology of this study is divided into four main phases, as shown in Figure 2.

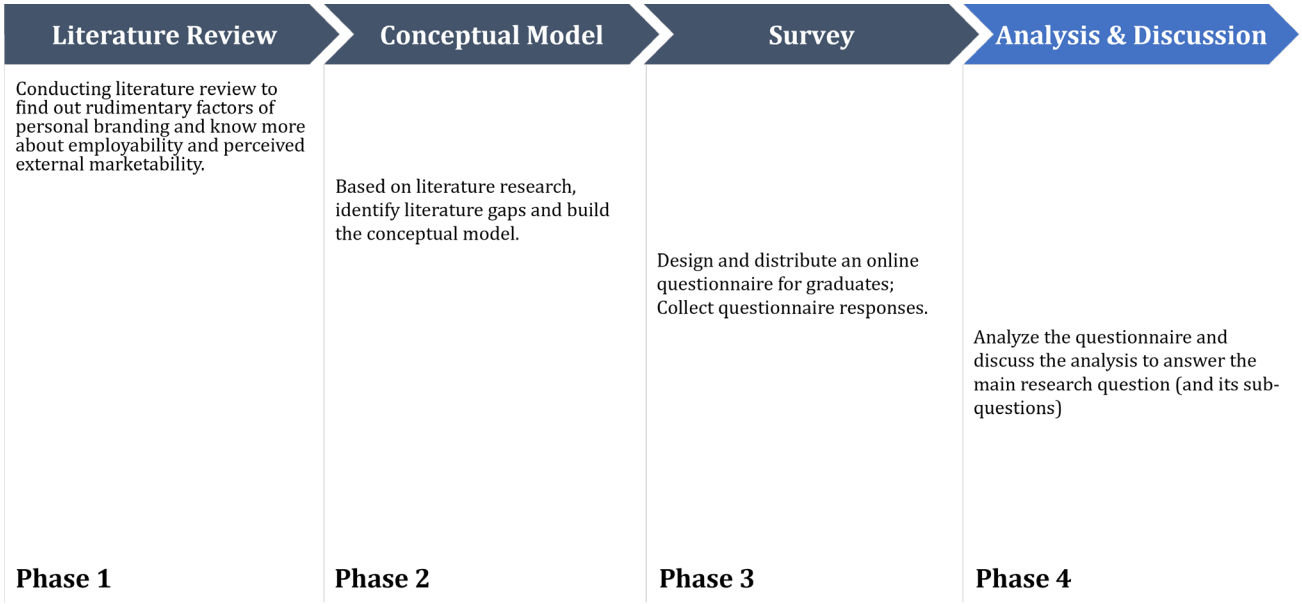

Figure 2: Four phases of research methodology

First, literature research will be conducted to identify the dimensions that constitute graduates' personal branding and other possible mediating/moderating variables. Afterward, the conceptual model to be validated will be presented based on the knowledge gaps identified in the literature research. The third phase is to design and distribute a questionnaire for graduates. Questionnaire responses will be processed for subsequent analysis. Finally, the questionnaire responses will be analyzed and the results will be discussed to answer the main research question and its sub-questions.

1.6 Thesis Structure

The thesis is structured as follows: This chapter identifies the research focus, objectives and questions as well as determines the research methodology; Chapter 2 will review the relevant literature; Chapter 3 will describe the literature gaps and propose the conceptual model; Chapter 4 will introduce the research methodology in more detail, including data collection, sampling and data analysis methods; Chapter 5 will show the results of surveys; Chapter 6 will analyze and discuss these results; And Chapter 7 will conclude, provide valuable advice for graduates and Human Resources (HR) departments, and point out the limitations of this study and directions for further research.

2 Literature review

2.1 Personal Branding

Since the 1990s, linear and stable career paths have gradually disappeared. The labor market shows a trend of polarization: on the one hand, senior jobs offer high salaries, comprehensive benefits packages and stable long-term security; on the other hand, starter jobs are characterized by lower salaries and high mobility (Kalleberg, 2013). Since graduates inevitably need to begin from starter jobs, they have a greater chance of working in highly flexible jobs. Although these jobs are often short-term, unstable and (relatively) low-paying, they allow graduates to learn practical skills, gain work experience and develop a network of contacts (Bertrand-Cloodt et al., 2012). These gains in turn make them more attractive to their future employers.

However, employers of these start-up jobs are faced with thousands of recent graduates with similar educational backgrounds but lacking work experience. If a graduate cannot find a way to stand out from their peers, he or she may be delayed in getting their first job. To distinguish from other candidates with the same years of educational and occupational experience, current graduates start to manage their external image through planned efforts to promote themselves in the crowded job market. This phenomenon is known as “personal branding” (Khedher, 2015).

What is “Personal branding”? The concept of “branding” has been used in marketing for a long time. By associating a company’s wide range of products and services with a specific brand, consumers, retailers, and partners can quickly identify the products and services they desire (Olins, 2000). The logic of personal branding, a “new” term that has emerged in the last thirty years, is also an extension of the “old” branding concepts such as consumer branding and corporate branding (Lair et al., 2005). Like building company or product brands, people need to develop their personal brands to “create, position, and maintain a positive impression of oneself, …, which signal a certain promise to the target audience through a differentiated narrative and imagery.” (Gorbatov et al., 2018, p. 6).

Currently, there are a large number of books on the market that teach how to build, develop and maintain your own personal brand (Cooper, 2014; McNally & Speak, 2011; Peter & Gomez, 2019). In addition to this, people from all walks of life are also building their personal brands through various social platforms such as LinkedIn, Twitter, Facebook, Youtube, etc (Green, 2016; Kucharska, 2017; Tarnovskaya, 2017). Among them, LinkedIn is the most important platform for graduates because the education and work experience they post, their comments about previous employers, and the recommendations they receive from colleagues will most likely affect their chances of

getting the next job. That's why most career centers at universities provide students with training courses on improving LinkedIn profiles. However, improving LinkedIn profile is just one way of personal branding and other methods also have much to offer.

Fortunately, online course platforms such as Coursera, Forage, and Udemy have launched a number of personal branding courses that anyone can enroll and take. We are also glad to see some universities have already started offering students training on personal branding and have gained some useful experience (Parrott, 2019). But in general, the number of educational institutions that have paid enough attention to that is still low.

2.1.1 Benefits of Personal Branding

Khedher (2014) found out that developing a professional personal brand can positively impact graduates' human, social and economic capital, which will ultimately help them get more desirable jobs faster. Human capital, also referred to as cultural capital, means people investing in themselves through academic education, short-term training and personal development programs developed by universities or companies to maximize their personal potential for self-realization (Khedher, 2014). A strong personal brand makes graduates more likely to be selected for leadership training programs at universities or management trainee programs at large multinational companies and thus receive more investment in their human capital.

Social capital reflects the extent to which a person develops broad public relations (Khedher, 2014). When people have an extensive network of relationships, their family, neighbors, friends, colleagues, employers, and other acquaintances can provide them with a very rich source of information, as well as guidance and support in work and life. Although graduates' social networks are often not extensive enough, those with strong personal brands are more likely to be recommended to top universities and companies by their mentors, agents, and academic advisors. As a result, higher social capital will help graduates find more suitable jobs in less time and have a stronger network of excellent people in the future (Zamudio et al., 2014).

Economic capital refers to the increased lifetime income that a strong personal brand can bring (Khedher, 2014). This can be achieved through higher (perceived) employability, greater visibility and broader influence (Peter & Gomez, 2019). Moreover, scholars have found that a strong personal brand can help entrepreneurs raise money more easily in the early stages when their startup is growing (ElMassah et al., 2019). For these reasons, graduates will reap proven benefits from their personal branding (Khedher, 2019).

In addition, people with strong personal brands can use their strengths and talents to proactively and freely explore career opportunities (Peter & Gomez, 2019) and even

seize leadership opportunities to add value to other individuals (Cooper, 2014). Considering that good personal branding has so many benefits, it's worth putting a lot of time, effort and patience into it.

Some studies have also found that personal branding is more prevalent in specific industries that require high-frequency interactions with (target) customers, such as the public relations industry (Bridgen, 2011), journalism (Molyneux & Holton, 2015), and the fashion industry (Delisle & Parmentier, 2016). Therefore, personal branding seems more rewarding for graduates who aspire to work in these industries or marketing departments (Amoako & Okpattah, 2018).

2.1.2 Challenges of Personal Branding

Despite its many benefits, personal branding can still be challenging. First, people need to put a lot of time and effort into managing their personal brands to avoid leaving the interpretation to others (Kaputa, 2006). As Kaputa (2006, p. 8) said, "If you don't brand yourself, someone else will.". Others' interpretations of one's personal brand may not only be biased but even contrary to the intent. Under this circumstance, the personal brand owner will fail to get all the benefits a strong personal brand can bring.

However, even when people make great efforts to manage personal brands, there can still be a mismatch between their self-presentation and the impressions of others, which will significantly damage their motivation on personal branding (Labrecque et al., 2011).

Secondly, keeping information up-to-date on all social platforms can be exhausting. And people even need to learn search engine optimization (SEO) techniques to increase brand exposure by improving their personal pages' rankings in search engine results (Labrecque et al., 2011). More importantly, most social networking sites other than LinkedIn are not designed for job hunting, so users will be more casual in their posts, photos uploaded, etc. However, HRs may hence have a negative impression of the candidate through this informal information.

Third, personal brands are required to be authentic, clear and consistent to enhance their recognizability (Parrott, 2019). However, an increasing number of people are looking to create different personal brands for different audiences to leverage the advantages better when they are in different roles, which raises new challenges for balancing the quality and quantity of personal brands (Labrecque et al., 2011). It may be a good idea to create and run multiple personal brands, abandon the less effective and misleading ones and keep the best one. But even so, the mutual contamination between brands is still a worrying issue.

Fourth, no matter how carefully a person positions their personal brand online, they will always leave some digital footprint that they have no control over (Labrecque et al., 2011). To avoid these footprints conflicting with the personal brand identity the person wants to position, which in turn leads to less effective personal branding, they need to regularly check and evaluate their personal brand positioning on the web. In addition, because different social media platforms have different audiences (Petruca, 2016), personal brand positioning that works well on one platform may not work on another. Therefore, it is necessary for graduates to use analytical tools such as traffic monitoring to evaluate the effectiveness of personal brand positioning on different platforms, modify which brand identities to position as appropriate, increase the frequency of activities, find platforms with more audiences that can accept their personal brand characteristics and leave platforms that are not suitable for them.

Finally, people often unconsciously disclose more personal information than actually needed during the personal branding process. These information disclosures may increase the risk of identity theft, leading to reputational damage or privacy exposure and resulting in inherent impressions that are difficult to erase and change (Goh et al., 2016). They may also encounter more fraud and harassment in their daily lives and some rumors and slanders against them may also breed. Another possible risk is that it may lead to discriminatory hiring practices (Goh et al., 2016). Because graduates do not know how much information their potential employers already know about them, they may be unaware that they are victims of discriminatory hiring even after being denied an offer.

2.2 Dimensions of Personal Branding

According to our research, people (more specifically in this study, graduates) need to focus on three dimensions to build strong personal brands. First, they need to establish their brand identities, which means finding out how to make themselves stand out in specific areas and hence being different from others (Labrecque et al., 2011; Parmentier et al., 2013). This process usually begins with discovering one's core identity and extended identity (Manai & Holmlund, 2015). And the effects would be better if a unique narrative could be developed based on this (Clark, 2011).
Second, they need to strengthen their brand identity until their personal brand can bring symbolic meaning to others (Khedher, 2014). This step is also known as brand positioning. Unlike brand identity, the key to brand positioning is to find the self-attributes that bring positive value to the target audience (Khedher, 2014).

Third, they need to strive to meet the expectations that people in their industry have of their professional behavior and values (Parmentier et al., 2013). And they need to get feedback from people around them and in the same industry to assess their self-image objectively, and further improve their personal brand based on that.

To sum up, personal brand identity, personal brand positioning and its fit with the company brand are the three dimensions that can be used to measure personal branding. However, existing studies have not conducted quantitative empirical research on their relationship. Therefore, more in-depth literature research needs to be conducted on these three dimensions to narrow our research questions further.

2.2.1 Personal Brand Identity

The definition of personal brand identity can be determined by referring to the broad brand identity. According to Aaker (2012), brand identity is a unique brand association consisting of core and extended identities that help establish a relationship between a brand and its customers. Core identity as the key to brand success comes from some basic characteristics that cannot be changed (Aaker, 2012). Therefore, we can say that the core identity of people's brand identity is the diploma, language skills and work experience they already possess and their fundamental beliefs and values, making them unique from others and irreplaceable. On the other hand, extended identity provides more details to refine the brand's texture, including their characteristics, professional skills, how they get along with others, etc (Manai & Holmlund, 2015). When the core and the extended identity can show consistency and coherence, the brand becomes powerful and effective, showing the effect of "1+1>2" (Aaker, 2012; Koffka, 2013).

Aaker (2012) also proposed a brand identity planning model, which includes four dimensions: "brand-as-product", "brand-as-organization", "brand-as-person" and "brand-as-symbol". The most closely related dimension is "brand-as-product" since this dimension emphasizes the functional value of people (Bendisch et al., 2007). Companies need graduates' knowledge, skills, and even appearance to generate revenues. On the flip side, the extent to which their personal brand identities meet the expectations of their stakeholders (employers, colleagues, customers, etc.) determines the income they can earn. The "brand-as-organization" dimension is also relevant to this study, as the synergy between employees' personal brands and the company brand can benefit both (Bendisch et al., 2007), which will be discussed soon after.

2.2.2 Personal Brand Positioning

Once a person has established their personal brand identity, the next thing they need to do is position their personal brand in the minds of stakeholders. Aaker (2012) defines brand positioning as actively communicating a brand identity to a target audience while demonstrating advantages over the competitors. It is especially important for graduates because many of their similar peers are competing with them for the same position (Shepherd, 2005). If personal brand positioning is not successful, graduates are just in danger of missing out on quality job opportunities.

Currently, blogs, personal websites (Vazire & Gosling, 2004), mobile apps (Labrecque et al., 2011) and other platforms constantly facilitate people's self-expression and presentation at a low price (Karaduman, 2013). Schawbel (2009), in his best-selling book, offers many suggestions for using different social media to position personal brands. Considering that users' friends and even strangers are checking what they post at all times, it is no wonder why Labrecque et al. (2011) found that once people are engaged in the online environment, they are branding all the time.

A characteristic of brand positioning is that it can change while the brand identity remains the same (Aaker, 2012). For example, by emphasizing different brand identity elements, people can create a distinct impression on the audience, which aligns with the function of most mainstream social media. On these platforms, users are free to choose which demographic information, interests and recent updates to disclose and to whom (Labrecque et al., 2011), which allows them to position different personal brand identities to different groups of people.

Although personal brand positioning has great flexibility, it does not mean that brand positioning can be arbitrary and confusing. Instead, brand positioning still needs to follow certain principles. First of all, brand positioning should always include the core identity because the core identity is the soul of the brand, marking the brand's unique value and providing a competitive advantage over others (Aaker, 2012). Otherwise, the personal brand may lose a certain degree of continuity.

Secondly, brand positioning should be built on the leverage point in brand identity, where it can produce the most excellent effect with the least investment (Aaker, 2012; Senge, 2006). This leverage point should also be a point that demonstrates the brand owner's most significant advantage over the competitors. In the best-case scenario, this advantage should also be the most urgent expectation of stakeholders. Finally, graduates can keep their core identity and the most cost-effective leverage points in mind and communicate their personal brand to the targeted audience (i.e., mainly their future employers) to finish the personal brand positioning process.

The traditional personal brand positioning method is also known as the "self-marketing" method. Resumes and cover letters are the most commonly used self-marketing tools designed to demonstrate to employers their strengths and suitability for the job. In addition, elevator pitches are very popular because even candidates may run into the company's top leaders in the elevator during interviews. If graduates can perfectly position their personal brand in the minds of their leaders in just half a minute, they are more likely to be noticed and admitted.

2.2.3 Fit with the Company Brand

After positioning the personal brand, the last thing needed is to assess the match between the personal brand and the stakeholders' needs. Considering that the subject of this study is graduates, stakeholders generally refer to employers. Therefore, the fit with the company brand influences how strong graduates' personal brands are.

To find out how well their personal brand fits in with the target company's brand, graduates can check the company's website or request a copy of its brand strategy document through email (McNally & Speak, 2011). Sometimes this kind of document will also be called "corporate identity strategy", " (corporate) positioning strategy" or "corporate identity guidelines" (McNally & Speak, 2011, p. 109). Suppose these documents do not exist or cannot be accessed due to confidentiality. In that case, graduates can infer the company's values, brand dimensions, and brand promises from other information, and how much similarity there is between graduates and companies in these three aspects is indicative of the extent to which their personal brand fits with the company brand (McNally & Speak, 2011).

It can be found in the results of the available studies that employees are more likely to be productive when their personal brand is aligned with the company's brand (Khedher, 2014), which is mainly because a high level of fit enables them to maximize their talents at work and to be more tolerant of unpleasant things (McNally & Speak, 2011). In other words, low productivity may not indicate that the employee lacks competitiveness or effort but simply means their personal brand is not strongly aligned with the company brand (Ulrich & Smallwood, 2008). Under this circumstance, graduates don't need to (unwillingly) change their personal brands. What they need to do is just to find common ground between one's personal brand and the company's brand as much as possible, which usually requires a concerted effort from both sides, though.
Companies can also benefit from this synergy between the employee brand and the company brand, as these employees tend to be more passionate about their work and more loyal to the company (McNally & Speak, 2011). Therefore, companies are also motivated to help employees build their personal brands in ways that enable them to achieve optimal levels of performance (Vosloban, 2013).

But we must realize that employees are people and not inanimate products. Perhaps helping employees build a personal brand aligned with the company brand may help them improve their personal performance and grow the company, but they still have and should have the freedom to choose what kind of personal brand they have. Therefore, the potential conflict between the employee's personal brand and the company brand should be handled flexibly (Rangarajan et al., 2017).

2.3 Perceived Employability

The concept of employability first appeared in the academic literature in the mid-20th century (Feintuch, 1955). At that time, the population of Europe countries had declined rapidly during World War II. Although the post-war baby boom led to a significant increase in the working population, these countries were still in desperate need of a large number of talents with university degrees and above. Due to the talent supply shortage, employability refers more to graduates' willingness to be employed as they can definitely find a job if they want (Forrier & Sels, 2003). However, with the gradual saturation of the labor market afterward, the actual meaning of the term employability is gradually shifting to the knowledge, experience and skills of workers meeting the needs of employers (Forrier & Sels, 2003). This definition combines the perspectives of both workers and employers. Later, some scholars came up with a broader definition. Peck (2000) argues that employability should also include workers' ability and willingness to continue improving their work capabilities in the workplace in addition to their existing (knowledge-, skill-, and experience-based) work capabilities.

Although employability has so many different definitions in workplace research, its exact definition remains a matter of opinion. However, most scholars can agree that employability refers to a person's ability to find a job when not employed and to keep a job or switch to another industry/job when already employed (Clarke & Patrickson, 2008; Rothwell & Arnold, 2007). According to this definition, perceived employability refers to how people feel about their ability to find jobs when not employed and to keep a job or switch to another industry/job when already employed.

As more and more companies no longer offer lifetime employment guarantees, employability plays an increasing role in an individual's career. However, graduates from many European countries do not feel their employability is high enough, which means they have lower perceived employability (Schomburg & Teichler, 2011). While graduates' complaints about the quality of their jobs are partly due to the general economic situation in their countries, there is reason to believe that an education system that fails to adapt to the latest economic and social needs is also part of the cause (Schomburg & Teichler, 2011). For graduates who wanted to start their own business, only about 20% felt that their course of study played a significant role in developing entrepreneurial skills that would help them achieve self-employment (Schomburg & Teichler, 2011). As a result, scholars have done many studies to find possible countermeasures. Some scholars looked at improving curriculum and academic support with a package of tools to help students manage their learning cycle better, aiming to improve their employability ultimately (Creasey, 2013). UK higher education institutions, on the other hand, are providing higher quality education to students who wish to improve their employability by including internship modules and entrepreneurship modules in their curriculum and

providing students with career counseling and a record of achievement (Knight & Yorke, 2003). In contrast, Schomburg and Teichler (2011) believe that the various stakeholders in higher education (universities (colleges), companies, communities, media, alumni, etc.) can work together to help students improve their employability. For this reason, a collaboration mechanism involving all stakeholders needs to be developed.

Despite the fact that there is so much research to help graduates improve their employability in terms of improving the curriculum, research on the relationship between graduates' personal branding and employability has only begun to increase in recent years. Several universities and colleges have currently incorporated personal branding into their career guidance programs with good results (Rosa Torres Valds et al., 2018; Tymon et al., 2020). However, most of these training programs are developed by senior job coaches based on their experience and do not follow a uniform guidance theory. The extent to which improved perceived employability of graduates can be attributed to training in personal branding has also not been systematically examined.

2.4 Perceived External Marketability

Marketability is a relatively new concept, and Eby et al. (2003) first proposed its relatively clear definition. According to Eby (2003), marketability refers to the extent to which a person is valuable to others. This concept can be further broken down into internal marketability and external marketability. In the workplace study, internal marketability is the state of being valuable to the current employer (Eby et al., 2003). In this case, the employee will be considered an important asset that will create value for the company (Su et al., 2019). On the other hand, external marketability refers to a state that the person is valuable to future employers. If a graduate has a high enough level of external marketability, they will have confidence that they can easily find a desirable job with their existing knowledge and skills.

On this basis, perceived marketability can be defined as the belief that one is of value to others (Eby et al., 2003). Even if graduates have followed the right approach to building a personal brand that is highly aligned with their preferred company's brand, they may not even dare to submit resumes if they do not have high perceived marketability. On the contrary, a graduate with high perceived marketability is more than likely to convince the employers to a positive conclusion like "this candidate's personal brand is a good match for my company's brand" in the interviews.

In particular, it should be noted that perceived marketability is not the same as perceived employability. High perceived employability is the belief that one can easily obtain or switch jobs, which is a factual judgment. In contrast, high perceived marketability refers to the belief that they can add value to their (current or future) employers and is a value

judgment (Vos et al., 2011). Most graduates face the dilemma of not believing that they are valuable enough to their future employers and repeatedly encounter barriers in the job search process. In turn, they find it more challenging to find an ideal job and thus become more convinced that they are not valuable. This is an example of how low perceived (external) marketability leads to low perceived employability, which leads to low perceived (external) marketability again and finally recurring repeatedly.

Therefore, perceived external marketability is expected to be an important factor that will affect the graduates' ability to get employed as soon as possible. Considering that personal branding can increase graduates' perceptions of themselves, it is also likely to affect perceived external marketability positively. Therefore, it can be assumed that perceived external marketability may play a mediating role in the effect of personal branding on perceived employability, and it will be of great importance to study whether this relationship exists.

2.5 Conclusion

This chapter reviews the labor market conditions that graduates face today, the formation and development of the "personal branding" concept and its benefits to graduates. However, graduates still face many challenges in their personal branding. Based on the literature, personal branding for graduates can be divided into three main steps: identifying one's core and extended identity, positioning their brand identity in the employer's mind through online platforms, and finally, having their employers assess their fit with the company brand. Finally, this chapter presented definitions of perceived employability and perceived external marketability. Although the existing studies confirm that personal branding can positively impact perceived employability, they do not consider the mediating role perceived external marketability might play in this process. As a result, further research needs to be designed to test this effect.

3 Conceptual Model

3.1 Literature Gaps

According to the literature review in Chapter 2, it can be found that the existing research on personal branding in the workplace mainly focuses on people who are already employed (Chen & Chung, 2016; Schlosser et al., 2017). Although some scholars have also conducted studies on graduates' personal branding (Tymon et al., 2020), most of these studies have only verified the effectiveness of a specific personal branding method and failed to theoretically prove that graduates' personal branding has a positive impact on their (perceived) employability. In addition, most of these studies were conducted on graduates of a particular university (Allison et al., 2020). Their findings are thus lacking in generalizability.

In addition, we note a disparity of opinion in much of the literature on what dimensions comprise personal branding. To solve this problem, we finally selected three dimensions, namely brand identity, brand positioning and the fit between personal brand and company brand, as sub-constructs for personal branding (Aaker, 2012; Khedher, 2014). This is because brand identity encapsulates all the efforts a graduate has made to build their brand, brand positioning demonstrates the graduate's ability to project their personal brand to the target audience, and the fit with the company's brand measures whether the graduate can produce a 1+1>2 advantageous effect upon joining the company. And other methods to decomposite "personal branding" can all be integrated with this framework.

The final gap is that previous studies have tacitly assumed that success in personal branding can directly lead to increased (perceived) employability. This hypothesis ignores the impact of graduates' psychological factors on their job search outcomes. We often see graduates who are not significantly different from other candidates stand out because of their confidence. We also see candidates who are well qualified in all aspects but not confident enough make interviewers doubt their judgments. In this context, graduates' belief that they are valuable to future employers, i.e., their PEM, is expected to mediate the impact of their personal branding on (perceived) employability.

To overcome the three gaps mentioned above, we planned to collect data from science/engineering graduates who obtained their degrees in the Netherlands as the primary research population to validate the following conceptual model (as shown in Figure 3). In this model, personal brand identity, positioning and the fit with the company brand are the exogenous variables, their perceived employability is the endogenous variable, and their PEM is assumed to be the mediating variable.

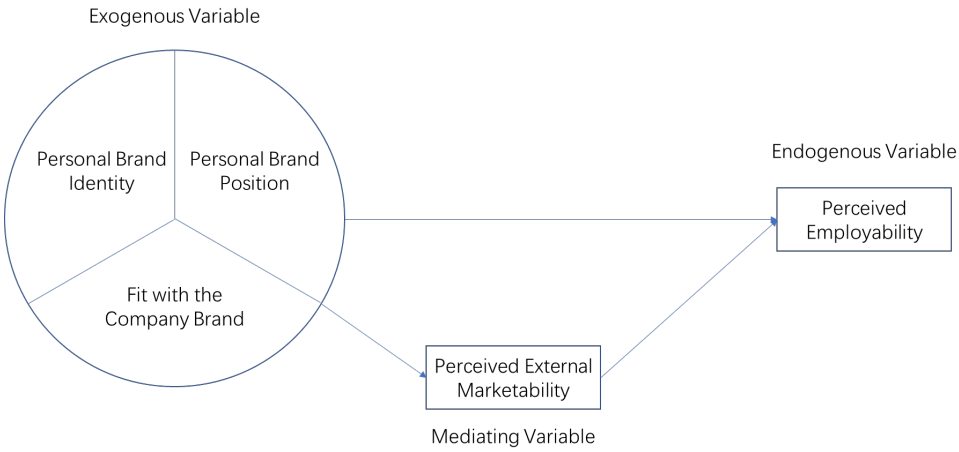

Figure 3: Conceptual model

3.2 Research Hypotheses

According to the literature research in Chapter 2, the first step in graduates' personal branding is to identify their personal brand identity. The combination of core identity and extended identity makes the personal brand identity more integral and achieves a certain degree of flexibility (extended identity) while ensuring brand consistency (core identity) (Aaker, 2012). With an authentic and consistent core personal brand identity, employers will be able to learn more about the graduate than is shown on their resume, which helps the candidate stand out in their minds based on a deep understanding of the graduate's past experience (Khedher, 2014). This impression will increase the likelihood of getting a job for this graduate. When graduates continue to improve their extended personal brand identity, i.e., commit to skills learning and personal growth, their improved general abilities will also contribute to perceived employability (Manai & Holmlund, 2015). Therefore, this study hypothesizes that graduates' core and extended personal brand identity positively impact their perceived employability.

H1: Graduates' core personal brand identity positively impacts their perceived employability.
H2: Graduates' extended personal brand identity positively impacts their perceived employability.

Once a graduate's personal brand is defined, they need to cast their personal brand into the minds of the stakeholders (to be specific, their employers). This step is called "brand positioning". With cost-effectively personal brand positioning (and regular checks), graduates will be able to ensure that their personal brand identity is fully known to their potential employers (Schawbel, 2009). This ongoing positioning enriches employers' perception of a graduate's personal brand identity from the temporal dimension. It also allows them to predict whether that graduate is likely to be a successful new hire

(Khedher, 2014). Therefore, this study hypothesizes that graduates' personal brand positioning positively impacts their perceived employability.

H3: Graduates' personal brand positioning positively impacts their perceived employability.

Even if a graduate has a strong personal brand identity and positioning skills, their chances of getting hired may still be influenced by how well their personal brand fits the company's brand. It was found that employees were more productive (Khedher, 2014), loyal (McNally & Speak, 2011) and complained less (McNally & Speak, 2011) when their personal brand matched their company's brand. For companies, hiring such employees provides more economic benefits for the same labor cost, so they are more willing to recruit graduates who match their company's brand. Therefore, this study hypothesizes that the fit between graduates' personal brand and the company brand positively impacts their perceived employability.

H4: The fit between graduates' personal brand and the company brand positively impacts their perceived employability.

Finally, the variable of perceived external marketability was introduced to consider how graduates' psychological factors influence their job search process. When graduates have a strong personal brand, i.e., a strong brand identity and positioning and a high fit with the company brand, they are more likely to believe they are valuable to their future employers (Khedher, 2014; Tymon et al., 2020). In this case, they are more likely to initiate contact with recruiters or current employees of their preferred company to get an interview or insider promotion (McNally & Speak, 2011). More exposure in turn helps increase their chances of getting an offer. In addition, job seekers with high (perceived) external marketability often perform better in the interview sessions. As a result, employers are more likely to offer secure job opportunities to such talent (especially in times of labor shortages) (Spurk et al., 2016), which is consistent with his previous findings that PEM has a positive impact on perceived employability (Spurk et al., 2015). Therefore, this study hypothesizes that graduates' perceived external marketability mediates the relationships between their personal branding (personal brand identity, positioning and fit with the company brand) and perceived employability.

H5: Graduates' perceived external marketability mediates the relationship between their core personal brand identity and perceived employability.

H6: Graduates' perceived external marketability mediates the relationship between their extended personal brand identity and perceived employability.

H7: Graduates' perceived external marketability mediates the relationship between their personal brand positioning and perceived employability.

H8: Graduates' perceived external marketability mediates the relationship between "the fit between their personal brand and the company brand" and perceived employability.

4 Methodology

4.1 Ethical Approval

The TU Delft Human Research and Ethics Committee approved the ethicality of this study on March 29, 2022.

4.2 Sampling

The target population of this study includes all graduates in the Netherlands who are in their final year studying a Science/engineering-related degree program or have obtained a Science/engineering-related degree no more than two years ago. This time frame for graduation defined for our research aligns with the requirements of most companies (ABN AMRO, ING, Shell, etc.) running graduate programs in the Netherlands concerning how long graduates have graduated and worked. In addition, if the graduates surveyed have been graduated for more than two years, their perceived employability may be more influenced by their past work experience than recent graduates (Humburg et al., 2013).

We have contacted HoiTalent, a job search coaching company that has served and will still serve hundreds of graduates from different universities and science/engineering-related majors in the Netherlands, to assist us with the questionnaire distribution. They sent emails with links to the questionnaire and explanatory messages to their customers via their built-in marketing platform. In this process, the researcher did not know the specific people involved in the study. In addition to this, the researcher sent a small number of digital versions of the questionnaire to other eligible respondents via their professional network. The link to the questionnaire used was also anonymized and could not be traced back to a specific individual (unless the respondent left an email address to draw the participation prize).

We also asked for participants' assistance in forwarding the questionnaire to other eligible participants as snowball sampling on the final page of the questionnaire. Because of the diversity of the sample, it can be assumed that the sample will be sufficiently representative of the target population we wanted to study. We will also contain 1-2 identification questions to avoid ineligible participants' responses.

4.3 Data Collection

The data needed for this study will be collected through an online questionnaire platform, Qualtrics. The collected data with the related analysis files are then stored and managed in TU Delft's WebDrive.

An online survey has many advantages. First, the anonymity of the participants is ensured. Without enabling IP address tracking and setting up real name questions, the researcher cannot know any personal information of the participants by any means. Second, participants can make more independent responses. If the survey is distributed offline, participants may choose to give "socially acceptable" responses in the researcher's presence. Third, an online questionnaire alleviates the time and financial costs for the researcher. The researcher no longer needs to travel to the study site but can conduct (pre-)analysis based on the collected responses while continuing to collect data.

However, online surveys also have some drawbacks to be aware of. First, the response rate of electronic questionnaires is often low. Although researchers can incentivize potential participants by writing sincere invitations/prompts or setting up prize draws, the effect is still limited. Second, messages inviting participation in surveys are often treated as spam and blocked by social media platforms and email servers before reaching the audience (Evans & Mathur, 2005). Third, participants may give "socially acceptable" answers to some questions rather than their own answers. And it requires the researcher to be more deliberate in designing the questionnaire to avoid possible directivity.

4.4 Research Design

The questions included in the questionnaire are all closed-ended. With all constructs assessed on 5-point Likert scales, participants can choose to answer somewhere between "strongly disagree" and "strongly agree". All non-demographic questions must be answered before the questionnaire is submitted.

The first page of the questionnaire is a description page and does not contain any questions. On this page, we describe the research topic, research background, research approach and research objectives of this study. We promise the participants that any responses they submit will be kept strictly confidential and used only by the researchers of this study. Once they clicked "Next" to enter the body of the questionnaire, they digitally signed the informed consent form. However, they could still withdraw their informed consent by emailing the researchers after submitting the questionnaire.

The second page of the questionnaire contains eligibility validation questions to ensure that respondents belong to the target population of this study (graduates who are in their final year of university study or who have graduated no more than 2 years ago).

The body of the questionnaire is divided into six sections. The first section will collect some demographic information for subsequent analysis of the subgroups, including gender, nationality, type of degree earned, current employment status, etc. The remaining sections respectively present the Personal Brand Identity Scale (PBIS), Personal Brand

Positioning Scale (PBPS), Fit with the Company Brand Scale (FITS), Perceived Employability Scale (PES), and Perceived External Marketability Scale (PEMS).

The last page of the questionnaire reminded respondents that they could leave their email addresses (which will be deleted immediately once the study completes) to participate in the prize draw. They were also informed that their email address would only be used to participate in the prize draw, obtain a digital copy of the report once completed (if they chose) and withdraw their participation (if they sent an email to the researcher's email address).

4.5 Measures

Since no existing scales for personal brand identity, positioning, or fit with the company brand were found in the literature research, we evaluated the existing scales in the literature on personal branding and developed the corresponding scales after being reviewed by the supervising professor of this study.

4.5.1 Personal Brand Identity Scale (PBIS)

Based on the findings in Chapter 2, people's core identity is derived from their identifiable and unchangeable basic characteristics (Aaker, 2012). Therefore, items related to CI structure generally contain the keywords "own", "distinct/distinctive", "different/differently" or "recognizable". Based on the existing literature, a total of 18 items were collected from the "Differentiated" factor of Gorbatov's Personal Branding Scale (Gorbatov et al., 2019) and the "Brand Appeal" factor of his Personal Brand Equity Scale (Gorbatov et al., 2021).

After careful assessment, 7 CI items are determined, as shown in Appendix A.1. All these items were assessed on a 5-point Likert scale based on "strongly disagree" and "strongly agree". An example of a CI item is "I have my own set of rules for doing things." This question is answered through participants' self-perceptions of their work style. Similar to the CI items, six items were collected from the "Strategic" factor of Gorbatov's Personal Branding Scale (Gorbatov et al., 2019). As the extended identity is changeable and often referred to by a person's continuously improved professional image in the workplace (Manai & Holmlund, 2015), we finally selected three items after careful review, as shown in Appendix A.1. All these items were assessed on a 5-point Likert scale based on "strongly disagree" and "strongly agree". An example of an EI item is "I purposefully engage in experiences that can enhance my professional image." This question is answered through participants' self-perceptions of whether they seek improvements in their professional image.

4.5.2 Personal Brand Positioning Scale (PBPS)

Personal brand positioning is defined as actively communicating brand identity to the audience (Aaker, 2012). Therefore, items related to the BP construct usually contain the keywords "communicate/communication" and "network". Based on the existing literature, a total of 12 items were collected from the "Strategic" and "Differentiated" factors of Gorbatov's Personal Branding Scale (Gorbatov et al., 2019). After careful assessment, 4 BP items are determined, as shown in Appendix A.2. All these items were assessed on a 5-point Likert scale based on "strongly disagree" and "strongly agree". An example of a BP item is "I make an effort to expand my professional network." This question is answered through participants' self-perceptions of their communications with their brand audiences.

4.5.3 Fit with the Company Brand Scale (FITS)

Fit with company brand refers to how well the graduate's personal brand matches the employer's (company) needs (expectations) (McNally & Speak, 2011). Therefore, items related to the FIT construct generally contain the keywords "consistent", "compatible", and some other synonyms. Based on the current literature, four items were developed to reflect the degree to which graduates' personal brand matches the companies' brand (McNally & Speak, 2011). The full list of the FITS can be found in Appendix A.3. All these items were assessed on a 5-point Likert scale based on "strongly disagree" and "strongly agree". Since our study involves two categories of graduates who have found a job and those who have not yet found a job, the wording of the FITS will be slightly different. An example of a FIT item is "I am (expect) to be able to reflect the company's values in my work.". This question is answered through participants' self-perceptions of their fit with their companies' culture and values.

Graduates who already have full-time work experience can answer this scale by directly referring to the fit between their personal brand and the brand of their current (previous, if they have left and not yet found a new job) employer. For graduates without full-time working experience, we prompted them in the questionnaire to refer to the job description (JD) of the position they applied for most recently in order to measure the match between their personal brand and the company brand mentioned in the JD and answer this scale accordingly.

4.5.4 Perceived Employability Scale (PES)

Berntson and Marklund (2007) developed this scale consisting of five items. All these items were assessed on a 5-point Likert scale based on "strongly disagree" and "strongly agree". The full list of the PES can be found in Appendix A.4. An example of an PES item is "My competence is sought-after (desired) in the labour market." This question is answered through participants' self-perceptions of their professional competence.

4.5.5 Perceived External Marketability Scale (PEMS)

The scale was first designed by Johnson (Unpublished, 2001) and then used by Eby et al. (2003). It consists of three items. All these items were assessed on a 5-point Likert scale based on "strongly disagree" and "strongly agree". The full list of the PEMS can be found in Appendix A.5. An example of a PEMS item is "I could easily obtain a new (equivalent or better) job with another employer." This question is answered through participants' self-perceptions of how valuable they are to their future employers.

4.6 Pre-test

To ensure the comprehensibility and validity of each question, we pre-tested this questionnaire within five graduates before its official release. They pointed out some items in the questionnaire where the original wording may have been ambiguous and suggested some minor changes to the question presentation process.

4.7 Data Analysis Method

We used the SPSS package (Statistical Product and Service Solutions) for descriptive analysis, and SmartPLS 3.0 for structural equation modeling (SEM) (Ringle et al., 2022).

SEM is very commonly used in quantitative science because it combines exploratory factor analysis and multiple regression (Ullman, 2001), thus enabling measuring unobserved latent variables via indicator variables (called measurement model) and checking the interrelationship between latent variables (Schreiber et al., 2006). Each measurement model can be classified as a formative or reflective model depending on the causal relationship between its latent and indicator variables. The causality within the reflectivity model is from constructs to indicators, so that changes in constructs will be reflected in changes in all indicators (Henseler et al., 2015). The values on the paths of the latent and indicator variables at this point are called factor loadings. In contrast, the causality in the formative model is from indicators to constructs, and the indicators exhaust the full dimensionality of the constructs (Henseler et al., 2015). Changes in any single indicator will affect changes in the construct (with different weights), but not necessarily affect other indicators. The values on the paths of the latent and indicator variables at this point are called weight coefficients.

In our conceptual model, core personal brand identity, extended personal brand identity, personal brand positioning, fit with the company brand, perceived employability and perceived external marketability are all reflective constructs. They are measured by several representative indicator variables, which explain the qualities of the measured constructs and are capable of interchangeability.

There are also two highly relevant terms in the structural model: exogenous variables, variables that affect other structures within the model but are not affected by them; and endogenous variables, variables that are affected by exogenous or other endogenous variables (Schreiber et al., 2006). In our conceptual model, the four first-order latent variables of core identity, extended identity, personal brand positioning, and fit with the company brand can be used to predict perceived employability and are therefore exogenous. The second-order latent variables of perceived external marketability and perceived employability are influenced by the four first-order latent variables and are therefore endogenous.

5 Results

The purpose of this chapter is to test and analyze the survey results. We first summarized the descriptive statistics and then examined the measurement and structural model's reliability and validity. Then, we conducted SEM analysis and mediating effects analysis. Finally, multi-group analyses based on demographic characteristics were conducted.

5.1 Descriptive statistics

We collected 80 valid responses, and their demographic information is shown in Table 1.

Table 1: Demographic information of samples

Samples N=80			
Demographic Information		Frequency	Percentage
Gender	Male	43	53.75%
	Female	35	43.75%
	Prefer not to say	2	2.50%
Nationality	EU	22	27.50%
	Non-EU	58	72.50%
Current Status	In their final year of study at university	58	72.50%
	Have graduated from university no more than 2 years ago	22	27.50%

As seen in Table 1, the number of male and female respondents participating in this survey was roughly 50%, and two respondents did not want to reveal their gender. Graduates from the EU account for about a quarter of the total. In contrast, international students are more actively participating in research. Graduates who have graduated also account for about one-fourth, while the rest are in their final year at university. In addition, the sample's representativeness was ensured by the fact that respondents' responses to their industry covered 18 of the 25 options.

Before conducting reliability analysis, we checked whether the collected responses showed a response pattern, i.e., the same rating was selected for all items. Since four responses presented some kinds of response patterns, they were not considered valid responses. Thus, the total number of responses used in this study was 76 (four invalid responses were excluded from our main study).

Next, we used SPSS to diagnose outliers, and all indicator variables' skewness and kurtosis values fell between +3 and -3 (Hair, 2010). We then examined the correlation matrix for each latent variable. As seen in Table 2, there is a significant moderate correlation between all latent variables, except for CI, which weakly correlates with PEM (but its value is very close to the moderate correlation threshold of 0.3) (Urdan, 2022).

Table 2: Pearson's correlation matrix

	CI	EI	Perceived Employability	Fit with the Company Brand	PEM	Personal Brand Positioning
CI	1.000					
EI	0.495***	1.000				
Perceived Employability	0.356**	0.526***	1.000			
Fit with the Company Brand	0.387**	0.416**	0.609***	1.000		
PEM	0.299**	0.423**	0.640***	0.480***	1.000	
Personal Brand Positioning_	0.346**	0.538***	0.454***	0.490***	0.343**	1.000

Significance (p value): *<.05,
**<.01,
***<.001

Due to this study's relatively small sample size, we need to analyze it using a partial least squares-structural equation modeling (PLS-SEM) approach (Hair et al., 2017). Confirmatory factor analysis (CFA), a widely-used statistical method, assesses the multi-item constructs included in the measurement model of covariance-based structural equation models (CB-SEM) (Hair et al., 2020). However, since PLS-SEM is more focused on maximizing the explained variance of the endogenous constructs, CFA is not commonly used in PLS-SEM (Hair et al., 2017). Instead, confirmatory composite analysis (CCA) is more prevalent among PLS-SEM researchers because of its ability to retain more items for each structure in the measurement model (Hair et al., 2020). Therefore, we will follow the CCA steps Hair et al. (2020) proposed to test this model's construct reliability and validity.

First, we will estimate the external loadings of each potential variable and their significance. After that, their combined reliability, convergent validity and discriminant validity will be checked. Finally, we will check whether there are cointegrating relationships among the constructs that may affect the analysis.

5.2 Measurement Model Analysis

5.2.1 Model Fit Test

Garson (2016, p. 60) defines the outer loadings as "the absolute contribution of the indicator to the definition of its latent variable." When the external loadings are below a threshold of 0.7, the indicator variables do not adequately reflect the (formative) constructs, thus reducing the reliability of subsequent analyses (Hair et al., 2017). Therefore, we first conducted the PLS calculation to check the outer loadings for the original model with all indicative variables loaded.

In the calculation settings, we choose the weighting scheme “path”, the maximum iterations “300”, and the stop criterion as “10 ^(-7)”. In addition, the missing values are processed using the “mean replacement” algorithm.

After the calculation is completed, we obtain the outer loadings matrix as shown in Table 23 in Appendix B. Since the external loadings of CI7 were too low and there were six other CI items reflecting the construct “core identity” after the exclusion of this variable, we excluded this variable from the model and re-performed the PLS calculation again. Again, we excluded CI1 this time and repeatedly ran the PLS algorithm. Finally, after excluding CI1, CI7, EI3, EA2 and CI4, each item in the new model has an outer loading above 0.7 and hence passed the model fit test, as shown in Table 3.

Table 3: Outer loadings matrix

	CI	EI	Perceived Employability	Fit with the Company Brand	PEM	Personal Brand Positioning
BP1						0.857
BP2						0.743
BP3						0.861
BP4						0.701
CI2	0.739					
CI3	0.703					
CI5	0.851					
CI6	0.726					
EA1			0.793			
EA3			0.754			
EA4			0.804			
EA5			0.789			
EI1		0.871				
EI2		0.909				
FIT1				0.750		
FIT2				0.886		
FIT3				0.873		
FIT4				0.830		
PEM1					0.876	
PEM2					0.870	
PEM3					0.830	

5.2.2 Reliability Test

After checking whether the outer loadings are greater than the threshold value of 0.70 in the pre-evaluation, we then directly check the construct reliability and validity. According to Sekaran and Bougie (2016, p. 223), reliability refers to “the stability and consistency with which the instrument measures the concept”. The composite reliability and Cronbach’s alpha are the two most commonly used methods to assess reliability.

Table 4: Construct reliability and AVE values

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
CI	0.763	0.842	0.573
EI	0.740	0.884	0.793
Perceived Employability	0.794	0.865	0.617
Fit with the Company Brand	0.856	0.903	0.700
PEM	0.823	0.894	0.738
Personal Brand Positioning	0.816	0.871	0.629

Since the composite reliability and Cronbach's Alpha of all constructs are greater than the threshold of 0.7 recommended by Hair et al. (2017), we can assume that each construct has sufficient reliability.

5.2.3 Validity Test

Construct validity refers to how the results obtained in a study conform to the theory around which the measurement is made, and it can be further divided into convergent validity and discriminant validity (Sekaran & Bougie, 2016). Sekaran & Bougie (2016) defined convergent validity as the level of correlation between the results obtained from measuring the same concept with two different instruments. The average extracted variance (AVE) indicates the extent to which each indicator variable explains the variance of the latent variable. When the AVE of a construct is greater than 0.5, the construct has sufficient convergent validity (Fornell & Larcker, 1981). As shown in Table 4, AVEs of all constructs meet the requirements.

Next, we will examine the discriminant validity between the constructs. Discriminant validity assesses how two uncorrelated variables predicted based on theory are confirmed uncorrelated by measurement in an empirical study (Sekaran & Bougie, 2016). The most common metric used to determine discriminant validity in SEM studies is Heterotrait-Monotrait Ratio (HTMT).

As can be seen from Table 24 in Appendix B, the HTMT for each construction pair is less than the threshold value of 0.85 except for the one between "Perceived Employability" and "PEM" (Hair et al., 2017). It implies that respondents thought that some of these items were similar when answering the relevant Likert scale (Garson, 2016). This could mean that some PEM items actually measure perceived employability or that some of the perceived employability items actually measure PEM. After careful review, we believe that the statements in PEM1 and PEM2 are more objective and cannot fully reflect respondents' subjective perceptions of whether their external marketability is strong. Therefore, we decided to keep only PEM3 for subsequent analysis.

Table 5: HTMT for all pairs of constructs (PEM1 and PEM2 excluded)

	CI	EI	Perceived Employability	Fit with the Company Brand	PEM	Personal Brand Positioning
CI						
EI	0.639					
Perceived Employability	0.424	0.688				
Fit with the Company Brand	0.469	0.520	0.718			
PEM	0.327	0.486	0.705	0.513		
Personal Brand Positioning	0.470	0.657	0.492	0.550	0.353	

After excluding PEM1 and PEM2, the HTMT value between PEM and perceived employability does exceed the threshold of 0.85, as shown in Table 5. To test whether the HTMT of each construction pair is significantly different from 1, we also performed 5000 bootstrap calculations to find confidence intervals. According to the calculation results, the confidence interval of each construct pair does not include 1. In summary, the constructs had sufficient discriminant validity.

5.2.4 Collinearity Test

When two or more independent constructs are highly intercorrelated, they have high collinearity, inflating standard errors and making the analysis unreliable (Garson, 2016). The most common tool used to identify collinearity is the variance inflation factor (VIF). As shown in Table 6, The VIF between all endogenous constructs is less than the threshold value of 5 (Hair et al., 2017).

Table 6: Inner VIF values of constructs for respondents with (currently) full-time work experience

	CI	EI	Perceived Employability	Fit with the Company Brand	PEM	Personal Brand Positioning
CI			1.401		1.400	
EI			1.771		1.685	
Perceived Employability						
Fit with the Company Brand			1.612		1.436	
PEM			1.413			
Personal Brand Positioning			1.604		1.603	

5.3 Structural Model Analysis

5.3.1 R2 Value

R^2, also known as the coefficient of determination, is a measure of the predictive power of the sample (Rigdon, 2012). Core identity, extended identity, personal brand position, fit with the company brand and PEM explained 56.9% of the variance in perceived employability (adjusted R^2 of 53.8%), thus having a moderate predictive power. In

contrast, CI, EI, personal brand position, and fit with the company brand explained only 29.2% (adjusted R2 of 25.2%) of PEM variance, thus having only low predictive power.

5.3.2 Construct Cross-validated Redundancy

Construct Cross-validated Redundancy is the metric used to evaluate the "predictive relevance of the path model" (Hair et al., 2017, p. 217). As seen in Table 7, the Q^2 values for "PEM" and "perceived employability" are both much greater than 0. Thus, the predictive relevance of the model for these two latent constructs is significant.

Table 7: Construct Cross-validated Redundancy
(SSO = sum of squares of observations, SSE = sum of squares of (prediction) errors)

	SSO	SSE	Q^2 (=1-SSE/SSO)
CI	304	304	
EI	152	152	
Personal Brand Positioning	304	304	
Fit with the Company Brand	304	304	
PEM	76	58.513	0.230
Perceived Employability	304	213.452	0.298

5.3.3 q^2 Effect Size

Q^2 measures the ability of the path model to predict the original observed values (Hair et al., 2017). To assess the relative predictive relevance of the model for each endogenous construct, we calculate using the Q^2 of the path model when a construct is included with the Q^2 when that construct is not included to obtain the q^2 effect size for that construct.

Table 8: q^2 effects sizes
(q^2 effect sizes = $(Q^2_{included} - Q^2_{excluded})/(1 - Q^2_{included})$)

	PEM	Perceived Employability
CI	0.000	0.000
EI	0.019	0.010
Personal Brand Positioning	0.000	0.000
Fit with the Company Brand	0.113	0.033
PEM		0.081
Perceived Employability		

As shown in Table 8, the q^2 effect sizes of CI, EI and personal brand positioning on PEM and perceived employability are less than the threshold of 0.02 (Hair et al., 2017, p. 208) and can be considered not to have predictive relevance. The q^2 effect size of fit with the company brand on PEM and perceived employability range between 0.02 and 0.15. Therefore, they can be considered to have a small predictive relevance (Hair et al., 2017). The q^2 effect size of PEM on perceived employability also ranges between 0.02 and 0.155, which indicates PEM has a small predictive relevance.

5.4 SEM Model

5.4.1 SEM Analysis

After completing the item-by-item testing of the measurement and structural models, we performed the structural model analysis using the bootstrap method (5000 times). Table 9 shows the analysis results and the path model diagram is shown in Appendix C.

Table 9: Structural Equation Model Analysis

	β	t Value	p Value	2.5% CI	97.5% CI
CI -> Perceived Employability	0.011	0.107	0.915	-0.248	0.177
CI -> PEM	0.032	0.197	0.844	-0.273	0.345
EI -> Perceived Employability	0.297	2.474	0.013	0.058	0.519
EI -> PEM	0.247	1.449	0.148	-0.075	0.592
Fit with the Company Brand -> Perceived Employability	0.446	4.465	0.000	0.231	0.624
Fit with the Company Brand -> PEM	0.353	2.948	0.003	0.120	0.586
PEM -> Perceived Employability	0.384	3.950	0.000	0.172	0.555
Personal Brand Positioning -> Perceived Employability	0.072	0.697	0.486	-0.153	0.256
Personal Brand Positioning -> PEM	0.026	0.202	0.840	-0.226	0.272

As can be seen from the table, the influence relationships among the latent variables are all positive. However, for most of these positive relationships, the effect is insignificant at the 0.05 level. Among the four significant relationships, graduates' extended personal brand identity (b=0.297, p=0.013) was able to significantly and moderately influence their perceived employability, which shows that the extended identity contributes to the perceived employability of graduates more than the stable and unchanging core identity.

In addition, three moderate relationships between fit with the company brand, perceived external marketability and perceived employability are all significant. The finding suggests that the fit between personal brand and company brand may be the most important of the three dimensions that influence personal branding.

5.4.2 Mediating Effect Analysis

Next, we calculated the mediating effect of PEM on each construct. In addition, we tested the significance of direct, indirect, and total effects between the constructs.

CI → Perceived Employability

We tested the total, direct and indirect effects (via PEM) of personal brand identity, positioning and fit with the company brand on perceived employability in this model using bootstrap methods.

The effects of CI on perceived employability are shown in Table 10.

Table 10: Effects of core identity on perceived employability

Effect Type	Effect Path	β	t Value	p Value	2.5% CI	97.5% CI
Total Effect		0.011	0.107	0.915	-0.248	0.177
Direct Effect	CI → Perceived Employability	-0.001	0.009	0.993	-0.259	0.193
Indirect Effect	CI → PEM → Perceived Employability	0.012	0.189	0.850	-0.109	0.147

As shown in Table 10, since both the direct and indirect effects between CI and perceived employability were not significant ($p>0.05$), we concluded that CI did not significantly affect perceived employability and PEM did not play a significant mediating role.

EI → Perceived Employability

The effects of EI on perceived employability are shown in Table 11.

Table 11: Effects of extended identity on perceived employability

Effect Type	Effect Path	β	t Value	p Value	2.5% CI	97.5% CI
Total Effect		0.297	2.474	0.013	0.058	0.519
Direct Effect	EI → Perceived Employability	0.202	1.982	0.048	0.008	0.408
Indirect Effect	EI → PEM → Perceived Employability	0.095	1.393	0.164	-0.017	0.264

Since the direct effect between EI and perceived employability is significantly positive while the indirect effect is insignificant, we conclude that EI has a significant direct positive effect on perceived employability. However, PEM did not play a significant mediating effect in their relationship.

Personal Brand Positioning → Perceived Employability

The effects of graduates' personal brand positioning on perceived employability are shown in Table 12.

Table 12: Effects of personal brand positioning on perceived employability

Effect Type	Effect Path	β	t Value	p Value	2.5% CI	97.5% CI
Total Effect		0.072	0.697	0.486	-0.153	0.256
Direct Effect	BP → Perceived Employability	0.062	0.602	0.547	-0.168	0.241
Indirect Effect	BP → PEM → Perceived Employability	0.010	0.190	0.850	-0.084	0.126

As shown in Table 12, since both the direct and indirect effects between BP and perceived

employability were insignificant (p>0.05), we concluded that BP did not significantly affect perceived employability and PEM did not play a significant mediating role.

Fit with the Company Brand → Perceived Employability

The effects of graduates' fit with the company brand on perceived employability are shown in Table 13.

Table 13: Effects of fit with the company brand on perceived employability

Effect Type	Effect Path	β	t Value	p Value	2.5% CI	97.5% CI
Total Effect		0.446	4.465	0.000	0.231	0.624
Direct Effect	FIT → Perceived Employability	0.311	2.896	0.004	0.082	0.503
Indirect Effect	FIT → PEM → Perceived Employability	0.136	2.336	0.020	0.047	0.281

Since both the direct and indirect effects between FIT and perceived employability were significant, PEM can be seen as a complementary mediator (Hair et al., 2017).

5.5 Multi-Group SEM Analysis

The PLS-SEM model can be used to test the extent to which exogenous variables explain endogenous variables. However, since different populations may have heterogeneous views on the same variables, we used Multiple-Group SEM Analysis to test the effect of observable differentiating characteristics (e.g., gender, etc.) on the relationship between personal branding and perceived employability. The Multiple-Group SEM Analysis will be divided into two phases: the first phase tests the measurement invariance of each grouping model, and the second phase then performs the multi-group analysis.

5.5.1 Measurement Invariance Tests

First, we tested the measurement invariance of the grouping model. This will be done by a test procedure called Measurement Invariance of Composite Models (MICOM) to sequentially examine configural invariance, compositional invariance, and equality of composite means and variances (Henseler et al., 2016). Configural invariance consists mainly of using the same indicator variables to reflect the latent constructs, coding and processing the raw data in the same way, and using the same algorithms for calculations (Hair, 2017), which has been ensured in the previous model analysis process.

The second step is to check the compositional invariance, which is calculated in SmartPLS 3 by an algorithm called "permutation" (Hair, 2017). After dividing the samples into two data sets based on the grouping variables, group A will have n_1 samples while group B will have n_2 samples (No. of total samples = n_1+n_2). The composite score calculated at this point is called the original score. Second, by randomly selecting n_1 observations from

the total samples to group A and assigning the remaining n_2 observers to group B, the program will calculate the correlation between the composite scores of group A and group B. In 1000 permutations, if the original score is below the 95% cut-off point of the permuted score in ascending order (or the 5% cut-off point in descending order), the original score is then significantly different from 1 ($p<0.05$) and thus compositional invariance cannot be established (Hair, 2017). As the calculation results of this step are shown in Appendix D., compositional invariances of the three grouping models were satisfied because the original scores were greater than the 5% descending cut-off points.

The final step is to assess the mean and variance between the composite scores of the original and permutated models. Since the confidence intervals for both the mean and variance of each construct contain the original values and are not significant at the 0.05 level, we proved that all grouped models have full measurement invariance (Hair, 2017).

5.5.2 Multi-Group Analysis

SmartPLS provides multiple methods to perform MGA. Due to space limitations, we provide the test results of each method for between-group differences in this section while placing the calculation results in the appendices.

MGA (Grouped by gender)

Pooled results for differences between male and female groups by multiple methods are shown in Table 14, and details of the calculation for each method are listed in Appendix E.

Table 14: Pooled results for differences between male and female groups

Path Coefficient	Permutation Test	PLS-MGA	Parametric Test	Welch-Satterthwaite Test
CI -> Perceived Employability	Insignificant	Insignificant	Insignificant	Insignificant
CI -> PEM	Insignificant	Insignificant	Insignificant	Insignificant
EI -> Perceived Employability	Insignificant	Insignificant	Insignificant	Insignificant
EI -> PEM	Insignificant	Insignificant	Insignificant	Insignificant
Fit with the Company Brand -> Perceived Employability	Insignificant	Insignificant	Insignificant	Insignificant
Fit with the Company Brand -> PEM	Insignificant	Insignificant	Insignificant	Insignificant
PEM -> Perceived Employability	Insignificant	Insignificant	Insignificant	Insignificant
Personal Brand Positioning -> Perceived Employability	Insignificant	Insignificant	Insignificant	Insignificant
Personal Brand Positioning -> PEM	Insignificant	Insignificant	Insignificant	Insignificant

Since the four tests found no significant differences between the male and female groups for all path coefficients, we can assume that the SEM analysis results in Section 5.4 did not vary by gender.

MGA (Grouped by nationality)

Pooled results for differences between EU and non-EU groups by multiple methods are shown in Table 15, and details of the calculation for each method are listed in Appendix F.

Table 15: Pooled results for differences between EU and non-EU groups

Path Coefficient	Permutation Test	PLS-MGA	Parametric Test	Welch-Satterthwaite Test
CI -> Perceived Employability	Insignificant	Insignificant	Insignificant	Insignificant
CI -> PEM	Insignificant	Insignificant	Insignificant	Insignificant
EI -> Perceived Employability	Insignificant	Insignificant	Insignificant	Insignificant
EI -> PEM	Insignificant	Insignificant	Insignificant	Insignificant
Fit with the Company Brand -> Perceived Employability	Insignificant	Insignificant	Insignificant	Insignificant
Fit with the Company Brand -> PEM	Insignificant	Insignificant	Insignificant	Insignificant
PEM -> Perceived Employability	Insignificant	Insignificant	Insignificant	Insignificant
Personal Brand Positioning -> Perceived Employability	Insignificant	Insignificant	Insignificant	Insignificant
Personal Brand Positioning -> PEM	Insignificant	Insignificant	Insignificant	Insignificant

Since the four tests found no significant differences between the EU and non-EU groups for all path coefficients, we can assume that the SEM analysis results in Section 5.4 did not vary by nationality.

MGA (Grouped by current status)

Pooled results for differences between At-University and Graduated groups by multiple methods are shown in Table 16, and details of the calculation for each method are listed in Appendix G.

Table 16: Pooled results for differences between At-University and Graduated groups

Path Coefficient	Permutation Test	PLS-MGA	Parametric Test	Welch-Satterthwaite Test
CI -> Perceived Employability	Insignificant	Insignificant	Insignificant	Insignificant
CI -> PEM	Insignificant	Insignificant	Insignificant	Insignificant
EI -> Perceived Employability	Insignificant	Insignificant	Insignificant	Insignificant
EI -> PEM	Insignificant	Insignificant	Significant	Insignificant
Fit with the Company Brand -> Perceived Employability	Insignificant	Insignificant	Insignificant	Insignificant
Fit with the Company Brand -> PEM	Insignificant	Insignificant	Insignificant	Insignificant
PEM -> Perceived Employability	Insignificant	Insignificant	Insignificant	Insignificant
Personal Brand Positioning -> Perceived Employability	Insignificant	Insignificant	Insignificant	Insignificant
Personal Brand Positioning -> PEM	Insignificant	Insignificant	Insignificant	Insignificant

Although the parametric test found that graduates who were still in their final year of university had significantly larger path coefficients for EI -> PEM than those who had graduated, the other three tests rejected this finding. In addition to this, since the SEM analysis in Chapter 5.4.1 found that the effect of EI on PEM is insignificant, no matter which group has a significantly different path coefficient than the other group, the final effect is most likely still insignificant. Therefore, we can still assume that the SEM analysis results in Section 5.4 did not vary by graduates' current status.

6 Discussion

In this chapter, we discussed how and to what extent the personal branding and PEM of science/engineering graduates affect their perceived employability, based on the results in Chapter 5.

6.1 Assumptions

As an overarching concept, personal branding was further decomposed into four sub-factors based on our findings from literature research: core brand identity, extended brand identity, personal brand positioning, and fit with the company brand.

6.1.1 Assumptions H1 & H5

The analysis results in Chapter 5 reject the hypothesis that core brand identity can positively influence graduates' perceived employability. Although there is a weak positive effect of core brand identity on perceived employability, this effect is not significant. This illustrates that a person's constant core characteristics and the unique style of acting he/she displays at work have little impact on the ability to get a job, which is not consistent with the marketing view that the constancy of core brand identity will bring benefits (Aaker, 2012). In our opinion, this inconsistency may stem from the inherent differences between the product brand and the personal brand. Once we understand the core features of a particular product, we can decide to buy or not to buy in a short time. Because we may encounter the need to buy that product (or not it but to buy its equivalent) multiple times in our lifetime, this ability to make quick decisions will save us much time. However, for a given company, the probability of repeatedly encountering a specific applicant over several years or decades is very low. Thus obtaining detailed knowledge of that applicant's personal core characteristics is unnecessary. In addition, the effect of CI on PEM (and its PEM-mediated effect on perceived employability) was also insignificant. It is possible that because core identity is stable and unchanging, graduates believe that increased PEM relies more on the extended identity that can be improved.

6.1.2 Assumptions H2 & H6

In contrast, the analysis results in Chapter 5 accept the hypothesis that extended brand identity can positively influence graduates' perceived employability ($b=0.297$, $p=0.013$), which is consistent with the previous findings (Gorbatov et al., 2019; Manai & Holmlund, 2015). Graduates' willingness and ability to continuously change their EI (improve their professional image) is valued more by employers than a stable and unchanging CI. With the rapid development of technology and customers' changing needs, it has become increasingly difficult for rigid and stagnant organizations to survive in the marketplace. As a result, organizations are required to be flexible and able to adapt quickly to changes in the external environment. Lifelong learning and personal growth are also expected as

essential qualities for employees in these organizations (Koolmees & van Engelshoven, 2020). Therefore, companies are more likely to hire new employees committed to improving their professional image over the long term. Thus, a higher EI directly contributes to the perceived employability of graduates. However, the effect of EI on PEM (and its PEM-mediated effect on perceived employability) was insignificant. This suggests that an improved professional image does not necessarily lead graduates to believe that they are valuable to future employers. Since graduates' continued optimization of their extended identity is largely based on the requirements of their current employers, their perceived internal marketability should theoretically increase significantly. However, the rapidly changing external environment makes them uncertain whether they still have a competitive advantage in the labor market. As a result, their PEM were not improved.

6.1.3 Assumptions H3 & H7

The analysis results in Chapter 5 reject the hypothesis that personal brand positioning can positively influence graduates' perceived employability. This result is slightly surprising, as most personal branding guides emphasize the importance of positioning (Schawbel, 2009). But why isn't the brand positioning effective? One possible reason is that in the early days when social media platforms were not widespread, people had very limited channels to present their brands to others (especially strangers). Therefore, people could generate more exposure by promoting themselves on social media at that time and thus dramatically increase the probability of finding a job. However, almost all current graduates are using social media extensively (not only professional job search platforms such as LinkedIn, Indeed, etc.). As everyone is more or less updating others in their professional networks, brand positioning no longer makes a decisive difference.

Another possible reason is the content of the positioning. According to previous research, people mainly update their latest jobs on employment-based social networking sites, mainly LinkedIn, and use them as electronic business cards (Skeels & Grudin, 2009). And it is close to the term "(core and extended) personal brand identity" in this study. However, the effect of CI on perceived employability is insignificant. Also, probably due to not having full-time working experience or confidentiality reasons, the work style and details are not often mentioned in these posts. Thus, future employers do not have sufficient information about whether the candidate's personal brand matches the company brand, which has been proven important.

In addition, the effect of personal brand positioning on PEM (and its PEM-mediated effect on perceived employability) was also insignificant. This may be because the dimension of personal brand positioning is more process-oriented, while judgments about whether one is valuable to future employers are more outcome-oriented.

6.1.4 Assumptions H4 & H8

Unlike personal brand identity and positioning, the fit between personal brand and company brand has both a significant direct and indirect (through PEM mediation) positive effect on perceived employability. With the increasing standardization of job settings across companies, people with relevant experience and expertise seem to be qualifiable for the same standardized positions in the same field, regardless of the companies (Robbins & Judge, 2019). However, while the responsibilities of the same positions may be the same across companies, it is the ability to work well with other departments within the company that determines the ultimate productivity of the employee. Under this circumstance, people who fit with the company's brand are more likely to work better with other departments, creating greater synergy (McNally & Speak, 2011). Similar to the findings of McNally and Speak (2011), Khedher (2014) also found a noticeable increase in employees' productivity when their personal brand was aligned with the company brand. Based on the literature and analysis above, it is reasonable to assume that employees who fit the company's brand are more productive because of the "productivity bonus" associated with the fit. Therefore, their perceived employability and perceived external marketability are higher than those who do not.

6.1.5 Test Results of the Hypotheses

Based on the test results of the structural equation model and the discussion above, we finalized the test of hypotheses H1-H8, and the results are shown in Table 17.

Table 17: Test results of the hypotheses

No.	Hypotheses	Results
H1	*Graduates' core personal brand identity positively impacts their perceived employability.*	**Rejected**
H2	*Graduates' extended personal brand identity positively impacts their perceived employability.*	**Accepted**
H3	*Graduates' personal brand positioning positively impacts their perceived employability.*	**Rejected**
H4	*The fit between graduates' personal brand and the company brand positively impacts their perceived employability.*	**Accepted**
H5	*Graduates' perceived external marketability mediates the relationship between their core personal brand identity and perceived employability.*	**Rejected**
H6	*Graduates' perceived external marketability mediates the relationship between their extended personal brand identity and perceived employability.*	**Rejected**
H7	*Graduates' perceived external marketability mediates the relationship between their personal brand positioning and perceived employability.*	**Rejected**
H8	*Graduates' perceived external marketability mediates the relationship between "the fit between their personal brand and the company brand" and perceived employability.*	**Accepted**

It is worth mentioning that, in addition to the above hypotheses, our study also demonstrated that gender did not have a differential impact on the study findings, which is consistent with the previous findings of scholars Gorbatov et al. (2019) and Vallas and Christin (2018), but not with the results of Thompson-Whiteside et al. (2018). The effect

of nationality on perceived employability in terms of personal branding has not yet been studied. Although we believe a priori that non-EU graduates are significantly different from EU graduates in terms of personal branding because they must meet certain salary conditions to hold a long-term visa to work in the Netherlands. However, the results of the analysis reject this hypothesis. Thus, the effect of possessing EU nationality or permanent residence on graduates' perceived employability may exist in other areas than personal branding. Similarly, we also assume that graduates who are still in their final year of university may not have as much time to seek full-time employment as those who graduated due to their incomplete courses or theses. However, this hypothesis was also rejected, suggesting that sufficient time for job search preparation and participation in selection (e.g., interviews) does not significantly impact graduates' personal branding.

6.2 Theoretical Implications

This study contributes to the topic of the impact of graduates' personal branding on perceived employability in academia. First, this study is the first academic attempt to examine the impact of the three elements of personal branding (core/extended personal brand identity, personal brand positioning, and the fit between personal brand and company brand) on perceived employability through a quantitative approach. Previous academic studies have either used different taxonomies (Gorbatov et al., 2019) or qualitative methods with the same taxonomy (Khedher, 2014). Thus, this study lays the foundation for quantitative analysis follow-up studies and provides theoretical support for qualitative follow-up studies using the same taxonomy.

Second, previous research has focused on what benefits employees can gain through personal branding in the workplace (Vosloban, 2013). As a result, not many studies have been done on students' or graduates' personal branding. Even among the very few similar existing studies, most of them only focused on business students (Manai & Holmlund, 2015). Our study, which distinctly focuses on science/engineering graduates from Dutch universities, enriches the academic resources related to this field. Considering that the number of majors within science/engineering fields is much larger than the number of business-related majors, the findings of this study will provide useful reference value to a broader range of graduates.

Third, this study shows that the fit between personal brand and company brand is the most important dimension affecting graduates' perceived employability. It is reflected in the fact that both its direct effect on perceived employability and the indirect effect mediated by PEM are positive and significant. Currently, students (graduates) tend to focus more on communicating their (educational, work and extracurricular) experiences, skills, (academic and work) achievements, career goals, and interpersonal skills (communication, leadership, etc.) to employers (Hood et al., 2014). However, whether

their own personal brand matches the company's brand and how to improve the fit between the two is not something they often consider when seeking employment. If graduates could give more thought to this point, their perceived external marketability and perceived employability would likely be further improved.

Finally, this study also introduces multi-group analysis to obtain differentiated insights for different population segments, which is relatively uncommon in prior research on the impact of personal branding on perceived employability (Gorbatov et al., 2018; Khedher, 2019; Peter & Gomez, 2019). Although we ultimately found that gender, nationality, and current status did not significantly affect our conclusions, this finding is still worthwhile and will provide a useful reference for subsequent studies.

6.3 Practical Implications

As organizations are now increasingly flexible, they are looking to recruit employees who are able and willing to learn throughout their lives to achieve continuous improvement in their extended identity (Koolmees & van Engelshoven, 2020). As a result, graduates with a long-term commitment to improving their professional image are more desirable to employers. To improve their extended brand identity, graduates need to have the willingness and ability to improve their professional image continuously (Manai & Holmlund, 2015) and remain motivated. They also need to frequently reflect on the gaps between their current image and others' expectations and seek any possible (tiny) improvements (Koolmees & van Engelshoven, 2020).

Graduates' perceived employability has also been a hot issue of general concern for society and universities. Unlike applying for higher-level degree programs, a graduate's high GPA, internships and extracurricular experiences, and recommendations from professors do not necessarily guarantee that they will get the job they want. They also need to communicate to employers the knowledge and skills they have learned in universities through personal branding. Existing personal branding guidelines focus heavily on establishing and maintaining personal brand positioning channels (Schawbel, 2009), which include resumes, cover letters, (elevator) pitches, and social networking platforms. However, this study found that personal brand positioning through these channels to improve perceived employability was not decisive. In other words, graduates who are good at positioning themselves may not always get a job. As a result, graduates should not continue to invest a disproportionately large amount of time and energy in personal brand positioning.

Instead, they should pay more attention to improving their fit with the company brand, as our study found that it plays the largest role in influencing the perceived employability of graduates among the three dimensions of personal branding. To further enhance their

perceived employability, graduates will need to actively seek out their preferred company's brand identity or brand strategy documents on the official website, social media platforms, and recruitment events (McNally & Speak, 2011). It also means that companies that actively communicate their employer brand to potential candidates are more likely to increase their brand awareness/familiarity in the minds of candidates (Theurer et al., 2018). Conversely, if a company's management is not aware of its brand identity, or if they keep the brand strategy internal and unpublished, it will be more difficult to recruit graduates who are in line with the company's brand.

Graduates then need to evaluate the fit with the company's brand carefully. If their brand is a good fit with the company's brand, they are more likely to get the job after applying (McNally & Speak, 2011). On the other hand, companies can also design a test questionnaire based on their brand and recruitment strategies and invite candidates to fill it out in advance and obtain brand-fit results. It will not only make it easier for candidates to assess brand fit, but also for companies to recruit employees who are a better fit and therefore likely to demonstrate higher productivity once onboarded.

Finally, we found a significant positive effect of PEM on perceived employability in the mediation analysis, which is consistent with the existing research (Spurk et al., 2015). In our personal branding model, the fit with the company brand was found to impact PEM significantly positively. Thus, they can improve PEM by investing in delivering a better fit between their personal and company brands. However, there are other methods graduates can use to improve PEM and, in turn, their perceived employability beyond personal branding. For example, analyzing, visualizing and extending a person's professional network will help improve the network structure (Spurk et al., 2016). As a result, graduates who have done so will have a better chance of meeting someone who can bring new career opportunities or provide potential resources (Spurk et al., 2016). As having these important people as friends will make them believe they are more valuable to their future employers, graduates can also enhance their perceived employability.

6.4 Limitations and Future Research Directions

Although we have obtained some interesting findings through this study, there are still certain limitations. First, we collected data using online surveys rather than field studies, which may result in the constructs reflected by the indicator items being more respondents' perceptions than facts (Sekaran & Bougie, 2016). Therefore, we recommend including field observations or interviews with employer representatives (usually HR managers) in the follow-up study to make the findings more accurate.

Second, the sample size of this study was a bit low. Although the PLS-SEM method we used is suitable for studies with low sample sizes (Hair et al., 2017), it may still result in

the samples not adequately representing the entire study population (Sekaran & Bougie, 2016). We therefore recommend future studies to expand the sample size further.

Third, this study was conducted in the Netherlands. However, different countries may have different educational systems and employment environments. Hence, we expect subsequent researchers to conduct similar studies in other countries to obtain more comprehensive findings compared with this study.

Fourth, this study only investigated science/engineering graduates from Dutch universities, making our findings more applicable to graduates of technical universities such as TU Delft but lacking generalizability to some extent. Therefore, a valuable research direction is to conduct a comparative study on the personal branding of graduates from other majors.

Fifth, although we asked respondents about their industry in the questionnaire, due to the low total sample size and the diversity of respondents' industries, the amount of data collected was not enough for group SEM analysis by industry. We propose expanding the sample size in a follow-up study while maintaining its representativeness, aiming to identify whether graduates' personal brand identity, positioning and fit with the company brand have differentiated direct and PEM-mediated indirect impacts on perceived employability across different industries.

Sixth, since scholars have proposed a variety of personal branding scales but have not yet agreed on the best one (Gorbatov et al., 2019; Rampersad et al., 2009), this study designed another scale based on the three dimensions of personal branding found in the literature research. This will lay the foundation for developing an academically recognized personal branding scale in the future. In addition, the FITS used for this study requires graduates who do not yet have full-time work experience to speculate their fit with the company's brand from the JD for the position they applied for most recently. As a result, their responses to FITS may not fully reflect the actual brand fit. Therefore, subsequent studies could build on this foundation to improve FITS so that the same items have the same measurement reliability and validity for all kinds of graduates.

Seventh, this study focuses more on the attracting and hiring phases among the six stages of the employee lifecycle: attracting, hiring, onboarding, engaging, performing and departing (Itam et al., 2020). However, the companies' employer brand will interact with graduates' personal brand once they are on board and beyond (Itam et al., 2020). Therefore, future research could focus on examing the impact that graduates' personal branding may have on their employability in the remaining stages of the employee lifecycle, with this interaction taken into account.

Finally, although we made some personal branding suggestions to the graduates in the previous section based on our findings, the effectiveness of these suggestions is to be further examined. Consequently, future research could set up comparative experiments to test the effectiveness of these tips or make other recommendations to improve graduates' extended personal brand identity and their fit with the company brand.

7 Conclusion

The Covid-19 pandemic is profoundly affecting the employment environment in countries around the world. In a more competitive job market, science/engineering graduates, despite their extensive expertise and skills, often encounter difficulties finding employment because of negligence in building their personal brand. Suppose the key factors of personal branding that affect perceived employability can be identified. In that case, these graduates can take a targeted approach to improve their personal brands quickly and effectively enhance their perceived employability.

Based on the existing literature, this study identifies three dimensions that constitute personal branding: personal brand identity, personal brand positioning, and fit with the company brand. In addition, previous studies also found that graduates' perceived external marketability mediated their relationship, but it is not clear which of the three dimensions it affects the most. To answer the research question, we collected responses from graduates through the online survey and conducted hypothesis testing using the structural equation modeling (SEM) method.

The study found that of these three dimensions, only extended personal brand identity and fit with the company brand significantly influenced graduates' perceived employability. This means that investing more time and energy in improving one's professional image may be more profitable than frequently interacting with professional networks on social media.

In addition, graduates' perceived external marketability significantly mediated the relationship between brand fit with the company and perceived employability. Due to the synergistic effect of alignment between employees' personal brands and the company's brand, their productivity increases. This "productivity bonus" allows them to perform better and feel more confident in their value (i.e., their perceived external marketability) than employees whose brands do not match. In turn, a higher PEM will make them more proactive in the job search process and perform better in the interview and other examination sessions. Based on the above findings, we suggest that future graduates pay more attention to the fit between their personal brand and the company brand to find a more desirable job in a faster way.

We also found from multiple group analyses that these effects do not differ significantly by demographic characteristics. However, despite some interesting findings from this study, future researchers can continue to study graduates from other countries or non-science/engineering majors to draw more generalizable conclusions.

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Appendix A. Scales used in the study

A.1. Personal Brand Identity Scale

Table 18: Personal Brand Identity Scale

Construct	Label	Item
Personal Brand Identity	CI1	I have my own set of rules for doing things.
	CI2	I make an effort to have a distinct profile compared to others in my professional area.
	CI3	My work is distinctly recognizable.
	CI4	My work has a distinctive style.
	CI5	I make an effort to present myself differently from my peers.
	CI6	I make sure that what I do is recognizable.
	CI7	What I offer professionally is no different than others. (reverse item)
	EI1	I purposefully engage in experiences that can enhance my professional image.
	EI2	I actively develop my professional image.
	EI3	I proactively adjust my professional image to manage the target audience's expectations.

A.2. Personal Brand Positioning Scale

Table 19: Personal Brand Positioning Scale

Construct	Label	Item
Personal Brand Positioning	BP1	I make an effort to expand my professional network.
	BP2	I have established routines to communicate my professional image to my network.
	BP3	I am strategic in the type of information I communicate about myself.
	BP4	I make my successes known to my professional network.

A.3. Fit with the Company Brand Scale

Table 20: Fit with the Company Brand Scale

Construct	Label	Item
Fit with the Company Brand	FIT1	I am (expect) to be able to reflect the company's values in my work.
	FIT2	I can do what is promised to customers in the company brand.
	FIT3	My quality is consistent with the quality promised to customers in the company brand.
	FIT4	Colleagues or managers (interviewers) think I am very compatible with the company culture.

A.4. Perceived Employability Scale

Table 21: Perceived Employability Scale

Construct	Label	Item
Perceived Employability	EA1	My competence is sought-after (desired) in the labour market.
	EA2	I have a contact network that I can use to get a new (equivalent or better) job.
	EA3	I know of other organizations/companies where I could get work.
	EA4	My personal qualities make it easy for me to get a new (equivalent or better) job in a different company/organization.
	EA5	My experience is in demand in the labour market.

A.5. Perceived External Marketability Scale

Different wording for the items is indicated in parentheses.

Table 22: Perceived External Marketability Scale

Construct	Label	Item
Perceived External Marketability	PEM1	I could easily obtain a new (equivalent or better) job with another employer.
	PEM2	There are many jobs available for me, given my skills and experience.
	PEM3	(Other) organizations will find me a value-added resource, given my skills and experience.

Appendix B. Confirmatory Composite Analysis Results

B.1. Outer Loadings Matrix (all factors included)

Table 23: Outer loadings matrix (all factors included)

	CI	EI	Perceived Employability	Fit with the Company Brand	PEM	Personal Brand Positioning
BP1						0.855
BP2						0.741
BP3						0.859
BP4						0.712
CI1	0.505					
CI2	0.710					
CI3	0.714					
CI4	0.673					
CI5	0.762					
CI6	0.707					
CI7	0.388					
EA1			0.809			
EA2			0.603			
EA3			0.712			
EA4			0.786			
EA5			0.773			
EI1		0.857				
EI2		0.909				
EI3		0.587				
FIT1				0.752		
FIT2				0.885		
FIT3				0.873		
FIT4				0.830		
PEM1					0.875	
PEM2					0.871	
PEM3					0.831	

B.2. HTMT for all Pairs of Constructs

Table 24: HTMT for all pairs of constructs

	CI	EI	Perceived Employability	Fit with the Company Brand	PEM	Personal Brand Positioning
CI	1.000					
EI	0.639					
Perceived Employability	0.424	0.688				
Fit with the Company Brand	0.469	0.520	0.718			
PEM	0.391	0.604	0.917	0.532		
Personal Brand Positioning	0.470	0.657	0.492	0.550	0.323	1.000

Appendix C. SEM Path Model

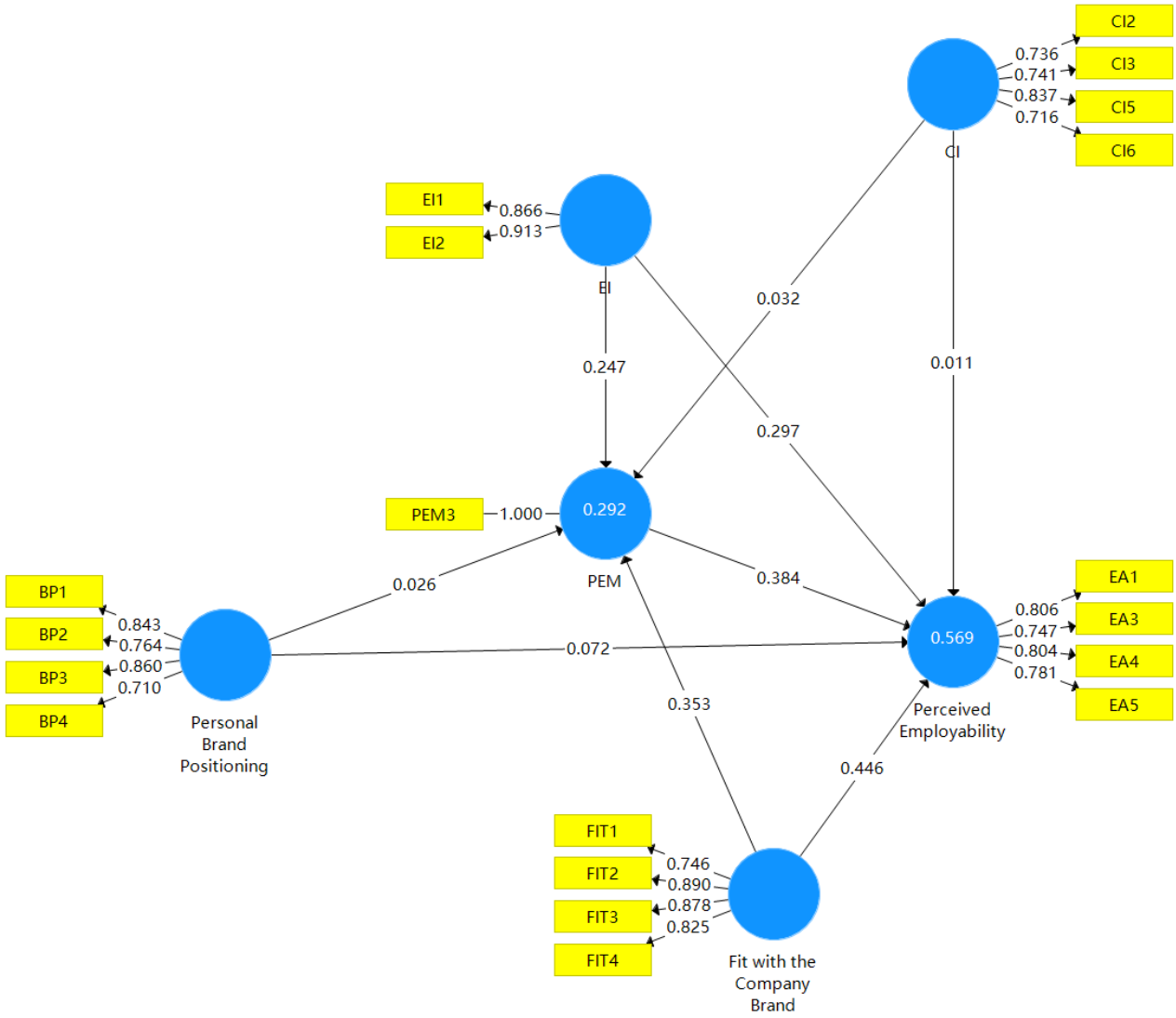

Figure 4: SEM path model

Appendix D. Constitutional Invariance Tests

D.1 Constitutional Invariance Test (Grouped by Gender)

Table 25: Constitutional Invariance Test (Grouped by gender)

	Original Correlation	Correlation Permutation Mean	5.00%	Permutation p-Values
CI	0.965	0.932	0.763	0.571
EI	0.990	0.991	0.969	0.289
Perceived Employability	0.992	0.995	0.985	0.214
Fit with the Company Brand	0.996	0.995	0.985	0.473
PEM	1.000	1.000	1.000	0.192
Personal Brand Positioning	0.971	0.976	0.938	0.217

D.2 Constitutional Invariance Test (Grouped by Nationality)

Table 26: Constitutional Invariance Test (Grouped by nationality)

	Original Correlation	Correlation Permutation Mean	5.00%	Permutation p-Values
CI	0.990	0.896	0.505	0.895
EI	0.999	0.986	0.954	0.790
Perceived Employability	0.987	0.990	0.972	0.145
Fit with the Company Brand	0.988	0.988	0.969	0.225
PEM	1.000	1.000	1.000	0.334
Personal Brand Positioning	0.998	0.947	0.802	0.949

D.3 Constitutional Invariance Test (Grouped by Current Status)

Table 27: Constitutional Invariance Test (Grouped by current status)

	Original Correlation	Correlation Permutation Mean	5.00%	Permutation p-Values
CI	0.968	0.900	0.552	0.599
EI	0.966	0.985	0.955	0.072
Perceived Employability	1.000	0.988	0.974	0.979
Fit with the Company Brand	0.998	0.986	0.970	0.809
PEM	1.000	1.000	1.000	
Personal Brand Positioning	0.961	0.954	0.828	0.238

Appendix E. MGA Tests (Grouped by Gender)

E.1 Permutation Test

Table 28: Permutation test results (Grouped by gender)

Path Coefficient	Path Coefficients Original (Male)	Path Coefficients Original (Female)	Path Coefficients Original Difference (Male-Female)	Path Coefficients Permutation Mean Difference (Male-Female)	2.50%	97.50%	Permutation p-Values
CI -> Perceived Employability	0.059	-0.025	0.084	-0.003	-0.490	0.472	0.772
CI -> PEM	-0.226	0.285	-0.511	-0.022	-0.649	0.552	0.124
EI -> Perceived Employability	0.153	-0.021	0.174	-0.007	-0.403	0.381	0.385
EI -> PEM	0.541	0.070	0.471	-0.005	-0.682	0.660	0.227
Fit with the Company Brand -> Perceived Employability	0.208	0.560	-0.353	0.003	-0.431	0.438	0.117
Fit with the Company Brand -> PEM	0.328	0.278	0.050	0.008	-0.486	0.505	0.846
PEM -> Perceived Employability	0.497	0.307	0.191	-0.008	-0.389	0.393	0.337
Personal Brand Positioning -> Perceived Employability	0.055	0.119	-0.064	0.009	-0.376	0.397	0.744
Personal Brand Positioning -> PEM	0.059	-0.097	0.156	0.002	-0.564	0.542	0.625

(p<0.05 indicates the path coefficient of the male group is significantly greater than the female group;
p>0.95 indicates the path coefficient of the female group is significantly greater than the male group;
Other p-values indicate no significant difference between the path coefficients of the two groups.)

E.2 PLS-MGA Test

Table 29: PLS-MGA test results (Grouped by gender)

Path Coefficient	Path Coefficients-diff (Male-Female)	t-Value(|Male vs Female|)	p-Value (Male vs Female)
CI -> Perceived Employability	0.084	0.312	0.757
CI -> PEM	-0.511	1.766	0.087
EI -> Perceived Employability	0.174	0.661	0.513
EI -> PEM	0.471	1.506	0.142
Fit with the Company Brand -> Perceived Employability	-0.353	1.463	0.153
Fit with the Company Brand -> PEM	0.050	0.185	0.854

PEM -> Perceived Employability	0.191	0.832	0.411
Personal Brand Positioning -> Perceived Employability	-0.064	0.260	0.796
Personal Brand Positioning -> PEM	0.156	0.553	0.584

E.3 Parametric Test

Table 30: Parametric test results (Grouped by gender)

Path Coefficient	Path Coefficients-diff (Male-Female)	t-Value(|Male vs Female|)	p-Value (Male vs Female)
CI -> Perceived Employability	0.084	0.306	0.761
CI -> PEM	-0.511	1.811	0.074
EI -> Perceived Employability	0.174	0.672	0.504
EI -> PEM	0.471	1.562	0.123
Fit with the Company Brand -> Perceived Employability	-0.353	1.495	0.139
Fit with the Company Brand -> PEM	0.050	0.194	0.847
PEM -> Perceived Employability	0.191	0.858	0.394
Personal Brand Positioning -> Perceived Employability	-0.064	0.259	0.796
Personal Brand Positioning -> PEM	0.156	0.568	0.572

E.4 Welch-Satterthwaite Test

Table 31: Welch-Satterthwaite test results (Grouped by gender)

Path Coefficient	Path Coefficients-diff (Male-Female)	t-Value(|Male vs Female|)	p-Value (Male vs Female)
CI -> Perceived Employability	0.084	0.312	0.757
CI -> PEM	-0.511	1.766	0.087
EI -> Perceived Employability	0.174	0.661	0.513
EI -> PEM	0.471	1.506	0.142
Fit with the Company Brand -> Perceived Employability	-0.353	1.463	0.153
Fit with the Company Brand -> PEM	0.050	0.185	0.854
PEM -> Perceived Employability	0.191	0.832	0.411
Personal Brand Positioning -> Perceived Employability	-0.064	0.260	0.796
Personal Brand Positioning -> PEM	0.156	0.553	0.584

Appendix F. MGA Tests (Grouped by Nationality)

F.1 Permutation Test

Table 32: Permutation test results (Grouped by nationality)

Path Coefficient	Path Coefficients Original (EU)	Path Coefficients Original (Non-EU)	Path Coefficients Original Difference (EU – Non-EU)	Path Coefficients Permutation Mean Difference (EU – Non-EU)	2.50%	97.50%	Permutation p-Values
CI -> Perceived Employability	0.033	0.062	-0.028	0.019	-0.563	0.567	0.921
CI -> PEM	0.474	-0.009	0.483	0.015	-0.624	0.710	0.216
EI -> Perceived Employability	0.150	0.354	-0.203	0.002	-0.525	0.493	0.459
EI -> PEM	-0.029	0.327	-0.356	0.007	-0.782	0.718	0.391
Fit with the Company Brand -> Perceived Employability	0.317	0.301	0.016	0.018	-0.555	0.504	0.947
Fit with the Company Brand -> PEM	-0.125	0.384	-0.509	-0.004	-0.599	0.549	0.077
PEM -> Perceived Employability	0.621	0.189	0.432	-0.011	-0.545	0.462	0.085
Personal Brand Positioning -> Perceived Employability	-0.096	0.065	-0.161	-0.020	-0.624	0.489	0.516
Personal Brand Positioning -> PEM	0.447	-0.072	0.519	0.027	-0.609	0.653	0.103

(p<0.05 indicates the path coefficient of the EU group is significantly greater than the Non-EU group;
p>0.95 indicates the path coefficient of the Non-EU group is significantly greater than the EU group;
Other p-values indicate no significant difference between the path coefficients of the two groups.)

F.2 PLS-MGA Test

Table 33: PLS-MGA test results (Grouped by nationality)

Path Coefficient	Path Coefficients-diff (EU – Non-EU)	t-Value(|EU vs Non-EU|)	p-Value (EU vs Non-EU)
CI -> Perceived Employability	-0.028	0.548	0.905
CI -> PEM	0.483	0.050	0.100
EI -> Perceived Employability	-0.203	0.778	0.444
EI -> PEM	-0.356	0.761	0.479
Fit with the Company Brand -> Perceived Employability	0.016	0.459	0.917
Fit with the Company Brand -> PEM	-0.509	0.961	0.078

PEM -> Perceived Employability	0.432	0.062	0.125
Personal Brand Positioning -> Perceived Employability	-0.161	0.667	0.667
Personal Brand Positioning -> PEM	0.519	0.104	0.207

F.3 Parametric Test

Table 34: Parametric test results (Grouped by nationality)

Path Coefficient	Path Coefficients-diff (EU – Non-EU)	t-Value(|EU vs Non-EU|)	p-Value (EU vs Non-EU)
CI -> Perceived Employability	-0.028	0.108	0.914
CI -> PEM	0.483	1.424	0.159
EI -> Perceived Employability	-0.203	0.764	0.447
EI -> PEM	-0.356	0.974	0.333
Fit with the Company Brand -> Perceived Employability	0.016	0.062	0.951
Fit with the Company Brand -> PEM	-0.509	1.773	0.080
PEM -> Perceived Employability	0.432	1.698	0.094
Personal Brand Positioning -> Perceived Employability	-0.161	0.554	0.581
Personal Brand Positioning -> PEM	0.519	1.536	0.129

F.4 Welch-Satterthwaite Test

Table 35: Welch-Satterthwaite test results (Grouped by nationality)

Path Coefficient	Path Coefficients-diff (EU – Non-EU)	t-Value(|EU vs Non-EU|)	p-Value (EU vs Non-EU)
CI -> Perceived Employability	-0.028	0.098	0.923
CI -> PEM	0.483	1.602	0.121
EI -> Perceived Employability	-0.203	0.611	0.548
EI -> PEM	-0.356	0.776	0.446
Fit with the Company Brand -> Perceived Employability	0.016	0.061	0.952
Fit with the Company Brand -> PEM	-0.509	1.839	0.078
PEM -> Perceived Employability	0.432	1.576	0.129
Personal Brand Positioning -> Perceived Employability	-0.161	0.407	0.688
Personal Brand Positioning -> PEM	0.519	1.288	0.212

Appendix G. MGA Tests (Grouped by Current Status)

G.1 Permutation Test

Table 36: Permutation test results (Grouped by current status)

Path Coefficient	Path Coefficients Original (At-University)	Path Coefficients Original (Graduated)	Path Coefficients Original Difference (At-University - Graduated)	Path Coefficients Permutation Mean Difference (At-University - Graduated)	2.50%	97.50%	Permutation p-Values
CI -> Perceived Employability	-0.003	0.027	-0.030	-0.023	-0.534	0.558	0.913
CI -> PEM	-0.113	0.414	-0.526	-0.005	-0.745	0.669	0.177
EI -> Perceived Employability	0.264	0.172	0.092	0.003	-0.491	0.532	0.723
EI -> PEM	0.525	-0.190	0.715	-0.023	-0.700	0.798	0.057
Fit with the Company Brand -> Perceived Employability	0.248	0.394	-0.146	-0.001	-0.519	0.527	0.597
Fit with the Company Brand -> PEM	0.296	0.256	0.040	0.019	-0.530	0.584	0.890
PEM -> Perceived Employability	0.289	0.577	-0.288	0.017	-0.438	0.531	0.260
Personal Brand Positioning -> Perceived Employability	0.122	-0.097	0.218	-0.005	-0.510	0.569	0.397
Personal Brand Positioning -> PEM	-0.091	0.194	-0.285	-0.021	-0.625	0.591	0.372

(p<0.05 indicates the path coefficient of the At-University group is significantly greater than the Graduated group;
p>0.95 indicates the path coefficient of the Graduated group is significantly greater than the At-University group;
Other p-values indicate no significant difference between the path coefficients of the two groups.)

G.2 PLS-MGA Test

Table 37: PLS-MGA test results (Grouped by current status)

Path Coefficient	Path Coefficients-diff (At-University - Graduated)	t-Value(|At-University vs Graduated|)	p-Value (At-University vs Graduated)
CI -> Perceived Employability	-0.030	0.519	0.961
CI -> PEM	-0.526	0.936	0.129
EI -> Perceived Employability	0.092	0.371	0.741
EI -> PEM	0.715	0.041	0.082

Fit with the Company Brand -> Perceived Employability	-0.146	0.759	0.482
Fit with the Company Brand -> PEM	0.040	0.429	0.858
PEM -> Perceived Employability	-0.288	0.876	0.249
Personal Brand Positioning -> Perceived Employability	0.218	0.204	0.408
Personal Brand Positioning -> PEM	-0.285	0.843	0.314

G.3 Parametric Test

Table 38: Parametric test results (Grouped by current status)

Path Coefficient	Path Coefficients-diff (At-University - Graduated)	t-Value(|At-University vs Graduated|)	p-Value (At-University vs Graduated)
CI -> Perceived Employability	-0.030	0.087	0.931
CI -> PEM	-0.526	1.352	0.180
EI -> Perceived Employability	0.092	0.340	0.735
EI -> PEM	0.715	2.032	0.046
Fit with the Company Brand -> Perceived Employability	-0.146	0.571	0.569
Fit with the Company Brand -> PEM	0.040	0.168	0.867
PEM -> Perceived Employability	-0.288	1.203	0.233
Personal Brand Positioning -> Perceived Employability	0.218	0.751	0.455
Personal Brand Positioning -> PEM	-0.285	1.016	0.313

G.4 Welch-Satterthwaite Test

Table 39: Welch-Satterthwaite test results (Grouped by current status)

Path Coefficient	Path Coefficients-diff (At-University - Graduated)	t-Value(|At-University vs Graduated|)	p-Value (At-University vs Graduated)
CI -> Perceived Employability	-0.030	0.095	0.925
CI -> PEM	-0.526	1.578	0.126
EI -> Perceived Employability	0.092	0.364	0.719
EI -> PEM	0.715	1.759	0.093
Fit with the Company Brand -> Perceived Employability	-0.146	0.628	0.536
Fit with the Company Brand -> PEM	0.040	0.146	0.886
PEM -> Perceived Employability	-0.288	1.149	0.262
Personal Brand Positioning -> Perceived Employability	0.218	0.788	0.439
Personal Brand Positioning -> PEM	-0.285	0.976	0.339