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Perceived employability of international doctoral students in the UK: applying Bronfenbrenner's ecological systems theory

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ABSTRACT

The quality of the UK's doctorate training system plays a fundamental role in fostering vibrant research outputs and attracting global talent. However, while maintaining a consistently high standard of quality remains static and challenging, little is known about how the employability of international doctorate students is shaped and at what juncture it is opportune to support their employability during their research studies. This paper aims to understand the employability of international doctoral students within business schools at British universities, drawing on Urie Bronfenbrenner's ecological systems theory as a framework. The qualitative study involves 15 international doctoral students from 9 business schools. The findings uncover various environmental systems impacting their employability. In addition, this study theoretically extends employability research by applying Bronfenbrenner's ecological systems theory to provide a multi-layered understanding of international doctorate employability, offering a novel framework for targeted career support interventions. Further, the implications highlight the urgent need for tailored support to build industrial connections, promote departmental collaboration to scaffold a dynamic research environment, proffer multiple resource channels, and create employment opportunities both inside and outside of the university.

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1. Introduction

Doctoral students are consistently facing prompt changes in the labour market landscape, necessitating the solid development of their career pathways (Beasy et al. 2022; Chen, Mewburn, and Suominen 2024; Zhao and Kung 2021; Zhao, Kung, and Bista 2024). The significant focus on graduate employability has been heightened in the UK due to initiatives such as the National Student Survey and Teaching Excellent Framework. However, much of the attention has been paid to undergraduates by embedding employability agendas and work-based learning into the programmes of study, scant research has unpacked the discussions of employability of international doctoral students (IDSs) (Zhao and Kung 2021). Additionally, while the post-doctorate academic life is filled with heavy workloads, mental health challenges, and ongoing job insecurity (Ueno et al. 2024), there remains a gap in understanding how these challenges and stress can be better managed as IDSs navigate post-PhD career pathways.

Given the insufficient attention paid to investigating the employability of doctoral students and graduate cohorts (Pham 2023; Stamati and Willmott 2023; Zhao, Kung, and Bista 2024), employability still functions as one of the key competitive factors that amplify career opportunities and

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employment aspirations for universities to attract doctoral students (Stamati and Willmott 2023). According to CFE Research (2014), a noticeable trend of decreased number of doctoral graduates choosing to continue working in academic research positions, finding portfolio careers or entrepreneurial careers that seem more pragmatic in navigating economic challenges. This shift is attributed to the lack of effective career support, broadened career options, and credential inflation (Hancock 2021; Zhao, Kung, and Bista 2024)**.** In this study, an international doctorate student (IDS) is defined as an individual whose first language is English (Gao 2021) and who is pursuing a full-time doctoral degree at a British university (Zhao and Kung 2021). Therefore, this study aims to investigate the employability of IDSs through the lens of Bronfenbrenner's ecological systems theory, examining how their built environment influences their career development and prospects. The research objectives are as follows: (1) To understand international doctorate student employability from students' perspectives within UK's business schools; (2) To explore the extent to which ecological systems impact their employability and shape their career pathways; (3) To investigate the current challenges and opportunities that IDSs encounter during their research trajectories.

2. Literature review

2.1 International doctorate student employability

The concept of employability has been revamped into a phenomenal buzzword in the last decade. Harvey (2001) underpinned the two approaches of defining employability as 'individual' and 'institutional'. At the individual level, employability refers to the 'propensity of students to obtain a job' (Harvey 2001, 98) and to fulfil the attribute requirement set by potential employers during the recruitment process. The individual approach is in accord with how employability predominantly and conventionally refers to the attributes and skills that an individual needs to get a job and maintain the employment in majority of the existing research (Huang and Turner 2018; McQuaid and Lindsay 2013; Nilsson and Ripmeester 2016; Pegg et al. 2012; Tomlinson 2012). Noticeably, critics of this 'skill-centred' and 'supply-side' approach to defining employability are overly simplistic and descriptive, resulting in expectation mismatch between individuals and employers, taking limited considerations of HEs as a warm hub of personal and professional development (Nikusekela and Pallangyo 2016; Tomlinson 2012). In addition, this approach will also lead to 'the increased numbers of explanatory elements with no theoretical gain' (Holmes 2013, 546). At the institutional level, employability is closely intertwined with higher education, industries, and social norms that shape the contextual elements of employability (Harvey 2001). The institutional approach to defining employability is closely linked to the indicator of employment outcomes, lacking engagement with the statutory professional practices of individuals and the measurement to gauge employability from the organizational level tends to focus predominantly on short-term courses (Bridgstock and Jackson 2019; Harvey 2001). Among various distinguished approaches to defining employability, Holmes's (2013) approach of exploring the definitional categories of employability as the three competing categories in 'possessive' (skills and attributes), 'positioning' (societal position and identity), and 'processual' (ongoing learning and development) being particularly notable. From a broader socio-cultural perspective, employability is highly associated with social structures, cultural expectations, economic conditions, and policy environments, especially when it comes to the topic of employability of international student and graduate cohorts (Crossman and Clarke 2010; Nilsson and Ripmeester 2016; Tomlinson et al. 2022).

Beasy et al. (2022) identified doctoral employability into three categories including academic preparedness, career preparedness, and general preparedness. The distinguished features of the three contexts vary significantly based on the desirable skillset and attributes, which align with the career pathways that doctoral candidates and students choose to delve into accordingly (Beasy et al. 2022). When considering international students in general, Wang (2023) has pioneered the synthesis of the concept of international student employability wherein four critical components are constructed:

the international fresh identity, formed international experiences inside and outside of the university, cross-cultural capacity, required skills and attributes by adopting the core ideas of defining employability from Holmes (2013) and Tomlinson (2012; 2017). Further, Xu (2020) adopted graduate capitals to investigate Chinese doctorate students wherein the findings indicated that doctorate employability is intricately linked to the accumulated occupationally skilled capital, competitions within the target labour market, and the self-positioned tactics to mobilise acquired different forms of capitals. While Pham (2023) signified the existing gap wherein predominately research in doctorate research, which is highly quantitative-based, narrowly emphasises the temporary portrayal of short-term employment issues that contribute to their overall employability discourse.

Additionally, Pham (2023) pinpointed the critical role of employability agency which is a strong contribution to doctoral employability development. Further research from Pham, Dai, and Saito (2023) demonstrated that international doctorate students and graduates who have explicit agentic features (e.g. self-determination, persistence, and strong belief) and agentic action (e.g. active engagement and self-reflection) could have well-rounded capacities to achieve the transition from campus to workplace strategically. While current research on doctorate employability appears to be Anglo-centric, Hu and Wang (2024) highlighted the different results, demonstrating that Chinese IDSs in Malaysian universities place greater emphasis on human capital (academic qualifications, subject knowledge, and research skills) in their perception of employability. Additionally, Wang and Byram (2019) explored how cultural nuance and social factors impact IDSs' supervision experiences and career prospects within a Chinese university. The findings indicated that informal enculturation (social engagement and academic network) and adaptation to local social practices are essential for IDSs in enhancing their research experiences and future career opportunities (Wang and Byram 2019). Consequently, when considering the employability of IDSs, needless to say, should also take into account, geographical variations, cultural diversity, linguistic disparities, and both academic experiences and expectations inside and outside of the university setting (Davis, Fedeli, and Coryell 2019; Hu and Wang 2024; Wang and Byram 2019).

In the context of the UK, Zhao, Kung, and Bista (2024) underpinned the importance of establishing effective channels to enhance the employability of IDSs via career mentorship and guidelines from supervisors, proffering more fieldwork and teaching opportunities, and fostering a collaborative environment for advancing publication among IDSs. The findings from Zhao, Kung, and Bista (2024) advocate the urgent need to integrate employability discussions and training into the doctorate program in the UK, placing greater emphasis on publications and working opportunities during their degree pursuit. Furthermore, Shi (2024) identified a noticeable gap, adopting a case study of IDS, revealing a disconnection wherein expected personal characteristics and communicative skills are not readily applicable in the job market. However, it is important to note that the researcher participants in the aforementioned studies were exclusively from China. Consequently, the findings and implications appear to be more tailored to this cohort, lacking comprehensive explorations of the diverse sociocultural employability and career needs of IDSs. While desired personality traits, apart from academic skills and capacity, are crucial in improving IDSs' employability (Shi 2024), it is also worthwhile to obtain teaching, tutoring, and supervising experiences during doctorate study that can enhance IDSs' career prospects and overall marketability, especially for those seeking academic roles in the UK's business schools (Mogaji, Adamu, and Nguyen 2021).

Despite the existing research on doctoral employability (e.g. Beasy et al. 2022; Chen, Mewburn, and Suominen 2024; Jones and Warnock 2015; Pham, Dai, and Saito 2023), the investigation into this topic is still in its early stages, especially concerning international doctoral students. IDSs encounter distinct challenges that impact their employability including linguistic barriers, cultural adjustments, visa restriction, and limited access to professional networks (Mogaji, Adamu, and Nguyen 2021; Zhao, Kung, and Bista 2024), setting them apart from their domestic counterparts. Furthermore, IDSs often face different expectations regarding academic supervision and mentorship, while their qualifications and experiences may be valued differently across countries (Hu and Wang 2024; Wang and Byram 2019). These socio-cultural, institutional, and geopolitical factors highlight the need for tailored

strategies to support IDSs' employability and career development. While several studies have focused on specific nationalities and groups, such as Chinese IDSs (Hu and Wang 2024; Shi 2024; Zhao, Kung, and Bista 2024) and Asian and African IDSs (Mogaji, Adamu, and Nguyen 2021), there remains a significant gap in understanding how diverse cultural backgrounds, socio-political structures, academic adaptation in host countries, and international experiences both inside and outside of the university, impact their research trajectories, career pathways, and overall employability. Based on the discussions above, the definition of employability of IDSs in this exploratory study is a multi-dimensional concept that is shaped by personal, institutional, and social-cultural factors which also involves the self-positioning strategies, personal agency, and the accumulation of employability capitals chronically.

2.2 Employment and career pathways of international doctoral students

Doctoral students see resourceful employment potential via the doctoral program system (Jackson and Michelson 2015). A key finding from Beasy et al. (2022) bemoaned that students reported insufficient doctoral training were bespoke their post-graduation career pathways despite an increasing recruitment number of doctorate students in HE. In the course of the traditional standardised employment mechanism and training, models loomed over doctoral students and became obsolete in recent years, more focus has been paid to undergrads and postgraduates wherein the career support for students is predominantly reported as largely UK-centric (Beasy et al. 2022; Huang and Turner 2018; Zhao, Kung, and Bista 2024). Therefore, it is critical for Higher Education developers and practitioners to reflect and re-evaluate the doctoral programmes that both foster academic skills development embedded into the programs and facilitate employability preparedness at the early stage of the doctoral degree (Beasy et al. 2022; Pham 2023), leading to a more flexible approach of exploring career options. On the other hand, it is of equivalent importance to inform non-academic employers to provide more opportunities for doctorate students to enhance their employability and readiness outside of academia (Teelken et al. 2023).

Conventionally, the purpose of a doctoral program is to acquire specific training for employment in academia (CFR Research 2014). Despite the majority of doctorate candidates and graduates retaining the intention of staying within the HE, tangible evidence demonstrated increasing mobility and movement between academia and other sectors (CFE Research 2014). The flexibility of completing a doctorate degree enhances career opportunities and long-term prospects. This might vary from the perspectives of international doctoral students. However, International doctoral students, especially in the UK, are dominantly taking the full-time student approach considering the visa restriction. While casual employment and short-term internships outside of the campus are allowed, there remains a gap regarding how those off-campus employment has enhanced their employability, as the majority of the focus was paid to undergraduate experiences (Stamati and Willmott 2023). Findings from Jackson and Michelson (2015) and Jones and Warnock (2015) shed light on how undertaking paid employment (internships), engaging in a healthy intellectual climate, scaffolding professional networking, and utilizing university-based job-hunting methods during the doctorate study could contribute to the post-doctoral employment outcomes.

In the light of post-doctorate trajectories, proposals from Teelken et al. (2023) contended that the pivotal necessity of raising the awareness of doctorate graduates diversify their employment pathways outside of academia. This is in accordance with the government's advocacy of transitioning more doctorate degree holders into non-academic careers facilitating a more dynamic labour market (Hancock 2023). Further, post-doctorate employment is also significantly linked to support from career mentors (supervisors), off-campus employment, teaching opportunities, international conferences, and co-publications during doctorate studies (Davis, Fedeli, and Coryell 2019; Jones and Warnock 2015; Zhao, Kung, and Bista 2024). However, there seems an increasing focus on investigating the career pathways and outcomes of doctoral students and graduates, building upon various stakeholders' perspectives impacting IDS's study experience and career-related issues (Jackson and Michelson 2015; Mogaji, Adamu, and Nguyen 2021), little is known about what

influence employment attainment of international doctoral students, and reshape the employability discourse of them, especially in a long term career development.

2.3 Theoretical framework

Ecological Systems Theory (Bronfenbrenner 1977) is adopted as the theoretical framework for this project as a nested arrangement of structures to explore the employability of international doctoral student cohorts. It is a comprehensive life course approach involving five levels of different systems that function beyond an individual's development and look at wider contexts of the multifaceted human development in a myriad of interconnections and via the prism of influential psychological forces (Bronfenbrenner 1994; Crawford 2020; Neal and Neal 2013). Ecological Systems Theory (EST) places a critical emphasis on the process that moulds the human development of individuals (Bronfenbrenner 1986, 1994, 1995). This perspective is in accord with the procedural approach of how employability is developed (Holmes 2013) wherein the long-term course of doctoral employability remains an underexplored research area (Pham 2023), and existing research on doctoral employability is moderately focused on the short timescales after graduation (CFE Research 2014).

Microsystem, as a basic unit (Poch 2005), refers to a set of activities, social roles, and interactions encountered by an individual in a particular face-to-face environment, characterised by distinct physical, social, and symbolic aspects (Bronfenbrenner 1994). The immediate environments (Microsystems), applied to the current project, could potentially be the direct engagement with supervisors. A mesosystem is a system of microsystems that involves two or more immediate environments interacting with each other to form a new setting (Bronfenbrenner 1995). It particularly occurs when an individual's microsystems cannot function separately and independently but are inter-correlated and influence one another. Bronfenbrenner (1977) claimed that exosystems incorporate one or more social settings that do not contain the developing individual as an active participant, but it indirectly impacts the social structures that affect microsystems. While macrosystems allude to the overall broad social and cultural structure, they can be understood as the most distant source of influence on an individual (Poch 2005) and the consistencies underpinned by (sub) culture, belief, ideology, socioeconomic status in an established societal setting (Bronfenbrenner 1979). In the later stage of further looking at human development, which would pertain to the time constrain, the concept of chronosystems was developed as the fifth system not only considering the chronological age or maturation but more of a personal environmental changes of the development and the cumulative sequences of life transitions (Bronfenbrenner 1986). As shown in Figure 1, EST involves micro-, meso-, exo-, macro-, and chronosystems.

EST is extensively applied to child development (Bronfenbrenner 1995), and it is also widely used in higher education, psychology, and social science (Crawford 2020). Poch (2005) pinpointed the strengths of EST in evolving a dynamic environmental impact and does not limit looking into a singular setting but also extends to encompass the interplay among a variety of contexts and their connections to a broader environment. Furthermore, Crawford (2020) depicted the vital belief within the ecological systems that the impact and interplays of the settings or social circumstances arise from the individual's perceptions and interpretation yet the complexity of involving multiple layers makes it challenging to isolate and measure the impact of each system in a more practical application. Additionally, the original conception of EST did not sufficiently account for the nuanced cultural differences in the systems (Neal and Neal 2013) and it primarily centred on the significance of the contextual variations of the interconnectedness as processes, but instead, it did not focus on a specific domain, it would be relatively risky to explore the employability of international doctoral students as scant examples can be found previously applied EST into employability research.

3. Methodology

This study adopted a qualitative research method by conducting semi-structured interviews, focusing on understanding IDSs' employability, current factors, challenges impacting their career

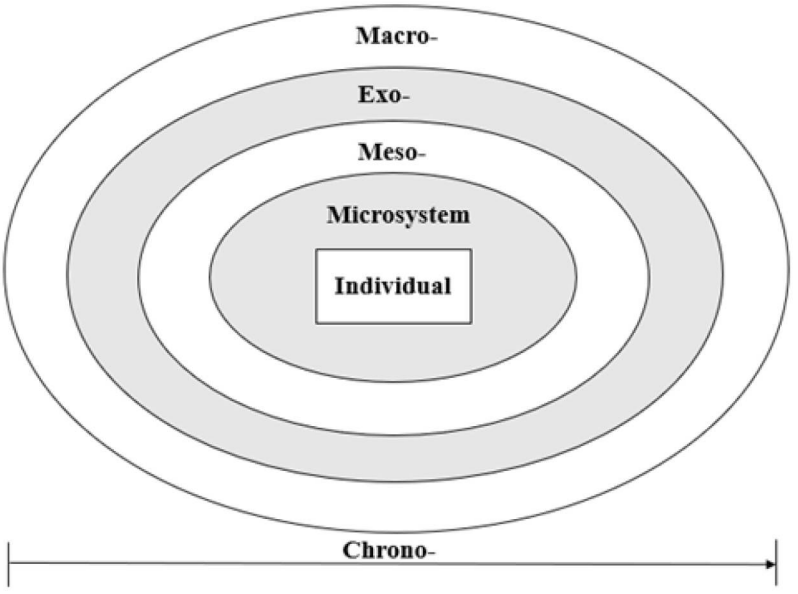

Figure 1. Bronfenbrenner's Ecological Systems Theory.

prospects, and pathways in the context of the UK's business schools. The semi-structured interview has unique characteristics such as flexibility which creates spaces for the research topics and enables researchers to explore participants' narratives which are not normally explicit in contextual forms of communication (Galletta 2013). Apart from the flexibility of this method, semi-structured interview pinpoints the core of generating more insightful and unfettered discussions unfolded in the exploratory paradigm (Galletta 2013).

In this study, 15 interviews were conducted to achieve the research objectives. The interviews were conducted with international doctorate students at the different stages of enrolment in their doctorate programmes from 9 British universities. Each interview lasts between 35 and 50 minutes. The participants were recruited by adopting purposive sampling and snowball sampling. To ensure the representativeness of the IDS cohorts in the UK, 60% of the participants ($n = 9$) were originally from the top 10 sending countries that contributed to most of the international student recruitment to the UK, retrieved from the enrolment figures reported by UUKI (2023). In addition, the geography of the participants involves most of the regions including Asia (East, Southeast, South, Central, and West Asia), Africa, Europe (South and East Europe), the Middle East, and North America. For the characteristics of the participants, all of them are in pursuit of their doctorate degrees within the scope of Business Schools including Russel groups and non-Russell group universities. Ethical approval was gained from the researchers' university and a pilot study has been conducted to improve the suitability of the interview questions. Furthermore, the participants were proffered informed consent and there was no conflict of interest leading to any impact of their own study by attending the interviews. Further, participants were well informed that they were not subjected to coercion to participants nor faced penalties for withdrawing from the study. As alluded the above, Table 1 presented a comprehensive demographic overview of participants' details, including codification of the IDSs, gender, origin of region, age range, year of enrolment, school of study, name of university, and categories of university groups.

All the audio and recording data were transcribed into Word documents by using the personal university account of Office 365. The digital data were encrypted in the researcher's personal One Drive while in use and the interviews were conducted in researchers' offices and private study rooms. Files of the transcribed data were imported into NVivo 12 anonymously for further coding.

Table 1. Demographic information of the participants.

Categories	Sub-groups	*n*
Gender	Male	4
	Female	11
Schools of Studies	Business School	15
Originality	Africa (P1, P2, P3)	3
	Asia (P4, P5, P6, P7, P8, P9, P10)	7
	Middle East (P11, P12)	2
	Europe (P13, P14)	2
	North America (P15)	1
Age ranges	24–30	5
	31–40	8
	40+	2
Year of enrolment in doctorate study	Frist year	2
	Second year	4
	Third year	3
	Fourth year	7
Study Status	Full-time	15
University groups	Russel groups	3
	Non-Russell groups	6

The qualitative data was analysed following the six key steps of conducting thematic analysis adopted from Braun and Clarke (2006) encompassing familiarizing data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. Researchers of this study conducted the interviews while at the same time coding data spontaneously, leading to a deep and subtle understanding of the data to identify the recurring patterns.

To ensure the reliability and validity of the research outcomes as well as being congruent to achieve the research objectives, a hybrid thematic analysis is adopted (Swain 2018). The hybrid thematic analysis method is exceptionally well-suited for small qualitative research projects, enabling the concise summarization and overview of information in a straightforward and organized manner (Swain 2018). Thus, the deductive approach is used to predefine the conceptualizations that lie within the core layers of ESTs, ensuring theoretical rigour by aligning the analysis with the established theoretical concepts. In the meantime, an inductive approach is adopted, functioning as a distinct social constructivist and interpretive epistemology, to analyse the key factors that further form the subthemes in different systems respectively, which impact IDS' employability journeys, career prospects, and employment outcomes. The inductive approach serves as a more flexible and nuanced approach to allow for the openness of complexities of the qualitative data, enabling the exploration of emergent sub-patterns and insights that may not have been anticipated by the theoretical framework alone.

4. Results

The results of this qualitative investigation reveal a diverse array of perceptions held by IDSs concerning their understanding of employability, alongside the emerged themes within the five systems that have shaped their employability and career pathways. In this study, a majority of the participants recognize the rewarding value and experiences derived from pursuing a PhD degree in British Business Schools, a sentiment that echoes the finding from Zhao, Kung, and Bista (2024), which underpins the competitive advantage gained over their domestic counterparts through doctoral pursuits in the UK. The results are detailed as follows.

4.1 Microsystems: identity of supervisor, employment experiences inside and outside of the university, and employability agency

The key microsystems we have identified are the identity of the supervisor, employment experiences, and employability agency. Notably, IDSs ($n = 9$) shared the commonality that their first

supervisors are from the same background, valuing advice on academic development, feedback on research work, and guidance on preparedness for the workplace. Despite these scenarios cannot represent the common trend of targeting supervisors from the same background. However, it is indeed noted that such an experience is advantageous:

> The reason I come here was because of my first supervisor is also from China … He studied in the UK, and we shared similar experiences, which is definitely an advantage for better communication, and I could learn a lot from him. it is also beneficial for Chinese students whose English skills are weaker than others. (P4)

Similarly, Participant 13 acknowledged that using their home language (Greek) when it comes to solving challenging research-related issues, facilitates smooth communications with supervisors. In addition, having a supervisor from the same background could reduce culture discrepancies and enhance working efficiency, as 'my second supervisor (who is from the same country) can grasp my ideas quickly and sometimes help me interpret my thoughts to my first supervisor (a native speaker)' and 'she knew what I was doing because our cultures and norms are the same' (P8). While supervisors can function as professional role models in academia (P4), one participant expressed her concerns:

> Although I really feel inspired by my first supervisor of what she has achieved, I might get fewer opportunities to know about working culture and improve my language skills if I decided to look for a job in the UK. (P5)

Apart from supervisors can serve as career mentors (Zhao, Kung, and Bista 2024), IDSs in this study acknowledged that having at least one supervisor from an international background would enhance their confidence and self-awareness, as they can be more empathically understand their challenges as the personal and professional trajectories towards a doctorate degree shared some certain similarities. As noted by one participant,

> My first supervisor (a native) talked in a way that he felt I knew the culture here and sometimes I couldn't even follow what he said. So, my second supervisor (from an international background) sometimes stepped in and explained my situation to him. (P11)

Given the essential role that supervisors play during IDSs' academic and professional development journeys, it is critical to be aware that the identifies of supervisors vary and function differently, directly impacting IDSs' employability.

IDSs in this study highlighted the employment experiences both inside and outside of the university, serving as crucial elements to enhance their marketability for future careers. The perceived narrative of securing a teaching role within the university is underpinned as follows:

> I had the chance to teach modules in Finance and Economics, and it definitely improved my understanding of working in academia and my personal skills … (teaching experiences) can make me more employable if I am seeking full-time lecturer roles in the future. (P1)

Teaching experiences enhanced IDSs' employment prospects concerning their long-term careers, proffering chances to explore career interests. However, challenges in this regard have been depicted by several IDSs: 'University is not very willing to give teaching opportunities to international students because they feel you might have language deficiency' (P5) and 'I feel like I am not confident enough to apply for assistant lecturer job as I find it's challenge to give a lecture to native students' (P10). In addition, IDSs also shared experiences in working as tutors, supervisors, and research assistants, which were mostly encouraging as in accumulated human, social, and linguistic capitals.

Employment experiences outside of the university were also described as IDSs' rationale of seeking those types of jobs associated with their future career plans in securing employment in industry and exploring career options outside of academia. For example, one participant shared her experience:

> I work as an administrative job in a local primary school … I get the chance to learn the workplace culture, how to communicate professionally, and get to know the education system as well, and it's a great learning experience. (P3)

Similar circumstances apply to two participants who secured external teaching and tutoring roles (P9, P15). The agenda of initiatives in seeking employment beyond universities reflects proactive attitudes towards career development and utilization of their developed skills in real-world settings. However, several participants found that supervisors might not be able to help with industrial jobs and connections (P5, P14) and demonstrated their concerns that they are overqualified for industrial jobs as international doctorate students (P4, P7, P12, P13).

The final subtheme within microsystems relates to IDSs' employability agency. The concept of agency in this study is adopted from the conceptualized notion regarding the dynamic and socially mediated interactions of individuals within a wider structural context of labour market (Tomlinson 2010). It refers to IDSs' personal ability and features to navigate and negotiate their professional development, drawing upon their personal perceptions of employability, depositions, and attainment. For instance, one IDS stated such a narrative when she was asked about her understanding of employability:

> Honestly, I think it's about the consistent effort of applying for jobs and seeing what opportunities are there open for me. I need to be quite patient as I learned from the mistakes I made before … Most of the PhD students, they have lots of knowledge and skills, but they don't see themselves as valuable assets for the employers, they don't know how they will position themselves in the industry. (P11)

Employability agency in this case is highly associated with their personal features, perceived identity, and constructed narratives of employability, which could be developed through purposive and meaningful actions. Several IDSs (P5, P8, P9, P15) highlighted the qualities of being independent and self-sufficient are critical qualities to enhance employability and future marketability. For example, one of the participants depicted such remarks as the following:

> It's important to have some sort of autonomy to make decisions, take risks, and explore new areas in your field … I know many of my colleagues feel isolated, but I think it is what a PhD study looks like, you just need to be self-sufficient and rely on yourself. (P9)

IDSs' practices of employability agency, in this case, reflected the context regarding how individuals exercise their agency in interlinking different attainments and qualities to maintain professional development in the host country (Pham, Tomlinson, and Thompson 2019). IDSs embarking on their doctorate journey manifested the continual enhancement of agency, leading to positive results and professional development.

4.2 Mesosystems: dynamic co-supervision and university support system

Two distinct subthemes emerged including the dynamic co-supervision relationship between IDSs and their supervisors, and the university support system encompassing career service, doctoral college (academy), and the supervision team, functioning as key components shaping IDS's employability journeys in mesosystems.

Supervisors have been identified as the most significant stakeholder contributing to doctorate students' success in business schools (Mogaji, Adamu, and Nguyen 2021). In this study, a considerable number of IDSs ($n = 8$) shared their experiences and engagement with supervision teams that would impact their employability. The teamwork between supervisors is described by one participant:

> My first supervisor is trying to keep everything on the right track and tell me what I should do to achieve the final outcomes … my second supervisor always tells me not to get overly stressed and ask me to focus on what I want to do. It's like good mental health support. (P7)

Despite the first supervisor conventionally offering direction and major mentorship throughout the research process, a third-year participant shared the following:

> I think the interactions and engagement with my supervisors influenced me a lot. My first supervisor is very dedicated and sets the bar really high. I got nervous when we had meetings together, but when my second supervisor jumped in with a joke or something, it kind of broke the tension which really relaxed me. (P6)

These supervision dynamics facilitate a friendly and supportive environment with a healthy atmosphere allowing for open communication and engagement and subsequently, cultivating students' ability to balance high expectations and enrich their learning and research experiences. Meanwhile, co-supervision also involves seeking advice and guidelines based on the supervisor's expertise and experience. One participant (P2) noted that the first supervisor was helpful with technical data analysis while the second supervisor offered practical ideas in drafting literature reviews and provided external academic resources.

However, IDSs articulate their concern that limited industrial experience would hinder their employment options beyond universities (P10, P12) while supervisors seem less likely to assist them in building industrial connections (P5, P14). Therefore, the university support system seems most likely significant in helping IDSs transition from campus to workplace, either academia or industries. In this study, the university support system includes several stakeholders, encompassing supervisors, career service, peers, and doctoral college (academy). For instance, a second-year IDS shared her experiences:

> I think it is very important for me to involve myself in various activities such as seminars and conferences. How I can present and engage myself to my peer group and of course, my supervisors, and how much am I able to use career service to explore my career opportunities while I'm still studying and doing my research. (P9)

The sentiment reveals how IDSs could position themselves in the communities through various forms of engagement to build a sense of belonging and support system. Likewise, Participant (P15) detailed that her perceived employability is a combination of endeavours and self-proactivity in joining PhD peer learning experience, career fairs, networking events organized by career service, and research seminars organized by doctorate college.

4.3 Exosystems: labour market conditions and immigration policy

Exosystems cover broader societal and institutional contexts that indirectly influence the perceived employability of IDSs. Several participants illustrated their attitudes towards the UK's labour market conditions as well as current immigration policies, both of which potentially influence employment opportunities and doctoral education. The results were not encouraging, as one participant voiced:

> I think (the UK's) job market is not very good … cutting down the migrants is affecting the number of international students coming to the universities, so which is affecting the revenue and funding opportunities affecting our employability prospects. (P9)

Particularly, one participant illustrated disappointment towards a series of new government actions and increased job salary thresholds:

> A lot of international students want to find sponsored jobs without applying for PSW (formerly post-study work visa, official name is graduate route visa). But now with all these immigration policies and new changes, I think finding a job is even more challenging, especially when you target industry jobs, some companies do not even want to offer sponsorship if they see you are from an international background. (P7)

Whist IDSs might have better employment prospects, as they could choose to stay in academia as an option, they still most likely face a number of uncertainties, as noted by a second-year IDS,

> Actually, I was not into finding jobs in industries at the beginning. But it is more of a trend and common sense that jobs in academia are very limited and competitive as some universities are cutting off staff … I feel like I have no choice but to seek a job in the industry. (P4)

Similar narratives are upheld by other IDSs (P6, P11, P15), yet they do acknowledge they should also understand the host labour market recruitment process, rules, and norms before making their post-doctorate career decisions.

4.4 Macrosystems: sociocultural integration into academic practices

A macrosystem perspective on cultural adaptation to academic practices of IDSs pinpoints the necessity of navigating themselves to the host country's academic environments. This lens recognises the significance of the cultural environment in influencing how IDSs adapt to academic norms, expectations, and practices, and how these adaptations impact their overall academic and professional performance, thereby affecting their employability. In this study, several IDSs (P1, P6, P10, P13, P14) expressed how cultural adjustments impacted their daily life in terms of academic engagement and practices. For example,

> I found it was not easy to make friends with home PhD students even though I like the British accent … I try to join group seminars, research committee meetings, and peer symposiums and until I get used to their accent and culture, I start to enjoy my PhD life here a bit more. (P10)

The significance of mastering legitimate language underpinned the cultural norms to enhance their cultural competencies through using appropriate language and observing cultural sensibility (Dai and Pham 2024), indicating the fact that established cultural settings in higher education might affect their overall experiences. However, IDS whose first language is English did not encounter issues in this regard, as Participant 12 depicted that 'the academic environment is similar, and I don't necessarily find huge cultural differences in terms of my way of speaking and communicating with my supervisors'.

In addition, the cultural environment impacts the function and performance of IDS in the built social setting as well, as one IDS mentioned the following:

> I think the UK's culture is very peaceful and relaxing, not only in the way of study but also the lifestyle. It gives me enough space to fit in my PhD study and you could find a positive work-life balance somehow. (P6)

Such experience indicates that IDSs' cultural adaptation to academic practices is an ongoing process of becoming, cultivating societal knowledge and education in a personal process of internalization and assimilation which demands individual investment of time and effort (Bourdieu 2018). The cultural setting in Higher Education requires self-adjustment and refinement, especially for those from international backgrounds. In this study, the impact of the cultural environment can be positive, suggesting that IDSs from Business Schools could navigate themselves to blend into the culture, without suffering from major culture shocks. This reflects the dynamic nature of cultural integration within the academic environment, where IDSs must continually refine their understanding and adapt their practices to succeed.

4.5 Chronosystems: accumulating different forms of employability capitals over time

This study involved 15 IDSs at different stages of their doctorate journeys. The patterns of employability development over time reveal how they accumulate various forms of different capitals in their research journey. Specifically, we have identified that the first year of IDSs' employability is more associated with human and cultural capital. The second year is more focused on developing social capital inside and outside of the university. Moreover, IDS's employability in the third chronical year is the maintenance and exercise of their psychological capital. Finally, IDSs' employability in their last year is primarily associated with their identity capital, positioning themselves in the target job market.

This study involved 15 IDSs at different stages of their doctorate journeys, revealing the patterns of how they accumulate various forms of capital over time. Specifically, In the first year, IDSs' employability is linked to human and cultural capital. The second year focuses on developing social capital both within and outside the university. In the third year, employability involves maintaining and

exercising psychological capital. Finally, in the last year, IDSs' employability is primarily associated with identity capital, positioning themselves in the job market.

The first year of doctorate study tends to be overwhelming, especially concerning developing academic skills, obtaining new techniques and relevant certification, getting accustomed to the administrative system, and fitting into the academic workplace. This indicates their practices in acquiring human and cultural capitals. For example, a first-year IDS shared her experiences as follows:

> It seems everyone struggles in their first year such as you need to define the studies and get to know the methodology and at the same time looking at the theoretical framework, develop your reading skills, and learning new technologies. (P12)

Meanwhile, one participant (P6) reflected on her first-year experience as intensive, dealing with paperwork, participating in training, and the bulk of email engagement with supervisors, doctoral college, school admin staff, and university colleagues. Similarly, another first-year IDS shared her thoughts on doctorate study so far:

> I finished my teaching training recently, but I noticed that find a teaching job here is so different from my own country … I think I should know the cultural norms first, and also develop my research skills to prove that I can be qualified as a lecturer in the future. (P3)

In this study, second year IDSs (P4, P8, P14) seem more dedicated to building professional networks to enhance their social capital, especially beyond their universities. While IDSs in this study found the rare response of seeking working and networking opportunities is discouraged (P1, P12) and circulating networks for data collection is challenging (P5, P6), building networks in early years of doctorate studies benefits both in their PhD research project and professional development, as stated by a second-year IDS:

> I joined some department seminars and workshops … I also attend conferences at other universities to use these opportunities to meet other PhD researchers. It just feeling great to network with like-minded people. (P14)

Apart from the academic activities that can enhance student's social capital, another second-year IDS (P4) depicted his experience working as a doctorate student representative, enhancing his interpersonal skills by communicating with different stakeholders and building meaningful connections not just within the scope of the university but for long-term professional development through organising events and joining university student committees.

We also found that the third-year IDSs are at the biggest turnaround of their research journeys, which is associated with their psychological capital. They are facing tremendous research, personal, and professional challenges and hurdles including personal burnout, imposter syndrome, uncertainty of career prospects, work-life balance, and the pressure of seeking publications. In this regard, a third-year IDS shared the following narrative:

> The main challenges I found are consistency and self-discipline, and sometimes I procrastinate some work because I feel my energy level is reduced … I think it is because this stage I have too many things to do and consider such as data analysis, preparing my CV, revising my papers (for publication), teaching assistant job, and also need to network. (P13)

A similar situation applied to another third-year IDS (P6) who noted that the consistent investment of time and maintaining an optimistic mindset have been the ongoing circumstances at this stage. This reflects the amount of resilience and self-efficacy that are essential to overcome those challenges physically and emotionally.

Concerning the final-year IDSs, we found that most are in the process of collecting experiences and resources, assembling identity capital over time, and navigating career strategies to position themselves in the job market. Their identities are closely intertwined with what they could bring to the market, as stated by a fourth-year IDS:

> I think a big piece of being employable at this stage is to understand how to translate what you've done into a broad context or to identify what is your potential contribution to the companies to the universities. (P15)

Moreover, several non-English speaking IDSs labelled their identity as foreign students and aimed to exploit their identity as 'foreigners' to seek employment opportunities and professional development, subsequently enhancing their employability (Dai and Pham 2024). However, their identities seem to serve as a double-edged sword for their employability. On one hand, as noted by an IDS:

> I feel like the UK's job market would give more opportunities to underrepresented groups such as BAME students, and I've noticed some job advertisement indicated their policies on welcoming graduates from those backgrounds. (P1)

On another hand, a final-year IDS (P2) worried about her career pathways and job securement due to the uncertainty of her current status quo:

> It's more challenging for international (doctorate) students to find a job compared to home students … You must have publications, international conferences, and teaching experiences otherwise employers won't even trust you. (P2)

The complexity of identities would influence how IDSs utilise different career narratives and take initiative in their employability efforts. However, it also reflects that some IDSs might be affected by systematic biases or even inequity as they progress toward securing employment. The finding of the final year IDSs' identity capital necessities to foster a nuanced understanding of the multifaceted dynamics involved in establishing employability journeys. Additionally, these findings call for targeted support mechanisms that recognise and address the unique challenges faced by IDSs.

5. Discussion

This study examines the employability of IDSs within five ecological systems, highlighting the challenges and opportunities they face during their doctorate studies in UK's business schools. The findings show that IDSs' employability is profoundly impacted by different systems including the identity of the supervisor, accessibility to employment opportunities, university support, labour market conditions, and their cultural adaptation to academic practices, elucidating the complexity in equipping various forms of capital over time during their research studies.

The findings of this study, within the scope of the microsystems, indicate that the supervisor plays a pivotal role in shaping IDSs' personal and professional development. Previous research has illustrated that supervisors can act as career mentors for international Chinese doctorate students in the social sciences (Zhao, Kung, and Bista 2024). Differently, this study unveiled that supervisors might not be capable enough to assist IDSs' transition from campus to industry, especially in business-related fields due to the potential lack of connections and resources. This seems an urgent issue for universities to facilitate more flexible employment opportunities to enhance their marketability beyond traditional career pathways. Similarly, according to Teelken et al. (2023), universities should provide training for doctorates to look at broader contexts of academic jobs, either private or public sectors, and promote the value of PhD holders to employers outside academia. Meanwhile, this study concludes that IDSs need to exercise their employability agency through employment opportunities inside and outside of universities, indicating a more nuanced and integral approach to employability enhancement. Similar findings also pinpointed that IDSs must strategically utilise their agency to direct resources (Pham, Dai, and Saito 2023) and gain valuable real-life experience and cross-cultural exposure such as field work, international conference, internship, and co-publication (Davis, Fedeli, and Coryell 2019; Zhao, Kung, and Bista 2024), leading to more reflective biographical narratives and strategic agency exploration (Edwards and Ye 2018). Furthermore, the current dominant skill-centric approach is insufficient to facilitate employability journeys (Pham, Tomlinson, and Thompson 2019), which is in alignment with this research that IDSs should be proactive in developing career acumens in navigating employment options during their research degree studies.

The mesosystems are intricately linked to the IDSs' direct stakeholders., this study also found that supervisors may not be empathetic to the challenges IDSs face, such as adjusting to UK academic practices and subtle knowledge and understanding of workplace culture. Mogaji, Adamu, and Nguyen (2021) similarly revealed that supervisors tend to overlook students' struggles, particularly in business school, including seeking support systems, financial constraints, networking, and career uncertainties. Previous research indicated that supervision teams' support significantly influenced both subjective evaluations of the PhD experience and objective outcomes such as PhD duration and employment (Platow 2012), IDSs in this study reaffirm the view that supervision teams could help develop desirable traits and relevant academic skills to overcome challenges during research journeys. Therefore, creating and maintaining a healthy, transparent, and dynamic co-supervision environment is essential in addressing the most mentioned challenges faced by IDSs, such as navigating unequal power dynamics and managing relationships with supervisors throughout their research studies (Gao 2021; Hu and Wang 2024). In addition, universities are prompted to attentively heed doctoral candidates' perspectives, tailor support to meet their needs effectively, and provide diverse training for academic, industrial, and general career pathways (Beasy et al. 2022). Moreover, a robust university support system, both academic and professional, is crucial in offering bespoke career assistance, inclusive doctoral training, and continuing professional development for supervisors, thus enhancing employability (Duke and Denicolo 2017). While the existing dilemma lies in determining the requirements of industry and academic employers for future employees and the current availability to offer (Young, Kelder, and Crawford 2020), a stable university support system could additionally foster their sense of belonging and self-identities, leading to more substantial research results in a more dynamic workplace for IDSs. Despite joint efforts from industry and university are necessary, it is worthwhile to recognise the importance of decolonising doctoral training and career support system in British universities, leading to a more holistic understanding of the employability needs of IDSs (Zhao, Kung, and Bista 2024).

Although labour market conditions may not directly impact IDSs' research outcomes, it is closely linked to post-doctorate career pathways. There is an urgent need to review how doctorate graduates could match the diverse demands of the contemporary labour market inside and outside of academia (Teelken et al. 2023), little is known in this matter concerning IDS cohorts. IDSs are suggested to develop desirable personality traits to adapt to the host country's labour market conditions (Shi 2024). Such forms of exercise their personal agency might sound passive and discursive. Nonetheless, although doctoral education is subject to the host country's policy (Chen, Mewburn, and Suominen 2024), UK immigration policies and labour market conditions impact the employability of IDSs in various indirect mechanisms concerning work visa regulations, employer sponsorship requirements, and post-study options. From a macro perspective, IDSs found it challenging to adapt culturally to the existing academic environment and practise. The formed societal setting outweighs their academic studies which play a more significant impact on IDSs' academic practice, echoing the finding from Edwards and Ye (2018) that IDSs struggle to build rapport with peer PhDs, maintain relationships with supervisors, and navigate doctorate training approaches such as classroom-based discussions and professional communications. This also reflects that current neoliberal agendas in Higher Education prioritise producing employable graduates over fostering intellectual growth (Precarious Workers Brigade and Federici 2017) yet the employability frameworks should also involve recognising and valuing different forms of knowledge, skills, and career goals that IDSs bring to the table.

The chronosystems align with how Tomlinson (2017) conceptualises various forms of capital drawing upon graduates' transition in the workplace. Differently, we acknowledged the strategies and resources IDSs unitised to develop capitals throughout their doctorate studies, noting the chronological patterns of primarily functional capitals. First-year IDSs highlighted the importance of acquiring high levels of human capital (academic and professional skills) and cultural capital (value, awareness, and embodied behaviours), performing as fundamental components of future career success. The overwhelming and tensive circumstances echo concerns from Pretorius and

Macaulay (2021) regarding the optimal methods for acquiring this valuable human capital, and which specific types of human capital hold the greatest significance. Additionally, IDSs in this study engaged in understanding accents and academic norms, reflecting the aspects of enculturation in academia (Usher and McCormack 2021). After setting into their doctoral studies, second-year IDSs prioritise developing professional networks, leading to better access to access to job leads and the accumulation of social capital ready for post-doctorate employment and opportunities (Peeters et al. 2019).

When it proceeds to the third year, IDSs face emergent challenges and obstacles, which are always associated with IDSs' resilience, consistency, and positivity, signalling the significance of developing psychological capital to cope with career-building stresses and maintain a positive approach to professional growth (Tomlinson 2017). Moreover, final-year IDSs position themselves in the target labour market, both academia and industries. Their perceived identity as work-ready doctorate candidates is linked to consistent self-investment for future employment (Pham, Tomlinson, and Thompson 2019) and career strategies and tactics to progress toward the target occupation (Xu 2020). Despite high expectations and stereotyped attitudes towards international graduates to secure employment (Gribble and McRae 2017; Pham, Tomlinson, and Thompson 2019), IDSs in this study, especially for those from BAME backgrounds, noted that diversity hiring would proffer more opportunities in the UK labour market.

6. Conclusion and implications

This study aims to understand the employability of IDSs currently enrolled in Business Schools at British universities, alongside the investigations of how ecological systems impact their employability journey and the current challenges and opportunities they encounter during their research trajectories. The direct impact is retrieved from the supervisor's identity and background, employment experiences, and their employability agency. Additionally, we found that shared backgrounds with supervisors improve communication and guidance but could limit cultural exposure, build industrial connections, enhance desirable skills, and marketability, indicating the importance of securing employment experiences inside and outside of the universities and exercising employability agency. From the mesosystems, the dynamics of co-supervisions could foster a transparent and engaging environment, and university support systems, including doctoral college, supervisors, and career services, functioning as three critical stakeholders, were crucial for IDSs in academic and professional development. Furthermore, exosystems such as labour market conditions and immigration policies posed significant obstacles for universities to put continual endeavours to support IDSs wherein IDSs' post-graduation career decision-making and long-term employability are impacted negatively. While cultural adaptation to academic practices was essential, IDSs found it necessitates ongoing efforts to integrate. Over time, IDSs built various capitals – human, cultural, social, psychological, and identity – shaping their employability and career trajectories.

There are some limitations in this research. First, the participants were recruited from British business schools only as a relatively small number of IDSs. This may affect the generalizability of the findings to a wider broad understanding of IDSs' employability, as the experiences and perspectives of IDSs from the business school might not fully represent those of IDSs in other disciplines such as other social science subjects and STEM-related disciplines. Another consideration is, that despite the existing numbers of self-funded IDSs in business schools, this study did not distinguish the cohorts between self-funded and those with scholarships or studentships. While a previous study from Mogaji, Adamu, and Nguyen (2021) identified that self-funded IDSs were under unfavoured social positions, financial pressure, and intricate family relationships, future research could conduct a comparative analysis between two student cohorts, exploring stakeholders' perspectives qualitatively or quantitatively. In addition, the authors acknowledge that EST is a relatively rigid, nested structure, which may limit its effectiveness in investigating doctoral employability in diverse and globalized contexts. Finally, the participants recruited are current doctorate students

at different stages of their doctorate studies, thus, their university-to-workplace transition cannot be portrayed as none of them are technically doctorate graduates, despite some of them secured part-term employment. In this regard, their long-term career prospects could merely be assessed through the formed personal experiences and narratives thus far.

Concerning the theoretical contributions, the results from the in-depth semi-structured interviews fill the gaps in the current literature. While previous research regarding doctorate employability dominances on the home students or doctorate graduates in general (Cuthbert and Molla 2015; Hancock 2023; O'Connor, Denejkina, and Arvanitakis 2023; Pham 2023; Pham, Dai, and Saito 2023; Stamati and Willmott 2023; Teelken et al. 2023), wherein sparse attention is paid to the UK's IDSs, particularly for those from subject-specific disciplines and specific group of origin (Mogaji, Adamu, and Nguyen 2021; Xu 2020; Zhao, Kung, and Bista 2024). This study echoes the theoretical implications from above to extend the employability research to IDSs from British Business schools. Additionally, instead of focusing on cultivating academic skill development for producing work-ready IDSs, universities should also be aware of and further address IDSs' social and cross-cultural barriers. This can be potentially achieved through incorporating anti-colonialist perspectives into training programs for both IDSs and their related stakeholders, encouraging recognition of IDSs' diverse knowledge systems, cultural sensitivity, and career aspirations. Furthermore, this study pioneered the initiative of adopting ecological system theories (Bronfenbrenner 1994) in the domain of employability research of IDS cohort, the finding identified the multi-layered understanding of IDSs' employability within their built environmental contexts and the dynamic interactions between these layers, offering a novel framework and related valuable insights for developing targeted employability interventions and support mechanisms to enhance IDSs' career outcomes.

The findings of this study revealed several practical implications. It calls for the urgent need to address the ongoing issues and challenges that IDSs are facing during their study in the UK's higher education. These encompass limited access and opportunities to build industrial connections outside of academia, lack of dynamic departmental collaborations to better assist academic and professional development, and insufficient working opportunities to enhance IDSs' employability. Moreover, while the advancement of an evidence-based approach to employability training is essential for enhancing doctorate students' career prospects (O'Connor, Denejkina, and Arvanitakis 2023), this study depicted the idea of fostering cultural-sensitive training to boost IDSs' confidence in presenting their findings, positioning their perceived value in the targeted job market, and exercise their employability to navigate career pathways and build a strong personal branding and personal traits to be employable candidates. Furthermore, international doctorate students and graduates play a significant role in their socioeconomic impact on the host country, the results from this qualitative study inform the UK high education to provide multiple research and learning channels and accessible-free resources to IDSs and policy makers to review the current immigration policies to retain the global talents trained from the doctorate systems. Further research could be conducted to expand to various IDS cohorts from various subjects and backgrounds and international graduates to form a holistic understanding of their employability and university-to-workforce transition.

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