Development of key employability skills for business students in higher education. Evaluation of a business simulation game as a method to enhance employability

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Thesis Summary

Employability has been and continues to be the top of the higher education agenda. What is evident in the literature is that defining and measuring employability are challenging tasks. More specifically, little research has been carried out to define what constitute generic or key employability skills in the context of higher education. This research fills this gap by presenting a multi-dimension framework of key employability skills and methods to measure these skills in higher education. In addition, there are many methods implemented in HE to develop and measure the employability of students, including placements, internships, Work-Integrated Learning programmes, and business simulations. Most of these methods have been investigated in previous research. However, there are still very few studies that examined business simulations in developing the employability of students. To fill this gap, the study also investigates the role of a business simulation in enhancing specific key employability skills.

The study uses a mixed-method approach involving two phases of data collection. The first phase was a Delphi technique used to collect data from experts in the field of graduate employability. This phase was analysed qualitatively using MAXQDA. The second phase was a quasi-experimental one-group pre-post-test method. This phase was analysed quantitatively using SPSS.

The study contributes to knowledge by developing a holistic and multi-dimensional framework of key employability skills, definitions and methods for measuring these skills in HE. The framework highlights the links and dependencies between the dimensions and the skills. It also recognises the overlap between developing and measuring key employability skills. The study also found that business simulation can enhance several key employability skills of business students. Finally, some of the demographic characteristics, including gender and work experience, influenced students' perceptions regarding several key employability skills. These findings are intended to help HEIs improve the development and measurement of key employability skills of business students.

Keywords: Employability skills, Personal attributes, Career building skills, business simulation, Higher education

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List of Abbreviations

EFA	Exploratory Factor Analysis
EI	Emotional Intelligence
HE	Higher Education
HEIs	Higher Education Institutions
HEPs	Higher Education Providers
MDC	Multidimensional Construct
NGOs	Non-Government Organisations
RO	Research Objective
RQ	Research Question
WIL	Work-Integrated Learning

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Chapter 1: Introduction

1.1 Introduction and Background

This chapter introduces the thesis. It outlines the background of the study introducing the concept of employability skills which underpins this work. It also presents the gap in knowledge to which this work makes its contribution. Additionally, it states the aim of this study and the research questions. Further, this chapter explains the structure of the thesis, outlining the content of each chapter.

Employability has been, and contributes to be, dominant to the mission and functioning of all universities. Many universities are marketing themselves to their prospective students or 'customers' mainly on the basis of how easy it is for their graduates to enter the job market after graduation and the proportion of graduates who are enrolled in high-skilled or graduate jobs (HEFCE, 2016). This thesis unpicks the concept of employability and examines specifically the key employability skills that are essential for business students. As the study targets key employability skills, and to incorporate students' perspective, the use of Business Simulation is examined as one of the methods that are used in HE to develop students' employability in order to reveal many of the complex aspects related to employability. The Business Simulation was evaluated in order to reveal whether key employability skills are perceived differently before and after the simulation. This thesis contributes to the important and continuous work around employability, specifically at undergraduate business students' level, which can be enhanced further.

In more detail, this study develops a framework of key employability skills required from business students. The framework is based on the analysis of data gathered from experts in the field of employability. On the other hand, the study explores the extent to which business simulations contribute to the perceived key employability skills of business students. The study is based on the analysis of data gathered from second-year business students from one university business school in the Birmingham area. It's an investigation into the perceptions held by students about a number of key employability skills, and the extent to which these perceptions alter after a business simulation module.

1.2 Employability in HE

As noted above, employability of students occupies an important place on the HE agenda. The literature review will explain how employability has been defined differently from the ability to find a job to something more multi-faceted (Yorke and Knight, 2006; Dacre Pool and Sewell, 2007; Dacre Pool and Qualter, 2013). The literature review documents the significant change around the employability debate from an individual's ability to 'get a job' to a more advanced view of the individual obtaining a number of skills and attributes. As this change of employability definitions has advanced and included skills and attributes as an element of employability, this study narrows down from the discussion of employability in general to the focus on employability skills as an important part of employability. The review of the literature distinguishes between different types of skills, including the key or transferable employability skills, and presents the different views of employability stakeholders regarding what they consider important key employability skills to acquire.

The review then evaluates the existing key employability skills frameworks and discovers some limitations including the disagreement between key stakeholders on what constitutes skills and the ambiguity in some frameworks about explaining the listed skills clearly and effectively. These limitations will be addressed in detail in the literature review chapter. This literature review also highlights the complexity of identifying key employability skills that are required from students. Additionally, another area that needs improvement in the development of key employability skills in HE is related to the measures and assessment methods that can be used to evaluate whether students develop such skills. This highlights the necessity to investigate key employability skills from multiple perspectives in order to capture overall skills needed and how these skills can be assessed in the context of HE.

1.3 Business Students

This study targets business students in particular because the supply of business and management graduates from HE to the labour market has grown significantly. These graduates enter many professions and can be employed in various sectors in the labour market. In the UK, it is recognised that business and management studies recruit a high number of students in HE, which increase the need to inquire critically into employability skills that they need to develop during their study and how it responds to market needs. This is because investigating the key employability skills they need to acquire before entering the job market can be of great value for both the students and HEIs. Thus, this research aims to investigate the key employability skills required from business students that can help them in their transition from university to the world of work more effectively.

1.4 Business simulation and employability

As indicated above, the scope of this study aims to draw a holistic understanding of key employability skills in Higher Education. Although there exist major efforts which attempt to understand what students would need to develop, the majority have lacked contextualisation of the inquiry, which resulted in ambiguous conclusions that often are not transferrable or applicable in other contexts. Increasingly, business schools are focusing on student's employability by integrating employability into the curriculum and the overall student experience (CMI, 2014a). They are acting quickly to promote student employability by introducing many methods, such as giving them opportunities for securing internships and placements, linking them with employers and preparing them for the world of work. One of these methods that can be used to enhance the employability of business students in is the business simulation. Broadly, business simulation can be defined as a representation of the real situation using a simplified simulation model imitating some business situations or processes (Pasin and Giroux, 2011).

Even though other methods (e.g., placements and internships) have been tested in terms of their value to student employability, studies about the business simulation method have been limited. Business Simulation provides a flexible means to develop student employability skills while they are at university (Farashahi and Tajeddin, 2018), as it allows skills development through exposure to a simulated work environment that reveals how business might operate and helps students to build soft skills in the process (Levant et al., 2016). What distinguishes this method of development is the ability to provide a risk-free environment (Bell and Loon, 2015) that supports experimenting and learning from mistakes (Avramenko, 2012).

Most importantly and for the purpose of this study, the use of business simulation can support contextualising skill development for business students. Also, it provides an example of how to assess student's key employability skills development in HE. Finally, it can be viewed as an approach to consider students' perspectives that is as valuable as other stakeholders of graduate employability. last but not least, the findings from business simulation can potentially inform factors to be considered when developing or assessing students' key employability skills in HE.

Thus, this study investigates business simulation as a way to enquire into its value in terms of enhancing key employability skills for business students. In the subsequent chapter, more details are provided about the business simulation method, but in brief, business simulations are used in HE to develop students' employability. Hence, testing whether these simulations develop key employability skills of business students can help evaluate whether this method that is used by business schools is effective in achieving its purpose.

1.5 Aim and objectives

The aim of this research is to establish a more tailored approach towards key employability skills development and assessment for business students in HE.

In order to do so, a number of objectives are introduced including the rationale behind how they were decided as follows:

RO1: To critically review existing frameworks of key employability skills with particular emphasis on their applicability in the Higher Education.

This objective requires looking into previous frameworks of key employability skills and evaluating their suitability to be used in HE context and more specifically targeting

business students. This will support highlighting limitations and shortfalls, which will rationalise the need to develop key employability skills framework.

RO2: To develop an overarching key employability skills framework taking into consideration skills, definitions, and assessment methods.

This objective will support overcoming some of the limitations found in previous frameworks of skills and to develop a more suitable approach of key employability skills development that can meet HE needs. Thus, an overarching framework of skills is devloped.

RO3: To evaluate use of business simulation game in terms of enhancing undergraduate business students' perceptions of their key employability skills.

Business simulation role in developing key employability skills was investigated by considering students' perspectives to inform the framework development by validating some of the framework elements (connections) and the need to add additional factors that should be considered when using the framework.

RO4: To synthesise the value of recognising interconnectivity and relationships between key employability skills for business students in HE.

This research objective aims to integrate the findings of Delphi and pre-post-tests by discussing interconnections between skills categories and recognise its importance and overall impact on key employability skills development in HE.

1.6 Structure of the thesis

The thesis is organised into ten chapters. The content of each chapter is detailed below.

1.6.1 Chapter 1: Introduction

This chapter introduces the thesis, gives some background knowledge about the research, its aim, and objectives. It also signposts the reader about the content of the thesis.

1.6.2 Chapter 2: Literature review

This chapter provides the theoretical knowledge underpinning this study. It starts by introducing the context of this study which is higher education HE. It then examines the concept of employability, stakeholders' views on key employability skills and measures of these skills that can be used in HE. After that, another section is introduced that discusses the concept of business simulation. This section defines business simulation and how it works, discusses its relation to some of the learning theories, including experiential learning theory and finally highlights its role in developing key employability skills.

1.6.3 Chapter 3: Methodology

Since this thesis uses a mixed method approach to collect data, an overview of this approach is explained in this chapter. Then, the chapter explores the underpinning research philosophy, research design and detailed description of the two methods, Delphi technique and pre-post-tests that are employed in this study.

It starts with the Delphi technique, the purpose of choosing it in this research and the process of selecting panel experts. It explains how the first round was conducted. Then, it describes the formation of the second round and the survey design.

Following Delphi techniques, the chapter explains the pre-post-tests method, the study design, including survey design steps. It offers a detailed explanation of the study context, including an overview of the module, scenario of the simulation and participants. The chapter moves to outline the measures to be tested and the relationship between these measures. Finally, data analysis techniques, reliability and validity and the ethical consideration are discussed for both methods.

1.6.4 Chapter 4: Delphi findings

Chapter four presents the Delphi findings based on its rounds. It starts by exploring the findings of the first round in terms of key employability skills, proposed definitions, and suggested methods for measuring these skills in HE. It also highlights all the skills that can be developed through a business simulation. It then moves to the results of the second round identifying the top-ranked key employability skills and the top suggested methods for measuring these skills in HE.

This chapter also investigates connections that are recognised by the study experts. These connections are found between employability skills and personal attributes. A more detailed explanation of these connections is presented in chapter 4.

1.6.5 Chapter 5: Pre-post-tests findings

Chapter five shows the findings of the pre-post-tests. The first part of this chapter shows the descriptive statistics of the participants who engaged in the survey. Then, this chapter goes through the detail of the survey findings. The main finding explores the changes in student perceptions regarding a number of key employability skills. Finally, the impact of some demographic characteristics on students' perceptions of their skills is presented.

1.6.6 Chapter 6: Discussion

This chapter discusses the implications of the study findings. The discussion is framed around the research objectives. Returning to the literature, insight and meanings from the data gathered in Delphi are exposed, indicating the theoretical contribution this research makes. After that, the discussion elaborates on the findings from the pre-post-tests results in relation to the development of key employability skills in a business simulation.

1.6.7 Chapter 7: Conclusion

The final chapter draws conclusions on the main findings of this study. This chapter revisits the study's starting point and addresses the aim of this work. This provides a platform for discussing theoretical and practical contributions this study made. In addition, limitations of this study and recommendations for future work are identified.

Chapter 2: Literature Review

2.1 Introduction

This chapter offers a critical review of the literature relating to this study and develops the theoretical basis to conduct this study. Given the scope of this work, literature incorporates a number of areas, thus an overview and their relevance are elaborated in *Table 1*. This serves to signpost the reader through the main themes which underpin this project. The chapter concludes with a summary of key aspects, which have emerged from the literature. A series of research objectives arising from the literature are reported, which gives the study the focus it needs. This leads into the following chapter which is going to define the research design.

Higher Education Institutions (HEIs) are under pressure to enhance the employability of their graduates (Grotkowska et al., 2015; HEFCE, 2011). Contextualising this, this research examines current frameworks of employability to identify key employability skills and possible methods to measure them for business graduates. The aim is to contribute by adding to previous frameworks and provide more clarity and detail. In addition, this study investigates whether the use of business simulation increases students' employability. This chapter will reveal an immediate concern that there is no single definition of employability (Williams et al., 2016) and that employability is perceived differently by the various stakeholders of graduate employability (Williams et al., 2016). Further, studies of graduate employability have investigated different methods to develop students' employability in Higher Education (HE) including the use of internship programmes to increase employability (Silva et al., 2016), however, the evaluation of business simulation as a method to promote employability have been insufficiently studied. As such, this study is contributing to address this gap.

2.2 The scope and rational of the literature review

The outline for this literature review is shown here to provide an indication of the thinking behind what is presented in this chapter. To start with in this review, the context in which this study is rooted, which is higher education is discussed. Attention is given to how employability has emerged as a theme in higher education.

Following the context is the development of employability concept, proposed definitions and the focus on skills. The discussion also presents how employability evolved from the ability to be employed to a number of elements such as skills, aptitude and personal qualities. Several frameworks are discussed to highlight the key employability skills that can form the theoretical basis for this research.

Next, the discussion around business simulation as a method to enhance employability is followed. Points include the definitions of business simulations, its relation to learning theories, reported benefits of using them as educational tools and their relation to enhance student employability skills.

Regarding the contribution to knowledge, it is going to be discussed separately. After identifying the gap related to employability skills, the contribution of knowledge will follow. The same applies to the business simulation and the gap in the existing body of knowledge.

Given the scope of this project, the literature review contains a number of themes, an overview and their relevance are summarised in *Table 1*.

Relevance to the study	Theme(s)	Detail
Context for the study	Higher education	Pressure to change how HE operates Role to produce employable graduates
Theoretical underpinning	Employability	Definitions Focus on Employability skills Stakeholders' views Employability measures
	Business simulation	Definition An overview Learning theories Skills development
Contribution to knowledge	Employability related	Taxonomies, relationships and measures
	Business simulation related	Employability skills that can be enhanced by using business simulation

Table 1: Overview of the literature search

2.3 Context- Higher education and employability

Due to the increased pressure on universities to enhance the employability of graduates, growing accessibility to higher education and dynamic and competing nature of graduate

employment marketplace, the main argument is that having a degree is not enough on its own for graduate employment. It is the responsibility of higher education to produce graduates who are employable and meet the industrial requirements (Jackson and Chapman, 2012a). Also, students and (their parents) are seeing employability as the main criterion for choosing a course or a university (Tomlinson, 2008).

This emphasis on employability from industry, market competition and students' selection criteria have placed employability at the top of higher education agenda. This strategic shift in HE from discipline-specific knowledge and academic skills to focus on skills and vocational readiness is criticised (Pegg et al., 2012). Many authors believe that employability can be developed in work setting such as work experience or employment-based training (Yorke, 2004; Andrews and Higson, 2008; Matlay and Rae, 2007). However, employers are becoming hesitant to invest in their training, specifically in transferable employability skills (Jackson, 2010). Reasons for their unwillingness are economic pressures and their views about "Generation Y" employees' lack of commitment and loyalty compared to previous generations employees (Jackson, 2010). Thus, HEIs are expected to fill the gap and place employability at the top of their strategic priorities and influence policy and curriculum amendment.

To enhance employability, universities have used different methods to equip students with employability skills. These methods include embedding employability in the curriculum, using work-based learning schemes (placements and internships), apprenticeship and business simulation. This research focuses on one specific method, which is the business simulation and investigates whether it enhances graduate employability. But first, for universities to develop their graduate employability, there is a need to define employability in the context of HE. Hence, this research aims to define key employability skills and possible methods to assess these skills in HE.

The next section tackles employability definitions and highlights the importance of focusing on generic employability skills. It also evaluates several employability skills frameworks and current methods for assessing and measuring employability in HE. Finally, it discusses business simulations as a method being used to enhance graduate employability in universities.

2.4 Employability

2.4.1 Employability definitions

Employability is considered a difficult concept to define. A number of attempts have been made to define employability, ranging from students "having a job" to them having the wide range of "knowledge, skills and attributes" expected from higher education graduates. An early definition of employability was "the ability of graduates to obtain a job" which used the simple measure of testing whether a graduate had obtained a job within six months of leaving HE, relying on figures from the first destination survey (Dacre Pool and Sewell, 2007).

A similar definition of employability was presented by Harvey (2001) as "the propensity of the individual student to get employment" (p.97). He noted that this definition is normally looked at in relation to one or more of the following five aspects:

- The job type can be interpreted in several ways such as securing any job or obtaining a graduate-level job
- Timing relates to securing a job within a specific time after graduation
- Attributes on recruitment, meaning the ability of an individual to demonstrate required attributes at the point of recruitment or the individual's ability to develop required attributes quickly
- Further learning, reflecting one view of employability that suggests an undergraduate degree is not enough and that graduates who are ready and willing to develop further are more appreciated
- Employability skills, meaning that an individual possesses basic, core or key skills that a given employer specifies.

Perhaps a clearer and more detailed definition of employability is that developed by Yorke and Knight (2006) and the Higher Education Academy's *Enhancing Student Employability Coordination Team* (ESECT):

> *A set of achievements – skills, understandings and personal attributes – that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy. (p.8)*

As Artess et al. (2017), Hooley and Mellors-Bourne explained, the importance of this definition is found in the way it looks at employability as a position that an individual occupies. Put simply, the definition suggests that while employable individuals are more likely to be employed, being employed is not the sole indicator or measure of employability.

2.4.2 Employability skills

Yorke's definition also suggests that the benefits of well-developed employability skills are not restricted only to individuals but extended further to society and the economy. Another interesting element of Yorke's definition is that he is careful not to claim that the achievements, skills, understandings and personal attributes he mentions are only developed in HEIs. In fact, he states clearly that employability is developed through a person's working life.

While most definitions recognise that employability requires the possession of skills and personal attributes, there is still a need for greater clarity about it. As an example, precisely what skills and personal attributes do graduates need? In this study, a more precise aspect of employability is considered, which is the concept of employability skills and personal attributes. As the literature suggested, employability skills can be divided into two categories, technical skills or subject-specific skills, and transferable skills. Employers recognised that the required technical and job-specific skills are not easily predictable because of the constant change (ACCI/BCA, 2002). Thus, the importance remains in individual ability to adjust and promote by applying the generic employability skills that can be transferred from one setting to another. Because transferable employability skills are more predictable and valued by employers, this research is going to focus on these skills.

Many terms are used in the literature to describe transferable skills and attributes including "generic skills", "attributes", "values", "characteristics", "professional skills" and "qualities" (De La Harpe et al., 2000). Transferable and generic skills are becoming more important than before, especially in a rapidly changing world. The power of globalisation and technological advancement is changing the way people work all over the world. As stated in Confederation of British Industry (2017) report, businesses want graduates who do not only add value to the company but also who have the skills to help change the organisation in a world where is

economy and technology are changing continuously and rapidly. This research uses the term Key Employability Skills to describe these skills.

Another consideration regarding generic or key employability skills is the categorisation of these skills as 'skills' and 'attributes'. Since this study aims to find key employability skills that are required from business graduates, both categories are included. Employability skills and personal attributes are defined previously in the literature. "Skills are commonly understood to refer to an ability to perform a specific task" (ACCI/BCA, 2002, P. 13). Personal attributes on the other hand "refer to those capabilities of an individual in most instances although "characteristics" is sometimes used to describe a workplace/job-specific requirement" (ACCI/BCA, 2002, P. 13). In terms of the relationship between the two, Yorke and Knight (2006) have identified personal qualities as a separate but an inter-related component of employability. Not only these skills and attributes are going to be included in this study, but also, the possible relationship between the two is going to be discussed.

Another type of skills that can be essential for graduates to develop is career building skills. These skills can help graduates navigate the changing labour market. These market changes are due to technological advancements and the emergence of an international talent pool that compete for opportunities in all levels of the UK workforce (Z_punkt The Foresight Company, 2014). It has been defined as *"The abilities required to proactively navigate the working world and successfully manage the career building process"* (Bridgstock, 2009, 34). In Bridgstock (2009) career management model, the author presented career building skills. These skills are related to firstly find and use available information about careers, labour markets and the world of work; and secondly, identify, obtain and sustain a job while searching for job opportunities to reach personal and desirable outcomes (Bridgstock, 2009). Some of these career building skills presented in his model included (1) the familiarity with one's industry which involve the ability to understand the structure of the industry and its core values, beliefs and culture, (2) the ability to apply for and secure a job effectively, knowing how to represent the desired skills and abilities to possible employers, and (3) the ability to build social capital by finding and maintaining personal and professional relationships with individuals who might offer job opportunities or useful resources.

Since this research is focusing on key employability skills and previous studies have not identified a definitive list to utilise, this review seeks to discuss published frameworks of

employability, analyse them and identify key employability skills. This review is taking into consideration the views of stakeholders who have an interest in the employability of university graduates which include employers, universities and government views. Each stakeholder view is going to be discussed separately to demonstrate while there is some consistency across various stakeholders' views, there is no definitive view as to what constitutes employability.

2.4.3 Stakeholders views

The first stakeholder perspective to consider is employers. Different methods have been used to define a set of skills that employers value the most. These methods to identify demands include employers' published reports, statements on their websites and research done with employers on skills demanded in the hiring process. One of the studies conducted with employers identified three categories of skills: professional competencies, business skills and personal attributes (Barker, 2014). Professional competencies include communication skills, the ability to apply knowledge, logical thinking and critical analysis were found essential respectively. Business skills required from graduates ranged from skills of problem-solving, working in high quality, team-working, time management and initiative were of great importance. Personal attributes were related enthusiasm, self-motivation, maturity, flexibility and adaptability (Barker, 2014).

Many employers in the UK have stated in published reports and statements on their websites the importance of employability skills. They even made it implicit for graduates to understand precisely the type of skills required when recruiting. Looking at the big four accounting companies in the UK for instance, PwC, Deloitte, EY and KPGM, which are the biggest recruiters of graduates, their requirements concerning employability skills vary from one company to another. However, there is a set of skills valued by these employers including, but not limited to: communication, problem-solving, team working, time management, Technology and IT, numerical skills and business and customer awareness (Deliotte, 2007; PwC, 2014).

Turning now to the employability skills reported in the literature, previous research conducted on employability skills has highlighted the importance of graduates to acquire these skills. According to Wickramasinghe and Perera (2010), critical employability skills from graduates', university lecturers' and employers' perspectives are problem-solving, team-working and self-

confidence. Employers and female graduates in the study identified positive attitude as an important skill.

Another research suggested that students need more development in basic numeracy and literacy, critical thinking, IT and systems thinking skills (Sulphey, 2015). Additionally, one more study taking into consideration employers' and students' perception of valuable employability skills pointed out that time management, written communication, leadership and handling ambiguous situations were found important by both employers and students (Bhanugopan and Fish, 2009).

Moving to the lists of skills reported by government organisations or non-profit originations, these lists range from surveys and reports to frameworks that communicate employers demands, and skill shortage and employers' satisfaction with graduates' skills. This research reviews some of these lists including the UK Commission for Employment and Skills (UKCES) skills survey (UKCES, 2015), Confederation of British Industry (2009) report, Australian Chamber of Commerce and Industry (ACCI); Business Council of Australia (BCA) (ACCI and BCA, 2013) framework, Chartered Management Institute CMI (2014a) report, and Council for Industry and Higher Education (CIHE) survey (Archer and Davison, 2008).

To provide some context for these frameworks and the main aim of developing them, a summary of each framework is presented. In the case of Confederation of British Industry (2009) report, the authors have listed all the graduates skills that were valued by British businesses and how satisfied they are with graduate applicants work-relevant skills. It focused on the business sector in the UK. The framework developed by Chartered Management Institute CMI (2014a) also surveyed employers to understand their requirements in terms of the key attributes of business graduates. The main aim of the framework was to aid universities in updating their curriculum based on collaboration between industry, employers and HE. Another report is presented by the Council for Industry and Higher Education (CIHE) Archer and Davison (2008) who also asked employers to list the skills that they considered important when recruiting recent graduates.

This study focuses on government and non-government organisations frameworks because they provide a better picture, compared to other stakeholders, of what constitutes key employability skills by concentrating on listing the skills required by employers. On the other hand,

communicated needs of skills reported by employers -discussed previously- focuses on individual needs of each organisation and does not provide a holistic view of what constitute key employability skills for various employers and sectors. Adding to that, the skills reported in academic studies sometimes, rely on skills list provided by governments frameworks and only rank the skills based on students, employers and academics perceptions to compare their views. Thus, they do not generate and discuss lists of skills but test some frameworks in different contexts and from different perspectives. For these reasons, government frameworks were more suited for evaluation and discussion in this study because they mainly focus on key employability skills discussions and provide in-depth information that are potentially more informing than other sources of skills list.

Because each framework represents a different set of skills, all these lists are evaluated, and key employability skills are highlighted based on their occurrence in different frameworks. As presented in *Table 2*, various skills lists are identified based on each framework, and any skill that is repeated in more than one framework is highlighted.

(UKCES, 2015)	(ACCI and BCA, 2013)	(Confederation of British Industry 2009)	(CMI, 2014a)	(Archer and Davison, 2008) CIHE
Communication	**Communication**	**Communication and literacy** **Analysis skills**	**Communication**	**Communication skills**
Team working	**Teamwork**	**Team working**	**Teamwork**	**Team-working skills**
Solving problems	**Problem solving**	**Problem solving**	**Problem solving**	*Integrity*
Knowledge of company, products & services	**Planning and organising**	**Business and customer awareness**	Motivational skills	**Planning/ organisational skills**
Basic and advanced Numerical skills	*Initiative* and enterprise	**Application of numeracy**	Financial skills	**Numeracy**
Basic and advanced IT skills	**Technology**	**Application of information technology**	**Digital literacy**	*Character/ personality*
Mange own feelings and handling those of others	*Self-management*	*Positive attitude*	*self-awareness*	Intellectual ability
Leadership	Learning	International culture awareness	Project management	Literacy
Foreign language		**Foreign language**	Ability to reflect	*Confidence*
		Attitudes/behaviours		Analysis and decision-making skills
Time management				
Customer handling and sales skills			Ability to work across different cultures	

Table 2: Government Frameworks of key employability skills

*Items in **bold** are duplicated in two or more frameworks

*Highlighted in *italics* are attributes with clear links to personal attributes

Evaluating existing frameworks of employability skills in the was the first objective of this study. Conducting a review on existing frameworks of employability skills (UKCES, 2015; ACCI and BCA, 2013; Confederation of British Industry 2009; CMI, 2014a; Archer and Davison, 2008) was determined as the logical starting point. These frameworks consisted of employability skills and personal attributes deemed important for graduates and existing employees across different industries and contexts. The skills and attributes in these frameworks compromised some recurrent skills such as communication, team working, problem-solving, numeracy, IT skills, commercial awareness, positive attitude, confidence, initiative, and motivation. Even though individual job roles require different skill levels and priorities, the frameworks were considered generic across different industries. These types of frameworks may have helped universities to be able to use them in various programmes in all disciplines.

However, these frameworks have many weaknesses observed in this study. Weaknesses include definitions or explanations of individual skills that are poorly defined and ambiguous. This ambiguity of skills definitions issue does not only exist in the evaluated frameworks but also keeps appearing in many studies that investigated the required employability skills in graduates (Male and Chapman, 2005). The exact meaning of skills is open to interpretation, and it proves the difference in academic understandings of the exact nature of employability skills (Bridgstock, 2009). The unclear definitions of skills can lead to problems in assessing and measuring employability skills. For example, how can "Basic numerical skills or Computer literacy UKCES, 2015" be measured? Additional clarity and understanding of skills and attributes are required in any framework of employability skills and attributes.

In addition, when these frameworks provided brief definitions, they have not stated the methodology or steps that were undertaken to define skills. Were these definitions proposed by the researchers? Were they taken from previous studies in the literature? Or were they based on employers' published reports? They just projected these definitions as 'common knowledge' or understanding of what they mean by specific skill sets. Following the same steps as employability skills frameworks, many studies, that evaluated employability skills of graduates, failed to report the methods they used to define skills (if definitions were included in the studies), for instance, did they propose their definitions or did they take it from another research or framework?

Even though these existing frameworks provided lists of key employability skills, methods for assessing these skills were not included in these frameworks. It is essential for all relevant stakeholders involved in developing student employability in universities, including teachers, facilitators, supervisors, career services, programme designers, to be able to use these frameworks effectively to find and measure skills acquisitions. Stakeholders should be able to identify various key employability skills and also to know what these skills mean and how they can be assessed. Having a framework that is more suited for university education and can provide measures to assess whether students have developed specific skills can be of great value to the people involved in measuring employability skills of business students. Not only listing the possible measures is helpful but also highlighting the appropriate methods to assess certain skills and attributes.

A third identified weakness of some of the existing frameworks includes the elimination of personal attributes including the frameworks of (UKCES, 2015; CMI, 2014a) who listed employability skills without the inclusion of personal attributes that are thought to be important by employers. A possible explanation could be that developing and measuring attributes is thought to be difficult (Taylor, 2005). However, the inclusion of these personal attributes into an employability framework would support more accurate mapping and benchmarking processes of employability in HE. Also, it will help recognise the importance of developing specific 'attitudinal dispositions and affective traits' required by employers (Taylor, 2005, P. 205).

Finally, these evaluated existing frameworks are considered outdated, ranging from 2008 to 2015. It is essential to capture and present the current needs and priorities of today's employers, certainly, for the business sector. Technological advancement, especially automation, is changing the skills that employers are searching for in their employees. Additionally, business leaders are facing exceptional risks, disruption and political and social pressures (Brown et al., 2017). It is relevant that key employability skills requirements should be reviewed often to ensure that they represent current needs. Trends from the business profession, such as a change in organisational structures, labour diversity and virtual working conditions, will influence the type of skills that are crucial for business graduates (Z_punkt The Foresight Company, 2014). Thus, the need for an employability skills framework relevant to today's needs and is aligned with expectations of graduate employability stakeholders is paramount.

To summarise, the identified weaknesses of existing frameworks of employability skills in the literature include missing definitions, elaborations and meaning of key employability skills. Lack of objectivity is another issue in some of the frameworks which included brief skills definitions where the methodologies for including certain definitions were missing. Another missing element is the methods that can be used to assess employability skills acquisitions. An additional weakness is related to the exclusion of personal attributes from specific frameworks. Finally, the need for an updated framework that take into consideration current trends in the business world.

2.4.4 Employability assessment and measures

Given that common definitions of employability are relatively ambiguous, it should not be surprising to find that measuring employability outcomes is also difficult. It is easy to find strong criticisms of some of the current methods used to measure graduate employability. As an example, a commonly used measure is the number of graduates able to secure employment within six months of graduation. However, this says nothing about what students have gained from their studies and the extent to which their skills have improved. Measuring employability based on obtaining a job also raises the question of what a graduate-level job really means, and what does it involve? (Dacre Pool and Sewell, 2007). Knight (2001) has debated that the relationship between employability and employment is heavily intervened by uneven access to employment opportunities and preferences of the labour market. Agreeing with this standpoint, Morley (2001) argued that employability has become one of the higher education performance indicators that ignore social factors such as gender, social class, race and disability, and their interaction with employment opportunities in the labour market. In addition, there is a consensus that employability is more than obtaining employment and that higher education providers (HEPs) should not focus primarily on helping students to obtain their first job but support them in building their own careers (Cole and Tibby, 2013).

Since there are many attempts to develop employability in higher education, there is a need to assess skills development in university students. Page and Knight (2007) emphasise the importance of recognising the challenges in assessing employability skills which are considered as *"achievements that cannot be neatly pre-specified, take time to develop and resist measurement-based approaches to assessment"* (p. 2).

On the other hand, universities are gradually requested to include assessment outcomes as employability indicators in quality assurance of education (Green et al., 2009; Kinash et al., 2018). Thus, a popular method that universities can use to measure graduate employability is assessment as a means of learning (Kinash et al., 2018). Theories and designs of assessment have been shifted from primary use to evaluate students for completion and certification to an expanded use to comprise assessment as a teaching tool. Put differently; it is now recognised that assessment can be of learning and for learning, whereby assessment for learning thought to be a new and more influential entry to pedagogy (Akib and Ghafar, 2015). The main aim of assessment has shifted from creating classroom competent students to promoting employment-ready graduates (Lombardi, 2008).

The use of assessment to measure employability of students have been incorporated and evaluated in some of the HE programmes. One of the programmes provided by higher education is work-integrated learning (WIL) programmes which prepare students for the world of work and give them opportunities to apply theory in an authentic industry setting and professional environment (Jackson, 2015). However, because students are incorporating work into their studies, they need to apply a range of employability skills that have to be assessed and evaluated by their academic mentors or workplace supervisors. Jaekel et al. (2011) evaluated assessment tools in WIL in various disciplines and restated the significance of aligning assessments constructively to learning outcomes using assessment methods that support self-reflection and feedback including methods as portfolios, self and peer assessment and checklists.

Some assessment methods for evaluating work-related activities, including employability skills development have been highlighted in WIL literature. However, there is a need to highlight and discuss the current assessment methods for measuring employability skills development in higher education not only in WIL, but also in other programmes as well that incorporate employability skills development activities in their curriculum. More specifically, this study aims to develop a framework for undergraduate business students and the inclusion of possible assessment methods for this context is sought. In addition, linking suitable assessment methods to specific skills and attributes can help academics evaluate these skills and attributes more accurately. For instance, instead of listing all possible methods for measuring skills acquisition, highlighting the appropriateness of each method to measure specific skills or attributes can

support assessors in evaluating employability skills more precisely in programmes that include employability skills courses of activities.

Since there is no agreement on a framework that discusses key employability skills with shared meanings about what they are, and methods for measuring them, this research argues that careful discussion is needed among relevant stakeholders of graduate employability including businesses, universities, government and non-government organisations with an aim to develop a framework of employability skills for business graduates that elaborate on the meaning of these skills and suggested methods for assessing them. This research aims to fill the gap between what employers expect from graduates and what universities can deliver by inviting these stakeholders to participate in a discussion to hear different views on employability skills needed from business graduates.

2.4.5 Employability: what is missing?

Based on the above existing studies, it can be recognised that the existing frameworks although offer multiple perspectives into key employability skills, it is considerably complex to abstractly conceptualise a general key skill employability framework that can be applied in different contexts. For instance, and in line with the purpose of this study, current employability skills frameworks may not take into account the needs and requirements of business students in higher education, and what needs to be considered when developing students' skills. In addition, the development of skills requires suitable assessment methods to evaluate skills acquisition. Discussions of suitable methods to assess skills in the literature were also limited in terms of generalisability, as they targeted specific audiences such as WIL programmes. Therefore, there is a need to conduct data collection for primary evidence that supports unravelling the potential complexities related to key employability skills, and more importantly, contextualising it to business students. This, in essence, addresses the need to answer the following research question RQ1: What are the key employability skills required from business graduates and how can these skills be assessed in HE?

2.4.6. Methods for enhancing graduate employability in higher education

The pressure to produce employable graduates from students, employers and governments has placed employability at the top of the higher education agenda (McMurray et al., 2016). New employability position in higher education results in several initiatives and programmes design funded by the government to support employability skills development within higher education to enhance graduates' employability. One strategy to promote students' employability, including skills and attributes development is the establishment of WIL programmes (Mason et al., 2003). Additional initiatives include introducing new courses, modifying existing course content, responding to employers' requirement, and providing more opportunities for work experience (Cranmer, 2006).

In a study of graduate, the majority of UK graduates had been involved in a twelve month work placement, (Andrews and Higson, 2008). It was found from the study that students who undertook this work placement have benefitted greatly. Placement provided multiple advantages, offering a valuable learning experience in which theoretical skills could be applied to real-life employment. Another study that evaluated the relationship between work placements, in sandwich courses, and the probability of graduates obtaining a job six months after graduation, found that students who took placements as part of their studies were advantaged in the labour market. Additionally, they were more likely to be employed in graduate-level occupations (Mason et al., 2003).

As stated above, work experience can be valuable for students' employability; employers have acknowledged that many graduates do not have the opportunity to participate in such experiences (Andrews and Higson, 2008). For institutions, it means that finding work placements for students can be challenging and time-consuming and sometimes not successful. In addition, not all students want to be enrolled in placements. According to Balta et al. (2012), students who did not take a work placement revealed several reasons for their choice. They wanted to concentrate on achieving a better degree classification. They also wanted to finish their studies as early as possible to enter the job market and start earning a salary. Another key factor that stops them from taking work placements is the fear of application rejection.

To conclude, placement and internship can be valuable for student employability. However, securing placements for students can be challenging, and some students hesitate to enrol in placement and internship as part of their studies. Hence, other methods of developing key

employability skills in HE can be employed to support students' employability development while in HE. One of these methods is the use of business simulation games as a method to enhance the employability of students.

2.5 Business simulation games

2.5.1 Business simulation in higher education

Higher Education has used various methods to enhance the employability of university graduates including placements and internships. As reported earlier, there are some issues related to these methods in HE. For universities to have a wide range of employability enhancement opportunities for students, other methods have been introduced. One of these methods used to enhance graduate employability is the business simulation games in business and management education.

The use of a business simulation game as a pedagogic tool is not new. They are being used in various disciplines such as medicine, engineering, management, and entrepreneurial education. A growing body of literature is evaluating different simulations and their influence on business students learning (Faria, 2006; Keys and Wolfe, 1990).

In terms of their value in relation to developing students' employability, business simulations provide a simulated experience for business students in a risk-free environment of the business world before entering the "real" job market (Tsvetanov, 2015). This can encourage them to make mistakes, learn and develop their skills. It also helps them develop their ability to bridge theory to real-world situations (Tsvetanov, 2015). Thus, it can be of great value, especially for fresh graduates who may lack work experience and exposure to work settings.

This section will begin with defining business simulation, reviewing existing literature about business simulation and its relation to learning. To contribute to this body of knowledge, the study will evaluate a simulation game that is used as a method to enhance business students' employability.

2.5.2 Business simulation definition

When defining business simulation, various terminologies are used, including top management, business simulators, simulation games, macro-worlds/micro-worlds and learning laboratories (Clarke, 2009). It appears that there has always been a confusion between simulations and games even though there has been attempts to clarify the difference between the two. Ruohomäki (1994) distinguished between simulation and simulation game as the following:

- A simulation is a working representation of reality; it may be an abstracted, simplified or accelerated model of a process. It purports to have a relevant behavioural similarity to the original system.
- A simulation game combines the features of a game (competition, cooperation, rules, participants, roles) with those of a simulation (incorporation of critical features of reality). A game is a simulation game if its rules refer to an empirical model of reality. (p. 13-14)

It is worth noting that a simulation is not necessarily a game. In some disciplines such as in operation management research, simulations are regularly used to predict the possible outcomes of alternative scenarios. Simulation games can be used for various purposes as outlined by van Van der Zee and Slomp (2009) that they could support industrial workers find solutions for specific problems, or to familiarise themselves with new working conditions or systems. However, this study focuses on the pedagogical use of business simulation games to teach students how to apply their knowledge and skills in a simulated working environment.

Business simulations have been defined as a representation of the real situation using a simplified simulation model imitating some business situations or processes (Pasin and Giroux, 2011). In a business simulation, participants are encountered with managerial issues and problems, and they have to take their courses of action; by doing this, they get the opportunity to incorporate research, theory and managerial concepts in a practical environment.

A typical simulation session includes three stages, introduction and preparation (briefing), the proper simulation activities, discussion and evaluation (debriefing) (Ulrich, 1997). A business simulation runs for a few simulated periods. Each period represents weeks, months, quarters, or years depending on the type of simulation. The features of simulation games include a

simulated competitive environment in which competing companies are making decisions periodically. These decisions provide the input data for the software package that generates the management information such as the financial reports including profit and loss statements and analysis of sales patterns, which produces the foundation for the next round of decision making (Vos and Brennan, 2010).

Eilon (1963) asserted that business simulation games have three objectives:

- They can be applied as training tools (in which players have to deal with the result of their decisions)
- They offer a general standpoint of strategic functions of business
- They can enhance a player's competence to face changes by offering simulated market trends

A graphical representation of the different types of games and their subset is shown in *Figure 1*.

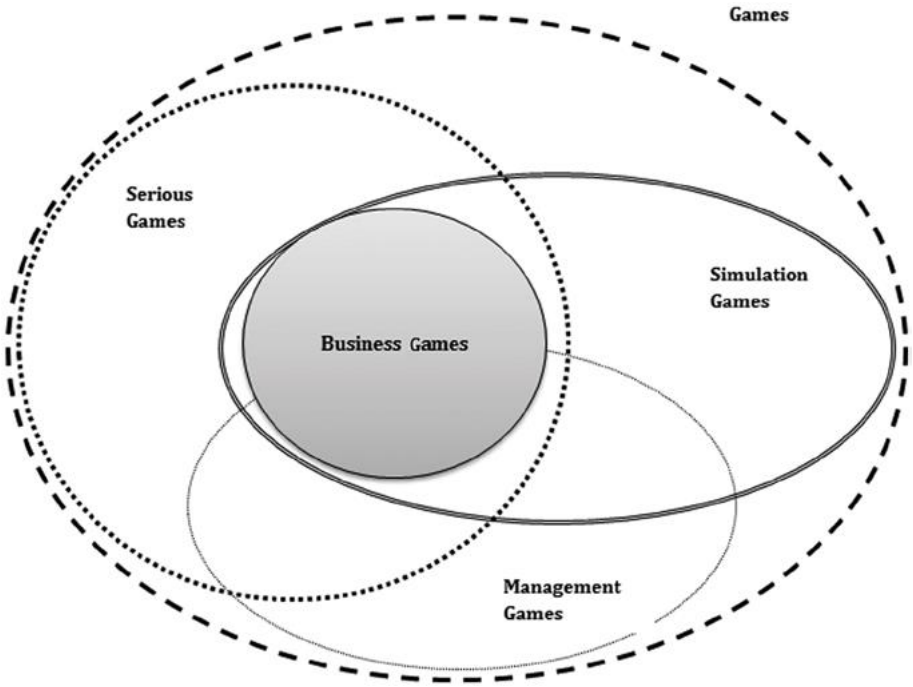

Figure 1: A graphical representation of the set of games and its subsets (Greco et al., 2013, P. 648)

Eilon (1963) was the first in categorising business simulations based on their design attributes as the following:

- total enterprise or functional,
- interacting or noninteracting,

- computer or noncomputer

He also classified them according to their expected use as:

- a part of a general management training program,
- for selling new techniques or procedures,
- for conducting research: for example, on systems behaviour, on an individual's decision-making process and the interaction of individuals within the team.

2.5.3 A brief history and an overview of business simulation

The main purpose of using simulations and games is for training individuals. These simulations origin began in ancient China when they were used as war games in the form of boards (Wolfe, 1993). The modern business simulation game is dated to the year 1956, when the first management simulation called Top Management Decision Simulation, was developed by the American Management Association (AMA) (Wolfe, 1993). That simulation was the first successful and practical business simulation. From that time and according to Craft et al. (1961), the number of business simulation games expanded and by 1961, it was approximated that over 100 business simulation games were available in the US alone and more than 3000 managers had participated in playing them. After the use of business simulation in businesses to train employees, another study conducted in 2004 to evaluate business simulation usage in an educational setting and the authors found that 30% of business school professors use business simulation (Faria and Wellington, 2004).

According to Wolfe (1993), the development of business simulation games was split into four separate stages: creation and growth of hand-scored games (1955-1963), creation of mainframe games (1962-1968), growth of mainframes games and significant growth in business games complexity (1966- 1985), and growth of PC-based games (1984-2000). Due to the rapid technological enhancement, it was believed that another stage has emerged, which is business gaming (1998- present) (Faria et al., 2009).

According to Wolfe (1993) and Faria and Wellington (2004), there are three types of management simulation games: top management games (it involves all aspects of the business and there are usually strategic decisions attached to it), functional games (it focuses on a

specific area or department of the organisation) and concept simulations (it concentrates on certain types of decision). Another classification for business simulation games was offered by Hall (1999) who classified them as total enterprise simulations and other simulations. Total enterprise simulations are related to strategy, appreciation, and tactics. Strategic business simulations put the emphasis on decisions, especially, marketing, finance, operations, and product development. Regarding the appreciation business simulations, they are more about how the business operates, in relation to finance, marketing and operations. Tactics business simulations are primarily concentrating on internal aspects of the business and experience in the daily operation.

In this study, we focus on one type of top management simulation, which helps the students understand the main aspects of the business including, manufacturing, marketing, finance, HR, logistics, international business, research and development and corporate social responsibility. This chosen simulation is a computer-based version that allows face to face interaction between the students. Full detail of the business simulation employed in this study can be found in Chapter 7, section 7.5.2)

2.5.4 Business simulation games and learning theories

Business simulation has been linked to many learning theories that consider learning to be active and collaborative. Active learning theories are attributed to the education philosophy of Dewy, who asked for advanced education models. Dewey (1897) recommended that to train individuals for their future life means teaching them how to use their abilities and how to take command of themselves. Dewey also took a social standpoint on the education role, believing that social interaction forms the basis of education processes. He argues that a close relationship exists between the process of experience and education. A similar pedagogy was proposed by Freinet (1973) who promoted concepts of inquiry-based learning and cooperative learning as the basis of his pedagogy. The works of Dewey and Freinet built the establishment for a new approach in education called social constructionism. In this approach, learning is thought to be an experience that can only be constructed by the student. The emphasis is no action, social interaction and self-determination. Knowledge and skills are not passively taught by the teacher where students are only receivers; instead, knowledge and skills are built and constructed by the students.

This social constructionist approach can be achieved using methods such as experiential learning theory, discovery learning and situated cognition (Levant et al., 2016). These theories can be applied in business simulation games. Even though these theories are relevant to video games and serious games (Kebritchi, 2008), they are also related to the pedagogical foundation of business simulation (Levant et al., 2016).

Business simulations have been considered as a form of experiential learning because the process of creating knowledge depends on self-experience transformation. Kolb (1984) experiential learning model is the foundation of pedagogical applications in higher education. It is a four-stage cycle consisting of four learning steps: concrete experience, active observation, abstract conceptualisation, and active experimentation. For learning to occur, learners must cover all the steps of the cycle. These four stages include:

1- Concrete experience obtained either through real life or in a virtual environment.
2- Reflective observation*:* After the experience, a phase of reflection follows. The experience is recreated internally in the minds of the participants, and its many facets become apparent under different perspectives.
3- Abstract conceptualisation*:* In this step, the experience is compared to existing theories and examined for structures, patterns, and meanings. In this way, abstract concepts and new knowledge are created. Note that knowledge is created in two steps within the cycle: here and in concrete experience. Knowledge from concrete experience stems from an external event, whereas knowledge created by abstract conceptualisation emerges as a consequence of an inner cognitive process.
4- Active experimentation*:* The new concepts lead to new strategies for coping with reality. New experiments are performed consciously to test new knowledge in real situations. These performed experiments lead, again, to new experiences that continue the circle on a higher level of understanding.

Business simulation has also been linked with other learning theories, such as active learning. Research has indicated that the use of simulation games has been found to be effective as a learning tool (Keys and Wolfe, 1990; Strachan, 2016). In these simulations, students are involved in direct experiences. They have to make decisions and experience the consequences

of their actions (experiential learning). Additionally, the students interact with their environment to discover the meanings of the concepts that they are studying on their own (discovery learning|) (Levant et al., 2016). There are many reported benefits of the use of business simulation. Regarding the educational values of it, research suggests that students experience a valid representation of business issues in the real world (Faria, 2006). In the UK, research implies that enthusiasm of students is very positive for business games (Vos and Brennan, 2010) with evidence of increased student engagement compared to lecture-based teaching method (Strachan, 2016). Also, students perceived simulation as an effective learning method compared to case studies (Jennings, 2002) and that simulation bridges the gap between theory and practice (Avramenko, 2012). It also allows players to compare their performance against each other and the real-life data of industry and helps them to reflect upon their actions by ensuring quick and detailed feedback (Musselwhite, 2006).

2.5.4 Developing employability skills through business simulation

Apart from learning, it is equally important for students to be able to reflect upon the development of key employability skills and how these skills can be transferred to the real world. It is argued that business simulation can provide a creative provision of work experience for students across different disciplines (Avramenko, 2012; Vos and Brennan, 2010). Also, business simulation games can help students acquire skills that they need in the workplace (Ahmed and Sutton, 2017; Gonen et al., 2009). As presented in *Table 3*, some of the reported business simulation benefits and limitations as an educational and skill development tool are discussed. It worth noting that these reported benefits included some of what we call in this research key employability skills but because the authors of previous studies have combined benefits, advantages, and skills, it has been reported as" benefits".

Benefits/Limitation	Description	Reference
Benefits: Simplified real-world	Students experience a valid representation of business issues in the real world	(Faria, 2006)
Students' enthusiasm	Enthusiasm of students is very positive	(Vos and Brennan, 2010)
Students' engagement	Increased students' engagement compared to lecture-based teaching method	(Strachan, 2016)
Bridging the gap	Bridges the gap between theory and practice	(Avramenko, 2012)
High effectiveness	Effective compared to other methods of teaching	(Jennings, 2002)
Learning by comparison	Compare their performance against each other	(Musselwhite, 2006)
Experiential learning	Helps them to reflect upon their actions by ensuring quick and detailed feedback	
Skills awareness	Helps students gain skills awareness that they need as graduates	(Doyle and Brown, 2000)
Strategy development	Gives the plyers experience in developing strategies	
Time management	Provide practice of working towards deadlines	
Negotiation skills	Increase the possibility of negotiation among team and across teams of players	
Decision making and team-working	Encourage decision making and team-working	(King and Newman, 2009a)
Quantitative skills	Effective in improving the quantitative skills of students	(Faria and Wellington, 2004)
Problem-solving and critical thinking	Develop problem-solving and analytical skills of students	(Clarke, 2009)
Limitations: Not adequate	Cannot replicate real life	(Strachan, 2016)
Gaming	Students do not take it seriously	Doyle and Brown, 2000)
Model limitation	Application of relevant theory is limited by simulation model	(Faria and Wellington, 2004)
Complexity	Increased number of variables and their relationship is offered by latest simulation	(Anderson and Lawton, 2009)
Culture differences	Business games usually do not allow students from different cultures to learn effectively	(Chang et al., 2003)

Table 3: Summary of business simulation benefits and limitations

More specifically and in relation to the development of key employability skills, it has been reported that business simulation help enhances teamwork skills, communication, computer skills, presentation and report writing (Van der Merwe, 2013). Another study identified learning outcomes from business simulation exercises, and among those outcomes is the development of problem-solving skills in an environment of really complex and ill-structured business problems. The author argued that simulations tackle the missing opportunities to learn 'real' problem-solving skills by engaging students actively in decision making to handle business issues (Clarke, 2009). The author also argued that simulations could help improve teamwork and leadership skills.

According to Strachan (2016), business simulation helps the students increase their awareness and development of employability skills. More specifically, the results of the study indicated that business simulation supported the development of business awareness in students. Another study argued that the use of business simulation could help students' numerical skills as well as their tolerance for ambiguity and willingness to analyse problems (Riley Jr et al., 2013).

Another study considered among the key employability skills some personal attributes that can be developed in business simulation (King and Newman, 2009b). Regarding the personal attributes' category, the authors evaluated two types of business simulations, and one business simulation was ranked highly in self-reliance category which included self-awareness, self-confidence, initiative, and willingness to learn attributes whereas another simulation was ranked higher in skills of problem-solving, IT/computer literacy, flexibility numeracy, business acumen and commitment.

One of the personal attributes that can be developed and deeply rooted in business simulations exercises is reflection. Reflection has been broadly utilised in HE and usually used in experiential and action-based learning (Lizzio and Wilson, 2007). Reflection aims to pride the gap between theory and practice by allowing the individual to create knowledge relying on theoretical and practical knowledge. Students' ability to reflect is directly linked with their ability as future professionals to create alternative decisions when encountered with new situations, similar to the practice they went through when challenged in a simulated environment (Lizzio and Wilson, 2007).

Investigating student perceptions of the business simulation as a method to promote key employability skills and address the graduate skills gap consolidates existing literature in the field of business simulation games (Ahmed and Sutton, 2017; Gonen et al., 2009). This study addresses the identified gap by investigating a specific business simulation game, examining students' perspectives, supported by insights from employability experts to understand the role of a business simulation game in developing key employability skills. The results of this study will complement existing research in the area, including (Avramenko, 2012; Levant et al., 2016; Vos and Brennan, 2010; Strachan, 2016). Filling this research gap is increasingly crucial to

better understand whether business simulation can be considered a method to enhance student employability in higher education.

2.5.5 Business simulation: what is the potential?

As discussed earlier in this section, business simulations may help students develop key employability skills while they are in universities and before going to placements, internships, or employment. It helps them practice and envision what it might be like to work in a business environment. It can also help HEIs to teach students key employability skills that they might need in future employment. It can also help universities to assess whether students are developing certain key employability skills or whether they need further support. Most importantly and for the purpose of this study, the use of business simulation can support contextualising skill development for business students. Also, it can be viewed as an approach to consider students' perspectives as one of the stakeholders of graduate employability.

Evaluating the use of business simulation to enhance graduate employability can potentially inform factors to be considered when developing or assessing students' key employability skills in HE. It can help develop the study framework further by considering students' development in one of the skills development activities provided by universities. It can also help uncover some of the complexities related to the development of key employability skills in HE. This, in essence, addresses the second research question of this study: What is the role of business simulations in enhancing key employability skills of business students?

2.6 Demographic characteristics

The researcher also investigated previous studies that look at some of the factors (like gender, nationality, and work experience) that influence students' perception of their key employability skills development during learning activities.

There are other employability components that might affect employability of job seekers such as, gender, social class and disability with opportunities within the labour market (Morley, 2001). Harvey (2001) and El Mansour and Dean (2016) discuss additional factors, including age, gender, work experience, discipline, and type of HE.

Even though, there are many factors that affect graduates' employability, gender, work experience, nationality were the factors that were decided to be tested in the current research according to the availability of data and the relevance to this study's aim and context. Each factor will be discussed separately.

2.5.5.1 Gender

According to Qenani et al. (2014), self-perceived employability varied between male and female students. Results showed that female students are 50% less likely to view themselves as employable than males. In contrast, Rothwell et al. (2009) found that gender has no significant contribution to participants employability perception.

2.5.5.2 Nationality

While it is not the scope of this project to study culture in detail, what is relevant to this study is that by analysing students' nationality, it is possible to infer whether students are home, European or international, which suggests whether students have English as a first language. This indication might influence on students' skills and attributes development when taking the business simulation module. Clearly, this is not an exact measure, in that some students may have relocated to an English-speaking country, and no detailed data exists as to education background, which may suggest studying languages. It is also worth noting that all students must meet the entry requirement of the programme, including the level of English needed. However, this element of analysis can provide a good indication of a diverse student population, widely different backgrounds, levels of language and culture experience.

2.5.5.3 Work experience

It is widely agreed that work experience is more likely to secure a job than graduates without such experiences (Dacre Pool and Sewell, 2007). The authors also included work experience as one of the essential employability components. Similarly, Andrews and Higson (2008), stated that, participants from employers and graduates in the UK valued formal work experience

greatly. When the effect of work experience on employability was investigated by Helyer and Lee (2014), they reported a positive effect of work experience (internship) on students' employability perceptions. Qenani et al. (2014) underlined work experience as a significant factor that causes a difference in respondents' employability perceptions.

2.6 Research aim, objectives, and questions

Literature has noted that key employability skills discourse has some limitations that need to be explored. It offers an opportunity to explore employability in a new area. Based on the literature review, two main research questions were introduced:

RQ1: What are the key employability skills required from business graduates and how can these skills be assessed in HE?
RQ2: What is the role of business simulation in enhancing key employability skills of business students?

These research questions were supported by the literature review and stemmed from the overall research aim and objectives. To summaries, the research aim is to establish a more tailored approach towards key employability skills development and assessment for business students in HE. This aim has been divided into several research objectives as follows. The rational to support these objectives have also been addressed in the introduction chapter, section 1.5 Aim and objectives.

RO1: To critically review existing frameworks of key employability skills with particular emphasis on their applicability in the Higher Education.

RO2: To develop an overarching key employability skills framework taking into consideration skills, definitions, and assessment methods.

RO3: To evaluate use of business simulation game in terms of enhancing undergraduate business students' perceptions of their key employability skills.

RO4: To synthesise the value of recognising interconnectivity and relationships between key employability skills for business students in HE.

2.7 Conclusion

This chapter was informed by the research questions. In addressing the key employability skills and the use of business simulation to enhance them, this chapter started by addressing the current body of knowledge around employability, skills and different frameworks. In doing so, a number of theoretical perspectives have been explored around the concept of employability, the different views on employability skills and existing frameworks. This review notes that the existing frameworks of employability need further clarity in defining key skills and identifying measures for them.

This chapter also addressed the use of business simulation as a method to enhance employability in higher education. This review discussed the theoretical underpinnings of the use of business simulation as a pedagogical tool, including active learning theories and experiential learning theory. The chapter explored the development of skills through business simulations. This review highlighted the need to evaluate the business simulation game as a proposed method to promote student's employability.

Chapter 3: Methodology

3.1 Introduction

The purpose of this chapter is to explain and justify the methodology and research design of this research. It starts by discussing the philosophical research assumptions and their related research methodologies. It then introduces the overall research design, focusing specifically on identifying the methods used for data collection. Then, it explains each method in detail followed by the data analysis techniques, validity and reliability and ethical considerations.

The methodology and design of this research address the research aim and research questions. As stated in Chapter 1, the thesis main aim is to establish a more tailored approach towards key employability skills development and assessment for business students in HE. Specifically, the research questions underlining the study are:

1. What are the key employability skills required from business graduates and how can these skills be assessed in HE?
2. What is the role of business simulations in enhancing key employability skills of business students?

The rationale for these research questions is the need to further understand what constitutes key employability skills for business students and how these skills can be assessed in HE and to have additional insight by considering student voice and evaluating one of the methods used in HE (business simulation) to develop students' employability.

3.2 Research philosophy

It has been recognised that when a researcher makes a methodological choice and decides how the research is conducted and designed are affected by firstly, the research's philosophical assumptions about ontology and epistemology (Creswell, 2009; Bryman, 2012), and the research problems, purposes and questions (Creswell, 2009). Therefore, there should be a consideration regarding the researcher's philosophical assumptions and what that may bring to a study (Creswell, 2009). This subsection provides an outline of the main points involved in ontology and epistemology and highlights the philosophical underpinning of this study.

3.2.1 Ontology and epistemology

Ontology is a philosophical study of the world or the nature of reality (Creswell and Clark, 2017). From an ontological perspective, all theories and methodological positions make assumptions about what kind of things exist, conditions of their existence and relationships (Lewis-Beck et al., 2003).

There are two different perspectives on the nature of reality:

1) Whether the existence of the social world is independent and separate from reality and is also separate from the humans who are involved, or
2) Whether the existence of the social world cannot be separated from individuals, and that reality is formed or constructed by humans (their behaviours, knowledge and interaction), which indicates that reality can change.

The first ontological perspective is referred to as objectivism and the second perspective as subjectivism or constructionism (Eriksson and Kovalainen, 2008)

The opinion a researcher chooses regarding the reality, and the assumptions about what exists are vital because they influence the answer to the question of how we know what exists in the world. Thus, ontology can influence epistemological claims that are related to how we understand reality.

An epistemology is a theory of knowledge (Creswell, 2009). It represents a view and a justification for what is considered acceptable knowledge in a specific discipline (Bryman, 2012) and how it is obtained and validated (Eriksson and Kovalainen, 2008).

As mentioned earlier, epistemology is shaped by or closely related to a researcher's ontological assumptions (Eriksson and Kovalainen, 2008). To explain, how a researcher views reality has consequences for the ways he/she comes to know about the social world and therefore decides what the researcher considers valid knowledge. For that reason, the two main assumptions of

ontology, objective and subjective, present two separate epistemological views, positivism and interpretivism (Lewis-Beck et al., 2003).

Considering ontological assumptions of objectivism, positivism deal with the social world in the same ways as the natural world (Creswell, 2009). It is an epistemological view that encourages the application of scientific methods to study social reality (Bryman, 2012). To illustrate, positivism utilises scientific methods of enquiry to carry out investigations objectively. Though, it is argued that dismiss the fact that there are subjective individual decisions involved throughout the research process (Johnson and Onwuegbuzie, 2004).

On the other hand, interpretivism considers the ontological assumption of subjectivism. It reveals and emphasises the difference between the two: humans in social science, as compared to objects of natural science. Interpretivism holds the subjective meaning of social action with interpretive understanding (Bryman, 2012). Although, it is argued that sometimes it is not about the views and opinions of different individuals or groups and that there are situations "where subjective and objective realities directly meet and clash" (Johnson and Onwuegbuzie, 2004, P. 16). Johnson and Onwuegbuzie also state that the subjective position of reality can, sometimes, simply be multiple views, opinions or beliefs. Thus, what is argued as subjective reality is not essentially unique. More importantly, they claim that all realities have the capacity for social reality as well as material reality. This is the view that the researcher holds for the current study.

According to the first research question (What are the key employability skills required from business graduates and how these skills can be measured in HE?), the researcher recognises the existence and importance of external and objective reality for the topic under investigation. However, she also recognises the existence and importance of subjective reality from/through people's perceptions of it, particularly when the research includes the collection of differing perspectives. For instance, the identification of key employability skills that are deemed important for business students might be sought from different views; these views can be seen as subjective. On the other hand, identifying measures for these skills although they are based on different opinions, they may be seen as objective because they represent the reality of how these skills are being measured in HE. Thus, acknowledging both realities, subjective and objective are critical to answer the research question.

3.3 Research methodology and its associated paradigm

Starting with the positivism paradigm, quantitative research utilises the scientific methods to study the social and human world (Johnson and Onwuegbuzie, 2004). In contrast, qualitative research comes from an interpretivist or constructivist paradigm (Johnson and Onwuegbuzie, 2004).

There has been a significant debate between quantitative and qualitative research regarding essential conceptual issues, such as the debate around the nature of reality (Bryman, 2012; Johnson and Onwuegbuzie, 2004). On the other hand, it has been encouraged to recognise the predominance of research questions compared with paradigm debate. Instead of strictly following one paradigm and methodology exclusively, a researcher should ask what research is most helpful and when, then works for the particular research problem in their studies (Johnson and Onwuegbuzie, 2004; Tashakkori et al., 1998).

3.3.1 Pragmatism and mixed-methods research

The importance of research questions, in general, has guided a third and separate paradigm: pragmatism (Johnson and Onwuegbuzie, 2004; Tashakkori et al., 1998). This position provides a middle stand between the two different philosophies and methodologies and considers both subjective-objective realities (Johnson and Onwuegbuzie, 2004). Researchers who adopt this position consider truth to be ‘what works’ at the time (Creswell, 2009; Tashakkori et al., 1998). For that reason, they use whatever paradigm and or methodologies that are suitable or appropriate to offer the best understanding of the phenomena under investigation (Creswell, 2009; Tashakkori et al., 1998). Therefore, pragmatists hold a middle position to consider the elements and insights from both quantitative and qualitative research and determine how to take advantage of the two in their research (Johnson and Onwuegbuzie, 2004; Tashakkori et al., 1998).

The research methodologies underlining pragmatism position is a mixed-methods approach (Tashakkori et al., 1998). Researchers using mixed methods try to draw on the strengths and

minimise the weaknesses from quantitative and qualitative methods (Creswell, 2009), and mix them to help answer the research questions (Johnson and Onwuegbuzie, 2004).

3.3.2 Research design for the current study

Considering the aim and research questions of this study, the researcher used a mixed-methods approach combining quantitative and qualitative based evidence in an attempt to understand the complex nature of the topic investigated. The characteristics of the qualitative research of gaining understanding of the world from the perspectives of different groups of people can help the researcher answer the first research question. The researcher can collect subjective meanings and perspectives that might broaden our understanding of the topic under investigation and provide valuable insights that cannot be obtained using quantitative research methods (Creswell, 2014). Within the context of this study, previous studies identified sets of skills that employers value the most by using catalogues of previously defined skills as a method and then asking participants to rank these skills according to importance. This method was criticised as it is argued that relying on previously defined lists can be classified as a supervised method because the analysis is based on referential or portfolio of skills (Suleman, 2018). When using this method of data collection, participants are guided and restricted by the pre-defined list of skills (Suleman, 2018). Thus, to overcome the limitations of using quantitative methods (supervised methods) to investigate the key employability skills, a qualitative method was chosen as a suitable method to answer the first research question. Following the qualitative research, which provides more in-depth enquiry into the research being investigated, the use of quantitative method can be applied in order to further understand the implications of the findings and analysis resulted from the qualitative data. The characteristics of quantitative research that provide objective reality can help this research answer its second research question by testing whether business simulation enhances certain key employability skills. It can help to systematically and objectively collect data regarding participants' perspectives of the skills that can be enhanced through a business simulation.

Based on the nature of this research, the researcher takes the pragmatic position, and adopt mixed methods as the chosen methodology for the topic under investigation. In mixed methods, and according to many scholars, there exist two types of research designs namely: exploratory sequential and convergent parallel. Exploratory sequential design where a first phase of qualitative data collection is followed by a quantitative phase to test or generalise the initial

qualitative phase (Creswell and Clark, 2011). Convergent parallel design where the researcher collects qualitative and quantitative data in parallel, analyse these datasets separately and then integrates the results of the two data phases during interpretation (Creswell and Clark, 2011). This research commenced with identifying the gap using secondary data from existing studies on key employability skills and business simulation. The gap identified showed that there is a need to investigate the key employability skills required from business students, and whether the use of business simulation can support bridging the gap. Consequently, the researcher began with collecting primary evidence using qualitative method, which in this instance, was through the use of Delphi technique. This phase can be viewed, within the context of mixed method research design, as an exploratory sequential design because the phenomenon was investigated using qualitative approach followed by a second phase of primary evidence entailed the use of quantitative method to conduct business simulation using pre-post survey. It is important to indicate that, following the first phase, two parallel data collection methods occurred simultaneously: second round of Delphi technique and pre/post-test of business simulation using questionnaires. Therefore, this can be viewed, within the context of mixed method research design, as a convergent parallel design because the pre-post-tests started after the analysis of the 1st round of Delphi and continued simultaneously with the 2nd round of Delphi. Also, the results of the pre-post-tests were analysed and linked to the results of Delphi. The overall research design, including the two phases of data collection is presented in *Figure 2*. As a result, the research design combined the use of the two mixed method designs, exploratory sequential design and convergent parallel design.

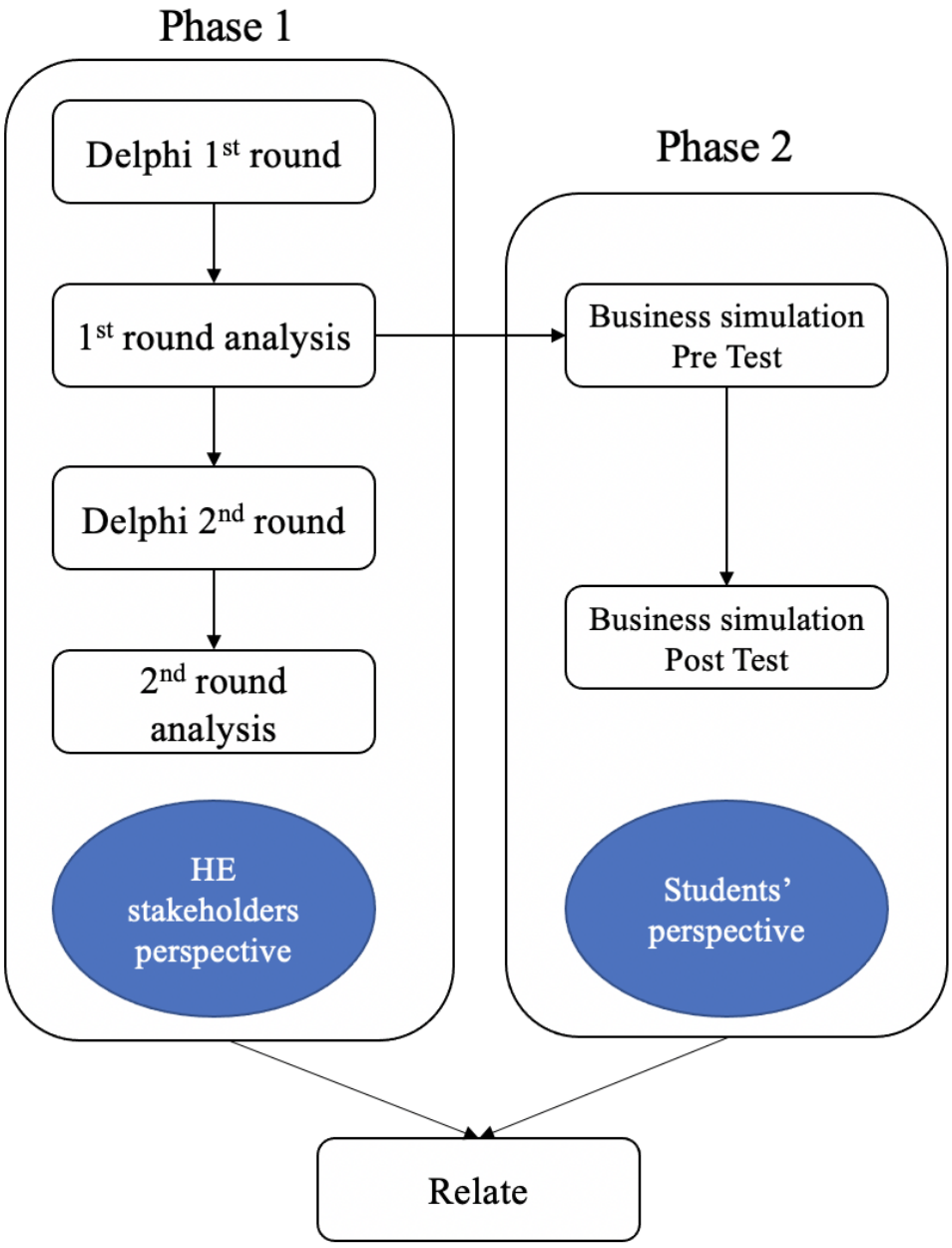

Figure 2: Plan for data collection in this study based on Convergent Parallel Design

As shown in *Figure 2*, Delphi technique is used to gather data from employability experts from different stakeholders of graduate employability, including employers, government, and NGOs and HEIs regarding key employability skills. After the 1st round of Delphi, analysis of the questions related to the use of business simulation to develop the employability of students is used to generate the list of skills that will be evaluated in the following phase. Then, Pre-post-tests method is started by gathering students' perspectives before they enrol in the business simulation. The 2nd round of Delphi and the post-tests of the business simulation have run

simultaneously. The results of pre-post-tests will complement and help explain the findings of the Delphi phase, which will be further explained in Chapter 6: Discussion.

This section introduced the researcher's methodological decisions, the underlining philosophical position, the research paradigm, and adopting of two mixed methods designs. It concludes by illustrating the data collection plan for this research. All these decisions have been summarised in the table below.

Methodological considerations	**Decisions**
Philosophical position	Pragmatism
Research paradigm	Mixed method
Designs	Combination of exploratory sequential design and convergent parallel design
Methods	Delphi technique Business Simulation (Pre-post-test)

Table 4: A summary of the methodological decisions of this research

The following table outlines the research objectives of this study, followed by the relevant research questions, and the methods used to achieve the objectives of the study.

Research objectives	**Relevant research questions**	**Methods**
RO1: to critically review existing frameworks of key employability skills with particular emphasis on their applicability in the Higher Education.	RQ1: What are the key employability skills required from business graduates and how can these skills be measured in HE?	Secondary data using literature review
RO2: To develop an overarching key employability skills framework taking into consideration skills, definitions, and assessment methods.		Delphi Technique
RO3 To evaluate use of business simulation game in terms of enhancing undergraduate business students' perceptions of their key employability skills.	RQ2: What is the role of business simulation in enhancing key employability skills of business students?	Pre-post-tests

RO4 To synthesise the value of recognising interconnectivity and relationships between key employability skills for business students in HE.	RQ1 and RQ2	Analysis of Delphi Technique and Pre-post-tests

Table 5: Methods used to achieve each research objective

Following this introductory section, the first phase of data collection, Delphi technique will be discussed in-depth, followed the second phase of data collection, Pre-post-tests method.

3.4 Delphi technique

This section discusses the Delphi technique. It defines Delphi and the advantages of using it in this study. It discusses the stages of using this technique, starting from selecting experts, to designing and executing the first round and the second round of Delphi.

Delphi technique is frequently used and widely accepted across disciplines. It has been used as a research method in information systems research (Okoli and Pawlowski, 2004), operational research (Vidgen et al., 2017), social sciences (Geist, 2010), and education (Yousuf, 2007). Thus, the use of Delphi is an accepted practice in various research areas. However, it is not widely used in employability studies and especially in HE context. As stated in Turoff and Linstone (2002), Delphi can be employed when there is a lack of statistical methods for the problem under investigation, and it could benefit from gathering opinions of several individuals. It is also a valuable tool when there is no agreement or insufficient knowledge about a specific topic (Powell, 2003). There is lack of agreement on what constitute key employability skills for business students as the evaluation of the existing framework presented different sets of skills (Chapter 2, Section 2.4.2 Employability skills), and further, there is a need to consider different perspectives on the topic, Delphi technique was considered as an appropriate tool for this study.

3.4.1 Delphi history

Delphi method emerged in sets of studies that were conducted at the RAND Corporation in the 1950s. The aim was to minimise the negative influence of group communication and provide the most definitive consensus based on the opinions of a group of experts (Dalkey and Helmer, 1963). Delphi is named after an ancient Greek temple. The goddess of Delphi temple offered a prediction of the future for people who asked for advice (Gupta and Clarke, 1996; Grisham, 2009). Based on its name and origin, it was first used as a forecasting technique that obtains,

processes and draws conclusions from opinions of a panel of experts (Gupta and Clarke, 1996). Delphi technique has become popular in academia after it was introduced in the mid-90s, and researchers have used it in a wide variety of situations and disciplines.

Many researchers used the definition presented by Linstone and Turoff (1975) "a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem" (p. 3). Delphi's key advantage is it to avoid the direct confrontation of the experts (Dalkey and Helmer, 1963). They argue that Delphi seems to be more supportive of individual thinking and helps experts form their own opinion without the group pressure that exists in other forms of group communication. Another advantage of using Delphi is found in a study of Graefe and Armstrong (2011) who encouraged researchers to use it because the Delphi method can produce more precise results than other approaches including nominal groups, face-to-face meetings and prediction market.

Delphi can utilise group interactions' key advantages without the negative elements of social problems embedded within such groups. Four attributes can eliminate such problems and characterise Delphi technique, including anonymity, iteration, controlled feedback and statistical group response (Rowe et al., 1991). These four aspects are discussed as follows:

1. Anonymity

Anonymity is attained by using questionnaires by giving the group members the opportunity to complete the questionnaires in private. It gives them the freedom to express their views without social pressure encountered in face-to-face interactions. It also helps them focus only on the issue's merits while allowing them to change their views without worrying about their status (Rowe et al., 1991).

2. Iteration

Members of Delphi panel are allowed to change their views by showing the structured questionnaire over several rounds. The rounds start with a Generative round where the experts are asked to give their opinions about an issue or a topic. These views are then categorised and presented to the experts in the form of a survey in the second round. Then, the process is iterated two more times (Rowe et al., 1991).

3. Controlled feedback

Controlled feedback happens between rounds when the researcher informs panellists of the views of other group members. This controlled feedback is presented as a summary of group response in an organised form that helps all members to have an input in the process and not just the most vocal members in the group (Rowe et al., 1991).

4. Statistical group response

This is acquired at the final round where the views and ideas are presented with quantitative feedback in forms of descriptive statistics (e.g., mean, and standard deviation).

3.4.2 The approach

Delphi has been used in many disciplines and fields and has been developed over time. Researchers used many alternatives of Delphi method. The main approaches of Delphi are the classic Delphi, the policy Delphi, decision Delphi and the ranking Delphi (Turoff and Linstone, 2002; Rauch, 1979; Schmidt, 1997). These techniques differ regarding their goals and processes even though they share essential features such as feedback and iterative process. In this research, a modified ranking type Delphi was used to collect data on the key employability skills required from business students and how these skills can be measured in HE. Delphi was favoured because of its open-ended first round to allow experts to state their views about key employability skills and methods for measuring these skills in the context of HE. The study was conducted to address the following objective and research question:

RO2: To develop an overarching key employability skills framework taking into consideration skills, definitions, and assessment methods.

RQ1: What are the key employability skills required from business graduates and how can these skills be assessed in HE?

We will address the research question by identifying key employability skills and measures for these skills in the higher education context. Previous academic literature and government reports provided frameworks of key employability skills. However, these frameworks were not

consistent and might not be suitable for HE context. Additionally, they did not provide a clear explanation or definitions of these skills nor methods for measuring them in HE. Thus, obtaining a more comprehensive view requires perspectives from all major stakeholders of employability in higher education, including government, non-government organisations (NGOs), employers and HE.

The aim of using Delphi is to develop a conceptual framework of key employability skills. The framework highlights all the key employability skills required from business graduates and the methods used to measure these skills in HE.

3.4.3 Sampling

A Delphi study does not rely on statistical sampling method that aims to represent a specific population. Instead, it is a group decision method that acquires qualified individuals who have knowledge and expertise of the study subject (Keeney et al., 2011). Thus, the selection of eligible experts for the Delphi panel is one of Delphi's most important phases, because the validity of the findings relies on the knowledge and expertise of the panel members (Clayton, 1997).

There is no one sample size promoted for Delphi studies. The literature reported different sample sizes depending on the subject under investigation, the different viewpoints required and the complexity of the problem (Powell, 2003; Turoff and Linstone, 2002). It is suggested that a sample size of 10-15 participants may be adequate for a homogenous population (Delbecq et al., 1975), as you could imply that the results are generalisable and representative to the larger population. Conversely, for heterogenous population, more subjects are required, and bigger sample size may be needed. Since this research aims to improve the development and measurement of key employability skills for business students in HE in the UK, the sample was homogeneous comprising of people representing different stakeholders of graduate employability in the UK. The ten-to-fifteen panel composition was deemed adequate. These

individuals represent three different stakeholders who are relevant to the employability of graduates, including employers, government, universities and NGO's and HE.

3.4.4 Procedure for identifying experts

Its recommended for researchers who use Delphi to employ selection criteria for recruiting the panel experts such as qualification, publications, geographical location or experience in a specific filed (Keeney et al., 2011). This study used a multiple-steps iterative approach to identify appropriate experts in the field of graduate employability. The first step was about selecting relevant groups and sub-groups to be included before selecting possible experts. The second step involved the formation of selection criteria and a flexible points system to rank potential experts. The third step consisted of populating the list with names and ranking each expert based on the selection criteria. Final step compromised contacting potential experts and verifying their details before their participation.

3.4.4.1 First step: identifying relevant stakeholders

The first step is to identify relevant groups in the field of graduate employability before identifying experts. The purpose of this phase is not to miss any important class involved in the subject study. We identified the most important groups, including government departments, NGOs, employers of recent graduates, and HEIs.

For government departments, we looked for any government divisions that have projects or an agenda that relates to graduates' employability or arises out of graduate employability topics or concerns. In terms of Non-government organisations, we chose a variety of organisations including professional bodies, research institutions, consulting companies, statistics agencies and national bodies. We choose NGOs who deal with employability of graduates and have projects and outcomes related to it. Regarding the employers' side, we choose businesses from the top 100 graduate employers in the UK. A list is issued by The Times (2016) which is released annually and provides a guide to Britain's most sought-after and prestigious graduate employers.

Regarding HE stakeholders, there are three different subgroups working in universities to enhance graduate employability, including career services, academics, including researchers, and educators (teachers). We choose the top 30 universities regarding employability factor in the UK according to the Complete University Guide (20116), to invite for participation from the subgroups of career services and educators. Regarding academics and researchers, we chose journals and conferences that publish and discuss employability in higher education as a platform for choosing academic experts.

3.4.4.2 Second step: creating selection criteria

After finishing the first step and choosing the type of originations, bodies and institutions in every category or stakeholder, selection criteria for all groups of experts were identified. A flexible points system was also introduced to rank experts based on the chosen criterion. Four main selection criteria were used, including qualification, experience, position and influence, and impact. These criteria were adjusted based on each group of experts and how expertise can be defined in that group. Additionally, each criterion has a flexible points system that will likely to lead to a well-qualified and diverse panel with a range of experience.

The points system was designed to have a score from 0 to 10, where 0 is the lowest score, and 10 is the highest score. The same points system is used in each criterion, and the scores are added to a final score for each potential expert. However, the final criterion related to influence and impact has a different point system where any added factor adds three points to the total score. It is suggested that panellists score at least five in the three different categories and at least three points in the influence and impact with a minimum of 15 total points for panellists in order to qualify for participation. Each criterion will be explained separately, including the points system applied.

- **Qualification**

Qualification was introduced as a criterion for selecting experts. It is of great value for selecting experts from HE stakeholder group and specifically, researchers or educators. It can also be applied to other groups such as government and NGOs. The different types of qualifications and the points system are presented in *Table 6*.

Qualification criterion	
0	No qualification
3	Career guidance (vocational)
5	Undergraduate degree
7	Masters or Postgraduate certificate
10	PhD in a topic related to employability

Table 6: Experts' selection criteria- Qualification

- **Experience**

Experience is the second criterion for selecting experts. It is an essential requirement for individuals working in graduate employability in all groups. It is used in many Delphi studies as the main requirement for selecting experts. In this study, the experience is defined differently according to the different groups. For employers, government and NGO's, the experience was identified as years of work experience in an employability related position. Three years' experience was identified as the minimum for panellists. Regarding academics and researchers, the experience was identified by the number of publications related to employability. In terms of educators, the experience was identified based on their teaching experience. All different types of experience and the points system are shown in *Table 7*.

Experience criterion		
Employers, Government, NGOs and HE: career services	**0**	No experience up to 2 years
	5	Three to five-year work experience in employability position
	7	six to nine years work experience in employability position
	10	Ten or more years
HE: Researchers	**0**	No publication related to employability
	3	One to three publications related to employability
	5	Five to nine publications related to employability
	10	Ten or more publication related to employability
HE: Educators	**0**	No teaching experience in employability related modules
	3	Lecturers or teaching fellows who deliver employability modules for one year
	5	Lecturers or teaching fellows who deliver employability modules for three years
	10	Lecturers or teaching fellows who deliver employability modules for five years

Table 7: Experts' selection criteria- Experience for all groups

- **Position**

The third criterion is related to a position or job title. It is assumed that if an expert is in a higher position in a job related to employability, it shows a higher level of expertise in the topic. Each stakeholder group has distinct position types, employers' positions related to graduate employability range from graduate recruiter to the HR manager or CEO. Organised by the stakeholder's groups, all positions and their associated points system are presented in *Table 8*.

Position criterion		
Employers	**0**	Job role that is not associated with graduate employability
	3	Operational level- recruitment department
	5	Medium level - HR manger
	10	Top management level (senior level) (CEO)
Government & NGOs	**0**	Project that is not associated with employability
	3	Member of an employability related project
	5	Manger of an employability related project
	10	Senior manager of an employability related project
HE - Lecturers & Researchers	**0**	No research role
	5	Lecturer
	7	Senior lecturer
	10	Professor
HE - Educators	**0**	No teaching experience in employability related module
	5	Teaching fellow
	10	Senior teaching fellow
HE- Career services	**0**	No experience in career support
	3	Career or placement advisor
	5	Team leader
	7	Manager of a career service department
	10	Head of employability position in university

Table 8: Experts' selection criteria- Position for all groups

- **Influence and impact**

This criterion is related to other aspects that are not included in previous criteria of qualification, experience or position. At least one of the following criteria must apply for experts to participate in the study. Each element adds three points to the total score of the individual ranking. These factors include:

- Invitation to give a speech, talk or presentation about employability at an event
- Having any social media account dedicated to employability discourse in any social media platform
- Owning or creating a website that focuses on employability
- Publication of research that has been used to inform government policy regarding employability
- Author or co-author of a book or a chapter in a book, or a white paper discussing employability
- Owning a consultancy business that is related to employability

- Invitation to participate in a government or non-government project or campaign that deal with employability
- A member of a committee or advisory board that deals with graduate employability

After selecting these criteria and the points system associated with it, these criteria were tested to ensure that only experts in graduate employability are chosen. We identified a sample of 4 already known experts in the field and additional four people who should be disqualified based on the criteria. Then, we ranked them to test whether the criteria are effective in distinguishing between experts and disqualified individuals. Based on this test run, we concluded that the selection criteria are sufficient for the purpose of this study.

3.4.4.3 Third step: populating the list with potential candidates

This step involves gathering bibliographic information on potential experts and nominations for additional experts. Based on the already identified groups and subgroups, we used an EXCEL file with separate worksheets for each group that used the points system to assign a total score to each individual. We started populating the list with potential experts from the top 30 universities, top graduate employers, well-known researchers and experts working in government and NGOs. We used an online search and the LinkedIn platform to find experts. The excel file was populated with approximately 190 potential experts in various groups. Then, we excluded the individuals who did not meet the minimum requirement for participation.

However, not all the needed information was available online and the details of some individuals were missing. Thus, we contacted all experts to make sure that all the needed information for the criteria were available and correct. In this initial contact, we explained the subject of the study and the procedure required for it, including the time commitment for this study. We specified for them the commitment needed for participation, including a 45-minute interview in the first round and up to two additional rounds of questionnaires taking approximately 20 minutes each to complete. Also, we took this opportunity to ask them to nominate others to be included on the list. This provided additional strength to the list, in case, we missed an expert in the earlier stages. These experts can be identified by other experts in the field. This initial contact was done using a survey that was sent by email to all possible experts. Delphi initial survey can be found in Appendix A.

Since this step does not request panellists to participate, we did not invite them to take part. We stated that this is an initial stage of gathering information about them and ask them to nominate other experts. We tracked information about other experts and added them to the list. This initial contact aimed mainly at expanding the experts' list to ensure that it includes as many experts as possible and gather adequate information on experts in order to rank their expertise for the next step. We also ask them to provide their contact information and how they prefer to be contacted if there were chosen to take part in this study.

3.4.4.4 Fourth step: evaluating potential candidates and contacting them

This final step compromised adding the additional names to the lists and ranking their expertise based on the selection criteria mentioned earlier. In this step, we added the additional experts nominated by others and added all required information in the list according to the selection criteria. We also added experts' contact information including emails and phone numbers, arranging for interviews, and sending and returning questionnaires. The total number of experts on the list was 204 potential experts.

3.4.5 Delphi rounds

Although the Delphi was planned to evolve over three rounds, due to time constraints and the fact that the ranking of skills was achieved in the second round, the Delphi process stopped. Also, highly valuable information was collected from the first round.

3.4.5.1 Round one

The first round involved the use of semi-structured interviews. It was considered as a brainstorming session composed of four open-ended questions (Appendix B) where participants discussed key employability skills required from business students and meanings of such skills. They discussed how these skills could be measured in HE. They also considered the use of business simulation to develop the key employability skills of business students.

A qualitative approach for the first round was thought ideal for the current research because the researcher needed to obtain data to gather more in-depth insights and allow a holistic understanding of the topic under investigation.

3.4.5.2 Round two

Round two involved the ranking of key employability skills based on their importance. The skills were identified based on the Round One interviews analysis through a synthesis of opinions gathered from the study respondents. This round analysis was translated into questionnaire items in Round two (Appendix C). Round Two items were organised based on the two of the main themes from Round One analysis. These comprised the two main sections in Round Two: the ranking of the top key employability skills for business students and suggested methods to measure these skills in HE. Participants were asked to rank the key employability skills from one to ten, where 1= is the top key employability skill. Then, they were asked to give their opinions and justifications for choosing the top three key employability skills to understand the reasons behind their ranking and why certain skills were deemed important. After ranking the key employability skills, they were asked to suggest methods that can be used to measure these skills in HE. Since the aim of conducting Delphi was to identify the top key employability skills and methods for assessing these skills in HE, and this aim was achieved at the end of Round Two, and as a consequence, the Delphi process stopped.

3.5 Pre-post-test method

After discussing the Delphi technique and its associated results, this section focuses on the other phase of this research which is the pre-post-tests. This phase aims to evaluate use of business simulation game in terms of enhancing undergraduate business students' perceptions of their key employability skills. A quasi-experimental one-group pre-post-test study has been conducted. This section introduces the method, discusses the study design, including the survey design steps. Further details about the questionnaire focus and phraseology and form of response are also highlighted. The section provides an overview of the research context where the study has taken place including a description of the Virtual Business Simulation Module, type of business simulation deployed, the

scenario of the simulation and assessments criteria. Additionally, data collection points for the pre-post-surveys are included. After the data collection and prior to the analysis, data preparation steps have been undertaken. Following the data preparation, the measures of the selected key employability skills are listed and described.

3.5.1 Use of Pre-post-tests in assessing student learning

One of the most effective tools for assessing students learning from the start of the term to the end is a long-term assessment which aims to track students' progress throughout the term. This method can be quite helpful in evaluating how well a module has met its central goals. It also can help highlight areas of content and instructions that were not as successful as others in facilitating students learning. Long-term or over time assessments range from portfolio analysis, systematic progression of assignments, and pre-and-post-tests (Sumner and Capano, 2010).

Pre-post-test survey is a method to evaluate students' learning from the start of the module until the end. A pre-module-survey can be used to assess the extent of students' knowledge and understanding at the beginning of the module. Then, a post-module-survey can follow at the end of the module. This method can be effective in demonstrating students' achievement over time (Sumner and Capano, 2010). The major advantage of long-term assessment is the ability to control for input factors such as students' prior knowledge (Nusche, 2008). In this research, this method will be used to measure self-perceived key employability skills of undergraduate business students taking a business simulation module. A detailed description of the use of this research strategy is going to be discussed in the study design section.

3.5.2 Implementing a Quasi-experimental design

There are different types of experimental designs in educational research, including the controlled experiment in laboratory conditions, the filed or quasi-experiment and the natural experiment (Cohen et al., 2013). This study uses Quasi-experimental design which has various types. This study implements one of the quasi-experimental forms, which is a pre-experimental design: the one-group pre-test-post-test. pre-experimental design is often used in educational

research to test the value of new teaching method. For instance, this design can be implemented where a researcher has measured a group of students on a dependent variable (O_1) and then proposed an experimental manipulation (X) followed by the researcher measuring the dependent variable again (O_2) and perusing to explain the differences between pre-test and post-test scores by indicating the effect of X (Cohen et al., 2013). This study is aiming to evaluate the use of business simulation module (X) to develop employability skills by testing employability skills at the beginning of the term (O_1) and the end (O_2). The one group pre-test-post-test design can be represented as: Experimental O_1 X O_2

This quasi-experimental one-group pre-post-test research method did not include a control group (without business simulation) because the researcher thought that the business simulation intervention would have a positive effect on the business students, as research indicated, and did not want to prevent any students of participating in such experience. The researcher also wanted to ensure consistency of content and assessment across all the module sessions and for all the students.

Designing an educational intervention study with a control group has been argued as a possible ethical dilemma by authors in the filed on educational research methods (Cohen et al., 2013). This ethical dilemma has arisen because, having a control group of students means preventing an intervention that is believed to have a positive influence on the students in the control group. In addition, because of the nature of field experimentation in the classroom, which happens outside of a laboratory where causes of variance that are irrelevant to the experimental treatment are easier to exclude, and which happens in an environment where participants true random assignment proves to be challenging (Cohen et al., 2013). For these reasons, the business simulation and pre-test and post-test assessments were implemented, and the simulation game was played in teams during scheduled face-to-face workshops. Furthermore, all the module content, assessments and pedagogical methodologies were consistent across all the student groups, reducing the possibility that irrelevant variables such as these would influence the effect of the business simulation.

3.5.3 Survey design overview

The focus of this questionnaire is to collect students' perceptions of their key employability skills. Several steps have been taken to ensure the development of a survey that meets the purpose and the context of this research. These steps are discussed separately as follows:

Initially, a list of key employability skills was created based on experts' opinions in the Delphi study. Experts were asked to list all possible key employability skills that could be developed in a business simulation. They highlighted fourteen different key employability skills as potential skills that can be enhanced using a business simulation. These skills include Communication, Teamwork, Leadership, Problem-solving, Technology/IT, Commercial awareness, Adaptability, Planning and organisation, Numeracy, Time management, Self-awareness, Self-confidence, Dealing with ambiguity and Reflection.

The second step of designing the survey is by looking into previous studies to search for existing measures for the identified skills. Because there are many key employability skills frameworks that focus on a variety of skills and attributes, and there is no single instrument that has all the identified skills in the previous step, this study used a combination of instruments to find the skills measures. Thirteen skills measures, out of the fourteen identified key employability skills were taken from previous studies of employability. Out of these skills measures, there is one measure, which is Commercial Awareness, that was taken from previous research where it has been considered as subgroups of the major theme. For instance, Commercial Awareness has been treated as a part of environmental awareness in the original research. It's worth noting that finding employability skills measures were a challenging task for the researcher, and it shows the gap in key employability skills research in terms of the availability of skills scales published in the literature.

Third, if measures were not found in previous studies, a number of items have been developed in this study. This skill measure was created based on definitions or interpretations of the skill that were found in the literature. For instance, there were no existing measures for adaptability attribute. Thus, available definitions for it in the literature is used to establish measures for it. These definitions were then divided into main elements, and then items were created based on these aspects. For instance, adaptability definition was divided into elements, and each element was considered as an item.

To summarise, there are three types of measures included in the survey, measures that were taken as it is, a measure was taken from major themes in original research (commercial awareness) and a measure that was developed in this study based on definitions in the literature (adaptability). For all types of skills measures discussed in these steps and their sources are highlighted in Appendix D.

3.5.4 Questionnaire focus and phraseology

The survey designed for this research (Appendix E) is organised into two broad sections, the first is about biographical data, and the second is the key employability skills scale. The second section consists of statements to which students indicate their level of agreement, in an amended version of Likert scale of five attitude statements ranging from not at all to very well to indicate their perceived abilities.

The second design consideration is related to biographical data which is included at the start of the pre-survey. The first section of the survey seeks personal information. In specific, unique candidate number, age, gender and nationality. As personal information is sensitive, students are not forced to answer these questions if they choose not to.

The candidate number provides a method of tracking questionnaires due to the fact that the survey was administrated at the start and end of the module. This provides a measure of student key employability skills before taking the business simulation module and after finishing it. The selection of candidate number as a method because it cannot identify study participants identity. Not only the researcher but also the facilitators are not able to identify the students by their candidate number, which ensure full anonymity of the respondents.

In terms of biographical data, age, gender, and nationality have been requested to provide an insight into the composition of students enrolled in this module. Personal data can also serve to identify where trends may exist, for example, is there a relationship between gender or nationality and Key employability skills development.

The survey also requires employment background to collect data regarding work experience. As noted in the literature, employers value work experience, while the business simulation is advocated as a tool to enhance employability. There is a chance here to examine whether work experience has an influence on students' perception of their skills and abilities.

After adapting and developing the items of the scale, several iterations and amendments have been made to ensure clarity and suitability for the purpose of this scale. In order to validate the content, items are worded to reflect the construct. Thus, as self-perceived employability is related to perceived capability, then items are phrased in terms of 'am' and 'can' rather than 'will' and 'may (Bandura, 2006).

The survey has been examined by seven experts in the field of employability, research methodologies and ethics to provide feedback on clarity, language and suitability for the audience. It has been seen by others to identify any potential issues that might arise during the data collection. As a result of this evaluation, there were some minor modifications in phrasing and language to eliminate any potential ambiguity. When items were formed for a different audience in the previous studies, they were modified to address this study population.

To test the effectiveness of the business simulation, groups of students were surveyed twice, once at the beginning of the module and once at the end. There were 12 groups of students, and 157 students took part in the study. It is worth noting that only students who participated at the beginning of the module and also at the end of the module were included in the analysis. Since students were asked to provide their unique candidate number, it is possible to track responses where students have completed two surveys responding at the start and end of the module. Then, these results can be compared, providing an opportunity to indicate any difference between the two data sets. To keep the anonymity of respondents, candidate numbers were only used to identify students who took part in both surveys, and they could not be used to identify students' names.

During the final data collection point, students were invited to participate in follow up interviews to explore in more detail their perception of the value of business simulation in developing their skills and what they have learned from engaging in this module. The aim was

to add additional insight that might not be covered in the surveys. Unfortunately, and due to time constraints, these follow up interviews were cancelled.

3.5.5 Context of this study (intervention)

3.5.5.1 Background and objective of the module

This module title is "Virtual business simulation". It is designed for the second-year business students from all the business school. The data was collected when the module was running in the academic year of 2018-2019 in the second term. Four hundred and three students were registered in this module. The main objective of this module is to enable students to demonstrate the professional skills and abilities needed by managers.

3.5.5.2 Module structure

In this module, there are twenty workshops running at the same time with each workshop representing a 'World'. The students are allocated to groups (Companies), and up to six groups are competing in each world. Within each team or 'company', every student takes a specific operational role, and the roles of students change every seminar to allow students to experience different tasks.

The module consists of four seminars, two hours each. In each seminar, students have to complete two tasks, one hour each. The first task is related to the business simulation exercise, which will be explained next, and the other task involves different challenges in each seminar. For instance, in the first seminar, students are required to answer accounting and finance questions. The second challenge is a group process review where teams reflect on how well they are working as a team. The third challenge is a marketing one where students are required to make two marketing decisions, one related to which segment of the market they are targeting, and the other is about which media they are using for advertising. The final challenge is the decision to export to other parts of the world and a legal dilemma where they have to make a legal decision and accept the consequence of their actions. *Table 9* lists all activities required in the four seminars.

Seminar	Activity
1	Strategy and 2031 Decisions; Accounting and Finance Challenge
2	2032 Decisions; Teamwork Challenge
3	2033 Decisions; Marketing Challenge
4	2034 Decisions; Export and Special Challenge

Table 9: Scheduled activities in each of the module seminars

The other part of the seminars is devoted to the business simulation exercise. At the start of the module, students watched a video clip that introduced the business simulation and explained the simulation scenario. It provided an overview of the product, the market, the competition between the teams, how to read the Result Form and what type of decisions students would need to make in each round. An additional peace of information is also provided to students at the start of the simulation, which is called The Manual. The manual contains further information about key decision areas, including planning decisions of team structure, objective and strategy, First-year decisions, Research and Development (R&D), Production, Finance, Marketing, HR & Sustainability. It also has decision forms where students record their yearly decisions.

During the seminars, teams are requested to discuss and complete a decision sheet for their company, which they then submit at the end of the session. The decisions, which the teams have to submit, cover the main areas of the business, including R&D, Production, Marketing, Human Resources and Finance. Then, tutors of each workshop (World) input teams' decisions into the simulation and in the following session, groups receive a company performance report accompanied by the tutor feedback about their position as a company in the market. This feedback is essential in allowing students to understand the consequences of their decisions in the previous round to help them amend their decisions for the upcoming rounds.

3.5.5.3 An overview about business simulation

This simulation was developed in the 1970s from a paper-based simulation exercise. It was then developed as a computer programme and improved to reach today's version of the software. It is an online type of simulation which requires facilitating from a tutor or a facilitator to enter the data into the system where the system generates all the results. Even though it is an online simulation, Students do not interact with the simulation directly but through a facilitator. This

feature provides the students with the advantage of focusing on making decisions and working together as teams instead of looking into a screen.

The simulation has three different versions depending on the complexity and the number of decisions required. The full version has the broadest set of decisions and a higher complexity level of the simulation. The middle version has a fewer number of decisions and less complexity. This version is used in this module. The simple version where the number of decisions is limited where it can be applied as an exercise in a module where the focus can be on one aspect of business areas such as accounting decisions only or marketing decisions only.

As mentioned before, the seminars are divided between the simulation exercise and the other four challenges. In terms of the simulation exercise, the scenario of the simulation involves students who take over the management of a business, which manufactures domestic robots in the year 2031. This robot is designed to carry out a wide range of domestic chores. During the exercise, companies will have the opportunity to develop the specification of the machine. There are four rounds of decision making, where the first round is considered the planning period where teams have to decide the responsibilities and roles of their members. They also need to choose their objective as a business and its strategy. The primary purpose of the first round is to familiarise students with the process. Thus, they have a limited set of decisions to make, including Production, Wages and Retail price. In the following rounds, students will have to make the full version of decisions. Decision form summary for the four rounds that shows the decisions that teams have to make in each round for all the areas of the business is presented in Appendix F.

The competition in the simulation is team-based competition in which students make decisions and interpret results over several decision years. Their business' performance depends partly on their own proposed decisions, partly on their competitor's decisions and partly on market forces. In the process, students deal with the main business functions of planning, marketing, accounting, product development, exporting and social responsibility. There is no one winner in this simulation, but teams can know if they are doing well or not by checking their profit, cash flow and if they received positive or negative feedback from their stakeholders that are generated by the simulation. Also, the role of the facilitator is to provide feedback after each

round to help students understand their position in the market and interpret some of the results and their implications on their business performance.

3.5.5.4 Assessment

Besides the decisions that students have to make in the seminars, there are three main assessments in this module. The first assessment is divided into two workshop tasks, one for the group and one for individual students, which worth 10% of the mark. The group task requires students to submit their team decision form (four in total) at the end of each seminar. Students also have to write up the results individually in their workbook and submit the portfolio at the end of the term. This portfolio of tasks prevents students from relying on one student to do the work because they have to do the calculations again in their workbook. The second assessment is peer assessment of the contribution of each of the team members and is worth 10%. The third assessment is a group presentation, which worth 80%. It is a 15-minute presentation where students summarise their company's strategy and financial performance, how effectively they worked as a team and what the team learned from this exercise.

3.5.5.5 Research population

The undergraduate level has been chosen for the context of this study due to several reasons. Firstly, many studies related to graduate employability have been conducted within the undergraduate population. Adding to that body of knowledge by testing the effect of business simulation is believed to be beneficial. Secondly, business simulation is mainly used to increase undergraduate employability arguably because it can prepare students to the world of work. For instance, in this research, business simulation module was placed in the second-year curriculum and before the placement year.

There is a range of 12 business programmes included in the sample (*Table 10*). What is evident is the overlap between the programmes, for instance, of the 12 listed programmes, 10 included 'Business', and/or 'Management' in the title. The other two programmes were about the functions of the business, such as Human Resource Management and Finance.

Accounting for Management	Business and Mathematics	Business and International Relations BSc
Business Management and Public Policy	Business and Politics BSc	Business Computing and IT BSc
Business Management and English Language BSc	Business and Sociology	Finance BSc
Mathematics with Economics BSc	International Business and Management BSc	Human Resource Management BSc

Table 10: Undergraduate programmes presented in the study

3.5.5.6 Form of response (paper-based survey)

As noted, study participants are enrolled in a range of undergraduate programmes as part of the business and management education in the studied institution. Students come from different disciplines and levels of experience. Even though, advances in technology make online questionnaires easy develop where electronic data can be easily examined, electronically administrated surveys can be vulnerable to low response rates. Thus, the decision was taken to conduct a paper-based questionnaire in order to promote greater participation.

3.5.6 Data collection points

For the pre-tests survey, data were collected before the first seminar. The researcher took the first fifteen minutes of the seminar to distribute questionnaires, allowing students to answer them and collect the surveys back. For the post-tests, surveys were distributed at the final seminar at the end of the session. A detailed schedule of data collection dates for the pre-post-tests is presented in *Table 11*.

Workshop No.	Pre-tests data collection dates	Post-tests data collection dates
9	28th January 2019	11th March 2019
10	4th February 2019	18th March 2019
11	28th January 2019	11th March 2019
12	28th January 2019	11th March 2019
13	4th February 2019	18th March 2019
14	4th February 2019	18th March 2019
15	28th January 2019	11th March 2019
16	4th February 2019	18th March 2019
17	4th February 2019	18th March 2019
18	28th January 2019	11th March 2019

19	4th February 2019	18th March 2019
20	4th February 2019	18th March 2019

Table 11: Data collection dates for the pre-post-tests

3.5.7 Data preparation

Before analysing the results of the study, the data needed to be prepared and edited first. Data preparation stage was needed in this study for various reasons. First, there was no agreement on a particular scale of the key employability skills in the literature. Thus, these skills measures were collected from various studies in the literature, which resulted in some issues that needed to be solved, including the overlapping between skills measures, skills reliability, and validity. Second, the key employability skills identified in this study were based on a combination of skills that can be developed through different business simulations. Hence, the list of skills needed further amendment to meet the research context and the type of business simulation employed. Third, there was a separation among different employability skills and personal attributes that needed to be addressed before conducting the analysis. All of these points are going to be examined further individually.

The first stage of data preparation started at the design stage of this method. The instrument was designed to measure employability skills development of undergraduate business students. This instrument intended to be a tool aimed to test whether the use of business simulation can develop specific key employability skills. While key employability skills development in higher education has been an area of intensive research, there is a lack of agreement on a list of skills, their definitions, taxonomies, and assessments methods (Suleman, 2016). In this study, the researcher decided to focus on measuring students' perception of their skills development before and after taking a business simulation module. The researcher used the list of key employability skill that can be developed in business simulation generated from the first round of Delphi as discussed in Chapter 4: Delphi findings, section 4.4.2.3 Business simulation. After identifying the list of key employability skills, previous studies that have measured these skills were investigated to search for existing instruments. Both existing and newly created items were placed into an initial questionnaire and subjected to rounds of sorting and adjustment by academic judges to decide which items should be included or eliminated.

The second stage of data preparation was conducted after the collection of the data. Some amendments were made to the selected key employability skills due to the research context. The initial list of skills is presented in the table below:

Adaptability	Planning and organisation
Communication	Problem-solving
Commercial awareness	Reflection
Self-confidence	Self-awareness
Dealing with ambiguity/uncertainty	Teamwork
Technology/IT skills	Time management
Leadership	Numeracy

Table 12: Initial list of key employability skills

After reviewing the business simulation module and knowing the type of business simulation employed in the module, one skill was omitted because it was not used when playing the business simulation. For instance, the type of business simulation used in the module did not involve interaction between students and the software. Thus Technology/IT skills were not required to complete the activities.

Other amendments were made because of the reliability and validity of the scale, and proper adjustments were made to have the most valid and reliable scale. All scale items demonstrated an acceptable level of reliability except for self-awareness skill, which was removed because of the low-reliability score. Scores of reliabilities of the scales will be presented in Chapter 5: Pre-post-tests findings.

Subsequent amendment of the employability skills items was made due to the overlap between some of the skills. The skills overlap was found when reviewing the wording of these skills items and having similar ones on other skills measures. Some of these skills were eliminated due to this overlap. For instance, dealing with ambiguity skills were omitted because they were part of the adaptability measures "I can respond positively to new situations, demands and conditions". Leadership was removed because they were included in the teamwork skills measures "I can lead a team at work or at school". Also, time management skills were deleted because they were part of planning and organisation measures "I am good at managing time and priorities".

As mentioned earlier, because there is no agreement on definitions and measures of employability skills, it caused some validity issues when combining skills from various sources.

For that reason, the validity of the scales was also checked using exploratory factor analysis, and one skill measure was loading on many other skills, this skill is planning and organisation. Thus, it was omitted from the analysis because of the issues of validity. It might be because planning and organisation measure was part of another employability study in the literature that has a different set of skills to investigate, and when it was combined with this study set of skills, it was loading on different factors (skills). The final list of skills that were used in the main analysis of the results are shown in the table below:

Adaptability	Numeracy
Communication	Problem-solving
Commercial awareness	Reflection
Self-confidence	Teamwork

Table 13: Final list of key employability skills to be used in analysis

3.5.8 Measures

For the purpose of this phase of the study, which is to evaluate the role of business simulation in enhancing key employability skills of business students from students' perspectives, several measures of the key employability skills that are going to be tested is established. As identified previously in the literature, there is no consensus on key employability skills required from business graduates, and that few studies have looked into the key employability skills that can be developed in business simulations. Thus, the study started by identifying key employability skills that can be developed by business simulation which were generated by experts from the Delphi first round. After identifying possible skills, skills measures were gathered from various studies in the literature. The combination of different measures generated some data issues that needed to be handled prior to data analysis. Thus, several skills have been omitted. A final set of key employability skills is identified based on the context of this study. Finally, the researcher believed that it is most suitable to present the conceptual framework in this section after explaining all the steps that were undertaken to reach the final set of skills.

After going through a review of the literature and preparation of the data and amending the pre-post-survey, eight different key employability skills have been selected for this study. The aim is to evaluate the use of business simulation in developing these eight key employability skills

from business students' perspectives. It was seen appropriate to divide these eight key employability skills into the two main categories, where communication, teamwork, problem-solving, numeracy and commercial awareness are under employability skills, and adaptability, self-confidence, and reflection under personal attributes. the list of employability skills and personal attributes to be tested are presented next.

1. Employability skills

As mentioned in the data preparation section, a final list of five employability skills is chosen to be included in this study. They are communication, teamwork, problem-solving, numeracy and commercial awareness. This research aims to find whether the use of business simulation develops these five employability skills for business students' perspectives. A detailed description of these skills is included in the literature review chapter, section 2.5.4 Developing employability skills through business simulation, and earlier in this chapter. The following skills are going to be measured in this study:

1. Communication
2. Teamwork
3. Problem-solving
4. Numeracy
5. Commercial awareness

2. Personal attributes

In this section, and based on previous steps in designing this study, three personal attributes are identified to be tested in this study. More details are presented about the development of these attributes in business simulations in Chapter 2, section 2.5.4 Developing employability skills through business simulation2.6 Demographic characteristics. The following attributes are going to be measured in this study:

1. Adaptability
2. Self-confidence
3. Reflection

3. Correlations

Test of correlations was conducted to test whether there is a positive relationship between students' perceptions of employability skills and personal attributes.

4. **Demographic characteristics**

In addition to the evaluation of eight key employability skills, a number of demographic characteristics are going to be included in this study. A detailed discussion is presented in Chapter 2, section 2.6 Demographic characteristics. The following characteristics are related to these three factors:

1. Gender
2. Nationality
3. Work experience

3.6 Data analysis technique

3.6.1 Delphi analysis

There is no standard approach used to analyse data from Delphi rounds. The approach chosen is mainly affected by the aim of the study, structure of the rounds, question types; open or closed-ended, and the number of participants (Keeney, McKenna and Hasson, 2011). Generally, when open-ended questions are used in the first round, a large number of statements may be generated. In order to summarise or compress the data for round 2, one of the methods of analysing qualitative data was used to help identify main themes from the data of the first round. In this study, analysis of Delphi was done between rounds, a process that increases the internal validity of a Delphi study (Okoli and Pawlowski, 2004). Late responses were also accommodated where a participant had promised to fill the questionnaire after reminders and follow up emails. What follows is a description of the steps involved in each Delphi round analysis.

3.6.1.1 Round One

Qualitative data analysis was used to analyse the first-round data, which can be done manually or by using software packages. The latter is beneficial since analysing qualitative data manually is time-consuming and requires reading and re-reading transcripts, establishing a coding process, categorising, and conceptualising the collected data. Hence, using technological development in the form of computer packages should be used to help the researcher with the analysis (Keeney, McKenna and Hasson, 2011). MAXQDA was chosen to analyse the qualitative data of the first round of Delphi. It is a qualitative data analysis tool, which allows qualitative data to be organised and cross-referenced effectively. It provides a platform for integrating qualitative and quantitative data and analysing both types simultaneously. Since this Delphi study has qualitative data in the first round and quantitative survey in the second round, combining the data from both rounds and analysing them using MAXQDA was thought appropriate.

The first-round interviews were analysed qualitatively. All interviews were transcribed by the author. The results of these interviews are presented as three main sections, one related to key employability skills, including their definitions, the second section is about the suggested methods to measure these skills in HE, and the final section is related to the business simulation role in enhancing key employability skills. Each section will be analysed and disused consecutively.

In designing the data analysis, an inductive approach was applied to the data. Inductive analysis is defined as *"approaches that primarily use detailed readings of raw data to derive concepts, themes, or a model through interpretations made from the raw data by an evaluator or researcher." (Thomas, 2003, p. 238).* Three relevant procedures of inductive coding are going to be discussed in this research, including the analytic principles underpin the inductive approach, the characteristics of the developed categories from coding, and the inductive coding process.

Firstly, some analytic principles that underpin the inductive analysis were used in this study, as highlighted by Thomas (2003)*:*

- Data were analysed based on guidance from the study objectives, which specify the domains and topics to be investigated. The analysis is conducted through several readings and interpretations of the original data. Even though the analysis is guided by the research objectives and questions, the findings resulted directly from the analysis of the original data and not from previous theories or models. The role of research objectives is to offer a focused analysis of the raw data.
- The main method of analysis is category development based on the raw data into a framework. This framework compromises key themes and developments recognised and created by the researcher through the coding process.
- The results are generated from the various interpretations created from the raw data by the researcher who codes the data. Unavoidably, the results are formed by the researcher's assumptions and expectations. For the results to be useful, the researcher must decide what is and is not important in the data.

Secondly, the inductive analysis outcome is the development of categories into a framework that reviews the raw data and communicates the main themes and processes. The categories generated from the coding process, which are considered as the centre of the inductive analysis, typically have five qualities (Thomas, 2003):

1. Category label: a word or a phrase that is used to refer to a category.
2. Category description: it explains the meaning of the category, including the main characteristics of a specific category.
3. Data associated with the category: samples of text coded into a category that explains meanings, associations and perspectives related to the category.
4. Connections: each category may have links or connections with other categories. These links may be based on commonalities in meaning between categories.
5. The type of framework in which the categories are embedded: the category system might be consequently combined in a framework or a model. To be consistent with the inductive approach, such frameworks or models indicate an endpoint of the inductive process.

Finally, and according to Thomas (2003), the inductive coding process is explained. The inductive coding starts with close readings of the data and consideration of the various

meanings that are integrated with the data. The researcher then recognises segments of the text that comprise meaningful elements and adds a label for a new category to which the segment of the text is assigned. Further segments are added to the categories to which are appropriate. In the same phase, the researcher may create a preliminary description of the meaning of the category and add a note about the category (for example, association, connection, and proposition).

Various procedures were reported in Thomas (2003) for conducting an inductive analysis of qualitative data are presented as follows:

- Raw data preparation (data cleaning): Format the file of raw data in a common format, for example, font size, questions or interviewer comments highlighted if required. Make a backup of each raw data file, each interview.
- Close reading of the text: once the data has been prepared, the file is read in-depth until the researcher is familiar with the content and has an understanding of the themes and events detailed in the data.
- Development of categories: the researcher recognises and defines the categories and themes where the upper-level themes are based on the research questions or objectives and the lower-level categories are driven from several readings of the raw data. In inductive coding, categories are usually identified from actual phrases or meanings of specific text parts. Multiple procedures may be used for creating categories. Professional software of qualitative analysis can be used to speed up the coding process, especially when there are large amounts of text.
- Continuous revision and modification of the category system: within each category, the researcher may look for subtopics, including conflicting points of views and new insights, choosing appropriate quotations that express the central theme of the category. The categories may be incorporated under an overarching category or linked to another category.

The previous procedures were undertaken in order to place the data collected into meaningful categories. In order to reach the final step of data analysis, firstly, the author has actively read and reread all interview transcripts several times searching for meanings and patterns. The

author recorded her initial thoughts and notes about the data and ensured that she was familiar with the entire dataset before any further analysis.
The data was then organised in a meaningful and systematic way, highlighting ideas about the data and what is interesting about them, thus, creating initial codes from the data. The data-driven focus was on the actual statements of participants.

To generate codes, all skills definitions and elements identified by the interviewees were grouped under each skill. Each skill has its own excel file that was generated from the MAXQDA program with all respondents' statements and codes to be analysed individually. Some skills have one definition, and others have several elements depending on the number of participants that have discussed that skill, the experts' opinions and elaborations. Also, repeated definitions for each skill were mentioned only once. If there are definitions that were not seen as significant, they were omitted, for example, if participants talked about a very specific situation or contexts that cannot be generalised, these statements were not included.

Regarding measures for these key employability skills, all proposed measures by the experts were also coded. In terms of statements related to the business simulation's role in enhancing key employability skills, all statements were coded, and a final list of key employability skills that can be developed by business simulation was created.

Next, inductive coding was used to group the initial codes into categories. For instance, all the identified key employability skills were grouped under three distinct categories. In relation to suggested measures, all identified methods for measuring key employability skills were also grouped under three categories. Additionally, connections between the categories have identified. These connections were found between the key employability skills categories and the measures categories.

In the searching for themes phase, codes were examined, and some of them were clearly fitted together in a theme. Thus, codes were grouped into themes. These upper-level themes were based on the study objectives. For instance, all codes related to defining key employability skills were collated into an initial theme of key employability skills and definitions. Regarding codes related to skills measures, they were gathered under the key employability skills measures theme. The final theme that was recognised is related to the business simulation's role in

enhancing key employability skills development, and all associated codes were linked to that theme. All themes and sub-themes were evaluated for their relevance to the study's goals. The findings of first round of Delphi's are presented in Chapter 4, section 4.4 Delphi Round One.

3.6.1.2 Round Two

Round two results were analysed quantitatively using Microsoft Excel. The analysis resulted in identifying the top ten key employability skills required from business students. The analysis also recognised the most frequently reported methods for measuring these skills in HE. The results of Round two are presented in Chapter 4, section 4.5 Delphi Round Two.

3.6.2 Pre-post-tests analysis

Both Excel and SPSS have been used for analysing the quantitative data. Since the questionnaires were paper based, all the responses were coded and then entered manually by the researcher to an excel file. Then, the dataset was transferred into the software Statistical Package for Social Science (SPSS) Version. The questionnaire data analysis techniques and procedures are as follows:

1. To check the reliability, Cronbach's Alpha was calculated. The coefficient was calculated for the survey.
2. Normal distribution of scales was tested
3. Exploratory factor analysis was conducted to test the structure of the scales and to expose any patterns of cross loading between variables.
4. Descriptive statistics were used to probe the research population.
5. T-test was conducted to evaluate the difference between the pre and post-tests responses.
6. ANOVA was used to explore differences between the groups.

3.7 Validity and reliability

An important issue in any study is whether the instrument is valid and reliable. For pre-post-tests validity and reliability, tests were conducted to ensure validity and reliability (see

chapter 5, section 5.3.3 Reliability and Exploratory factor analysis). For the Delphi technique, this issue is discussed as follows:

3.7.1 Reliability

Reliability refers to the consideration of the stability of the conditions and procedures of the study (Bryman, 2012). Unlike other methods, it is believed that Delphi improves reliability in two ways. Firstly, participants do not have to meet face-to-face because of the Delphi decision making process. Thus, avoiding group bias and groupthink situations. Secondly, as the panel size rises, the reliability of the candidate group increases (Keeney et al., 2011).

3.7.2 Validity

Validity deals with whether a specific instrument accurately measures what it claims to measure (Bryman, 2012; Cohen et al., 2013) and can draw meaningful inferences from the collected data (Creswell, 2009). There are different types of validity. Researchers can utilise different approaches to check and justify the validity of their research methods, and all the methods of validity can contribute greatly to the quality of any research. Two methods of validity are going to be discussed in relation to Delphi, content validity and criterion-related validity.

Content validity refers to whether a measure used adequately reflects and represents the content of the objective concept in question. Face validity is related to content validity but differs as it "*means that the instrument looks, on the face of it, as if it measures the construct of interest"* (DeVon et al., 2007, p. 157). It is argued that Delphi offers evidence of content and face validity based on three main assumptions: firstly, the results develop from group opinion. Thus they are more valid than an opinion made by a single individual; secondly, the process is based on expert opinion from the 'real world' providing confirmative judgments (Cross, 1999). Finally, Delphi's process containing an open and qualitative first-round permits experts to produce scale items and additional rounds give the opportunity to evaluate and judge the appropriateness of the scale (Keeney et al., 2011).

Criterion-related validity is established when a test is shown to be effective in predicting construct criterion or indicators. There are two main types of criterion-related validity: concurrent and predictive, and the difference between the two is the timing. Concurrent validity can be established when a test, conducted at the same time, is correlated with a measure that has been previously validated. Conversely, predictive validity is about using one measure to predicate some later measure (McIntire and Miller, 2006). It is argued that Delphi contributes to concurrent validity because of its iterative approach in data collection, allowing experts to review their responses between rounds as they compare their views to those of others on the panel (Okoli and Pawlowski, 2004).

3.8 Ethical consideration

Ethics refers to the rightness of behaviour; it is about conducting a study in a responsible way (Blumberg and Cooper, 2005). Before starting data collection, ethical approval was requested and granted, from the awarding institution's Research Ethics Committee.

While this step was required to graduate with a doctorate, the process of asking and receiving the approval was also helpful in the planning and consideration of the essential elements in the research design. These elements were considered in the ethics application, starting with a review of the research protocol moving to participant selection and data protection, including seeking consent, confidentiality, anonymity, and data storage.

To demonstrate ethical conduct in this research, areas of ethical consideration were followed (King et al., 1999, updated research). In both phases of the study, Delphi and pre-post-tests, background information about the study including purpose, description and expected benefits of participation were highlighted to the respondents as well as the expected duration of taking part in the study. Participants were assured that their participation was voluntary and that they have the right to withdraw at any stage. A request for consent form and approval was sought from all study participants.

When introducing the Delphi phase and due to the nature of Delphi design, participants' names and contact information were requested in order to contact them in each round. However, they

were assured that their information would only be accessed by the main researcher, and after all rounds are finished, their personal information will be deleted.

Additionally, in the pre-post-test investigation, the right of privacy was considered. Since the anonymity and confidentiality of participants are two approaches to protect participant's right of privacy (Cohen et al., 2013), the researcher assured the participants that all the data would be treated with complete anonymity and would only be used to achieve the purpose of this study. To track the pre- and post-questionnaires, students were asked to give their candidate numbers, and they were informed that these numbers could not be used to identify them. Instead, they are required only for the analysis purpose.

Chapter 4: Delphi findings

4.1 Introduction

This research has utilised mixed methods of data collection to address the research overall aim and objectives. This chapter shows the findings of the first study. The primary aim of this study is to understand what constitute key employability skills for business graduates. It also aims to find definitions of these skills and methods for measuring them in higher education. This study also takes into account the views of experts in relation to the use of business simulation games in enhancing graduate employability. It aims to find the key employability skills that can be developed through business simulations. The findings are drawn from the two Delphi rounds. The results are discussed in stages, firstly, the description of participants, the results from the first round and lastly the findings from the second round. Findings are summarised to highlight the key points, before moving on to pre-post-tests findings and discussion chapters.

4.2 Presentation of the findings

Since the findings of the first round are qualitative, the analysis will be done using inductive analysis, whereas descriptive statistics are going to be used for the second round of Delphi results since it was conducted quantitatively.

After this introduction, the first section discusses the panel exerts profiles, including sample size and characteristics of participants. The second section presents the qualitative analysis of the first round discussing key employability skills and their definitions, suggested methods for measuring them and finally, the key employability skills that can be developed through a business simulation from the experts' points of view. The final section shows the quantitative results of the second round of Delphi, including the top-ranked employability skills and the suggested methods that can be used to measure these skills in higher education.

4.3 Panel Expert Profiles

Fourteen experts were interviewed face to face, by telephone or skype. Experts were from different stakeholders' groups and in varied positions across organisations and sectors. As

presented in *Table 14*, the majority of the panel members (10 experts) were working in higher education institutions (including academics, career staff and managers), two experts in government and NGOs and two experts working with employers. The low numbers of experts in employers or government and NGOs groups can be reasoned by the inclusion criteria which perhaps can limit the population size of experts who can participate in the study. For instance, a criterion such as years of experience and working in positions related to graduate employability can in itself be considered as complex criteria to meet by majority of employers. For example, a number of potential candidates were excluded because they did not meet the criteria of experience or position. These eliminated candidates did not have the minimum requirements of experience (2 years) or did not work in positions related to graduate's employability.

Regarding some of the experts scores in the inclusion criteria, Of the 14 panel members who participated in the first round, 11 score 10 points for the experience of working in employability related job. Elven of respondents score 9 or 10 points for their influence and impact scores. Regrading position/job title scores, 9 of participants have 7 or 10 points. Nine of the panel members have postgraduate qualifications, five participants holding a PhD-level degree and four participants a master's-level degree. The full inclusion criteria of experts in the Delphi study are reported in Chapter 3, section 3.4.4 Procedure for identifying experts.

Number of experts [14]	Stakeholder group
2	Government & NGOs
2	Employers
10 **4** **3** **3**	HE: - Academics - Career services - Management (Head of school and Dean)

Table 14: Sample characteristics of Delphi study

4.4 Delphi Round One

4.4.1. Introduction

The first round is intended to help uncover the currently required key employability skills from business graduates, including definitions and elements or reported skills and suggested methods for measuring them in HE. It is also aimed to interduce and list the key employability skills that might be developed in business simulation based on experts' opinions. The interview guide was divided into three main parts, as follows:

Part one: A discussion around the key employability skills required from business graduates, and definitions of these skills.

Part two: The methods and assessments that can be used to measure these key employability skills in HE.

Part three: The role of business simulation in enhancing key employability skills of business students.

4.4.2 First round presentation of the findings

The first round Delphi analysis, including the coding and the steps undertaken to analyse the data were all discussed in Chapter 3: Methodology, section 3.6.1.1 Round One. Three main themes were identified based on the research questions and objectives. These themes include

- identifying key employability skills required from business students,
- identifying methods to measures these skills in HE, and
- discussing the role of business simulation in enhancing key employability skills of business students.

To summarise the main themes identified in the first round, key employability skills and definitions theme are discussed according to three categories of employability skills, personal attributes and career building skills. Regarding suggested methods for measuring key employability skills theme, these measures are discussed according to the role of three stakeholder groups of students, HE and employers. The final theme explores the role of business simulation in enhancing graduate employability. The themes, sub-themes and categories are identified in *Table 15*. Each of these themes is going to be discussed subsequentially as follows:

Theme	Sub-theme	Categories
Key employability skills and definitions theme	Employability skills	Recording and defining twelve employability skills
	Personal attributes	Recording and defining eleven personal attributes
	Career building skills	Recording and defining two career management skills
Suggested methods for measuring key employability skills theme	Roles of different stakeholders in assessing employability skills acquisition in higher education	Role of individuals (students)
		Role of higher education including different parties: educators, programme leaders, career offices and the employability enhancement opportunities provided in HE
		Role of employers
The role of business simulation in enhancing key employability skills of business students	Key employability skills development in business simulation	Identifying a number of key employability skills that can be developed through business simulations

Table 15: Themes, sub-themes, and categories of Delphi first round results

4.4.2.1 Key employability skills and definitions

This section presents the findings that are related to identifying key employability skills and their definitions. Three categories of key employability skills are recognised: employability skills, personal attributes, and career building skills. The researcher discusses the identified skills based on these categories. To differentiate between these three categories, these terms are defined in the table below, and then these definitions were used to locate each skill into its related category.

Term	Explanation
Employability Skills	skills are commonly defined as: "ability to perform a specific task" (ACCI/BCA, 2002, p. 5)
Personal attributes	Personal attributes or qualities are defined as: "those capabilities of an individual in most instances although "characteristics" is sometimes used to describe a workplace/job-specific requirement" (ACCI/BCA, 2002, p. 5)
Career building skills	the skills relating to finding and using information about careers, labour markets and the world of work and then locating, securing and maintaining work, as well as exploiting career opportunities to gain advancement or other desired outcomes. (Bridgstock, 2009, p.37)
Definitions	The definitions are the aspects of the skill that the experts identified as important. The mix and priority of these definitions would vary from job to job. The list of definitions is not exhaustive but rather reflects the information provided by the experts interviewed for this study. The list of definitions is indicative of the expectations of business students. The level of complexity in the use of the definitions will depend on the job level and requirements.

Table 16: Identification of the three different categories of key employability skills

In this section, key employability skills identified by the experts are going to be defined and discussed individually and according to the categorisation of the key employability skills presented in Table 16. These key employability skills required from business graduates are categorised in this study as employability skills, personal attributes, and career building skills. The separation between employability skills and personal attributes is found in previous studies of employability skills to differentiate between personality treats and skills. For example, this separation is found in two different frameworks of Yorke (2006) and ACCI ACCI/BCA (2002). However, the inclusion of career management skills was not found in previous frameworks of employability skills. Even though these skills were missing, the experts in this study have included them as part of the key employability skills that are required from business graduates. Thus, when these identified skills are categorised, the three definitions are used to judge its category.

Finally, based on all the identified key employability skills, this study has established the Key Employability Skills Framework that contributes to business students' skills development in

HE. This framework represents these key employability skills that experts view as critical. Finally, there are some important aspects that underpin the development of this framework.

- The framework is identified by experts representing different stakeholders of graduate employability.
- Experts have identified employability skills, personal attributes and career building skills and indicated that these are needed as part of the skills set.
- The priorities of these key employability skills and their respective elements differ from company to another and subject to the context of the job level and requirement

In terms of the key employability skills identified by the study experts, there are a number of skills and attributes that were only mentioned by one or two experts, which were also included in the framework. They were part of the findings because of the Delphi design that recruits only experts of the field to be part of the study. Hence, each expert opinion is considered valuable, valid and is added to the discussion. As mentioned in Chapter 3, section 3.4.4 Procedure for identifying experts, Delphi experts were chosen based on rigorous criteria to ensure their knowledge and expertise in this area. Key employability skills that were identified by one expert are underlined in *Table 17*.

Category	List of key employability skills
Employability skills	• Communication skills • Teamwork • Problem solving • Commercial awareness • Leadership • Technology/IT • Planning and organisation • Customer focus • *Dealing with ambiguity* • *Ability to apply* • *Numeracy* • *Time management*
Personal attributes	• Resilience • Self-awareness • Ability to learn quickly • Creativity and innovation • Motivation, open-mindedness and positive attitude • Adaptable and able to fit in • Emotional intelligence • Self-confidence • *Honest/ open* • *Reflection* • *Culture and moral awareness*
Career building skills	• *Preparation and professionalism* • *Networking*

Table 17: Categorisation of key employability skills into employability skills and personal attributes

* skills in italic are listed by one expert only.

4.4.2.1.1 Employability skills

The first category to discuss is employability skills which include thirteen employability skills that were reported by experts including Communication, Teamwork, Problem-solving, Commercial awareness, Ability to learn quickly, Leadership, Planning and organisation, Technology/IT, Customer focus, Dealing with ambiguity, Ability to apply, Numeracy and Time management. The list will start with the skills that have many elements associated with them to the skills that have few reported definitions. The first employability skill to tackle is communication:

1. **Communication skills**

Communication skills are key skills for business graduates to acquire in the workplace. Graduate jobs require the ability to communicate effectively both verbally and in writing. It is one of the main skills that was listed by almost all experts. It has four subcategories associated with it. It includes oral communication, written communication, body language and general skills that can be applied to all types of communication.

- **Oral communication**

The first part of communication is oral or verbal. Graduates are required to be proficient in oral communication skills so that they function effectively in the workplace. Experts highlighted the importance of oral communication as the most important communication skill for graduates to acquire.

> *"Very well-developed written communication is not as important as other types of communication skills such as verbal communication that is probably more important."*
>
> - Interviewee 1

Oral communication can be defined as the ability to exchange information verbally with others. Various types of oral communication have been identified, including presenting, listening, and

conversing. Additionally, communicating orally clearly and concisely and to suit different audience as well as differentiating between various forms of oral communication were identified. The first three skills of communication were discussed in oral communication model of Brink and Costigan (2015).

The first oral communication skill is presentation, which can be defined as the ability to convey a message to an audience. When making oral presentations, there are four core skills (organisation, structure and content, delivery and practice) that are needed to make a good presentation.

> *"The ability to present yourself to convey a message clearly and articulately to the people, to an audience."*
>
> - Interviewee 2

In terms of the four main elements of presentation skills that are highlighted by the experts, the first element is planning and organising.

> *"It's about planning, I think there are very few people that can do things off the cuff and do it well and often people that we think have done it off the cuff haven't, they planned it beforehand. So, I think in order to do a good presentation, again, you need to plan it well."*
>
> - Interviewee 3

When presentations are well planned, it can help maintain audience attention, organise the main points in a coherent manner as well as thinking about introduction and conclusion to the topic (Alwi and Sidhu, 2013; Kerby and Romine, 2009)

The second element of good presentation is to think about the structure and content of the presentation. For instance, understanding the topic of the presentation, the inclusion of well-researched supporting materials and ability to provide suitable and rich content and the ability to make clear conclusions (Alwi and Sidhu, 2013; Kerby and Romine, 2009).

"When doing a presentation, students should think of what structure should they use."

- Interviewee 12

"As a student, you need to know what you are going to say, thinking about what are the points that I need to get across, what these people need to know about the time I finish this presentation."

- Interviewee 3

The third key for good presentation is to think about delivery. Delivering presentations is not just about communicating verbally, but it also involves using body language, eye contact, visual aids and audience awareness. Graduates should be able to deliver presentations in a professional way and engage the audience. For instance, using verbal communication in the presentation includes enunciating the words clearly and using tone of voice.

"It is about verbal communication skills."

- Interviewee 5

It is also about making eye contact, facial expressions, body language, posture and gestures to enhance the presentation (Kerby and Romine, 2009).

"To have that posture that body language, that they can have eye contact with people and not to be scared."

- Interviewee 12

Visual aids are another important part of delivery. It includes the use of PowerPoint or any other programme to support the presentation content and have the confidence to operate it.

"I think, the use of different media. Infographics, PowerPoint, how do you use PowerPoint to support your presentation so that it is not overpowering."

- Interviewee 5

"They need to have some technical knowledge about PowerPoint or whatever they want to use and have the confidence to operate it."

- Interviewee 12

The final delivery skill is audience awareness and the ability to increase audience involvement and understanding.

"It's about thinking about your audience. Good presentation takes into account the audience and what they need to know and do it well. Do your presentation and come across in such a way that people want to listen to you"

- Interviewee 3

"You need to know who you are speaking to, you need to address your audience, your target in an appropriate way."

- Interviewee 5

The last recommendation by experts to develop presentation skills is to practice. Graduates need to have time and opportunities to practice their oral presentation skills (Alwi and Sidhu, 2013).

"So, I think in order to do a good presentation, again, you need to practice it."

- Interviewee 3

The second oral communication skill is listening, which can be defined as the ability to listen actively to other people as well as understand information and follow instructions.

> *"Listening can be about listening to people that you work with, it can be listening to people you have responsibility for, it can be about listening to those who supervise you, and it certainly is going to be about listening to customers, clients, whatever that might be as well."*
>
> - Interviewee 3

Thus, listening is required in the working environment, and graduates will need to have listening skills to communicate effectively with their colleagues, supervisors and customers.

The third oral communication skill is conversing. Experts identified that as the ability to have real conversations with others whether they are colleagues, team members, managers or people who have not met before.

> *"People that are happy to get out from their desks and have a conversation, also with colleagues or people who haven't met in a business context by sending email and expect an answer. Most companies do not want to overload people with electronic communication. So, having people who are happy to meet people and have conversations and make connections with others. That's quite important, I think."*
>
> - Interviewee 1

> *"So, I hope I don't sound like an old person now. The long times that we are living the digital, the social media, the WhatsApp, the mobile phone, they all take priority over somebody just popping in and saying hi, I am Justin, and I am coming for five minutes to talk to you about this."*
>
> - Interviewee 9

Another oral communication skill is about communicating in a clear and concise manner (Jackson, 2014). It is defined in this study as the ability to speak clearly, fluently and in a compelling and confident manner to both individuals and groups.

"Speaks clearly, fluently and in a compelling manner to both individuals and group."

- Interviewee 10

An important element of oral communication to consider is the audience. Thus, another element is defined as the ability to speak and adapt to different audiences, retain audience attention and use different communication approaches suitable for the audience or the situation.

"Communication skills would be the ability to speak to different audiences. So, to choose the words according to the audience, you address."

- Interviewee 5

A final point regarding oral communication is the ability to distinguish between different forms of oral communication including telephone or real conversation, presentation or meeting discussions. The difference between having real conversations and presentation skills are highlighted previously. Being able to participate constructively in a meeting is an additional oral skill that can be added to the other forms of communication (Jackson, 2014).

"The ability to use different means of communication, so the ability to use or have a decent phone conversation or to present something or to communicate in a meeting."

- Interviewee 5

To conclude, graduates are required to develop oral communication skills, including presentation, listening, the ability to have real conversations with people. They also need to enhance their language abilities to suit different audiences and use different forms of communication as required.

- **Written communication**

Different elements of written communication were listed, including the development of writing skills, the suitability of writing style to different contexts as well as various communication forms. The first point that was mentioned by experts is the writing skills needed by graduates. Some responses centred around writing basics including clarity, sentence structure, grammar and style.

> *"You need to write clearly, I guess with writing as well personally for me I also think it needs to be well written, certainly for business communication, you expect people to be using grammar, structuring sentences well. Or as you can get away with a little bit less obviously verbally. But certainly, for written communication, for me that's important, and that obviously adds to the clarity as well."*

- Interviewee 3

Some comments were about asking graduates to differentiate between academic and professional written communication (Moore and Morton, 2017). Graduates are advised to think about the context and use of appropriate language to communicate effectively. In business communication, graduates should write in a professional way according to the employers' context.

> *"There is a particular language, there is a particular expectation. Those students should be prepared to learn, what are the professional requirements, and the types of reports that they might be required to write and how can we bring that into the curriculum. So, we need to do our best job for preparation."*

- Interviewee 10

Another skill that students need in written communication is the ability to distinguish between different forms of written communications, including reports, emails and documents.

> *"Students need to compile documents that are concise and easy to understand, write reports that are well presented."*
>
> - Interviewee 10

> *"Sometimes emails coming from students, and colleagues get awry about the lack of structure, and clarity and use of language in them and the lack of formality where appropriate."*
>
> - Interviewee 11

Teaching students about different forms of writing that are different to academic writing is encouraged to develop a full range of writing skills that are suitable for different contexts, especially in the workplace.

Taking all these elements into account, written communication is required by employers and graduates should have these important elements to develop their communication skills, including the ability to write adequately, taking into consideration the required language and the different contexts as well as various communication forms.

- **General communication skills**

There are some definitions of communication skills that could apply to either oral or written communication, these elements were grouped under general skills. They include thinking and analysis, considering culture, country and context, ability to differentiate between formal and informal communication and technological fluency.

Critical thinking

Before communicating with others, graduates need to think critically about what they want to communicate about, determine the most suitable way of communicating the message and plan how to achieve it.

> *"It is to be able to design what the most appropriate medium by which to convey that message, is it written, is it oral, is it through social media kind of thing, video, telephone, you need to be able to determine first of what is the most appropriate medium, and that might come down to the immediacy in which you need to get a response to the message you are conveying"*
>
> - Interviewee 7

> *"Communication is thinking what your end result is, what your end goal is, working back from it and then planning how to achieve that."*
>
> - Interviewee 9

Thus, communications skills involve the use of critical thinking skills, before communicating that act as planning for what needs to be said or written and how to accomplish it for communication to be effective. Supporting this finding, one study found that written communication can enhance critical thinking and problem-solving skills (Larkin-Hein, 2000).

Intercultural communication

Since the internationalisation of business is increasing as well as the multicultural working environments, business graduates should develop intercultural communication skills to be able to communicate across cultures. It can be defined as the ability of individuals to communicate effectively across cultural boundaries (Daly et al., 2015).

> *"If you are talking and you can see that I am not interested, some moves and expressions in countries mean relevant and integrity and in other culture means lack of respect. So, you need to know about the culture and country you are working in and apply the right and suitable communication in that context."*
>
> - Interviewee 8

Digital communication

Since communications nowadays are often done by the use of technology, digital communication is also necessary. Experts indicated the need to use telecommunication such as Skype, emails and others to communicate effectively in the business world.

> *"The ability to use more digital forms of communication. To be able to use Skype or other forms of telecommunication."*
>
> - Interviewee 5

To conclude, communication is a significant skill that has many elements associated with it. It includes oral, written communications, listening skills and body language. It also has many other general skills that can be applied in all forms of communication, including verbal and written communication. Thus, developing communication skills for business students should take into consideration the various elements associated with it.

2. Teamwork

There are several reasons to consider teamwork as an important employability skill for recent graduates. The increasing use of teams in the workplace is hard to ignore. It is a skill relevant to any profession especially business professionals (Halfhill and Nielsen, 2007) It has been defined in this study as the ability to effectively work with other people to successfully perform a task. It involves communication, planning and task coordination, performance management and conflict resolution.

Communication can be heavily used in teamwork. Graduates should have good communication skills, including verbal communication and listening abilities, to perform well in teams.

> *"Teamwork is the ability to listen to others and understand others and be critical in understanding what people are trying to say."*
>
> - Interviewee 8

It also involves planning and task coordination. It helps coordinate information and activities. Graduates should learn how to define the individual and shared responsibilities in the team. It also involves recognising situations that require collaborative problem-solving skills. Additionally, students should learn to assign roles and tasks to ensure an equal workload.

"Strong team-working is the ability to interact with different people effectively to successfully perform a task in a given situation."

- Interviewee 2

"A good team worker will share both problems and the praise with the team. it's about being prepared to help out others, make new suggestions and listen to other people."

- Interviewee 3

An additional teamwork skill is the ability to manage team performance. Graduates should learn how to establish team goals, monitor and provide feedback on the overall performance of the team and performance of team members.

"It's about trying to ensure that everybody is included and recognise that you all do work together to achieve whatever goal you've got to achieve."

- Interviewee 3

"*Teamwork is the ability to get things done with people*."

- Interviewee 4

Conflict resolution is a necessary skill to work in a team. It involves the ability to persuade and negotiate with others and manage conflict when it occurs. It is also about trying to have good relations with all team members.

"Teamwork is working with other people, managing outputs, persuading, and conflict resolution."

- Interviewee 6

Many elements of teamwork skills are introduced by experts. These skills of communication, planning and task coordination, performance management and conflict resolution are identified in previous studies including the research by Halfhill and Nielsen (2007) who looked into many soft skills including teamwork skills in management education.

3. Problem solving

The skills of problem-solving and critical thinking have been used interchangeably by experts when defining the concept. In addition, previous studies have used them as one concept, for example, when defining critical thinking skill, problem-solving and decision making were part of the definitions (Zaharim et al., 2010). It has been defined as the ability to reason, analyse, diagnose and make decisions (Jackson and Chapman, 2012b).

Based on the analysis of experts' opinions of what constitute problem-solving skills, several elements are introduced. These elements include problem identification, thinking about time, resources and context, evaluating information sources, questioning assumptions, analysing the problem, identifying alternative solutions**,** and finally solving the problem effectively. Each element will be explored individually.

Problem identification

The first element is the ability to fragment the problem into its main components.

"Ability to identify what is the problem in the first place."

- Interviewee 1

"Identify the main component of a problem."

- Interviewee 10

Thinking about time, resources and context

The second part is about breaking the problem into elements, thinking about the context, and resources needed to solve the problem.

> ***"****Working out what it is important in that problem context, and you need resources to be devoted whether it is time or any other type of resources, maybe some technology, or business that the company currently doesn't have, but you have to make a case of why you need it."*

- Interviewee 1

Evaluating information sources

The third aspect is considering various sources of information and differentiating between good and bad sources. It is about evaluating the information in hand and its source to make sure it is reliable. Also, it involves breaking down and identifying key information and analysing it to solve the problem.

> *"And it could also be about somebody gives you a piece of information which before you take that somewhere else, it might be a question of well, let's have a look at that information, let's think about the source, where did it come from? How trustworthy is that source? Do you know what I mean?"*

- Interviewee 3

> *"To problem solve is analyse facts or information looking for trends and break down data and identify key information"*

- Interviewee 10

Questioning assumptions

One of the important problem-solving elements is the ability to question assumptions. Questioning the established ways of doing things is important in the world of work.

> *"The ability to question assumptions underpinning things, to think of alternative ways of doing things or improving things, so the idea of critical questioning, critical analysis is really important."*
>
> - Interviewee 11

Analysing the problem

Analysing the problem systematically and critically is a vital component that is required to reach the best solution possible. Analysing the problem refers to deciding which elements of the problem to tackle in order to offer solutions (Carvalho, 2016). Analysing the problem is seen as a process that is iterative where individuals in each step collect the information needed, and then select, analyse, and synthesise it to reach the optimal solution to the problem at hand (Carvalho, 2016).

> *"Defining the problem in certain ways and maybe claim different definitions of the problem and working out what the problem attributes are and take a programmatic approach towards solving that problem."*
>
> - Interviewee 1

Identifying alternative solutions

Before solving the problem, it is necessary to think of different solutions and critically analyse them before choosing the best solution for the problem.

> *"Coming up with different solutions and before putting those solutions forward, you probably want to critically analyse, wouldn't you? So maybe look at each one, look at maybe what could be the possible longer-term consequences of those sort of solutions. So, it is about thinking and decision making I guess in more depth."*
>
> - Interviewee 3

Solving the problem effectively

The final aspect is to solve the problem effectively. It is defined as the ability to draw conclusions and solve the problem in a timely and efficient manner. It involves decision-making skills to choose the most suitable method to solve the problem.

> *"Draw clear conclusions from complex information."*
>
> - Interviewee 10

To conclude, problem-solving is a key skill that involves decision making, critical thinking, and analysis skills. It requires careful considerations of the problem main characteristics, resources available, information management and alternative solutions to reach the most desirable outcome. Similar steps of problem-solving skills have been identified in the literature including the ability to identify the problem, analyse the root cause of the problem, findings and interpretations, apply solutions and make decisions (Zaharim et al., 2010).

4. Commercial awareness

Respondents define commercial awareness as understanding organisations' activities, operations, and the individual's role in that context. It is also defined as the ability to understand the implications of what is happening in the business and commercial world and its effect on a specific industry or company. Some experts also mentioned the ability to demonstrate knowledge of the leading business areas, analyse market trends and understand financial implications.

> *"That awareness is about an understanding of what an organisation ultimately delivers, and then the person's role might be to work in that organisation."*
>
> - Interviewee 4

> *"They will have to understand what is happening around the world but also how is that implicating their particular industry or their particular firm."*
>
> - Interviewee 14

"It is the ability to demonstrate the breadth of business knowledge such as finance, sales and marketing. It is also the ability to analyse functional trends like revenue and show consideration of business implications like increased profit,"

- Interviewee 10

All these definitions of commercial awareness are similar to the HEA and CIHE's (2006) definition which is to "*demonstrate the breadth of awareness of business knowledge, show consideration of such business implications, show an awareness of commercial activity and be able to analyse financial trends*" (p. 15)

5. Leadership

Leadership is considered an important employability skill for business graduates, from the experts' opinions. It was among the generic skills that have documented gaps between employers' expectations and higher education provision (see (Jackson and Chapman, 2012a). It has been defined in this study as the ability to lead or influence other people to achieve a common goal.

"Leadership, we define that as an opportunity to lead teams, or the ability to lead teams."

- Interviewee 6

"Leadership is the ability to influence other people according to their needs and the needs of the organisation. Ability to lead someone else, in the company or other companies."

- Interviewee 8

This definition has some similarities with this definition proposed in the literature "*Leverage the strengths of others to achieve common goals; use interpersonal skills to coach and develop others*."(Casner-Lotto and Barrington, 2006, p. 16)

An important aspect of leadership that is highlighted in this study is that different situations and professions require different leadership styles. These styles should be taught to business students so they can use them and differentiate between them when required.

> *"Different situations and different professions require different type of leadership. Type of leadership for a social worker is totally different from someone else in a higher hierarchy*."

- Interviewee 8

Even though leadership is considered a key skill to acquire, one concern regarding developing this skill in business schools is highlighted in this study. The issue is that not everybody should be a leader and that leadership might mean being a good team player. Thus, it is curial in universities and in business programmes specifically to consider teaching students how to become good followers and team members and not just focus on developing leadership.

> *"I would argue that not everybody is a leader; not everybody needs to be a leader. I think there is the other side of leadership, which is being a team worker, isn't it? is being a team player, some people function better as a member of the team and some people as leaders."*

- Interviewee 6

6. Technology/IT

IT, technology, social media, online personal branding, netiquette, data security and analysis and Microsoft packages skills were all grouped under (Technology and IT skills) because they are about the use of technology in the business world. It covers all required IT skills that needed to be developed by business graduates.

The first definition of Technology/IT skills is the ability to use appropriate technology and to be comfortable with it. With today's working environment, technology/IT is embedded in almost all daily tasks. Thus, it is necessary to be able to select and use suitable technology to manage a variety of tasks and be comfortable in utilising it (Jackson and Chapman, 2012a).

"I think nowadays in the workplace you have to be comfortable with technology because it's involved in just about everything that we do. But I think certainly, and the base is moving so rapidly that the changes I have seen in my lifetime have been absolutely tremendous. And I think so for new graduates. I can't see that slowing down. So, I think again they are going to be comfortable with technology and with the fact that it does change."

- Interviewee 3

Another associated skill with technology/IT skills is computer literacy; the ability to use Microsoft packages, including Word, Excel, PowerPoint and emails is proposed as a definition by the experts.

"Would be mainly talking about Microsoft packages primarily, so Word, Excel, PowerPoint and Outlook."

- Interviewee 6

Yorke and Knight (2006) defined computer literacy as the ability to use a range of software. Pescante-Malimas (2017) included computer literacy as an IT skill, and one of the descriptions was proficiency in MS Office Applications. Business students should be skilful in these applications and use them as tools to help them in their jobs.

ICT and social media are considered as increasingly crucial, particularly in marketing-related jobs. Employers are expecting graduates to be skilled in the use of social media (Benson et al., 2014). In this study, experts claimed that social media skill is always requested, especially by small businesses, when recruiting new graduates.

"Something that comes up a lot, particularly from small businesses, they need kind of social media savvy graduates, but there is an assumption that they are young graduates, they will know about social media and engaging in these sorts of platforms and they don't necessarily know that, so there are different understandings of what that means."

- Interviewee 11

Not only is social media is being used as a skill to help small organisations, business today use social media to recruit possible job applicants and in the screening process when searching for candidates' online profiles in Facebook or LinkedIn (Hood et al., 2014). Thus, online personal

branding is a key technology/IT skill for graduates, and it is important to teach them how to think about their LinkedIn identity to increase their employability.

> *"Under digital skills we have, online personal brand management, so getting students to be thinking about LinkedIn identity, making them aware that increasingly employers will be looking at their social media identity in screening processes."*

- Interviewee 6

Online personal plan is considered a process that begins with self-reflection and evaluation to develop and maintain personal branding. Then, students must know their personality, beliefs and values to effectively project themselves to the world. It is equally important to identify ways in which students can differentiate themselves in the online environment. The personal brand should also be customised for the intended audience and perception (Blacksmith and Poeppelman, 2014).

One of the important activities, which students should do is conduct a brand audit when the personal brand is established. They should evaluate their online presence and see the message or the "brand" they are proposing for the world to view. It is recommended that their brand message should be consistent across all accounts and profiles in various websites such as LinkedIn, Facebook or Twitter (Blacksmith and Poeppelman, 2014). Graduates should be committed to developing their online personal brand that can help them promote themselves and increase their employability.

Another skill of technology/IT is Netiquette skills are essential for graduates to develop. Netiquette is network etiquette, which is the formal and informal rules of how people should behave while they are online (Scheuermann and Taylor, 1997). One of the study respondents identified it as the ability to construct professional emails and communicate effectively in an online environment.

> *"Asking students to think about netiquette, so being able to construct professional emails, and communicate effectively and online environment."*

- Interviewee 6

Another important element of technology/IT skill is to enhance data security and analysis (big data).

> *"We also get our employers telling us, that they need students both in placement level and at the graduate level that they can handle big data, so data analysis and particularly big data analysis is becoming more and more important. Also, asking students to be aware of and engage with data security."*

- Interviewee 6

Thus, using technology/IT in the workplace is predominant, and students need to be able and confident in using it. They should be able to use the basic Microsoft packages applications. They need to be able to use social media, manage their online identity, be aware of concepts such as netiquette. They also need to be aware and engage with data security and analysis techniques.

7. Planning and organisation

Personal planning and organising are considered a key skill that students should gain to help them operate professionally and efficiently in their jobs (Spowart, 2011). Experts claimed that it is a skill that underpins students' academic and working lives; One expert stated:

> *"Of course, planning and organising underpin everything, they underpin your academic life, they underpin work life and even if you want good communication, you have to plan and organise."*

- Interviewee 9

Planning and organisational skills are defined as the ability to manage time and tasks through planning and prioritising (Jackson and Chapman, 2012a). This study's experts described it as the ability to plan and organise yourself, your time, and other people, so tasks are completed on time and done well. It also involves prioritising. One of the experts commented on planning and organisation abilities:

"If you are given a task, maybe have a little bit of a time just to think about how you are going to handle that task, who needs to be involved, how much time it is going to take. So, it's about organising yourself, your time and possibly other people as well so tasks are completed to the time that they are needed but also done well."

- Interviewee 3

"Sometimes it is about prioritising as well isn't it? So working out what needs to happen first and also if you nowadays in many workplaces, you might have a number of things that you are doing at the same time so you would need to prioritise what needs to happen first because what deadlines are looming? Or somebody else needs something from you, so it's about being able to do that."

- Interviewee 3

8. Customer focus

Customer-focused skill or sometimes called, customer service was described as the helping and service orientation, focus on client needs, actively solves client problems (Coll and Zegwaard, 2006). A suggested definition by the Delphi experts is the ability to understand who the customers of the organisation are and provide a service that meets their needs. To be customer-focused, students need to be able to build a relationship with customers, seek their feedback, solve their problems and act professionally with them.

"Customer focus tends to be one of the top ones I see in terms of what employers are looking for. To be customer-focused, you need to have the ability to understand who the customers are and provide a service that effectively meets their need. Also, you should act professionally, friendly, and politely when dealing with them. On top of that, you need to think about building and maintaining relationships with customers. You need to have the ability to deal constructively to resolve customers' problems. Seeking feedback from customers is also essential."

- Interviewee 10

It is worth noting that this skill is highly valued in customer-intensive industries and organisations. Thus, students who intended to work in such industries should develop this key skill.

9. Dealing with ambiguity

Dealing with ambiguity is recognised as an important skill to develop. It is defined in this study as the ability to deal with partial information and take decisions based on the information available at one point in time. The ability to cope with uncertainty and ambiguity.

> *"Somebody who is good at dealing with ambiguity will be able to feel comfortable with partial information. They would be somebody who would be comfortable making temporary decisions on the information they have available at one point of time, they could quickly change their position when new information came to light and facts change, they are not held by a particular view or position."*

- Interviewee 10

This skill was also identified as essential for helping graduates to cope especially in environments that are stressful and fast-paced (McCracken et al., 2016).

10. Ability to apply

The suggested definition of able to apply is the ability to apply what has been learned in an academic setting to a work context, applying theory to "real world" practice. It can also mean taking something that has already been learned and adapting it to different situations and contexts, including things that have been learned in work settings (practice to practice). Another definition proposed in the literature was "use of disciplinary understanding from the HE programs." (Yorke and Knight, 2006, p. 8)

> *"So, this is about taking something and adapting it to suit another scenario or another environment. Also, it is about taking what you have learned and applying it in a different way; you might be taught theories and practice in an academic setting but then to actually apply it in a work setting with real people and real materials and a real case study, a real scenario."*

- Interviewee 9

In line with Matlay et al. (2011), this study highlights the importance of this skill and the ability to develop it in HE. Thus, it is suggested that universities should provide students with real business experiences in order for them to apply theoretical concepts and develop their skills and experiences.

11. Numeracy

Numeracy is one of the core skills identified by Yorke and Knight (2006) as "the ability to use numbers with accuracy". Jackson and Chapman (2012a) also listed, as a core business skill, the ability to analyse and use numbers and data accurately and manipulate the numbers into pertinent information. This study's experts proposed a definition of numeracy as the ability to use numbers and data that are relevant in the business world. It includes skills such as calculating percentages, budgeting and balance sheet.

> *"Numerical skills are the ability to calculate percentages and fractions, budgeting and balance sheet."*
>
> - Interviewee 6

12. Time management

Time management skill is associated with planning and organisation skills. One interviewee defined it as the ability to manage your time, to achieve your goals and tasks accordingly.

> *"Being able to sort of know what you have got coming up, organise your days. There are expectations around the level of autonomy sometimes and particularly the graduate working force, so they think of the task they are being asked to do, which things they need to prioritise, and have they thought of how much time that is going to require in relation to commitment."*
>
> - Interviewee 7

This definition is similar to Jackson and Chapman (2012a) definition of time management which is "*managing time to achieve agreed goals*".

4.4.2.1.2 Personal attributes

The second category of the key employability skills framework is personal attributes that were mentioned by the Delphi experts. These consist of ten attributes, including resilience, self-awareness, creativity and innovation, motivation, open-mindedness and positive attitude, adaptability, emotional intelligence, confidence, honest and open, reflection and culture and moral awareness. The list starts from the most frequent attribute that was mentioned by three experts (resilience) to the least frequent attribute of culture and moral awareness that was mentioned by one expert only.

1. **Resilience**

Resilience is one of the new attributes that were not discussed in many frameworks of employability skills in the literature. It is a required skill in today's world, especially with the rise in digital and social media use. A recent survey of employers suggests that they perceive graduates when they enter the job market as lacking in resilience (CBI, 2017). This argument is also supported in this study. Participants stated that employers are complaining about the new graduates and their lack of resilience in accepting criticism and that they are less resilient than previous generations.

> *"The current people of the age around up to the age around 22 – 23 so probably generation Z type students if you believe in that terminology that they are less able to take criticism, less able to accept failure, less emotionally and psychologically resilient compared to the previous generations."*

- Interviewee 6

It might be one of the hardest skills to define and teach in higher education since it has not been appropriately defined. There are many definitions of resilience, and it has been used as a key employability skill without taking into account its proposed definitions and implications. Thus, there is a need to define resilience in the context of graduate employability.

"It is becoming quite prevailing in various literature particularly at job adverts, or discussions in the media around generations x y z, millennials, this idea that people need to be more resilient and resilience is an issue and what people mean by that, because very different conceptualisations of resilience, psychological, mental health wellbeing, what is it? It is worrying that it is being used so much without thinking about what does it mean and what the implications are."

- Interviewee 11

There are several definitions presented by the respondents, including having self-control, dealing with disappointments, and reflection.

The first definition is related to having self-control under challenging times.

"Students should learn how to remain calm, stable and self-controlled when performing in difficult times."

- Interviewee 10

It is related to the ability to deal with disappointments, bounce back in stressful situations and not giving up.

"One thing that is popular now is resilience, and I think it's the flavour of the month because it shows that you don't give up, but it also shows that you can get out of your comfort zone and I think this is the area that we need to focus on. So, the basic definition is the ability to bounce back when things don't go well. So, using that as a current definition, can students resource examples that they have done that, that they have not given up, that they have come back, and they have tried harder?"

- Interviewee 12

Lastly, there is a belief by study experts that resilience is something that can be taught and developed in higher education. It is suggested that in order to prepare students to be resilient, they need to learn to reflect on their experiences and how they respond to criticism.

"It is not easy to teach resilience, but I think what we are trying to do with students is encourage them to reflect about how they cope with and how they respond to disappointment, how they respond to criticism."

- Interviewee 6

Thus, resilience has been considered as an essential skill for young people to have. The discussed definitions of resilience are similar to the employer's definition who see resilience as *"to be able to cope with setbacks and criticism, to be motivated to overcome obstacles, and to stay calm under pressure"* (UCAS, 2018).

2. Self-awareness

A recurrent theme in the interviews is the attribute of self-awareness. It is argued that self-awareness is the basis of all the other employability skills. It is considered essential, especially in the job finding process.

> *"Self-awareness, I think for me is the starting point of everything. If you are not aware of yourself, then how are you going to find the right opportunity or job or career to match who you are."*
>
> - Interviewee 2

Another argument is that self-awareness is linked to students' self-efficacy, perceived employability and knowledge creation.

> *"Self-awareness, subjective employability, knowledge creation, self-efficacy kind of all connected to each other."*
>
> - Interviewee 5

There are several definitions proposed of self-awareness, including the awareness of own self, including strengths and weaknesses, the ability to modify behaviours according to the situation and progress and develop.

Some participants have argued that self-awareness is the ability of an individual to be aware of his own self, including abilities, strengths and weaknesses.

> *"You need to understand yourself and your strengths and your abilities and what you are interested in and your weaknesses, you need to be aware of you and what you are all about."*
>
> - Interviewee 2

A similar definition of self-awareness was proposed in the widely used DOTS model (Watts, 2006), which consists of four dimensions and self-awareness was one of them. It was defined as "*Self-awareness – in terms of interests, abilities, values, etc.*" (p 9/10).

It is not just required from graduates to be able to recognise their own abilities and personal qualities but also, they are required to modify their behaviour according to the situation. They should be able to fit in and mirror expectations of the surrounding environment.

> *"Self-awareness is looking at your environment and thinking how do I fit into this and am I mirroring the expectations of my surroundings. If the scenario that I am experiencing now is that appropriate to be my natural self or do I need to modify my behaviour, so yeah modifying behaviour."*
>
> - Interviewee 9

It is also argued that self-awareness is about the ability to progress and develop as a person. It involves reflection and evaluation of his own self and learning from past experiences.

> *"Self-awareness is the ability of an individual to progress and develop and understand how they are operating with a level of self-awareness; he will be able to look back and reflect and learn."*
>
> - Interviewee 4

Reflection, evaluation and learning in relation to self-awareness are identified in another employability skills framework (Jackson and Chapman, 2012b) as part of self-awareness definition "*Reflect on and evaluate personal practices, strengths and weaknesses in the workplace. Actively seek, monitor and manage knowledge and sustainable opportunities for learning in the context of employment and life."* (P. 101)

Thus, self-awareness is considered as the starting point of other important skills development and is linked to self-efficacy and perceived employability. It has been defined as the ability to know yourself, to be able to progress and develop as an individual and to modify your behaviour according to the situation.

3. Ability to learn quickly

The participants suggested that the ability to learn quickly is an important employability skill for graduates to acquire. They propose many definitions for ability and willingness to learn. These definitions include the ability to acquire knowledge to learn and carry on learning, having fundamental information skills and the concepts of lifelong and life-wide learning.

One of the repeated definitions is the ability and willingness to acquire knowledge to learn something new and carry on learning in order to develop oneself.

> *"Ability to learn is you take something that you are not aware of and acquire knowledge and experience to learn it or do it."*
>
> - Interviewee 8

> *"It is just about being willing to carry on learning, so, obviously you can grow and do a better job for whoever is employing you."*
>
> - Interviewee 3

Another associated definition of ability to learn is having fundamental information skills. It is defined as the ability to search for information, evaluate it and judge the source of that information. It is also related to the ability to take the information and apply it.

> *"Seek out information that is relevant to that skill and absorb that information and make a good judgment about it being the right information that they need. It's about finding a reliable source of information and be able to differentiate between bad and good sources of information is quite important in that context."*
>
> - Interviewee 1

> *"Train yourself how to pick up information quite quickly and apply it."*
>
> - Interviewee 14

The final proposed definition is related to the concepts of lifelong and "life-wide" learning discussed in (Jackson and Education, 2014). A study participant highlighted the importance of these concepts in relation to ability to learn skill.

> *"We are always learning, and more recently I have come across and have learned about another aspect of it which is life-wide learning by Norman Jackson and that's about learning that's taking place in multiple spaces in your life at the same time."*

- Interviewee 2

Lifelong learning can be defined as *"all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competences within a personal, civic, social and/or employment-related perspective"* (Commission, 2001, p. 9)

Life-wide learning. on the other hand, is defined by Jackson and Education (2014) as

> *"all learning and personal development that emerges through activities in the multiple contexts and situations we inhabit contemporaneously at any point in our life, with the aim of fulfilling roles and achieving goals, and continuously developing knowledge, understanding, skills, capabilities, dispositions and values for our personal, civic, social and/or employment-related contexts." P.1*

It is argued that life-wide learning is categorised as an inclusive concept of learning and development that include all types of learning and personal development whether in the formal educational environment or other informal or non-educational events such as in work, being responsible for home or being a family member or taking care of others, being involved in hobbies and interests. These different spaces of learning intermix and accumulate to influence who we are (Jackson and Education, 2014).

Three main definitions of the ability to learn quickly have been discussed, including ability and willingness to learn, having fundamental information skills and the inclusion of lifelong and life-wide learning concepts.

4. Creativity and innovation

Creativity and innovation have been used interchangeably when defining the concept by experts. In addition, previous studies have used creativity and innovation as a combination of skills that can be developed together (Jackson and Chapman, 2012a; Ritter and Mostert, 2017).

It has been defined by this study's experts as the ability to generate new ideas and apply these ideas, questioning traditional ways and bringing new approaches, and the ability to recognise innovative solutions.

The first definition is the ability to generate new ideas or solutions that are original and useful (Ritter and Mostert, 2017) and the ability to apply these ideas to different situations.

> *"It's about just coming up with good ideas. Or if somebody else has an idea, sometimes a creative person can add to that and say that it is actually interesting, what about doing it this way or that way. So, it just about coming up with good ideas and being creative."*
>
> - Interviewee 3

> *"Innovation is the ability to generate and/or recognise how best practice and imaginative ideas can be applied to different situations."*
>
> - Interviewee 10

The second definition is the ability to question traditional ways of doing things and bring new perspectives or approaches.

> *"It is the ability to have fresh eyes and the new perspective approach. It's not being afraid to ask questions and challenge appropriately to bring a new approach, and of course, that's what companies rely on."*
>
> - Interviewee 9

The experts defined creativity and innovation in two ways; the generation of new ideas or applying innovative solutions, and the individual's abilities to question traditional ways of doing things.

5. Motivation, open-mindedness and positive attitude

This category of skills includes all the attitudes toward work that are required from graduates. They include the required mindsets and the preferred attitude by employers. These desirable mindsets and attitudes were grouped under one category because it was hard to separate them

or draw a line among them. They were found to be interlinked factors that need to be developed together. In addition, participants have used them interchangeably to discuss the "attitude" that is required from graduates. These factors include motivations, open-mindedness, having a proactive mindset and positive attitude.

> *"Having the required attitude is about showing willingness and willingness to go the extra mile, you might be missing in some areas but if you have got that motivation, positivity, go get them attitude, people will be more likely to say ok, maybe their excel skills aren't great; however, their attitude is"*
>
> - Interviewee 9

The first skill is motivation, and it is defined by experts as the ability to motivate yourself to work and learn.

> *"Motivation is the ability to motivate yourself to learn and work; without motivation, you will not do anything."*
>
> - Interviewee 8

The second attribute is open-mindedness, and it is defined as having an open mindset about your abilities and what is possible to accomplish.

> *"Not going in with a fixed mindset, sometimes either by your own abilities or and what's possible and approaching it with an open mind."*
>
> - Interviewee 7

The third attribute is being proactive, which is defined as always looking for new opportunities and challenges, being action-oriented in the chosen approach.

> *"It is being proactive and making sure they have a proactive mindset. Proactivity means always looking forward to the next challenge and being eager to take different experiences and to do different things."*
>
> - Interviewee 13

The final one is the positive attitude, having I can-do approach and willingness to go the extra mile.

"I can-do type of approach but not in an over-confident way, so recognising boundaries."

- Interviewee 7

"Showing a willingness and willingness to go the extra mile."

- Interviewee 9

Thus, what required from business graduate are not only skills but also an attitude and mindset that is open, positive, proactive and motivated. It is an essential attitude that is sometimes more valuable than having all the required skills. Having this attitude towards work was also supported in previous research that showed among the required skills from recent graduates are being proactive, self-motivated and have a can-do attitude (Osmani et al., 2016)

6. Adaptability

Another reported skill is adaptability. There have been several definitions of this skill proposed by the experts. They range from being adaptable, able to change, willing to take more responsibilities and fit in with the organisation.

The first definition is the ability to adapt and be flexible in dealing with the new and changing requirement.

"It is about how do you adapt and change. Employers want people that are more flexible like that. They are able to adapt when needed rather than being fixed to one particular way of doing things."

- Interviewee 2

Adaptability is not just adapting to something new; it can also mean the willingness to take new responsibilities when required. These responsibilities can be something that graduates are familiar with but are not part of their duties.

"It might just be about being prepared to take on something else that you might already have the skill to do or not, but it is about, most employers don't generally want somebody who would say that's not in my job description if it is a reasonable request, you don't want somebody who is going to say that's not in my job description."

- Interviewee 3

Another way of defining it is related to the ability to fit in with the organisation culture and adapt to their rules and actions. Being adaptable can help graduates meet the organisation's expectations of what is required and feel a sense of belonging to the team and the overall company.

> *"Within work, there is an expectation, so if you were to do things quite radically different to how your team and the wider department were doing something, that wouldn't sit comfortably with the organisation, and that individual would potentially start to feel alienated."*

- Interviewee 9

7. Emotional intelligence

Emotional intelligence (EI) is another key skill that is listed by respondents. There are several definitions of EI proposed by different participants. They include the ability to recognise your own and other people's emotions and the ability to use emotional signals, including facial expression, body language and tone of voice to support relationships with others and behaviour.

The first element of EI is the ability to read your own emotions, being able to recognise what you are feeling at a particular time, and how to manage these emotions effectively.

> *"It's also about being able to recognise what are you are feeling at a particular time. So, do you feel anxious, or you are feeling angry, or you are feeling enthusiastic, or you are feeling motivated, so it's about working out what you are feeling at a particular time as well, being aware. And it is also about being able to manage your emotion."*

- Interviewee 3

Another part of EI is the ability to recognise other people's emotions by paying attention to their facial expression, body language and tone of voice and then to behave according to their emotions and the situation at hand.

> *"So, it's about being able to read other people and that sometimes about paying attention, so you are paying attention to people facial expressions, their body language and their tone of voice."*

- Interviewee 3

"Being able to understand better how people feel or understand that they are coming from a different perspective. It is the ability to recognise where they are coming from because it is something that technology cannot do. A robot cannot pick up people's emotions, but you know human beings can."

- Interviewee 14

"Emotional intelligence is starting to talk about emotions, is the ability to read emotions and to behave accordingly, so if someone is upset in front of you, how do you behave?"

- Interviewee 2

An existing definition of EI is discussed in the literature "*Capability to recognise own emotions, emotions of others and share the feelings. Use emotional information to guide thinking, maintain relationships and behaviour."* (Bhagra and Sharma, 2018, p.17)

8. Self-confidence

Showing self-confidence is listed as a required attribute from graduates. A proposed definition of confidence is to the ability to show confidence in taking opportunities and ability to deal with the job. Self-confidence is also related to self-efficacy and self-belief.

"It is pushing yourself, so you get more. It is the ability to show your confidence, for example, if you get involved in a club or society, and you might put yourself up for a committee, that is showing confidence in yourself as somebody who's trustworthy and able to carry that role forward, so I think it is taking opportunities and just giving things a go."

- Interviewee 12

Self-confidence is seen as related to self-efficacy and self-belief concepts.

"Having self-confidence, self-efficacy, self-belief in what you can do."

- Interviewee 2

Another definition of self-confidence is proposed by Yorke and Knight (2006) as *"Confidence in dealing with the challenges that employment and life throw u"* (p. 8).

According to Bandura (1977), an individual can be employed if only he or she has self-belief and is self-confident about the various opportunities to get a job, which is closely related to self-efficacy. Self-efficacy is defined by Bandura (1977) as:

> *"beliefs in one's capabilities to organize and execute a course of action required producing a given attainment"* (P. 3)

In the higher education context, it means that graduates who believe in themselves and their ability to do whatever is necessary are more likely to gain a job and be successful in it than graduates who do not have that self-belief. Thus, when self-efficacy is seen as a belief that one has the capacity in a specific situation, self-confidence can be explained as the ability to show that to the world which can be seen from the person manner and behaviour (Dacre Pool and Sewell, 2007).

9. **Honest and open**

A proposed definition of being honest and open is treating others with honesty and openness in the workplace and accepting responsibility for one's actions. It is linked to self-reflection attribute, which is the next skill on the list.

> *"If something goes awry in the workplace as a mistake, or something has happened, you want people to be just honest about it and say to their line manager. I guess what is behind all of this is people's capacity to be self-reflective and pick up when things are working and maybe when not working."*
>
> - Interviewee 7

10. Reflection

Providing opportunities for students to develop employability skills in higher education is considered crucial; equally important is to provide students with chances for reflection on their learning experiences during their university studies. Reflection in this study is considered as one of the important employability skills for graduates. A proposed definition of reflection is to reflect on your own learning process or/and experiences. However, it is recommended that reflection has to be systematic, developmental and progressive to allow the student to learn from their experiences and benefit from opportunities for reflection.

"I think there is a real problem with reflective practice in HE. I think the problem is we need to ask the question, is it developmental? Is it progressive? So, if you ask a senior leader or an academic, do students get reflective practice? They will say yes, but the reality is, that's true, but it is in one module that they could be different to another module, then, in the next level of their study in year 2, they do it again but in a different way and the whole point is are those experiences connected? You need to do that in a reasonably organised systematic way, and if you are just doing it randomly ad hoc in different modules, you do a portfolio here, and then you do a presentation or journal, then students will just get little snippets, little pockets of experience but it is not building, it's just doing it now and forget about it. It is not connected."

- Interviewee 2

11. Culture and moral awareness

Culture and moral awareness are suggested as a key employability skill for business graduates. A set of cultural and moral skills were identified by one study's expert including Ethics, Sustainability, Corporate Governance and Corporate social responsibility. It was highlighted that it is a new or an evolving skill that it might consider several elements of culture and moral awareness, such as cultural sensitivity, citizenship, and awareness of other people's perceptions. These factors were considered essential in dealing with future colleagues in the workplace. However, more research is still needed to unpack and define each of these factors and how to develop them in business students.

"Cultural and moral awareness, this is the one that is still evolving, but at the moment we are working with students with cultural sensitivity, citizenship, awareness of other people's perceptions and we are about to develop a new unit for our programme in two years' time which is going to be called responsible business practice, so that would bring in ethics, sustainability, corporate governance, corporate social responsibility, that type of thing."

- Interviewee 6

These concepts of business ethics, corporate social responsibility (CSR) and sustainability have been some of the most widely used terms in the literature, and they are related concepts with small differences because they come from a different background (Setó-Pamies and Papaoikonomou, 2016). Since the definitions of these already established concepts are not

discussed by this study participants, more elaboration on the definitions of them can be found in Setó-Pamies and Papaoikonomou (2016) study.

4.4.2.1.3 Career building skills

The last category of key employability skill is related to career building skills. Any identified skill by the Delphi experts that is related to searching or finding a job opportunity is included in this category, such as networking and preparation and professionalism.

1. **Networking**

Networking skills are required for students to build professional relationships that can help them get a job. It is defined as the ability to build relationships and be strategic about it and plan for it.

> *"Networking, being able to build relationships, analyse who the people that you should be talking to are. So, for example, if it is like something like LinkedIn, you are not just going to collect connections but actually being more strategic about it, I need to be talking to people who are alumni or this is the sector I want to go into."*
>
> - Interviewee 12

2. **Preparation and professionalism**

A proposed definition of preparation and professionalism is understanding how to interact in the workplace. The ability to maintain professional behaviour and look at work — the ability to adhere to the organisation own rules, expectations, values and culture.

> *"Understanding how to interact in the workplace, preparation and professionalism. For example, if you are going to meet a client at an accountancy firm, I would expect you to look like an accountant, and I know that this is quite stereotypical but that, a firm that employed you as an accountant would expect you to look and deliver as an accountant would."*
>
> - Interviewee 9

This section has covered the proposed definitions, meanings and elements of employability skills, personal attributes and career building skills listed by Delphi experts as key for business students to develop. Following definitions of key employability skills, measures for these skills are discussed next.

4.4.2.2 Employability skills assessment

In this section, methods for assessing key employability skills in higher education are identified by the study's experts. These methods are going to be defined and discussed separately. Explanations or definitions of proposed assessments are going to be added for the purpose of clarity and understanding of the suggested methods.

These methods of assessing key employability skills of business students are categorised based on different graduate employability stakeholders who should cooperate in assessing and measuring the development of key employability skills in HE. The stakeholder groups who can participate in assessing student's employability, students who have an important role in developing and assessing employability, followed by higher education group represented by educators, programme designers/leaders and career services, and the final group is employers who can support in measuring employability. A summary of the stakeholder groups and their roles in assessing key employability skills is presented in *Table 18*.

Stakeholder groups	Suggested measures
Students	- Reflection - Competency-based assessment - Strength based assessment - Online portfolio - Self-assessment surveys
HE: Educators	- Observation
HE: programme-level measures	- Benchmarks
HE: Career services	- Mock assessment centres - Mock interviews
HE: employability enhancement opportunities	- Roleplay - Business simulation
Employers	- Third-party feedback - 360 feedback - Psychometric tests - Emotional intelligence performance test MSCFEIT

Table 18: Roles of various stakeholders in measuring key employability skills in HE

4.4.2.2.1 Roles of different stakeholders in assessing employability of students

4.4.2.2.1.1 Role of students

The extent to which students believe that they are employable is of great importance. Self-efficacy or self-perception of their key employability skills are the first assessment to discuss. These methods include Reflection, competency-based assessment, strength-based assessment, online portfolios, and self-assessment surveys.

1. **Reflection**

Reflection is defined by Moon (2004) as:

> *"A reflection is a form of mental processing – a form of thinking – that may be used deliberately to fulfil a purpose or to achieve some anticipated outcome, or there may be an unexpected outcome from a state of 'being reflective'. It is applied to relatively complicated or unstructured ideas for which there is not an obvious solution and is based on the further processing of knowledge and understanding and emotions that we already possess." (p.4)*

Reflection was identified as an essential method to assess employability skills development in higher education. One expert explained that the purpose of using reflection in the context of employability is to reflect on strengths, weaknesses, and areas of improvement both in academic and employability contexts.

> *"We ask students to do an individual task which is pretty much about reflection on strengths and weaknesses and areas of improvement both in academic and employability context."*
>
> - Interviewee 6

Some experts have stated that reflection is better than other methods of assessing employability such as the self-reporting questionnaires or writing a report about placement or group work because it uses the evidence-based approach to prove skill acquisition.

> *"Reflective writing should be better than a self-rating questionnaire."*
>
> - Interviewee 10

> *"If you get students to identify critical incidents and document that in a certain way using Star L format, for example, that's much better evidence-based for how a student approaches a problem than you may get from them writing a 10000-word report."*
>
> - Interviewee 1

A suggested framework identified by the expert is called Star L framework, which can be used when asking students to reflect on their experiences. An explanation of the framework and how it can be used was given by one of the experts:

> *"The most important example that I can give you is something called the Star L framework. What happens in the STAR L is the students are encouraged to identify a number of situations called critical situations and document their approaches to cope in these situations using the STAR L framework. So, the STAR L gets the student to define what is the situation that's they were facing, that's S. What is the task they were charged to carrying out, that's T? Action they took in order to move things on, A.*

Results what results came out form the action they took, R. The most important one is the L from learning, and that's got the students to reflect upon their approach to the situation and task and their action to judge whether it was correct, what they have learned from that, what they would do in the future and what they may see as going forward."

- Interviewee 1

2. Competency-based assessment

Competency-based assessment is identified as:

"Assessment in which the assessor makes a judgement of competency (competent or not yet competent) against clear benchmarks or criteria such as a competency standard/unit of competency, assessment criteria of course curricula, performance specifications, or product specifications. Competency-based assessment may be contrasted with assessment in which candidates are compared to others or graded, for example" (IBSA, 2017, p. 9).

This assessment method is being used by many employers to measure key employability skills. This approach is based on past experiences and providing evidence of having a certain skill. It is based on the assumption that past behaviour is the best predictor for future behaviour.

"They are still used by many employers as a standard measure for assessing skills. So, competency-based approaches are based on past experiences; you can say give me an example of when you have worked in a team you give me a good example, I will use that example as evidence that you should be able to do this in the future."

- Interviewee 4

It has its limitation as an assessment method because it depends on providing evidence of competence from past experience. This provided evidence indicated that an individual has that competence in the past. However, it does not indicate that the person will be able to do what is required in the future because it might be that the competence level required might be different. Thus, when providing evidence on past behaviour does not necessarily mean the ability to do it in the future.

"I think the challenge when you come to this measurement, particularly in terms of recruitment, is that just because you have done something doesn't mean you can do it."

- Interviewee 4

The application of this approach in higher education context can be useful because using this approach in universities is not about assessing a person for a job. It is about measuring whether students are getting experiences and can articulate them in the form of evidence.

"I guess if you are measuring in a university context where actually is not about getting the job, not about assessing that person for a job for the best level, so it is more about are you measuring if somebody is getting experience and can articulate it, actually yes I can see its relevance."

- Interviewee 4

Even though it is considered an employer method that is used to evaluate competency, it is categorised as a measure under the role of students because they are providing evidence of their competencies and employers are not the people who will be evaluating their evidence in higher education but a broader range of assessors.

3. Strength-based assessment

This measure is similar to the competency-based assessment. However, the difference is that Strength-based assessment focus on what the individual enjoys doing, rather than what he or she can do or is competent in such as the evidence presented in the competency-based assessment. However, the graduate has to be careful because while he or she is talking about what he likes and dislike, the employer is learning about what he is good and not so good at (Mason et al., 2009).

Many employers are switching from competency-based to strength-based approach. A strength-based approach is similar to the competency-based approach, but the difference is that the former looks for what people are good at and what they enjoy doing while the latter looks at what they can do.

"Many employers are switching to strength-based recruitment methodology, and the reason they are doing that is that the competency-

based approach can sometimes mask whether somebody just can do something or whether they loved to do it."

- Interviewee 4

Strength-based assessment is considered a slightly better method because it focuses on individual preferences and what they enjoy doing. The assumption behind the strength-based assessment is that if an individual enjoys doing something, then he is the right person for the job.

"In strength-based interviews, how quickly candidates answer a question or in what energy they answer that question is an indicator of whether this is a genuine strength that somebody has or has not. So, what the employers actually measuring is the difference between do you know how to do something, and would you love to do it? because If you loved to do something then, it genuinely something you are interested in or you are good at and actually, that is an indicator that you are the right person for the particular role."

- Interviewee 4

4. Online portfolio

E-portfolio is defined as "*a digitized collection of artefacts, including demonstrations, resources, and accomplishments that represent an individual, group, or institution"* (Lorenzon, 2005, p.2). In this case, it may list THE key employability skills of students that they have developed. Four different skills and abilities of business students can be assessed by an online portfolio. The skills and abilities that can be assessed in students include:

- Self-awareness
- An ability to present themselves to a potential employer
- An ability to work in a professional social media context
- Writing skills

"I get students to do a LinkedIn type of assessment to get them used to work in a professional social networking, and they do it in another sort of electronic portfolio platform, but it is set up exactly like LinkedIn so we can look at how self-aware they are, how they are projecting themselves within professional social media context and are they doing that professionally, how they are writing and then again they can get feedback on sentence construction, grammar, so saying to them this is a short window now, so

they need to be careful on how they present themselves in there because it is how people are going to judge them on."

- Interviewee 7

5. Self-assessment surveys

In self-assessment, *"individuals are asked to rate their own level of skills in different domains"* (Allen and Van Der Velden, 2005, p. 8).

It is an affordable way of measuring employability skills acquisition in students by asking them to rate themselves in terms of their skills development.

> *"We can use the easy way, which is self-rating, it is a questionnaire, so these are the statements that people can respond to in terms of their level of agreement, they are self-rating questionnaires. This is very much a standard way of looking at it, and we actually are using one in our university."*

- Interviewee 10

An example provided by one of the study experts is the Employability Development Profile (EDP), which is "This diagnostic tool is a self-report questionnaire that asks students to rate themselves on different aspects of employability, as defined by the CareerEDGE model" (Dacre Pool and Qualter, 2013, p.305). Five elements of the CareerEDGE model were included in the questionnaire, including career development learning, experience (work and life), degree subject knowledge, skills and understanding, generic skills and emotional intelligence.

The main purpose of this survey is developmental for the students. It helps them to think about their own skills and to try to identify areas of improvement. However, it is subjective and might not reflect the actual skill proficiency of the students.

> *"I use the employability development profile, which is really more for developmental purposes. So, getting people to think about their own skills and try to identify areas for improvements but you are again there could be situations where somebody thinks that they are very good at it, but they might not necessarily be."*

- Interviewee 3

4.4.2.2.1.2 Role of Higher Education

The second stakeholder group that participate in assessing student's employability is HE. There are different people and departments involved in assessing employability in universities starting from educators, career offices to programme-level designers and leaders.

4.4.2.2.1.2.1 Role of Educators

The first method is **observation** and evaluation that can be conducted by teachers or facilitators. Observation can be used as a method for assessing the employability skills of students by observing them in a given task and evaluating their competence. It can be used for some of the employability skills that can be observed in classrooms such as presentation skills or the ability to use a certain technology.

> *"So, the only real way of getting at some of these skills would be possible through some sort of observations."*

- Interviewee 3

Some of the skills that can be assessed by observation are presentation and ability to use technology.

> *"Some of the easier skills are presentation skills. I am sure as a student, you have been assessed given a presentation, so if you can assess it, then yes that's probably one of the easier ones. Being able to use technology is quite straightforward, isn't it? it depends on what technology you want to use; somebody would be able to demonstrate whether or not they use it effectively."*

- Interviewee 3

However, this method cannot be used to evaluate other skills or attributes that are harder to measure, such as emotional intelligence. It can be used to measure behaviours that can be easily observed, but other skills and deeper attributes that are difficult to detect in individuals such as confidence cannot be assessed using observation.

4.4.2.2.1.2.2 Role of programme designers and leaders

Programme level assessments, including the use of benchmarks, were identified in this study. Benchmarks are explained as a process, where several employability areas that are relevant to a specific discipline or programme are identified at the beginning of the programme. Then, they become benchmarks that are addressed systematically throughout the programme. This method can help focus the efforts of developing skills to a smaller and more manageable scale. This method can prevent the issues of choosing skills that are not relevant to the programme or teaching some skills in different modules and disregarding others.

> *"One general approach I would take for employability within the university, I would get programmes to specify 8 to 10 maximum areas, and when I say areas, I am trying not to use the word skill, but I am talking about skills, behaviours, attitudes, different qualities. So basically, what the recipe is for employability for that subject, and I think for those 8 to 10, then they become the benchmark for the whole three years or the whole four years how long the course is. And those 8 to 10 things need to be addressed not just across all the modules but also outside of the modules."*

- Interviewee 2

4.4.2.2.1.2.3 Role of careers services

1. **Mock assessment centres**

According to Rowe (2013), an assessment centre is defined as *"A process employing multiple techniques and multiple assessors to produce judgments regarding the extent to which a participant displays selected competencies."(P. 18).* Assessment centre activities are listed as a suggested measure for employability skills. In universities, mock assessment activities can be used to prepare students to perform well in the assessment centre activities that are conducted by employers. It can develop some of the students' employability skills and assist them to increase their chances of getting a graduate-level job.

> *"It would probably be quite helpful; it would improve aspects of their employability. It would improve their chances of getting into graduate-level jobs if every student did a mock assessment centre."*

- Interviewee 3

The process of using a mock assessment centre can be different from one university to another. In some schools, the employers do the mock assessment centres, and in others, career services are responsible for running it. However, there are few mock assessment centre activities, and it is suggested to increase the number of times they are run in universities.

> *"Having a mock assessment would be helpful. So, all the schools are different so the mock assessment that we put on usually that is an employer that would run it. So, in a term, we might have three or four employers who run a mock assessment which is good, but I do wonder whether it is enough. there could be more of it."*

- Interviewee 12

Since employers use assessment centres activities to measure employability skills acquisition of job seekers, the mock assessment centre can use the same model as the "real" assessment centre activities to measure student's skills development in higher education.

> *"Some of those skills, I know employers try to measure them through assessment centres type of activities. So again, they would be looking to see how that person you know does work in a team by giving them a group task and observing them."*

- Interviewee 3

2. Mock interviews

One of the most important steps in the process of getting a job is the ability to do well in an interview. While some students are quite confident in marketing themselves to a possible employer, others may profit from building confidence in their performance by participating in mock interviews provided by career services to help them perform well in interviews.

Some universities embed interview skills in the curriculum and use the mock interview as an assessment of students with the support of some employers who come and assess the students with the educator.

> *"I have interview embedded so some of the organisations will come and sit with me and do the interviews for students, and that would be their*

assessments. We judge how they perform in the interview because one of the things that we had feedback from the employers was that some of the students were struggling to articulate themselves well in the interview."

- Interviewee 7

Other universities offer mock interviews for students through their career services, and students are able to book one if they need to, but it is not compulsory for everyone.

"We offered mock interviews, so they have a real experience of that, often they only booked that when they have an interview looming, but they could be more prepared for that."

- Interviewee 12

4.4.2.2.1.2.4 Employability enhancement opportunities

The last method of assessment listed in relation to the role of higher education are the provision of employability enhancement opportunities. Experts mentioned two specific experiential learning techniques of Roleplay and Business simulation. Even though they are considered opportunities to enhance employability, they can also be used to measure skills acquisition in university students as well.

1. **Roleplay**

(Crooltall et al., 1987, p.155) defined roleplay as a "*social or human activity in which participants 'take on' or 'act out' specific 'roles' often within a predefined social framework or situational blueprint. In roleplay, each 'actor' develops a particular behaviour, adopts an approach and/or responds to a scenario on the basis of a combination of the role they are asked to play and their interpretation of the particular scenario with which they are presented."*

It is suggested by the study's experts to use roleplay as a method to assess employability skills. Two issues are reported when using this method. The first one is that the method is time-consuming, and the second is that it is challenging to agree on assessment criteria to evaluate specific employability skills.

"You can assess skills by something like roleplay would be good for all these skills, but then again how would you, that would be time-consuming, and it

will be really hard to agree on criteria on how to measure team working if everyone understands something else about it."

- Interviewee 5

2. Business simulation

According to Rowe (2013), simulation is a "*fictional situation in which the candidate is expected to respond from the perspective of someone in the rank being sought. The simulation may be very similar to a real work situation or resemble some aspects of it, although in a different setting or with different components." (P. 22)*

Business simulation and simulated tasks, in general, were identified as a method to assess the employability of students. It thought to be similar to assessment centres and can assess a wide range of skills objectively.

"I suppose the extension to mock assessment centres is to give simulated tasks including business simulation activities but that in a sense is what assessment centres are, say they give in-tray exercise which can be a really good measure of people's prioritisation or decision making or a whole range of skills. If you design a series of tasks for them to do like an assessment centre, saying that it was designed well, that should give a really more objective measure of students' true competency."

- Interviewee 10

4.4.2.2.1.3 Role of employers

Four different assessments of employability have been linked to employers. They include the third-party feedback, 360 feedback, psychometric tests, and experiential evidence. Each of these methods is going to be discussed separately as followed:

1. Third-party feedback

The suggested method of employability skills is third-party feedback. It is a form of feedback that involves asking employers to assess students' employability skills before placements or any form of work experience and at the end, to evaluate their skills development.

> *"Third-party rating, you can get an employer, and this is what we can do here, is we could get an employer to rate students against these dimensions before their experience and at the end and then look for causality as a result to that."*

- Interviewee 10

2. 360 feedback

360 feedback is an assessment method that is widely used in the business world. According to the Chartered Institute of Personnel and Development (CIPD, 2018), It is defined as "*a method of performance appraisal which gathers feedback from a number of sources, including peers, direct reports, more senior colleagues and customers. This variety of feedback can offer line managers a wide-ranging perspective and help to make performance management a more objective and fair process."*

Even though it is used widely in the business world to give objective feedback to employees, universities do not use them as much to assess students. The advantage of this method is that it provides a more objective measure of abilities and skills compared to other assessment methods such as self-assessment.

> *"360 feedback is one method that I think is widely used in business around mentoring. But I don't know how widely we use it within assessments in universities. So, 360 feedback is getting that feedback from others around you whether that is a colleague or your peers in a group task or whether that's your boss or your line manager or whoever is around you like your significant other. You may self-report your ability in a particular area saying self-confidence that you believe you are very confident, yet your line manager may give you lower grading and saying actually he is ok, but he is not actually confident as he could be and this how he can improve, so you get different perspectives, and that's for me a more effective way."*

- Interviewee 2

3. Psychometric tests

Graduate psychometric tests are arguably helpful to identify skills, knowledge and personality. They're often used during the initial screening stage, or as part of an assessment centre. They're found to be an objective, convenient and robust assessment methods of job performance by many large graduate recruiters (Mason et al., 2009).

There are two main types of psychometric testing personality and aptitude tests. Personality tests are defined as "exploring your interests, values and motivations, analysing how your character fits with the role and organisation. They analyse your emotions, behaviours and relationships in a variety of situations" (Mason et al., 2009). Aptitude tests are explained as "assessing your reasoning or cognitive ability, determining whether you've got the right skill set for a role. Usually administered under exam conditions, you'll often be given one minute to answer each multiple-choice question. Your intelligence levels are compared to a standard, meaning that you must achieve a certain score to pass" (Mason et al., 2009).

One highlighted type of psychometric tests in this study is the personality test. Employers usually use it to identify the most suitable person for the job in terms of the personality type required.

> *"If you agree in advance, this is the sort of person we are looking for, in terms of personality, and then you give a personality test, and then obviously you see which people have matched that."*
>
> - Interviewee 3

4. Emotional intelligence performance test MSCFEIT

According to Fiori et al. (2014), the Mayer Salovey Caruso Emotional Intelligence Test (MSCEIT) is among the very few available and the most well-known and accepted assessment of Emotional Intelligence (EI) as an ability.

> *"There are measures for emotional intelligence. There is one that I used called the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) for short, which is what we call a performance-based test. So rather than asking people how emotionally intelligent they think they are, it gets some faces and asks them what emotion you think this person is showing in their*

face. It will also give them various scenarios and say how do you think is the best way of dealing with it and its very hard test to fake."

- Interviewee 3

This section discussed various methods that were suggested to assess key employability skills of business students in HE. Different stakeholders' groups were recognised, and methods have been discussed according to the stakeholder roles in implementing and supporting the use of these methods in HEIs. Next section examines some of the reported challenges in assessing skills in HE.

4.4.2.2.2 Issues of assessing employability

Some important views have emerged that discuss the issues of measuring employability in higher education. The experts highlighted these issues when they were asked about how to measure students' employability in HE. Three main challenges arose, including the following:

1. Assessing employability of students is expensive

Experts have highlighted the issue of assessing employability in HE in relation to the cost and that the needed investment to measure each student employability.

"The question is whether the university wants to make that level investment to measure these skills. So, I said employers measure them and that how they make their recruitment decisions. However, if you think about an employer making a recruitment decision starting from an application process, then, an interview process, testing process and assessment centre process, they could be investing anything up to days level of work within an individual, then investing in the systems and tools to measure that, which is quite different to what is happing in the academic life."

- Interviewee 4

2. Not all key employability skills are easy to teach, develop or assess

Experts also distinguish between two types of key employability skills, the skills that are easy to measure and those that are difficult. They argued that not all skills could be assessed in HE.

"Trickier skills are things like communication because you would only get communication in the activities you set up. It's not like you are going to watch that person over a working week to measure their communication. It is a very expensive thing to do"

- Interviewee 3

"More difficult one is leadership, but what we really want is to promote students to develop them and not just to measure them."

- Interviewee 8

"Some of the skills are harder to measure in HE. professionalism is difficult to measure."

- Interviewee 9

However, a suggested way to assess employability in HE is proposed by the experts. They emphasised the importance of appropriate assessment in tackling some of the measurement issues.

"I guess the best way for measuring it and developing it is through appropriate assessment. If we bring assessment to life with more realistic situations where students are getting to stand up and go outside of their comfort zone, think differently, where they are given a problem and apply a solution-focused approach. That means teamwork, that means communication, that's means thinking about how they are going to do it. That also means challenging the ordinary and stereotypes. Sure, it is more complex than that. Some of the skills are harder to measure; however, if you ask students to come to your assessment as they would in an interview. You can then start to work towards measuring their skills, and you can absolutely pick areas you can do that to."

- Interviewee 9

4.4.2.3 Business simulation

Business simulation role in enhancing employability

The final section of the first round of Delphi analysis is related to the business simulation's role in enhancing graduate employability. The following table presents all the key employability skills that can be developed through the use of business simulation based on Delphi experts' views. On top of the list is commercial awareness which is the skill that was reported from almost all experts. Teamwork skills are also recognised as a key employability skill that can be enhanced through business simulation, followed by communication and problem-solving skills. Other key employability skills followed as listed in *Table 19*.

Key employability skills	Quotes
Commercial awareness	*"I think this is a good idea because it is hard to get all business graduates to go out and experience what are the different functions and understand what is happening but through the game, they would be able to explore a bit more" - Interviewee 14*
Teamwork skills	*"Definitely they will develop all of the team-working skills: working with others, managing others, persuasion and conflict resolution." - Interviewee 6*
Communication skills	*"communication skills including written, verbal, listening and presentation skills as well" - Interviewee 6*
Problem-solving skills	*"It would definitely help with problem-solving" -* Interviewee 13
Time management	*"Students would be developing time management skills"* - Interviewee 2
Technology/IT skills	*"They should be able to learn the technology side of thing. Being able to not be afraid to use tech even if students now are quite comfortable with technology, they still have to learn something new, and being quite open to understand new things like simulation games" - Interviewee 14*
Planning and organisation skills	*"There is also organisation and prioritising of information of all the information you have got" – Interviewee 7*

Creativity and innovation	*"Students will learn things like creativity through a stimulating game because literally you have to imagine the whole thing. You won't be able to see it. You won't be able to actually set there, face to face, with someone and have a meeting. You have to be creative about your ideas as well and how to play the game."* - *Interviewee 14*
Dealing with ambiguity/uncertainty	*"Dealing with ambiguity. if they are given only part of the information then that is a good test about people deal with this because, you get people say I cannot do this and other people will say well ok, this is what we know, let's work with that information because in real world, we won't have everything."* - *Interviewee 10*
Leadership	*"They would develop things like team-working skills, possibly their leadership skills as well"*- Interviewee 3
Reflection	*"Adding reflective practice is essential to their development"*- Interviewee 2
Self-confidence	*"Self-confidence comes in as well and whether playing the game has improved their confidence in terms of their future development"*- Interviewee 2
Numeracy skills	*"Students can develop their numerical skills"* - *Interviewee 6*
Adaptability	*"students need to use their adaptability, flexibility to play the simulation"* -Interviewee 10

Table 19: key employability skills that can be developed in a business simulation as per expert's opinions

4.5 Delphi Round Two

4.5.1 Introduction

During the second Delphi round, the expert panel members received a document that included all key employability skills and their definitions. In addition, the document included all suggested measures and brief definitions of these measures for those who are not familiar with certain measures. Providing the list of skills, their definitions and suggested measures was meant to give each panel member an idea of the range of employability skills definitions and the range of suggested measures provided by other experts in the study. Also, it was meant to give the experts a chance to provide feedback about the framework developed from the first-round analysis.

The second round was completed using an online questionnaire to order the twenty-six skills in terms of their perceived significance. The questionnaire was pilot tested with three academics for content validity and usability before being sent to the respondents. To enhance data quality and reduce drop-out rates, experts were asked to choose their top ten employability skills and then rank these from 1 to 10 according to importance. The second round of Delphi resulted in 10 responses out of 14 from the first round. The respondents comprised four academics, three working in career services in universities, two from NGO's and one from the employers' group.

4.5.2 Ranking

Experts were asked to rank the identified key employability skills generated from the first round from one to ten with one= the top skill. The responses were analysed in Microsoft Excel. A total response weight was calculated where the weight of the ranked position is multiplied by the response count for every answer. Then, the average ranking is calculated for each skill. Finally, skills average rankings are evaluated to rank the skills from one to ten.

The key employability skills selected by participants in the second round are presented in rank order of importance based on the views of experts. The top key employability skills are (1) Communication skills, (1) Motivation, open-mindedness and positive attitude, (3) Emotional Intelligence, (4) Teamwork, (5) Problem-solving, (6) Ability to learn, (7) Self-awareness, (8)

Adaptability, (9) Preparation and professionalism, and (10) Dealing with ambiguity. The number of experts who voted for each skill, and the ranking are presented in *Table 20*.

Top key employability skills	Number of votes	Ranking
Communication	8	1
Motivation, open-mindedness and positive attitude	9	1
Emotional Intelligence	7	3
Teamwork	6	4
Problem-solving	8	5
Ability to learn quickly	5	6
Self-awareness	4	7
Adaptability	5	8
Preparation and professionalism	4	9
Dealing with ambiguity	5	10

Table 20: Delphi study rankings of the key employability skills

4.5.3 Reasons for choosing the top three key employability skills

Experts were also asked to provide their feedback regarding their ranking choice. They were asked to justify their ranking of the top three key employability skills. Presented in this section are some of the reasons identified by the experts. Reasons are discussed for the top three key employability skills including communication, motivation, open-mindedness and positive attitude, emotional intelligence, and teamwork.

Communication

Communication is seen as an overarching skill that is needed in any sector. It can help graduates accomplish most of the required tasks in their jobs. It can help them work in their teams but also with various stakeholders, including the company's customers and build and enhance the relationship with them.

> *"Without the ability to communicate well, an employee is going to find it difficult to carry out most tasks successfully."*
>
> - Interviewee 3

"Being able to communicate - listening, body language and being able to adapt your communication method will help you in any sector."

- Interviewee 8

"Communication skills are oral, written and non-verbal without highly developed communication skills students and graduates struggle to navigate the workplace and not only this communication is a wider life skill. Employers need students and grads to effectively work in teams and with stakeholders beyond the immediate environment and effective communication skills are in establishing building and enhancing workplace/client/customer relationships"

- Interviewee 4

Motivation, open-mindedness and positive attitude

They are ranked as the number one personal attribute in the study. The experts justified their choice by stating that this attribute is essential to employers because it helps them benefit from the maximum potential of individuals who are motivated and positive. It also helps graduates succeed in their careers and lives.

"We know from employers that a positive attitude is key."

- Interviewee 7

"A 'can do' attitude goes a long way, it suggests openness and willingness to learn, as well as the potential you bring with you to your employer."

- Interviewee 2

"It is more an attribute than a skill. Even though it is difficult to learn, but I think it's essential to success in all situations."

- Interviewee 9

Emotional intelligence

It is ranked as the second important personal attribute. It is seen as a key to effectively communicate and work with others. It can be an underlining attribute that is needed to develop other important skills like communication, teamwork or leadership skills.

"This dimension of the ability to engage effectively with others is important. This is key for life, not just work. It helps graduates learn how to deal with other colleagues, as well as customers."

- Interviewee 5

"Without EI many of the other required skills will be difficult to develop, especially the skills that need collaboration with others"

- Interviewee 1

"Students who have EI, they have the capacity to read a situation and make a judgement call about what the right thing to do is as they are alert to other's communication styles."

- Interviewee 6

Teamwork

Teamwork is ranked as the third top-ranked key employability skills. The experts justify their ranking by indicating the importance of teamwork in the workplace. Usually, employees need others to accomplish many required tasks in the job. This skill is also an indication of success in other key skills such as communication.

"Teamwork is important as everyone needs to get with done with and through other people. Good teamwork also indicates other skills such as communication skills."

- Interviewee 4

4.5.4 Employability skills assessment

The third question in the second round of Delphi is about skills assessments. After identifying the top ten key employability skills, experts were asked to find the most suitable assessment for these skills. *Table 21* represents the suggested methods identified by experts, the frequencies of each method and the key employability skills that can be assessed.

Methods	Frequencies	Key employability skills to be assessed
360-degree feedback	6	- Ability to Learn - Communication - Motivation, open-mindedness and positive attitude - Preparation and professionalism - Self-awareness - Teamwork
Roleplay	6	- Adaptability - Communication - Dealing with ambiguity - Emotional intelligence - Motivation, open-mindedness and positive attitude - Teamwork
Mock assessment centre	6	- Adaptability - Communication - Planning and organising - Problem-solving - Preparation and professionalism - Teamwork
Competency-based assessment	5	- Ability to Learn - Dealing with ambiguity - Emotional intelligence - Planning and organising - Problem-solving
Business simulation	5	- Commercial awareness - Dealing with ambiguity - Planning and organising - Problem-solving - Teamwork
Mock interviews	3	- Emotional intelligence - Motivation, open-mindedness and positive attitude - Preparation and professionalism
Observation	3	- Adaptability - Communication - Dealing with ambiguity
Psychometrics tests	3	- Dealing with ambiguity - Motivation, open-mindedness and positive attitude - Self-awareness
Self-rating questionnaires	3	- Ability to Learn - Problem-solving - Self-awareness
Third-party rating	3	- Ability to Learn - Communication - Preparation and professionalism

Strength-based assessment	2	- Ability to Learn - Motivation, open-mindedness and positive attitude
Emotional Intelligence Test (MSCEIT)	1	- Emotional intelligence

Table 21:Suggested methods to assess top-ranked key employability skills in HE.

Key points related to the key employability skills assessments:

There is a wide range of methods that can be used in HE to assess key employability skills of business students. The key is to implement the most suitable methods for assessing key employability skills as it is recognised from the suggested methods that specific assessments are more suitable for certain skills or attributes. For instance, psychometric tests are most suitable for measuring personal attributes such as emotional intelligence.

As highlighted in the table, 360 feedback, roleplay, and mock assessment centre are the most suggested methods that can be used to measure many of the top-ranked key employability skills. Following these methods are the competency-based assessment and business simulation. These are the assessments that were highlighted by five or more experts.

4.6. Interconnections

4.6.1 Connections found between skills in the framework

This section is introduced to discuss the findings of Delphi method that were not part of the research questions, but that add value to the overall discussion of key employability skills framework. This section specifically discusses the connection found between some of the identified employability skills and attributes that were identified in the previous sections. These connections were highlighted in the first round of Delphi, where experts elaborated on the key employability skills definitions and how elements of some may relate to other skills and attributes.

4.6.2 Connections between the Key employability skills

When collecting the data from the Delphi experts, an important finding has emerged, which is related to the connections between the identified key employability skills. When experts were listing these skills, they were linking skills and attributes together. Three different types of skills

connections were found in the data, including skill to skill, attribute to attribute and skill to attribute as illustrated in *Figure 3*. The first type of connection is related to the links between the skills in the employability skills category. These links where identified and drawn in *Figure 4*. The second type of connection was identified between the personal attributes, as also shown in *Figure 4*. The third and final type of connection was identified across the two categories of employability skills and personal attributes, as presented in *Figure 5*.

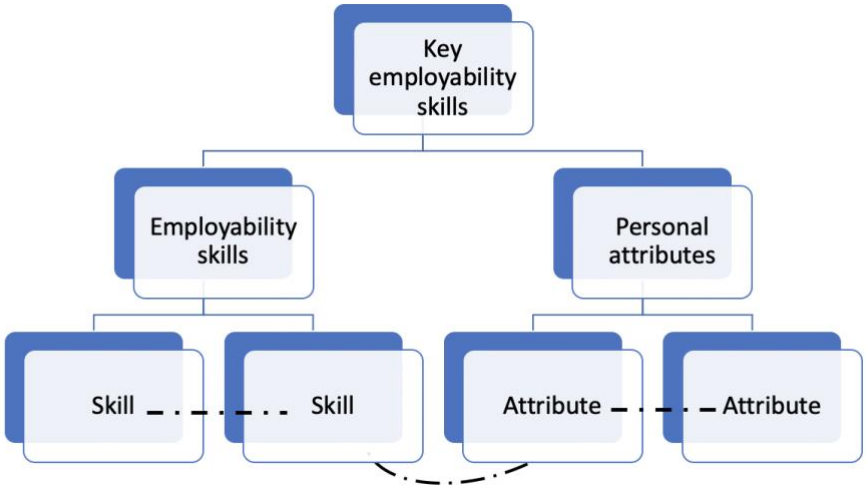

Figure 3: Illustration of three types of skills connections: skill to skill, attribute to attribute and skill to attribute

*---------- dotted line indicates connection

It worth noting that these identified links were not part of the study design and the questions asked to the participants, and they are based only on experts' opinions where they have stated that there is a possible link between skills and attributes. Therefore, there might be other links between the identified key employability skills that were not identified in this study. Another limitation is related to the volume of evidence; some of these connections were limited to a single remark. However, in Delphi technique, each expert opinion is considered valid as discussed in Chapter 3, section 3.7.1 Reliability.

4.6.2.1 Connections between the employability skills

The connections found between key employability skills resulted from the first round of Delphi. These connections are highlighted by the experts of Delphi. When participants were defining employability skills and attributes, they were linking the skills and attributes that they thought are connected. Starting from the links found in employability skills, three connections are

identified among these skills. For instance, planning and organisation skills are identified by an expert as a skill that underpins the development of many other different employability skills as well as a skill that underpin a person's academic and work life in general.

> *"planning and organising underpin everything, they underpin your academic life, they underpin work life."*
>
> - Interviewee 9

The same expert provided an example of the communication skill where graduates need to use their planning and organisation skills to communicate effectively.

> *"if you want good communication, for example, you have to plan and organise what you are going to say in the first place until you get to the outcome"*
>
> - Interviewee 9

The link between planning and organisation and communication is just an example of how planning and organisation skills underpin the development of skills. However, it should be considered as a skill that underpins many other skills and activities in academia or employment.

Additionally, Communication skill is also seen as an overarching skill that is needed when engaging in teamwork. For instance, in order to work in teams, individuals need to have good communication skills. "Teamwork is very much linked to communication skills' – *Interviewee3.* Another participant highlighted that *"Teamwork skills involve the use of verbal communication skills all the time."* – Interviewee 1.

The final identified connection between skills is related to teamwork and leadership skills. In order for leaders to perform well in teams, they need to have good teamworking skills. *"I think there is a part of leadership that involves being a team worker, isn't it? being a team player"*

- Interviewee2

These three connections were found in the employability skills category, including the link between planning and organisation and communication skills, the link between communication

and teamwork and the link between teamwork and leadership skills. The next type of link is related to personal attributes category.

4.6.2.2 Connections between the personal attributes

In regard to connections found between the personal attributes, seven different links are highlighted. If more than three skills or attributes are connected, they become a cluster. Two clusters of links were identified in the personal attributes category. The first cluster of links includes attributes of self-awareness, emotional intelligence, self-confidence, and resilience. The first attribute is self-awareness. It was seen as the starting point of all personal development, an overarching attribute. It was viewed as the basis of student overall employability and success in their future careers.

> *"self-awareness I think is the starting point of everything. You don't understand yourself, your strengths, your abilities, what you are interested in and your weaknesses if you lack self-awareness. If you are not aware, how are you going to find the right opportunity or job or career to match who you are?"*
>
> – Interviewee 8

A link was found between self-awareness and emotional intelligence. It was suggested that in order to develop emotional intelligence, individuals need to be aware of themselves and others.

> *"Awareness is not just of yourself but awareness of others, so I can say that emotional intelligence is directly linked to self-awareness."*
>
> -Interviewee 2

A second link was found between resilience and self-confidence attributes. It was argued that the individuals who are confident, use some elements of resilience. "*Self-confidence, I suppose is a bit going out of your comfort zone, so it overlaps with resilience too."* – Interviewee 12

The second cluster of connected attributes includes motivation, ability to learn, adaptability, open-mindedness and creativity and innovation. The first connection was identified between motivation and ability to learn attributes. It was argued by one of the experts that in order for individuals to develop their ability to learn, they need to be motivated to do so. One of the

proposed motivation definitions was *"the ability to motivate yourself to learn and work"* - Interviewee 8.

On the other hand, the ability to learn attribute is connected to adaptability trait. An expert explained *"ability to learn and being adaptable are linked, aren't they? Because often in order to be adaptable, you do need to learn new skills"* -Interviewee 3.

Adaptability attribute is also connected to open-mindedness. For instance, people who are adaptable might need to have an open mind and flexibility to help them deal with new situations or experiences. One of the experts argued that people could not be adaptable if they have a fixed mindset:

> *"I think there is an overlap between being open-minded and adaptable. If you want to be adaptable, you cannot have a fixed mindset. It is actually the opposite; you need to be open-minded to new possibilities and approaching it with an 'I can do' approach."*
>
> - Interviewee 7

The link between open-mindedness and creativity and innovation is the last connection in the second cluster of personal attributes. Being open-mindedness was considered as an element to embrace creativity and innovation attribute.

> *"If somebody comes with an idea which is a little bit outside of the field or it hasn't been considered before, people should not attack this idea or discourage someone from using it. To think about the possibilities which kind of move a bit to embracing creativity and innovation trait."*
>
> - Interviewee 7

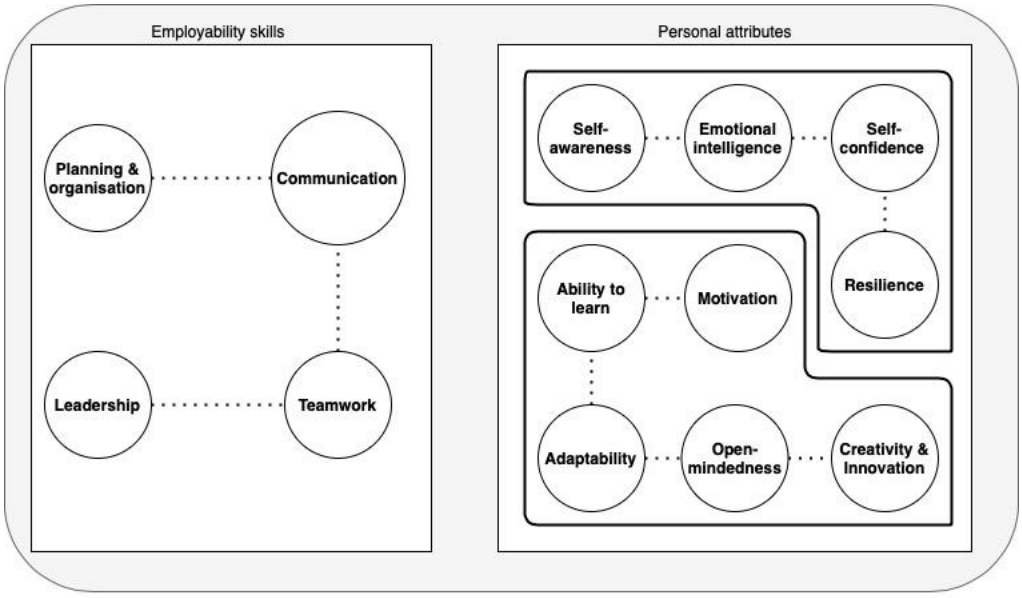

Figure 4: Connections found in the employability skills and personal attributes categories.

*A dotted line …… indicates a link between two key employability skills
*A straight line _____ around attributes indicates a cluster of connected attributes
If dotted lines continue between more than three skills or attributes, a cluster can be drawn

4.6.2.3 Connections across the employability skills and personal attributes categories

The third type of connection was found across employability skills and personal attributes categories, as shown in *Figure 5*. This type of connections is only discussing the links that exist across the two groups of employability skills and personal attributes. Seven links were identified by the experts. First, a connection was identified between emotional intelligence as an overarching ability to develop the two employability skills of communication and working effectively in teams. The link between emotional intelligence and communication was recognised because when people communicate, they need to consider the other party, especially in situations that need to be dealt with.

> *"Obviously, a good communicator is somebody who can get their point across clearly but also can do it by bringing in the emotional intelligence side that sometimes is needed especially when you want to communicate with tact and sensitivity."*
>
> *-Interviewee 3*

The connection between teamwork and emotional intelligence is presented by the experts because when working in teams, team members need to deal with conflicts and different points of view. Thus, they need to develop the emotional intelligence attribute to help them deal with similar situations.

> *"Teamwork is to be able to work with people who are different from you. It is sort of linked to stuff like emotional intelligence because if you understand people with different perspectives, you would be able to understand their point of view and work together as a group."*
>
> - Interviewee 14

Self-awareness also was also found to enhance leadership skills. For individuals to develop their leadership skills, they need to be aware of their leadership style and their strengths regarding group tasks as well.

> *"Leadership is kind of going a little bit to self-awareness, knowing your leadership style, and also to know your strengths when it comes to group tasks. It is also about self-awareness of your leadership strengths and what your abilities are as a leader."*
>
> - Interviewee 12

The ability to learn attribute is linked with the time management skill. In order to learn something new, time management skill can help accomplish that by identifying what needs to be learned, setting a deadline and trying to learn it.

> *"To learn something new, you need to be able to manage your time and be able to train yourself on how to pick up information quite quickly and apply it. You can definitely learn by setting yourself a deadline on when you want to finish a task and push yourself to do that."*
>
> - Interviewee 14

On the other hand, if individuals need to develop their technology/IT skills, they need to use the ability to learn, and adaptability attributes to help them learn about new technologies, how to use it and adapt to changing technologies.

> *"I think students need to be able to learn new technology and with the fact that it does change so, they need to adapt. Again, a lot of these elements of*

technology are tied with or possibly linked with things like being willing to learn and being adaptable."

- Interviewee 3

The last link across employability skills and personal attributes categories is the link between creativity and innovation and problem-solving skills. Having creativity and being innovative helps people to introduce innovative solutions and think of alternative ways to solve problems, which are highly valued by employers.

"Thinking creatively can be linked to problem-solving skills."

- Interviewee3

"Thinking creatively and innovatively can be branched out a little bit and linked to problem-solving ideas and innovative solutions"

- Interviewee 6

It worth noting that the career building skills were not included in these connections because the category has two skills only (preparation and professionalism, and networking) and these two skills were mentioned once. Thus, not enough discussion was offered regarding these two skills to search for possible links.

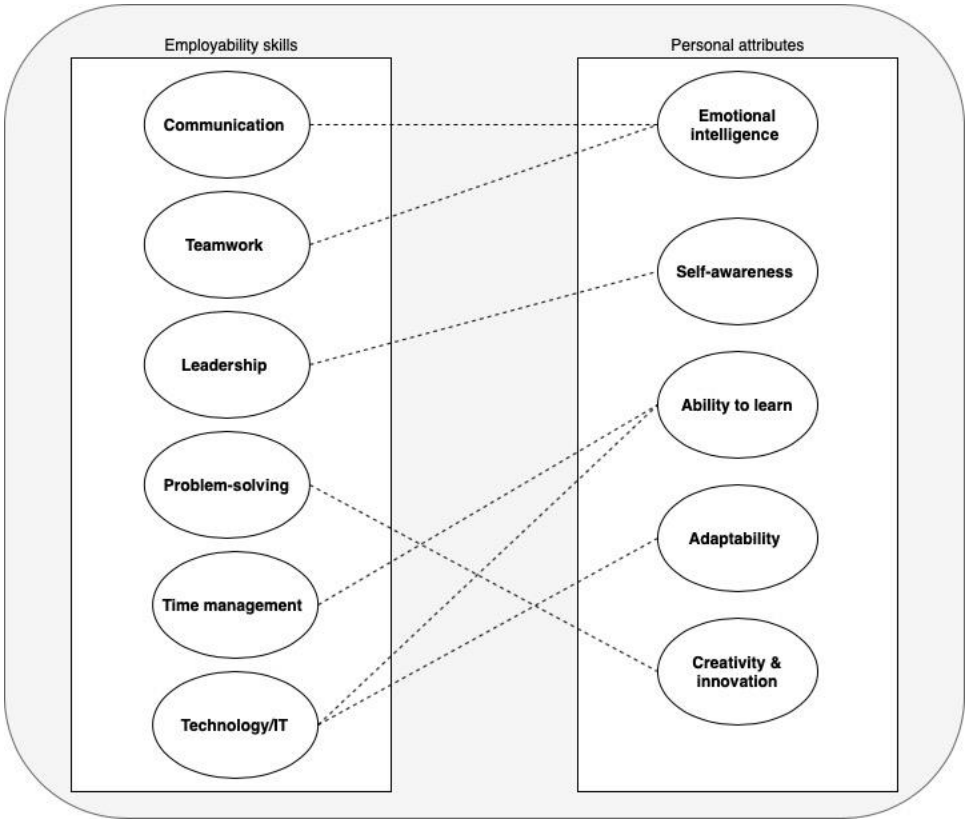

Figure 5: Links across the employability skills and personal attributes categories

*A dotted line …… indicates a link between two key employability skills

Previous studies that debated around key employability skills have not discussed the interdependencies among them. They were highlighting these skills as separate entities without giving attention to the connections that existed among them. This study tries to have a better understanding of key employability skills and what constitutes them and how they are linked. This finding can help HEIs in the development and measurement of key employability skills.

These connections can help HE develop and measure the related skills together instead of segregating related skills in different modules or exercises. Thus, it can help them design employability enhancement opportunities more effectively. More specifically, when benchmarking was identified in this study as a programme-level measurement of key employability skills, incorporating skills connections can help programme leaders and designers cluster the connected skills together to develop them collectively.

It can also be of great value to the students who are developing these skills in their studies. It can help them understand and make sense of these connections and the overlap between the key

employability skills and be aware of interdependences and complexity of employability. It can also help them showcase not only the skills they think they have developed, but also the skills that are connected with it, thus helping them articulate their skills development in the recruitment process.

4.7 Conclusion

This chapter presented the findings of Delphi study (first and second round) including the key employability skills for business students, and the top-ranked skills. In addition, definitions and elements of these skills were also included as well as the suggested methods for assessing these skills in HE. Finally, interconnections were highlighted between several key employability skills. To summaries these findings, a framework of key employability skills is presented in the following tables.

Key employability skills framework

All the listed key employability skills are categorised as employability skills, personal attributes, and career building skills. Each key employability skill in this framework is going to be defined individually and based on the opinations of the Delphi experts as presented in *Table 22*.

Key employability skill	Definitions
Employability skills	
Communication	**Oral communication** ○ Ability to adequately exchange information verbally with others. It includes six different skills: presentation, conversing, listening, communicating clearly and concisely, suitability of communication to the audiences and differentiating between various forms of oral communication 1. Presentation skills which are the ability convey a message to an audience. They constitute four core Skills: • Planning and organisation of the presentation • Structure and content of the presentation • Delivery skills: ▪ Using body language, facial expressions and eye contact ▪ Using visual aids, e.g. PowerPoint ▪ Ability to increase audience involvement and understanding • Practising 2. Ability to listen actively to other people

	3. Ability to speak clearly, fluently and in a compelling and confident manner to both individuals and groups. 4. Ability to speak and adapt to different audiences, retaining audience attention and using different communication approaches that are suitable for a specific audience or situation. 5. Use of different approaches that are suitable for the audience or the situation 6. Distinguish between different forms of oral communication: telephone or real conversation, presentation or meeting discussions **Written communication:** 1. Ability to express ideas effectively in a clear and concise manner: clarity, sentence structure, grammar, style and language 2. Writing documents or reports in a concise, easy to understand and well-presented way 3. The ability to distinguish between different forms of written communications: reports, emails and documents. **General skills:** 1. Critical thinking about selecting the appropriate type of communication and delivery 2. Considering culture, country and context (intercultural communication skills) 3. Differentiate between formal and informal communication 4. Ability to use digital forms of communication: Skype, emails
Teamwork	○ Ability to effectively work with other people to successfully perform a task. It involves communication, planning and task coordination, performance management and conflict resolution 1. Communication skills: Listen to other people, their ideas, suggestions and different points of view

	2. Planning and task coordination: share the load with the team, assign roles and tasks to ensure equal workload, define individual and shared responsibilities in the team 3. Ability to manage team performance: ability to establish team goals, monitor and provide feedback on the overall performance of the team and performance of each team member 4. Conflict resolution: ability to persuade and negotiate with others and mange conflict when it occurs
Problem-solving	There are eight elements associated with problem-solving skill including: 1. Identifying the problem by fragmenting it into its main components 2. Thinking about time limits, available resources, and problem context 3. Considering different sources of information and differentiating between good and bad source 4. Breakdown the available data, and identify key information and analyse it 5. Ability to question assumptions 6. Analysing the problem systematically and critically 7. Identifying different solutions, weighing up alternative ways of solving the problem 8. Solving the problem in an effective manner
Commercial awareness	o Understand what organisations do, how they operate and the role of individuals in that environment o Understand what is happening in the business and the commercial world and its implications for a specific industry or company o Ability to demonstrate business knowledge: finance, marketing, sales, etc. o Awareness of commercial activity, products, services and market trends o Analyse market trends and understand financial implications: revenue, profit

Leadership	○ Ability to lead or influence other people to achieve a common goal. ○ Different situations and professions require different leadership styles. ○ Ability to be a good team player
Technology/IT	○ Ability to use appropriate technology and to be comfortable with it ○ Having computer literacy; the ability to use Microsoft Packages including Word, Excel, PowerPoint and emails ○ Ability to build and manage online personal branding, e.g. LinkedIn identity ○ Being aware of social media and how to engage with it. ○ Knowing about netiquette: being able to construct professional email, communicate effectively in an online environment ○ Having the skills of data security and analysis e.g., big data analysis
Planning and organisation	○ Ability to plan and organise yourself, your time, and other people, so tasks are completed on time and done well ○ Prioritising
Customer focus	○ Ability to understand who the customers of the organisation are and provide a service that meet their needs ○ Having customer relationship management skills: • Ability to build relationship with customers • Seek their feedback, • Solve their problems and • Act professionally with them
Dealing with ambiguity	○ Ability to deal with partial information

	○ Make decisions on the information available at that point of time ○ The ability to cope with uncertainty and ambiguity
Ability to apply	○ Ability to apply what has been learned in an academic setting to a work context. Apply theory to "real world" practice ○ Apply what you have learned in a work context (practice to practice)
Numeracy	○ Ability to use numbers and data that are relevant in the business world, e.g. calculate percentages, fractions, budgeting and balance sheet
Time management	○ Ability to manage your time, to achieve your goals and tasks accordingly.
Personal attributes	
Resilience	○ Having self-control under challenging times ○ Ability to deal with disappointments, bounce back in stressful situations and not give up ○ Reflect on experiences and accept criticism
Self-awareness	○ Ability of an individual to be aware of his own self: strengths, weaknesses, motivations, abilities and personality ○ Ability to fit in, mirror expectations of the environment and modify behaviours ○ Ability to develop and progress as an individual by looking back, reflect and learn
Ability to learn quickly	○ Ability and willingness to acquire knowledge and learn something new and carry on learning in order to develop oneself ○ Having fundamental information skills: • Search for information

	• Evaluate and judge sources of information • Ability to apply that information o Lifelong and life-wide learning
Creativity and innovation	o Ability to generate new ideas o Ability to apply ideas or innovative solutions to different situations o Ability to question traditional ways of doing things
Motivation, open-mindedness and positive attitude	o Motivate yourself to learn and work o Having an open mindset about your abilities and what it is possible to accomplish. o Having positive attitude "I can-do approach" and willingness to go the extra mile o Always looking for new opportunities and challenges, being action-oriented in the chosen approach
Adaptability	o Ability to adapt and be flexible in dealing with the new and changing requirements o Willingness to take new responsibilities when required o Ability to fit in with the organisation culture and adapt to their rules and actions
Emotional intelligence	o Ability to read emotions of your own self, being able to recognise what you are feeling at a particular time, and how to manage these emotions effectively o Ability to recognise other people's emotions by paying attention to their facial expression, body language and tone of voice and behave according to their emotions and the situation at hand
Self-confidence	o Ability to show confidence in taking opportunities o Ability to deal with the job. o Self-confidence is also related to self-efficacy and self-belief.

Honest and open	○ Ability to treat others with honesty and openness in the workplace and accepting responsibility for one's actions
Reflection	○ Reflect on your learning process or/and experiences in a systematic, developmental and progressive way
Culture and moral awareness	○ Responsible business practice. It is about: • Ethics • Sustainability • Corporate governance • Corporate social responsibility ○ Awareness of cultural sensitivity, citizenship, and other people's perceptions
Career building skills	
Networking	○ Being able to build relationships and be strategic about it and plan for it
Preparation and professionalism	○ Ability to maintain professional behaviour and look at work ○ Ability to adhere to the organisation rules and expectations

Table 22: Key employability skills framework

Key employability skills framework – continued

Methods for measuring employability skills development in higher education

These measures are categorised based on the roles of different stakeholders of students' employability. Three groups of stakeholders are involved in measuring employability of students including students themselves, higher education and employers. Each measure is going to be discussed separately in *Table 23*.

Employability skills measures	Definitions
Role of individuals (students)	
1. Reflection	Reflection is defined by Moon (2004, p 4) as: *"A reflection is a form of mental processing – a form of thinking – that may be used deliberately to fulfil a purpose or to achieve some anticipated outcome, or there may be an unexpected outcome from a state of 'being reflective'. It is applied to relatively complicated or unstructured ideas for which there is not an obvious solution and is based on the further processing of knowledge and understanding and emotions that we already possess."*
2. Competency-based assessment	An assessment in which the assessor makes a judgement of competency (competent or not yet competent) against clear benchmarks or criteria such as a competency standard/unit of competency, assessment criteria of course curricula, performance specifications, or product

	specifications. Competency-based assessment may be contrasted with assessment in which candidates are compared to others or graded, for example. (Innovation and Business Industry Skills Council Ltd, 2017, P 9)
3. Strength-based assessment	Similar to the competency-based assessment, the difference is that Strength-based assessment focuses on what the individual enjoys doing, rather than what he or she can do or is competent in such as the evidence presented in the competency-based assessment.
4. E-Portfolios	E-portfolio is defined as "*a digitized collection of artefacts, including demonstrations, resources, and accomplishments that represent an individual, group, or institution"* (Lorenzon, 2005, p 2). In this case, it may list key employability skills of students that they have developed.
5. Self-assessment surveys	In self-assessment, "*individuals are asked to rate their own level of skills in different domains"* (Allen and Van der Velden, 2005, p 8). It involves asking students to rate themselves in terms of their skills development.
Role of Higher Education	
1. Role of Educators – Observation	Observation can be used as a method for measuring the employability skills of students by observing them in a given task and evaluating their competence. It can be used for some of the employability skills that can be observed in classrooms
2. Role of programme designers and leaders – Benchmarks	Programme level measures include the use of benchmarks where several employability areas that are relevant to a specific discipline or programme are identified at the beginning of the programme to become benchmarks and address them systematically throughout the programme.
3. Role of careers services	

3.1.Mock assessment centres	According to Rowe (2013, p 18), assessment centre is defined as *"A process employing multiple techniques and multiple assessors to produce judgments regarding the extent to which a participant displays selected competencies."* Mock assessment activities can be used to prepare students to perform well in the assessment centre activities that are conducted by employers. It can develop some of the students' employability skills and assist them to increase their chances of getting a graduate-level job
3.2.Mock Interviews	One of the most important steps in the process of getting a job process is the ability to do well in an interview. While some students are quite confident in marketing themselves to a possible employer, others may profit from building confidence in their performance by participating in mock interviews provided by career services to help them perform well in interviews.
4. Employability enhancement opportunities	
4.1. Roleplay	Crookwell et al. (1987, p.155) defined role-play as a *"social or human activity in which participants 'take on' or 'act out' specific 'roles' often within a predefined social framework or situational blueprint. In role-play, each 'actor' develops a particular behaviour, adopts an approach and/or responds to a scenario on the basis of a combination of the role they are asked to play and their interpretation of the particular scenario with which they are presented."*
4.2. Business simulation	According to Rowe (2013, p 22), simulation is a *"fictional situation in which the candidate is expected to respond from the perspective of someone in the rank being sought. The simulation may be very similar to a real work situation or resemble some aspects of it, although in a different setting or with different components."*

Role of employers	
1. Third-party feedback	It is a form of feedback that involves asking employers to assess student's employability skills before placements or any form of work experience and at the end, to evaluate their skills development.
2. 360 feedback	360 feedback is an assessment method that is widely used in the business world. According to the Chartered Institute of Personnel and Development (CIPD, 2018), It is defined as "*a method of performance appraisal which gathers feedback from a number of sources, including peers, direct reports, more senior colleagues and customers. This variety of feedback can offer line managers a wide-ranging perspective and help to make performance management a more objective and fair process."*
3. Psychometric tests - **Emotional intelligence performance test MSCFEIT**	Graduate psychometric tests are arguable helpful to identify skills, knowledge and personality. According to Fiori et al. (2014), the Mayer Salovey Caruso Emotional Intelligence Test (MSCEIT) is among the very few available and the most well-known and accepted measure of Emotional intelligence (EI) as an ability.

Table 23: Key employability skills framework - Measures

Chapter 5: Pre-post-tests findings

5.1 Introduction

This research project has used mixed methods of data collection, and this chapter discusses the results of the pre-post-tests method. The aim of this study is **(RO3)** to evaluate use of business simulation game in terms of enhancing undergraduate business students' perceptions of their key employability skills. The findings are presented in several sections. It starts with the tests of the robustness of data, and scales and items statistics. Descriptive statistics are then presented to provide an overview of the study participants who took part, including demographic characteristics such as gender, work experience and nationality. Next, trends of students' responses at the start and end of the module are presented. To follow, the mean differences between the start and the end of the module are identified. Also, the effect of some demographic characteristics on students' perceptions of key employability skills is tested. Finally, findings are summarised to capture the key points of the analysis before moving to the discussion chapter.

5.2 Presentation of findings

Findings of the survey are presented in the following sections.

5.2.1Overview of skills scale

This section starts with highlighting research hypotheses, then it moves to the handling of missing data followed by the scale and item statistics and includes the tests which have been conducted to evaluate the robustness of the data. The process of developing this survey is presented in Chapter 3, section3.5.7 Data preparation and 3.5.8 Measures.

5.2.2 Descriptive statistics

This section explains the data set characteristics. The goal is to provide an overview of the respondents who participated in this study and a context of further analysis. This section analyses the number of students, and the biographical data including gender, nationality, and work experience. These variables were analysed as part of the descriptive statistic because as discussed in Chapter 2, section 2.6 Demographic characteristics, they might have an influence on student employability.

5.2.3 Trends of pre- and post-tests

This section examines the findings of the survey at different points of the module. Data is available from the start and end of the module. Looking at the scale means provides an indication of changes in examined perception. These trends are examined based on the three control variables of gender, nationality, and work experience. As noted in Chapter 3: Methodology, section 3.5 Pre-post-test method, data has been gathered to enable comparisons of students at two different times to measure perceived employability skills before and after the intervention.

5.2.4 Correlations

This section investigates the relationships between skills and personal attributes. It helps clarify whether there are existing correlations between the skills of communication, teamwork, problem-solving, commercial awareness, numeracy and the personal attributes of adaptability, self-confidence, and reflection.

5.2.5 Intervention effect

This section investigates the data in terms of differences between perceived employability before and after the intervention. The investigation includes testing differences across control variables of gender, nationality, and work experience. The data has been analysed to identify whether there are any differences between students at the start of the module, and on completion to determine the change in perception.

5.2.6 Summary of findings

The final section of this chapter summarises the main findings that were obtained from the quantitative analysis of the surveys data. This section acts as a conclusion and preparation for the following chapter.

5.3 Overview of skills scale

After exploring the data set results, findings have been summarised and linked to the research hypotheses. This helps to clarify the main points of analysis to introduce and support the discussion of these results in the following chapter.

5.3.1 Key employability skills measures

To start, a summary of all research hypotheses that were discussed in the previous chapter is listed in four main categories as the following:

1. **Measures related to employability skills**

- Communication skills
- Teamwork skills
- Problem-solving skills
- Numeracy skills
- Commercial awareness skills

2. **Measures related to personal attributes**

- Self-confidence attribute
- Reflection attribute
- Adaptability attribute

3. **Control variables**

- Gender
- Nationality
- Work

5.3.2 Missing data

The data did not contain many missing values (0.69% of values). Overall, 136 of 157 respondents (86.03%) responded to all questions. Also, 30 of 44 variables included in the dataset have no missing values. The maximal percentage of missing values across variables was 2.5% (variable Reflection3_Pre and Communication4_Post). According to Bennett (2001), statistical analysis is not biased due to missing data if the missing data share is less than 10%. In addition, the Little's MCAR test indicated that missing data is completely at random (p=0.952). Only one of three control variables (nationality) had one missing value (0.6% of values). The overall scores for skills were calculated using pairwise deletion (exclude cases analysis by analysis option in SPSS). Thus, all analysis procedures did not have missing values.

5.3.3 Reliability and Exploratory factor analysis

The two tests have been conducted for the estimation of the data adequacy for factor analysis. Kaiser-Meyer-Olkin test (KMO) was used for measuring of Sampling Adequacy. Also, Bartlett's test was used for the estimation of the sphericity. As shown in *Table 24*, the value of the KMO statistic was around 0.75 and larger, indicating great adequacy of the data for factor analysis (Hutcheson and Sofroniou, 1999). The p-values of Bartlett's Test of Sphericity also were very small, indicating that the overall correlations between variables significantly differ from zero, and data are suitable for factor analysis (Field, 2013).

	Values
Employability skills	
Pre estimates	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.797
Bartlett's Test of Sphericity (p-value)	<0.001
Post estimates	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.815
Bartlett's Test of Sphericity (p-value)	<0.001
Personal attributes	
Pre estimates	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.85
Bartlett's Test of Sphericity (p-value)	<0.001
Post estimates	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.757
Bartlett's Test of Sphericity (p-value)	<0.001

Table 24: Data adequacy for EFA

Then, a factor structure was tested using exploratory factor analysis (EFA) separately for skills subscales and personal attributes subscales as well as for pre-intervention and post-intervention estimates. Principal axis factoring was used with Promax rotation because there is evidence to consider that underlying factors are correlated. Five factors were extracted in case of skills data,

and three factors were extracted for personal attributes data to test the hypothesised structure of the latent constructs.

EFA indicated an excellent fit 5-factor model within skills measurement for both pre- and post-estimates. Tables G1 and G2 (
Appendix G) report results for original data (results for imputed data were very similar, and the latent factor structure was stable across all five imputation datasets. The minimal loading value 0.32 was considered as significant, according to Tabachnick et al. (2007). The majority of the loadings were >0.5 corresponding to "strong" loadings (Costello and Osborne, 2005) without cross-loadings >0.32 that means insignificant cross-loadings across factors.

However, the picture for personal attributes was not as clear. According to Table G.3 (
Appendix G), EFA indicated the three-factor structure in case of pre-intervention estimates, while the factor structure for post-estimates has one item (AD1_post), which had low loading, 0.3 on the correspondent factor. Considering that data for pre-estimates indicates a good correspondence with hypothesised latent structure, results of EFA could be considered as acceptable.

Further, the reliability of the subscales was tested by the estimation of Cronbach's alpha. According to Nunnally (1994), latent constructs with values of $\alpha \geq 0.65$ are acceptable for new latent constructs. Scales with $0.5 \leq \alpha \leq 0.75$ can be accepted as scales with moderate reliability, while scales with $\alpha > 0.75$ can be considered as scales with high reliability (Hinton et al., 2014). A commonly accepted rule is that α within the range of 0.6-0.7 corresponds to an acceptable level of reliability, and $\alpha \geq 0.80$ indicates a very good level of reliability (Ursachi et al., 2015; Hulin et al., 2001).

As shown in *Table 25*, all the constructs excluding (Self-confidence) satisfied at least the moderate level of reliability based on Cronbach's alpha. At the same time, Communication, Adaptability (pre-estimates), Teamwork, Numeracy, and Adaptability (post-estimates) meet the condition of high reliability.

	Cronbach's alpha	
Skills	Pre	Post

Communication	C	.78	.64
Teamwork	T	.56	.74
Problem solving	PS	.62	.67
Commercial awareness	CA	.65	.58
Numeracy	N	.68	.73
Personal attributes			
Adaptability	AD	.75	.73
Self-confidence	CF	.59	**.29**
Reflection	R	.64	.57

Table 25: Reliability of the tested constructs

Only one construct (Self-confidence) in post-intervention measures has of α <0 .5, but α for this scale in case of pre-intervention estimates is 0.6 satisfying an acceptable level of reliability. In general, increasing the reliability of the scales is one of the directions for further investigations in the employability skills related literature.

5.4 Descriptive statistics

The first section of the survey involves demographics information of students, including their gender, type, work experience, age, and programme. This section of the analysis highlights those findings and provide an insight into the survey population structure.

The total number of students who participated in this study was 158. The decision was made to include only the responses of students who participated in both phases of the study; pre and post-tests.

A small number of questionnaires were omitted from the analysis. These responses were from students who failed to provide their candidate numbers at the pre- or post-surveys, which made linking their pre- and post-responses unattainable. There was also a student who failed to complete any question in the survey and submitted a blank questionnaire. All students were informed that participation was voluntary, no other student asked to not participate in the study, and no other student failed to participate. Thus, it can be inferred that steps to ensure participants voluntary involvement were effective.

Of the 403 students enrolled in the Business Simulation Module, a total of 158 (39%) students participated in this study. Those 158 responses were used in the analysis because they were for participants who completed the baseline questionnaire (pre-test) and the post-intervention questionnaire (post-test). A summary of the demographic characteristics is presented in *Table 26*.

	N (%)
Gender	
Male	72 (45.57%)
Female	86 (54.43%)
Student Type	
Home	126 (79.75%)
EU	9 (5.70%)
International	22 (13.92%)
Work experience	
Yes	137 (86.71%)
No	21 (13.29%)
Age Group	
18-21	149 (94.30%)
22-25	7 (4.43%)
30 and above	2 (1.27%)
Programme	
Accounting for Management	42 (26.6%)
Business and Mathematics	2 (1.3%)
Business and International Relations	12 (7.6%)
Business Management and Public Policy	4 (2.5%)
Business and Politics	8 (5.1%)
Business Computing and IT	14 (8.9%)
Business Management and English Language	5 (3.2%)
Business and Sociology	5 (3.2%)
Finance	25 (15.8%)
Mathematics with Economics	1 (0.6%)
International Business and Management	29 (18.4%)
Human Resource Management	10 (6.3%)
Other	1 (0.6%)

Table 26: Demographic Characteristics of participants in the research project (n=158)

5.4.1 Gender

The gender breakdown shows a slightly higher proportion of females (54.43%) in comparison with males (45.57%). Statistics from HESA for 2018/19, which relate to the data collection timeline, shows a similar number with a slightly higher percentage of full-time undergraduate females than

males (56%:44%). This indicates that the sample population is representative of undergraduate students.

5.4.2 Nationality

This percentage shows that the majority of undergraduate students are from the UK. Statistics from HESA for the period of 2018/19 shows a similar picture in that 83% of all full-time undergraduate students were from the UK (HESA, 2020), indicating this sample is representative of the full-time/undergraduate population.

5.4.3 Work experience

Of the students surveyed, the majority of students have work experience (86.71%), of these, 57% females, and 43% males. Of the students who claim to have no work experience (13.29%), 61% are males, and 39% are females. Thus, the data reveal higher proportions of males with no work experience than females.

5.4.4 Age

The breakdown by age of the total population shows that the youngest age group (18-21) have the largest share (94%), while the share of respondents older than 30 years is slightly larger than 1% for the overall sample. A similar picture was found in the HESA report of the undergraduate students in the UK. IT was found that the majority of undergraduate students (78%) were in the age group of 18-20. This suggests that undergraduate students in the age range of 18-21 dominate full-time undergraduate education.

5.4.5 Programme

In this study, participants are enrolled in a total of 13 programmes in the business school. The majority of students are enrolled in Accounting (26.6%), followed by International business (18.4%) and Finance (15.8%).

5.5 Trends of pre- and post-tests

This section seeks to explore differences between groups within the student population. The analysis investigates the scales of employability skills and personal attributes, focusing on whether there are perceived differences within the grouping of gender, work experience and nationality.

Age and programme variables have been eliminated from the analysis. In terms of age, the majority of students were in one age category of 18-21. Thus, there were not enough samples of each age category to analysis the difference. For programme variable, there were a total of 13 programmes that were similar and had many modules in common, and it was challenging to distinguish programmes from each other, and some programmes have very few students enrolled to compare them with other programmes, thus, arriving at conclusions from the analysis was believed to be difficult.

5.5.1 Assumption check

To establish whether to use parametric tests such as t-test and ANOVA, the data must meet certain assumptions:

- Independent variable compromises of two categorical independent groups (for example, gender: M/F).
- Groups are independent (an individual cannot be in more than one, for example, cannot be both male and female.
- Dependent variable is normally distributed in each group of the independent variable
- All population variances are equal
- There are no significant outliers

This process of checking assumptions was repeated for all elements of the data analysis, in relation to gender, nationality and work experience, and this is detailed below, as part of the presentation of each finding.

Independent t-tests were used to test the impact of gender, work experience and nationality on employability skills and personal attributes. One of the main assumptions for applying the t-test is the assumption that data distribution does not deviate from a normal distribution (Kim, 2015).

To test this assumption, z-scores Skewness and Kurtosis were calculated as it was suggested by Kim (2013). The results are reported in Appendix H. As shown in Table H1 (Appendix H), only skewness for communication skills before intervention within subgroup "With work experience" exceeds the cut-off value ±3.29 suggested for sample size >50 (Mishra et al., 2019).

For subgroup "International" within the control variable "nationality," sample size was <50. The cut-off level for Z-scores of skewness and kurtosis, in this case, is ±1.96. Values of z-scores reported in Table H2 (Appendix H) indicate that data distribution across nationality subgroups does not deviate from a normal distribution (Mishra et al., 2019).

Considering that only one subgroup indicates deviation from a normal distribution and t-test is, robust enough when the data are not normally distributed (Kim, 2013). Thus, the data distribution condition for the t-test is satisfied.

The additional important assumption to fulfil is the missing of significant outliers. To test this assumption, an inspection of boxplot was carried out, and it indicated that data had outliers (data outside of lower-upper fence range). Therefore, bootstrapping (with bootstrapping of 1000 samples) was used as it was recommended by Field (2013) when data has issues with distribution and outliers.

Another important assumption for using t-test and ANOVA is the assumption about equality of variances across subgroups. Levene's Test for Equality of Variances was used to test this assumption. The Welch statistic (Moder, 2010) was used in cases where the assumption about the homogeneity of variances was violated in ANOVA test. Welch-Satterthwaite adjustment to the degrees of freedom (Giorgi and Bhattacharya, 2012) was used when applying independent sample t-test. The variables that violated the assumption of the equality of variance are highlighted in Table H3 (Appendix H).

5.5.2 The Impact of Gender

An independent sample t-test was conducted to test the effects of gender on skills and personal attributes at the start and end of the module. *Table 27* presents t-test results for the comparison of average scores for employability skills and personal attributes before and after intervention across gender subgroups.

Variable	Males	Females	Difference (M-F)	t-statistics	p-value
Before intervention Employability skills					
Communication	4.01 [3.86 4.17]	4.23 [4.12 4.35]	-0.22 [-0.41 -0.04]	-2.368	**0.024**
Teamwork	3.86 [3.69 4.04]	3.77 [3.63 3.91]	0.09 [-0.14 0.31]	0.584	0.468
Problem-solving	3.72 [3.58 3.86]	3.77 [3.66 3.89]	-0.06 [-0.24 0.12]	-0.403	0.533
Commercial awareness	3.87 [3.74 4.00]	3.72 [3.59 3.85]	0.15 [-0.03 0.34]	1.893	0.114
Numeracy	4.14 [3.99 4.30]	4.00 [3.85 4.15]	0.14 [-0.07 0.35]	1.508	0.235
Personal attributes					
Adaptability	4.00 [3.84 4.16]	4.08 [3.97 4.19]	-0.09 [-0.26 0.11]	-0.736	0.368
Self-confidence	4.17 [4.01 4.33]	4.22 [4.09 4.34]	-0.04 [-0.26 0.16]	-0.136	0.689
Reflection	3.82 [3.68 3.97]	3.97 [3.84 4.09]	-0.15 [-0.34 0.05]	-1.307	0.137
After intervention Skills					
Communication	4.23 [4.10 4.36]	4.25 [4.15 4.35]	-0.02 [-0.17 0.13]	-0.497	0.771
Teamwork	4.03 [3.82 4.23]	3.94 [3.80 4.06]	0.09 [-0.13 0.34]	0.847	0.452
Problem-solving	4.03 [3.89 4.17]	3.84 [3.73 3.95]	0.19 [0.02 0.37]	2.158	**0.034**
Commercial awareness	4.00 [3.87 4.13]	3.87 [3.75 3.99]	0.13 [-0.03 0.31]	1.741	0.082
Numeracy	0.66 [0.55 0.76]	0.77 [0.65 0.87]	0.22 [0.01 0.45]	2.125	0.060
Personal attributes					
Adaptability	4.12 [3.99 4.26]	4.14 [4.02 4.27]	-0.02 [-0.20 0.16]	-0.305	0.811
Self-confidence	4.30 [4.19 4.43]	4.23 [4.12 4.35]	0.08 [-0.08 0.23]	1.047	0.350
Reflection	4.13 [3.97 4.29]	4.08 [3.96 4.21]	0.05 [-0.15 0.24]	0.159	0.874

Table 27: T-test results for comparison of average scores for skills and personal attributes before and after intervention across gender subgroups

As shown in the Table above, females had a higher level of communication skills before intervention (t=-2.37, p=0.024). After the intervention, males had a higher level of problem-solving (t=2.16, p=0.034). All other differences between gender groups across employability skills and personal attributes were insignificant before intervention as well as after the intervention. The significant results indicate that there is a difference in some of the perceived employability skills between males and females. For instance, analysis suggests that females perceive their communication skills higher than males before the intervention. In addition, males perceive their problem-solving skills higher than females after the intervention.

5.5.3 The Impact of Work experience

Table 28 presents t-test results for the comparison of average scores for skills and personal attributes before and after intervention across work experience subgroups.

Variable	Mean [CI 95%] With experience	Mean [CI 95%] Without experience	Difference (Y-N)	t-statistics	p-value
Before intervention					
Employability skills					
Communication	4.18 [4.08 4.27]	3.86 [3.57 4.14]	0.31 [0.02 0.62]	2.211	**0.037**
Teamwork	3.83 [3.72 3.94]	3.68 [3.35 4.00]	0.15 [-0.18 0.50]	1.080	0.280
Problem-solving	3.77 [3.68 3.87]	3.60 [3.35 3.84]	0.17 [-0.08 0.45]	1.177	0.209
Commercial awareness	3.82 [3.73 3.91]	3.57 [3.25 3.88]	0.25 [-0.08 0.58]	1.813	0.070
Numeracy	4.08 [3.93 4.19]	4.07 [3.74 4.33]	0.02 [-0.28 0.36]	0.052	0.958
Personal attributes					
Adaptability	4.09 [3.99 4.18]	3.75 [3.46 4.06]	0.34 [0.01 0.64]	2.377	***0.033***
Self-confidence	4.21 [4.11 4.30]	4.10 [3.78 4.41]	0.11 [-0.21 0.46]	0.515	0.506
Reflection	3.92 [3.82 4.02]	3.75 [3.47 4.04]	0.17 [-0.14 0.48]	1.203	0.264
After intervention					
Employability skills					
Communication	4.28 [4.20 4.35]	4.00 [3.72 4.27]	0.28 [0.01 0.57]	2.491	**0.056**
Teamwork	3.99 [3.88 4.11]	3.88 [3.54 4.20]	0.12 [-0.23 0.49]	0.835	0.404
Problem-solving	3.94 [3.85 4.03]	3.84 [3.60 4.09]	0.10 [-0.18 0.34]	0.797	0.472
Commercial awareness	3.94 [3.84 4.03]	3.83 [3.59 4.06]	0.11 [-0.15 0.36]	0.799	0.424
Numeracy	4.09 [0.47 0.57]	4.30 [0.34 0.57]	- 0.21 [-0.21 0.24]	-1.256	0.209
Personal attributes					
Adaptability	4.08 [3.95 4.22]	4.30 [4.03 4.57]	-0.22 [-0.53 0.08]	0.309	0.149
Self-confidence	4.14 [4.05 4.24]	4.08 [3.78 4.37]	0.06 [-0.24 0.37]	0.265	0.717
Reflection	4.12 [4.03 4.21]	3.98 [3.59 4.34]	0.15 [-0.22 0.55]	1.268	0.205

Table 28: T-test results for comparison of average scores for skills and personal attributes before and after intervention across work experience subgroups

According to *Table 28*, communication skills were higher for participants with work experience in comparison with participants without work experience (t=2.11, p=0.037) before the intervention. Also, adaptability was high for participants with work experience before the intervention (t=2.38, p=0.033). All other differences across skills and personal attributes were statistically insignificant. This suggests there is evidence to reject the idea that there is no difference in perceived skills and personal attributes between students with, and without work experience. In other words, analysis suggests that students with work experience perceive their skills and personal attributes as higher than those without work experience do before the intervention.

5.5.4 Impact of Nationality

Table 29 presents t-test results for the comparison of average scores for skills and personal attributes before and after intervention across nationality subgroups.

Variable	Mean [95% Confidence Interval] Home	International	Difference	t-statistic	p-value
Before intervention					
Skills					
Communication	4.21 [4.11 4.31]	3.82 [3.57 4.08]	.391 [0.11 0.07]	2.81	**0.008**
Teamwork	3.82 [3.70 3.94]	3.73 [3.33 4.12]	.093 [-0.02 0.43]	0.55	0.580
Problem solving	3.75 [3.65 3.86]	3.77 [3.64 3.85]	-0.020 [-0.26 0.22]	-0.17	0.862
Commercial awareness	3.76 [3.66 3.86]	3.96 [3.71 4.21]	-0.213 [-0.45 0.02]	1.82	0.070
Numeracy	4.01 [3.88 4.13]	4.25 [4.00 4.52]	-0.233 [-0.52 0.55]	-1.60	0.111
Personal attributes					
Adaptability	4.02 [3.92 4.12]	4.13 [3.89 4.38]	-0.11 [-0.34 0.12]	-0.93	0.354
Self-confidence	4.22 [4.13 4.33]	4.11 [3.81 4.42]	0.105 [-0.21 0.42]	0.68	0.500
Reflection	3.90 [3.79 3.99]	3.93 [3.67 4.21]	-0.03 [-0.28 0.20]	-0.31	0.765
After intervention					
Skills					
Communication	4.30 [4.22 4.37]	4.00 [3.79 4.24]	0.29 [0.04 0.55]	2.44	**0.020**
Teamwork	3.98 [3.86 4.11]	3.95 [3.64 4.24]	0.03 [-0.25 0.03]	0.26	0.799
Problem solving	3.92 [3.82 4.01]	3.95 [3.68 4.20]	-0.03 [-0.26 0.19]	-0.30	0.763
Commercial awareness	3.90 [3.82 3.99]	4.00 [3.79 4.20]	-0.09 [-0.30 0.11]	-0.87	0.384
Numeracy	4.11 [3.97 4.23]	4.10 [3.81 4.38]	0.01 [0.28 0.30]	0.08	0.931
Personal attributes					
Adaptability	4.11 [4.02 4.21]	4.20 [3.96 4.43]	-0.08 [-0.31 0.14]	-0.70	0.482
Self-confidence	4.26 [4.16 4.35]	4.30 [4.10 4.50]	-0.04 [0.24 0.16]	-0.40	0.689
Reflection	4.12 [4.02 4.22]	3.98 [3.23 4.10]	0.14 [-0.16 0.46]	0.96	0.342

Table 29: T-test results for comparison of average scores for skills and personal attributes before and after intervention across work experience subgroups

T-test results in *Table 29* indicate statistically significant differences in communication skills across nationality subgroups. These differences were significant before the intervention (t=2.81, p=0.008) and after the intervention (t=2.44, p=0.020). All other differences are statistically insignificant at the significance level of 0.05. It may be concluded that home students perceive their communication skills to be higher than international students do before and after the intervention.

5.6 Correlation between employability skills and personal attributes

The analysis was undertaken to ascertain whether there was a relationship between skills and personal attributes.

	C	T	PS	CA	N	AD	CF	R
Before intervention								
Communication, C	1	.411**	.368**	.245**	**.065**	.413**	441**	.486**
Teamwork, T	.411**	1	.384**	.276**	**.131**	.409**	.444**	.434**
Problem solving, PS	.368**	.384**	1	.405**	.295**	.601**	.366**	.457**
Commercial awareness, CA	.245**	.276**	.405**	1	.346**	.532**	.281**	.415**
Numeracy, N	.065	.131	.295**	.346**	1	.346**	.264**	.142
Adaptability, AD	.413**	.409**	.601**	.532**	.346**	1	.462**	.554**
Self-confidence, SC	.441**	.444**	.366**	.281**	.264**	.462**	1	.469**
Reflection, R	.486**	.434**	.457**	.415**	**.142**	.554**	.469**	1
After intervention								
Communication, C	1	.449**	.389**	.394**	.218**	.466**	.460**	.587**
Teamwork, T	.449**	1	.511**	.545**	.260**	.537**	.471**	.520**
Problem solving, PS	.389**	.511**	1	.641**	.389**	.542**	.476**	.596**
Commercial awareness, CA	.394**	.545**	.641**	1	.354**	.577**	.513**	.576**
Numeracy, N	.218**	.260**	.389**	.354**	1	.331**	.264**	.186*
Adaptability, AD	.466**	.537**	.542**	.577**	.331**	1	.534**	.492**
Self-confidence, SC	.460**	.471**	.476**	.513**	.264**	.534**	1	.465**
Reflection, R	.587**	.520**	.596**	.576**	.186*	.492**	.465**	1

Table 30: Correlation matrix between skills and personal attributes

Note: **. Correlation is significant at the 0.01 level (2-tailed).

As shown in *Table 30*, skills and personal attributes are positively correlated. Only Numeracy was not correlated significantly with Communication, Teamwork skills and Reflection before the intervention. After the intervention, all skills and attributes were positively correlated, supporting H9. In other words, all skills and personal attributes are related and connected where the higher

perception in one skill or attribute could lead to higher perception in other skills and attributes except for numeracy skill.

5.7 Intervention effect

5.7.1 Paired t-test results

To compare the average values of skills and attributes before and after the intervention, paired sample t-test was applied, as it is considered the most commonly used tool in cases when the impact of intervention/treatment are investigated (Skaik, 2015).

As shown in *Table 31*, all the values of Z scores for skewness and Kurtosis were less than 3.29, indicating (considering sample size 50<n<300) statistically insignificant deviation from a normal distribution across all subgroups (Kim, 2013). Considering the presence of outliers, bootstrapping (1000 samples) was performed to define confidence intervals for differences and test significance.

				Skewness		Kurtosis	
Variable	Min	Max	Mean [95% CI]	Statistic	Z-scores	Statistic	Z-scores
Before intervention							
Employability skills							
Communication	2.00	5.00	4.13 [4.04 4.23]	-0.64	-3.29	0.53	0.53
Teamwork	2.00	5.00	3.8 [3.69 3.91]	-0.24	-1.27	-0.13	-0.13
Problem-solving	2.50	5.00	3.76 [3.67 3.85]	0.02	0.10	-0.43	-0.43
Commercial awareness	2.33	5.00	3.8 [3.71 3.89]	-0.09	-0.47	-0.21	-0.21
Numeracy	2.00	5.00	4.08 [3.97 4.19]	-0.47	-2.44	-0.34	-0.34
Personal attributes							
Adaptability	2.67	5.00	4.05 [3.96 4.14]	-0.05	-0.25	-0.75	-0.75
Self-confidence	2.00	5.00	4.21 [4.11 4.31]	-0.60	-3.10	0.20	0.20
Reflection	2.50	5.00	3.91 [3.81 4]	0.00	0.00	-0.47	-0.47
After intervention							
Skills							
Communication	2.75	5.00	4.23 [4.16 4.31]	-0.52	-2.71	0.27	0.27
Teamwork	2.00	5.00	3.98 [3.87 4.09]	-0.25	-1.28	-0.64	-0.64
Problem-solving	2.50	5.00	3.92 [3.84 4.01]	-0.06	-0.29	-0.18	-0.18
Commercial awareness	2.67	5.00	3.93 [3.85 4.01]	-0.02	-0.13	-0.71	-0.71
Numeracy	2.00	5.00	4.12 [4.01 4.24]	-0.61	-3.17	-0.12	-0.12
Personal attributes							
Adaptability	2.67	5.00	4.13 [4.04 4.22]	-0.24	-1.27	-0.35	-0.35
Self-confidence	3.00	5.00	4.27 [4.19 4.35]	-0.18	-0.91	-0.67	-0.67
Reflection	2.00	5.00	4.09 [3.99 4.19]	-0.48	-2.50	0.13	0.13

Table 31: Descriptive statistics of the average values of skills and personal attributes

The t-test results are reports in *Table 32*.

	Mean difference [95%CI]	t-statistic	p-value
Employability skills			
Communication	-0.10 [-0.18 -0.03]	2.61	**0.007**
Teamwork	-0.17 [-0.27 -0.07]	3.49	**0.003**
Problem-solving	-0.17 [-0.26 -0.09]	3.57	**<0.001**
Commercial awareness	-0.14 [-0.22 -0.05]	3.08	**0.002**
Numeracy	-0.05 [-0.16 0.05]	0.87	0.354
Personal attributes			
Adaptability	-0.09 [-0.18 0.00]	1.77	**0.049**
Self-confidence	-0.06 [-0.17 0.03]	1.17	0.201
Reflection	-0.20 [-0.32 -0.09]	3.20	**0.003**

Table 32: Paired sample t-test results

According to *Table 32*, all changes in skills and personal attributes after intervention were positive. However, not all were statistically significant at the "standard" significance level. The p-value <0.05 corresponds "standard" significance level (Hair et al., 2010). **The positive changes across skills were significant for Communication, Teamwork, Problem-solving, and Commercial awareness.** The changes in Numeracy after the intervention were insignificant.

Across personal attributes, **positive changes in Reflection and Adaptability were statistically significant.** The **changes in Self-confidence were statistically insignificant at the level 0.05.**

5.8 Differences of skills and personal attributes across control variables

In this section, mean differences of skills and personal attributes across control variables are examined. In order to test these differences based on gender, nationality, and work experience, the assumption about normality has checked before the t-test results. To avoid issues with possible outlier, bootstrapping was used.

Factor Analysis of Variance (Factorial ANOVA) for repeated measures was used as an appropriate tool to detect differences in the mean values of variables before and after the intervention (Schober

and Vetter, 2018; Singh et al., 2013). Three control variables were tested gender, nationality, and work experience.

Table 33 Factorial ANOVA results for skills

Variable	Communication	Teamwork	Problem-solving	Commercial awareness	Numeracy
Intervention	*F* (1,147) = 4.559, *p=.034*.	*F* (1,148) = 7.426, *p*=.007.	*F* (1,149) = 5.441, *p*=.021.	*F* (1,149) = 3.754, *p*=.055.	*F* (1,149) = .134, *p* =.715.
Intervention * Gender	*F* (1,147) = *4.654*, ***p*=.033.**	*F* (1,148) = *1.528*, *p*=.218.	*F* (1,149) = 4.934, ***p*=.028.**	*F* (1,149) = .389, *p*=.534.	*F* (1,149) = .438, *p* =.509.
Intervention * Nationality	*F* (1,147) = *2.185*, *p= .141*.	*F* (1,148) = *.003*, *p* =.955.	*F* (1,149) = .754, *p*=.387.	*F* (1,149) = 2.926, *p*=.089.	*F* (1,149) = 3.042, *p* =.083.
Intervention *Work experience	*F* (1,147) = *.138*, *p=.710*.	*F* (1,148) = .911, *p*=341.	*F* (1,149) = .173, *p*=.678.	*F* (1,149) = 3.202, *p*= .076.	*F* (1,149) = 2.946, *p*=.088.

Table 33:Factorial ANOVA results for employability skills

According to *Table 33*, in the case of communication skills, there is a significant interaction effect between gender and intervention (p=0.033). The effect of the intervention is the largest and positive for "Males", while it is small and positive for "Females" (*Figure 6*). In addition, there is a significant interaction between gender and intervention in the case of problem-solving skills (p= 0.028). As presented in *Figure 7*, the effect of the intervention is the largest and positive for “Males” and small and positive for “females”. However, interaction effects between nationality and intervention as well as between work experience and intervention are insignificant. All other interaction terms reported in *Table 17* are insignificant, indicating no significant impact of other control variables on the development of the skills.

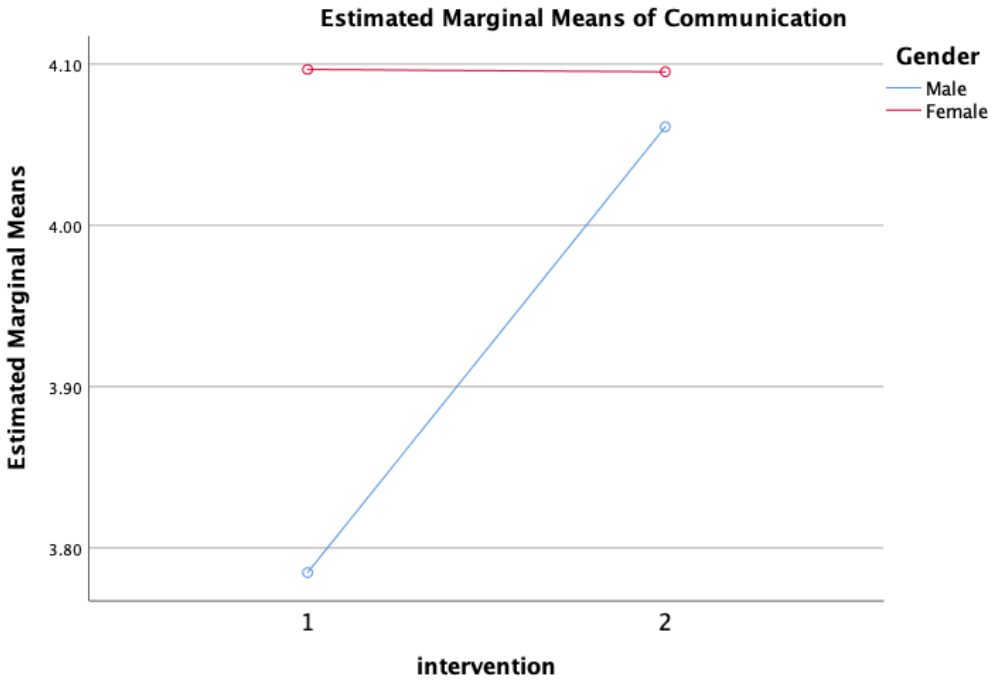

Figure 6: The effect of business simulation on communication skills across gender groups (1- before intervention, 2- after intervention)

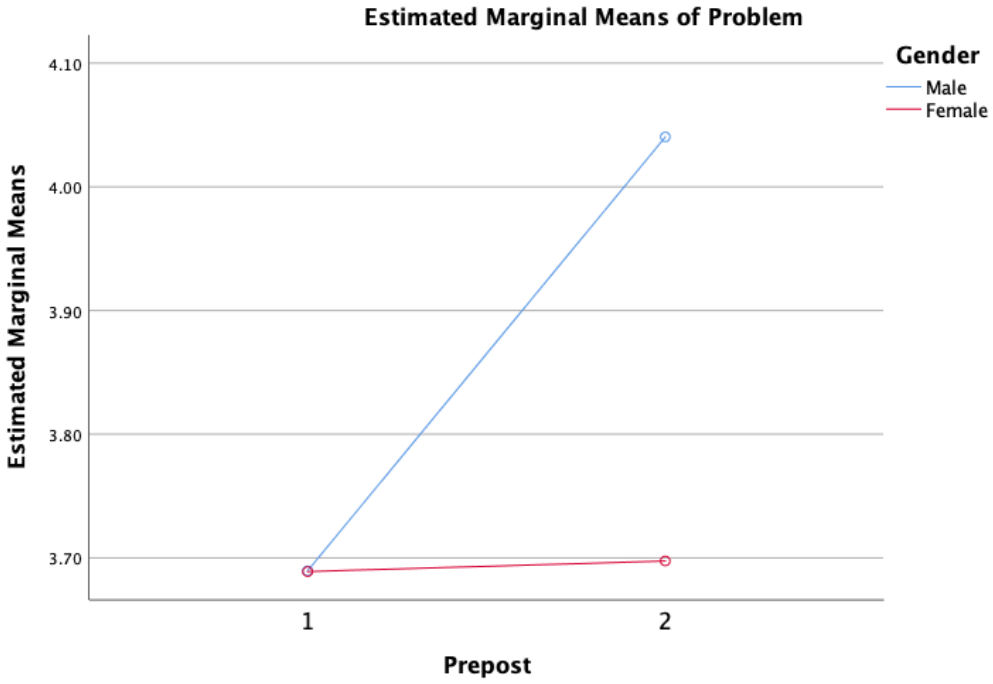

Figure 7: The effect of business simulation on problem-solving skills across gender groups (1- before intervention, 2- after intervention)

Variable	Adaptability	Self-confidence	Reflection
Intervention	*F* (1,149) =*3.818*, *p= .053.*	*F* (1,149) =*1.983*, *p= .161.*	*F* (1,149) =*1.111*, *p= .294.*
Intervention* Gender	*F* (1,149) =*.140*, *p= .709.*	*F* (1,149) =*.016*, *p= .900.*	*F* (1,149) =*.019*, *p= .889.*
Intervention* Nationality	*F* (1,149) =*1.740*, *p= .189.*	*F* (1,149) =*.115*, *p= .735.*	*F* (1,149) =*1.086*, *p= .299.*
Intervention* Work experience	*F* (1,149) =*4.503*, ***p= .035.***	*F* (1,149) =*.252*, *p= .616.*	*F* (1,149) =*.030*, *p= .863.*

Table 34:Factorial ANOVA results for personal attributes

According to *Table 34*, the intervention effect across work experience subgroups was different only for adaptability attribute. According to *Figure 8*, the intervention had a positive effect on adaptability for participants without work experience and had no impact on participants with work experience. All other controls had no significant effect on personal attribute development.

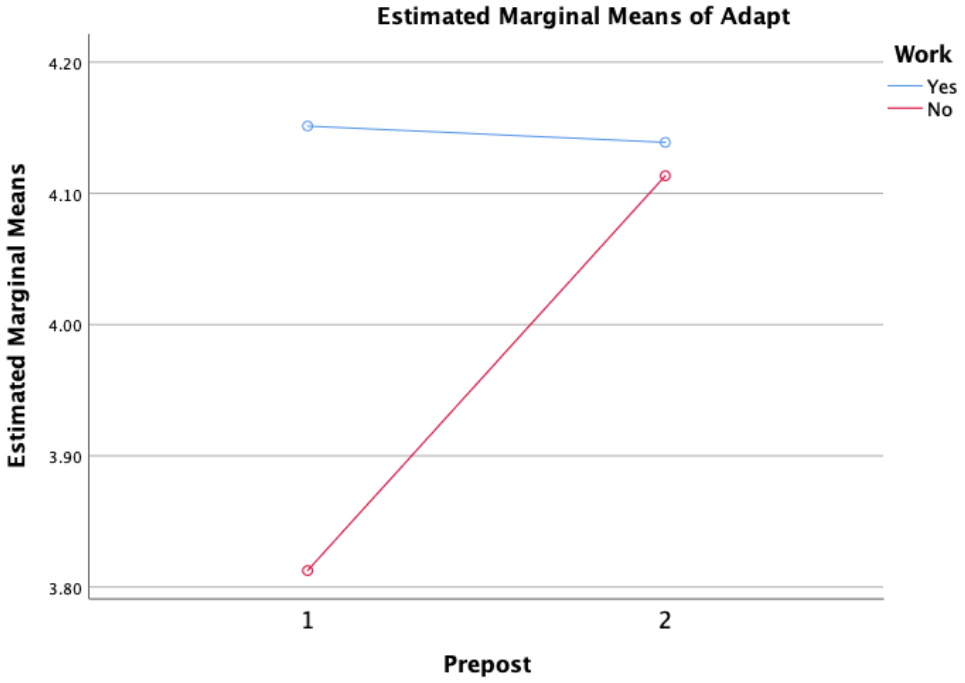

Figure 8: The effect of business simulation on adaptability attribute across work experience groups (1- before intervention, 2- after intervention)

These results of intervention effect indicate that the intervention of business simulation increased the perceived skills of communication, teamwork, problem-solving and commercial awareness for the study participants. The analysis also suggests that the intervention increased the perceived

attributes of adaptability and reflection for the respondents. When differences were analysed based on gender, nationality and work experience, gender and work experience had a partial effect on some employability skills and personal attributes based on their demographic characteristics.

5.9 Summary of findings

To summarise the findings in this chapter, Table 33 highlights the main points that were generated from this research. All the main findings from the pre-post-tests results are presented in *Table 35*.

Impact of gender		
Variables	**Descriptive statistics Higher/ highest mean**	**Is this significant?**
Before intervention Communication skills	Female	Yes
After intervention Problem solving skills	Male	Yes
Impact of Work experience		
Before intervention		
Communication skills	With work experience	Yes
Adaptability	With work experience	Yes
After intervention		
Communication skills	With work experience	Yes
Impact of Nationality		
Before intervention		
Communication skills	Home	Yes
After intervention		
Communication skills	Home	Yes

Intervention effect		
Variables	**Trend**	**Is it significant?**
Employability skills Communication skills	Higher perception after intervention	Difference is significant
Teamworking	Higher perception after intervention	Difference is significant
Problem-solving	Higher perception after intervention	Difference is significant
Commercial awareness	Higher perception after intervention	Difference is significant
Numeracy	Higher perception after intervention	Difference is **Not** significant
Personal attributes Adaptability	Higher perception after intervention	Difference is significant
Self-confidence	Higher perception after the intervention	Difference is **Not** significant
Reflection	Higher perception after the intervention	Difference is significant
Effect of control variables on mean differences of skills and personal attributes		
Control variable	**Interaction effect**	**Is it significant**
Gender	Males and females differ in their perceived employability skills	Significant for communication and problem-solving skills
Nationality	There is no effect of nationality on perceived skills and personal attributes	**Not** significant.
Work experience	Students with and without work experience differ in their personal attributes	Significant for adaptability attributes only

Table 35: Summary of survey findings

5.10 Conclusion

This chapter has presented the results from the quantitative phase of this research. It involved the analysis of pre-post-tests of business simulation intervention. The results indicate that the use of business simulation increased the perceived employability skills and personal attributes of the business students. The results also revealed that variables of gender and work experience have some effect on student perception. These profound findings are going to be discussed in the following chapter.

Chapter 6: Discussion

This chapter aims to synthesise the main findings of this study in order to draw justified conclusions. in the process, the chapter starts with in-depth discussion regarding the proposed conceptual key employability skills framework and its main outcomes, which is viewed as the primary contribution of this research. the chapter moves beyond the recognition of skills as separate entities to a more holistic view of connections between skills and assessments. The discussion moves to the evaluation of Business simulation game and how it helped inform the development of the framework. Finally, MDC was used as a theoretical lens of the key employability skills concept.

6.1 Employability skills for UK Higher Education: between reality and expectations

One of the primary contributions of this research is proposing the conceptual Key Employability Skills Framework, which holistically supported the recognition, and acknowledgement of various complexities. The developed key employability skills framework incorporated different perspectives, avoided potential shortfalls by adapting other non-HE tailored employability frameworks, and in fact provided a more realistic illustration of what key employability skills entail in the Higher Education. The following sections provides an in-depth discussion of the recognised outcomes from the framework, with particular emphasis on how it supersedes other frameworks and its rich consideration of multiple perspectives.

6.1.1. Key Employability Skills Framework: Incorporating Multiple Perspectives

As mentioned in the previous chapter, in order to develop the framework, various stakeholders' perspectives were considered. These perspectives help discovering multiple categories of skills. The framework constitutes of three main categories of skills including employability skills, personal attributes, and career building skills (see Chapter 4: Delphi findings). When the experts were identifying key employability skills, they also recognised the importance of personality traits

in graduate employability. They argued that skills are not the only employers' requirements, and that personality is also a crucial element of graduates.

"I will start by saying that's for me, it is definitely more than skills. I think skills are the dominant term that is used by the government and also the dominant term that potentially is used by employers, but it is actually much more than skills. I think it is you have to look beyond skills. There are attitudes, behaviour, values, other things like that."

- Interviewee 2

Another category of the framework is career building skills. The inclusion of this category in this study is formed based on experts' opinions who work in career services in universities. Two skills have been identified in this category, including preparation and professionalism and networking. the author believes that these skills should be included to raise students' awareness regarding its relevance and importance in graduate employability. The inclusion of these three categories collectively in one framework may help incorporate all key elements that need to be devloped in students to help and support them when searching for jobs after graduation. Including them can also help to focus universities' efforts in developing these skills as part of the overall skills set.

Looking at the framework developed within this research, it can be stated that previously adapted frameworks (UKCES, 2015; ACCI and BCA, 2013; Confederation of British Industry 2009; CMI, 2014b; Archer and Davison, 2008) for Higher Education, which have been evaluated in the literature review chapter, have missed important categories of skills such as personal attributes or career building skills that this research have highlight its significant in developing students' employability. More importantly, adapted frameworks were centred around employers' requirements, which retrospectively positions employability skills as a top-down requirement. For instance, Confederation of British Industry (2009) framework, the authors have listed all the graduates skills that were valued by British businesses or employers. Another framework developed by Chartered Management Institute CMI (2014a) also surveyed employers to understand their requirements in terms of the key attributes of business graduates. This asserts that key employability skills are tailored toward employer (top) requirements where skills (down) developed would have to meet those requirements. The main shortfall in this approach is that the skills developed within higher education are not robustly grounded, which can affect sustaining development and needs for student on the long term.

Hence, and in response to the above, this study framework provides a comprehensive view by identifying three interrelated categories of employability skills, personal attributes, and career building skills. Hence covering a wide range of skills and attributes that might have been neglected. These three categories combined can help students recognise that skills are more that employability skills and that they include other elements, such as attributes and career building skills that might have not been mentioned in previous frameworks in the literature. Thus, this framework helps clear some of the ambiguity surrounding the required key employability skills, what we mean about certain skills, reveal some of the complexity of skills such as the identification of connections between certain key employability skills. The next section expands on new categories that were found as a result of the developed framework.

6.1.2. Key Employability Skills Framework: A new Lens for Higher Education

With the involvement of various stakeholders and the current views on employability sheds light on new employability skills, personal attributes, and career building skills. The following sections expands on new categories and elements (within the categories) that were found.

Starting with employability skills category, Technology/IT skills included new elements of data analysis and big data. These elements were not considered in the previous frameworks of employability. Regarding data analysis and big data elements of IT skills, it is a needed element stems from the emergence of data from various sources that require trained individuals to process them. The data needs to be analysed and described to predict the current and the future needs of the customers for a certain business based on the collected and stored data in an organisation (Henry and Venkatraman, 2015). Big data and data analytics are required by many organisations in the UK. According to a recent report by MHR-Analytics (2018), 77% of organisations in the UK were planning to hire a data scientist or seek data consultancy in 2019. Business school programmes should benefit from such opportunities and develop data analytics and big data skills of their students to meet the increasing demands of such skills (Henry and Venkatraman, 2015).

An underrepresented element in the personal attributes' category, which was not commonly cited in previous studies or frameworks of employability is resilience. Many participants in this study

listed it, and it was ranked as the eleventh key employability skill for business graduates in the second round of Delphi. It is argued by participants that resilience is not clearly defined in the literature. This lack of definition has also been reported by Burke and Scurry (2019), who argued that there is a lack of conceptual understanding of graduate resilience. Another point that is highlighted in this study is related to the stigma around new generations, including Generation Y and Z, and their lack of resilience.

"Generation z is less able to take criticism, less able to accept failure less emotionally and psychologically resilient compared to the previous generations. It could be the case, or it could be that there is now a greater awareness of mental and psychological illness. It could be societal in a sense the rise of digital and the rise of social media has changed certain cultural dynamics."

-Interviewee 6

Whether the new generations lack resilience, there is an increased demand by many employers to develop 'resilience' as an attribute needed in recent graduates. It has been seen as a trait that should be developed in HEIs to help students to cope with various pressures, including the uncertainty of their career (AdvanceHE, 2019). In this study, experts have suggested some definitions of resilience, including having self-control, the ability to deal with disappointments, and accepting criticism. Resilience is also found to be connected to other factors, including mental health and wellbeing. This connection corresponds with a systematic review of graduate resilience. It was highlighted that resilience sits alongside other traits or qualities consisting of adaptability, goal re-setting, recovery and self-efficacy (Burke and Scurry, 2019). Since resilience is considered a new attribute emerging and needed spatially from new generations, more research in relation to this concept is needed to understand in depth the definitions and behaviours associated with it and how it can be developed and measured in HEIs.

Another attribute that was not commonly cited in existing frameworks of employability is culture and moral awareness. It has been defined in this study as 'the practice of responsible business with a focus on ethics, sustainability, cooperate governance and social responsibility'. Even though culture and moral awareness were not widely included in employability skills frameworks, graduates consider corporate social responsibility as critical in choosing employers (Coopers P.W.,

2008). This view of graduates was presented in studies where employers and academic perceived graduates as strong in social/corporate responsibility (Jackson and Chapman, 2012b).

The new skills in the career building skills category include preparation and professionalism, and networking. Professionalism skills are defined in this study as 'the ability to maintain professional behaviour and look at work and to adhere to rules and expectations of the organisation' (Chapter 4, section 4.4.2.1.3 Career building skills). Even though these skills of professionalism are considered important by the study experts, there is a lack of presentation and discussion of these skills in the literature. Even though it is less represented, a previous study that included professionalism skills in their evaluation of a skills-set indicated that business graduates are strong in it (Jackson, 2012). Additional to professionalism, networking skills were also neglected in established frameworks of employability (UKCES, 2015; ACCI and BCA, 2013; Confederation of British Industry 2009; CMI, 2014a; Archer and Davison, 2008). Networking has been categorised as part of career building skills. It is regarded as one of the career-building skills that help "creating social capital by developing strategic personal and professional relationships with those who provide opportunities and important resources" (Bridgstock, 2009, p. 38). Creating social capital has shown a direct impact on perceived employability (Eby et al., 2003) as well as actual employability (Marmaros and Sacerdote, 2002). Even though these networking skills and having social capital are considered essential for graduate employability, they are not always present in employability skills frameworks.

6.2. Beyond Key employability skills: Interconnections and Assessments

Another advantage of this framework is the identification of several links between the skills. These links and connections were not previously considered or discussed in the literature. Yorke and Knight (2006) in their model have discussed that personal attributes as an element of employability is linked to skills however, specific links or connections between skills, skills and attributes have not been identified previously. The importance of these links is that skills should not be considered as separate entities and that these connections help reveal the interdependencies between skills and that some of these connected skills should be developed collectively. It can also help universities focus their efforts on developing connected skills in one activity instead of these skills being scattered in different activities even though they are connected. The following sections,

respectively, will discuss the value of these interconnections between key employability skills and also point out the impact on future of assessing these key employability skills.

6.2.1. Linkage and connections between different elements including skills and attributes

As part of developing the framework within this study, relationships and links between the key employability skills were more tangibly recognised. These connections highlight the importance of defining the relationship between skills to recognise possible dependencies among them. This can help when developing students' skills by focusing on vital skills that are commonly used when performing others. For example, developing communication skills alone as an overarching skill can help graduates excel in other linked skills such as teamwork, customer handling and operating in a business environment.

With the extensive body of literature on key employability skills, majority of findings have discussed different categories of employability skills in isolation. For instance, Wickramasinghe and Perera (2010) have ranked several employability skills according to their importance from graduates, university lecturers, and employers perspectives. Similar study by Bhanugopan and Fish (2009). have considered the views of employers and students regarding the importance of a number of key employability skills Another study have listed several key employability skills that students are lacking (Sulphey, 2015). Although these studies are valuable in capturing different views and ranking skills according to their importance, they pose that key employability skills are separate entities.

These links suggest that skills and attributes cannot be developed in isolation. The skills and attributes integrate, support, and overlap to develop key employability skills of individuals. Thus, universities should focus on finding these dependencies among skills and attributes to teach students how they interact and overlap with each other to help them understand these links, develop these connected skills and attributes, and articulate their overall improvement clearly and accurately. Understanding these relationships can help them link many elements of their employability development while they are in HE to help them sell themselves better to potential employers. It can also help educators find and develop skills and attributes that are linked together in focused efforts instead of developing each skill separately or developing the same skills in

different scenarios. This finding has implications on skills development, for instance, universities should consider these links when designing and or implementing employability skills development exercises. The value of recognising such connections lies in the fact that strategies can be proposed developed to improve key employability skills more collectively. Another implication is related to students' awareness. Students should be taught about these connections to help them discover the complexity surrounding key employability skills and their overlap. This can also help them to broaden their skills portfolio by recognising the spectrum of skills they have developed including the additional connected skills.

6.2.2. Key Employability Skills: Measuring or Assessing?

As a result of this research, many forms of assessments were found that can be used to assess student skills development. Because some of these assessments are used by employers, it can also help the students to develop the required skills to collect and articulate evidence of their achievement that can help them in the applying process. These Various methods of measuring employability in HE has been discussed in (Chapter 4: Delphi findings, section:4.4.2.2 Employability skills assessment). These various methods of measuring key employability skills are categorised based on the graduate employability stakeholders and their roles in developing and assessing the key employability skills in HE. Based on the assessment methods listed in this study, the stakeholder groups, include first, students who play an important role in measuring key employability skills and without their engagement and participation, measuring their development would be challenging. Second, HEPs who are the leading players in developing and measuring student employability and represented by teachers/facilitators, programme designers/leaders and career services. Final stakeholders are the employers who can support in measuring employability in higher education.

The identified methods of assessments and the involvement of various stakeholders to assess students' key employability skills highlighted the importance of including collaboration among relevant stakeholders, including employers, students and HEIs. It also discussed the use of benchmarking, and teacher development and participation. Starting from the role of employers in enhancing and measuring employability of students, it highlights the discussion around the

relationship between the HE and the industry. Even though the university is viewed as the place to enhance student employability, the outcomes of that enhancement can only be noticed in enterprises. Thus, if HE implements employability goals and strategies, then involvement and collaboration from the employer side are essential in achieving such goals (Tran, 2016). Various types of University-Enterprise Collaboration (UEC) from both parties are identified: (1) university 'going out' into the organisations by sending students to do placement, internships or real live projects in firms, (2) employers engagement with HEIs through their involvement in student assessment and curriculum development and delivery (Tran, 2016). The aim of such practices is to combine the professional knowledge that students obtained at HEIs with the real application of acquired knowledge in the place of work (Tran, 2016). Both types of the collaboration of university 'going out' and employer involvement in university activities were listed as measures of employability in this study which emphasises the need to have UEC not only to help develop employability of students but also to measure it.

It can be stated that previous attempts to measure the employability of students have included measures such as employment rates after graduation. These measures have been critiqued because they rely on job acquisitions instead of preparing students for employment (Harvey, 2001). Talking more specifically about key employability skills, the evaluated key employability skills frameworks including (UKCES, 2015; ACCI and BCA, 2013; Confederation of British Industry 2009; CMI, 2014b; Archer and Davison, 2008) did not include measures or assessments that can be used to assess these identified skills. This study suggests, following the identification of different categories, interconnections between them and the acknowledgement of different perspectives, that it is more suitable to assess key employability skills rather than measuring them. The main rationale behind this is that assessment would allow capturing student-related employability skills longitudinally while they are in universities, whereas measuring would be cross-sectional gauging of employment rate, which do not provide a holistic reflection on student required development. Therefore, within this study, several assessment methods have been suggested. More importantly, alongside assessments methods, the skills or attributes that can be assessed using these methods were also listed. This can help universities choose the most suitable method of assessment when evaluating certain key employability skills. In addition, several stakeholders have been identified

that can help assess skills development in HE. It was also recognised that collaboration is needed between stakeholders to develop and assess students' skills.

Programme-level or institution-level assessments include the use of benchmarks as a way to identify a certain number of key employability skills to be taught in a specific programme. The key benefit is to apply a standardised method of incorporating employability skills development in curriculum design. A great amount of work has been conducted in this area in recent years, and many institutions have implemented processes for programme-level analysis and enhancement, which usually focused on bridging the accomplishment of graduate outcomes. The benefit of using a benchmark method does not only help standardised student's employability development, but also help align employers' expectations with what can be achieved during university education. More constructively, this may trigger the industry to reassess its level of involvement in undergraduate skill development to improve the outlined benchmarks (Riebe and Jackson, 2014). Even though benchmarking is viewed as strategic change, it also highlights the issue that the most important stakeholder -the students- may not be involved in the process. It is important to ensure that students are aware of the key employability skills that they have developed in the programme in order to able to articulate and evidence them to get employed and be responsible for their skills development (Oliver, 2015). Thus, the use of benchmarks to develop and assess employability of students can be considered as programme level or university level assessment that need collaboration among several relevant stakeholders in business education, including HE, students, and employers, as well as a systematic approach, to embed key employability skills into the curriculum successfully.

Building on the above, this study also recognised an overlap between the development and measurement of key employability skills requires collaboration among different stakeholders in HE. This collaboration, represented in students, universities and employers, is needed in the context of graduate employability (Ferns, 2018), to capture as many aspects of employability as possible. The input from students, employers, and HE, including career services, educators, programme designers and leaders, may provide a holistic picture of employability requirements. It may also allow students to understand and make connections between the many elements of employability that they need to be aware of and learn to become more employable. It can also support them in

making the transition from higher education to the world of work as informed as possible. Even though this overlap has not been discussed in graduate employability context, the overlap between teaching and assessing student learning where assessment can be used as a teaching tool has been recognised (Akib and Ghafar, 2015; Lombardi, 2008). In HE institutions, educators are trying to integrate employability skills development into their teaching and assessment practices, however, there are some concerns regarding the inconsistent occurrence of such practices and the unsystematic deployment across and within subjects and disciplines (Cotronei-Baird, 2020). Educators were found to assess only a small range of employability skills, and they only provided feedback regarding analysis and written skills (Cotronei-Baird, 2020). Also, it appeared that academics make an individual effort about incorporating employability skills into their teaching and assessment. This varied incorporation of employability into the curriculum may explain the lack of employability skills in recent graduates reported by the industry (Cotronei-Baird, 2020). Thus, a more systematic deployment of employability skills into the curriculum is needed with clear guidance, support and plans for educators to help them teach and assess the employability of students across different subjects and disciplines. Although the role of students is considered essential in developing and assessing employability skills, research shows the ongoing challenge of engaging students with their key employability skills development, especially first-year students. It is suggested for universities to be persistent, consistent and direct in its message to the students: 'be blunt, tell them it will get them a job and money!' (Jorre de St Jorre and Oliver, 2018). Keeping students in the loop, trying to engage them, and making them aware of the programme's overall employability strategy. It would help them recognise and articulate the skills they have developed during their time at universities to gain employment, hence, to illustrate this, business simulation use was evaluated in this research as a mechanism to incorporate student perspectives and support richer recognition of the interconnections between different employability skill categories and elements within the framework.

6.3 Business Simulation: Informing key Employability skills

This section discusses the outcome and value of using business simulations to enhance key employability skills of undergraduate business students. The section will also incorporate the views of Delphi experts regarding the key employability skills that can be developed through business

simulation games. Each key employability skill is discussed separately supported by evidence from both students and Delphi experts. In evaluating the use of business simulation, students were able to perceive themselves as having higher employability skills and personal attributes following the simulation. The study suggests that business simulation contributes significantly to the development of four employability skills of communication, teamwork, problem-solving and commercial awareness, and two personal attributes of adaptability and reflection. On the other hand, perceived numeracy and self-confidence were not significantly higher even though they increased at the end of the module. This outcome of the successful development of skills and attributes may be due to the business simulation and its realistic learning environment. The evaluation of the business simulation will start from the list of employability skills tested moving to the personal attributes list and finally, to the control variables and its impact on skills development. The next sections extensively discuss the key employability skills evaluated pre/post business simulation exercise.

6.3.1. Employability Skills

1. Communication

The pre-post-tests results reveal that perceived communication skills were significantly higher at the end of the module than the start of the module, indicating that business simulation can help enhance the communication of business students (Chapter 5, *Table 32*). Communication skills can be developed because students communicate with their team members, other teams and the facilitator when participating in the business simulation activities. They can also use their communication skills when presenting their strategy, decisions and what they have learned from the game. Important communication skills including written, verbal, listing and presentation are also highlighted by the Delphi experts as skills that can be developed in a business simulation. A previous study referred to group communication as 'social interaction' applied in business simulations where students are required to comprehend, inform, and convince their team members regarding various issues (Xu and Yang, 2010). Students often discuss and debate because of the difficulty and interconnectedness of the decision-making process (Xu and Yang, 2010). Also, in another study, students reported enhanced communication skills (Loon et al., 2015).

2. Teamwork

The pre-post-tests results show that perceived teamwork skills were significantly higher at the end of the module showing that business simulation helped improve this skill for business students (Chapter 5, *Table 32*). Teamworking skill is also reported by Delphi experts who argued that students could learn how to work in teams, persuade others and resolve conflicts. This study's business simulation game is based on team and group work, where teams of students are required to simulate the role of managing an organisation. Since the decisions of each team are group decisions that need cooperation, many students who may not know each other before or did not work together have to improve their listening, debating and negotiation skills (Barth and Géniaux, 2010). Teamwork skills were also reported in the literature as one of the skills that can be developed in business simulation games (King and Newman, 2009a; Levant et al., 2016).

3. Problem-solving

In terms of the perceived problem-solving skills, they were increased significantly at the end of the business simulation (Chapter 5, *Table 32*). This result indicates that students develop their problem-solving skills by enrolling in a business simulation game. Supporting this finding, Delphi experts have also highlighted that the development of problem-solving skills can be achieved through business simulations. Simulations are mainly designed to imitate dynamic financial, market and business scenarios; thus, they support students in comprehending, augmenting, and experiencing business concepts and the interrelations among various business functions. By experiencing a replicated business environment, students can experience the complexity surrounding cooperate strategies, business models and initiatives (Keys and Wolfe, 1990; Dumblekar, 2004). Problem-solving is needed when playing the game because the teams encounter challenges in each round that they have to overcome and learn from the implications of decisions that they made in previous rounds. Thus, the business simulation could offer a useful method to learn about complex situations, where information is partial, unreliable, or missing, and the problem is unfamiliar to the students. Simulations can offer opportunities to the students to learn real problem-solving skills by allowing them to actively experience decision making without real-life cost implications (Dumblekar, 2004; Doyle and Brown, 2000). A previous study evaluated a business simulation where students registered a very positive development of problem-solving skills (Mustata and Alexe, 2017).

4. Numeracy

Regarding numeracy skills, even though there was a slight increase at the end of the game, it is not found to be significant (Chapter 5, *Table 32*). It is a surprising result because perceived numeracy was expected to increase as students learned about applying these skills in the practical setting of the simulation. It is possible that, before students were able to apply their numeracy skills in the business simulation, respondents assumed that they might be fairly proficient in these tasks (with a mean of 4.08 out of 5). After engaging in the business simulation activities and the complexity of the game, they might have realised that they overrated themselves at the start of the module, and their evaluation of their numeracy skills at the end of the module is more reflective of their real skill level. Another possible justification for this result is that business simulation is considered as a group activity where students make decisions as teams. They might rely on team members who are better in numeracy to help them make the calculations needed for quantitative decisions; thus, the majority of students did not apply their skills effectively in the game.

5. Commercial awareness

The pre-post-tests results show that perceived commercial awareness significantly increased at the end of the module (Chapter 5, *Table 32*). This finding supports the hypothesis that business simulation can enhance commercial awareness of business students. Other evidence is presented in the results of the first round of Delphi. The majority of participants (12 out of 14 experts) cited commercial awareness as a skill that can be developed through the business simulation. One possible explanation is that the primary purpose of the business simulation is to help students understand the business environment by engaging in activities from many disciplines such as marketing, HR, production, logistics, accounting and finance, R&D. This exposure can help students understand the interrelations and the dependencies between different departments (Caruso, 2018). The same result was obtained in a previous study by King and Newman (2009a) where two simulations were evaluated based on the employability skills that the simulations might have a positive impact on. Commercial awareness skill was considered by respondents as having the highest positive impact on the students in both simulations (King and Newman, 2009a).

6. Additional skills highlighted by Delphi participants

In addition to the previously mentioned skills, other skills are reported by the Delphi experts who argue that these skills can be developed when students experience playing the game including time management skills, technology/IT skills, and planning and organisation skills. Delphi experts argue that time management is needed because students are required to make decisions in a timely manner. Providing practice of working towards deadlines was reported as one of the benefits of business simulations (Doyle and Brown, 2000). This requirement teaches students to manage their time effectively. Time management was tested in a previous study that evaluated a business simulation game, and it confirmed that students had developed their time management abilities (Levant et al., 2016).

Another reported skill by the experts is technology/IT skills that can be developed through business simulation to allow students to understand how the game works. The same skill was evaluated previously, and two simulations were found to develop these skills (King and Newman, 2009a). It worth noting that these simulations were electronic. However, the business simulation game evaluated in this study is not an online game. For this reason, technology skills were not included in the study design. This means that to develop technology/IT skills, there have to be elements within the game that allow students to learn IT skills whether it is about the game itself or any other task that might require them to apply their technical skills.

The final skill mentioned is planning and organisation. Delphi experts argue that planning and organisation skills can be developed because students need to plan their business strategy, decisions and prioritise their tasks in the game. However, there are no previous studies -as far as the author knows- that have tested whether the business simulation enhances the planning and organisation skills of students; thus, more research is needed in regard to this skill.

6.3.2. Personal attributes

1. Adaptability

The difference of perceived adaptability between the start and end of the business simulation is found to be significant, indicating that business students develop their adaptability attribute (Chapter 5, *Table 32*). This development of adaptability can be explained by the involvement in the business simulation. The same result obtained when students were asked about their experience using a simulation game where they reported a development in adaptability and mental flexibility. For instance, they were able to incorporate and process new information that would require a new line of thinking and inquiry (Loon et al., 2015). This ability to respond to new challenges can be seen in the business simulation in each round where students encounter new information related to the market conditions, and they have to adapt to these changes in the market. This is also supported by Clarke (2009), who reported the benefits and outcomes of business simulation, and one of the reported benefits was related to adaptability. Clarke stated that in a business simulation, students practise accelerated learning through dealing with complex situations that need alignment between decisions and the active environment. Then, the author linked this benefit to the possible outcome of an increase in the ability to adapt from mistakes and practices and the ability to align action with the changes in the environment.

2. Self-confidence

Business simulation contributes to students' development and helps graduates transition to employment by offering lifelike experience, hence, increasing self-confidence of students (Avramenko, 2012). Additionally, another study reported confidence as one of the skills developed in a business simulation (Abdullah et al., 2013). Delphi experts' opinions align with the literature by identifying self-confidence as an important outcome of the business simulation. This finding is not supported in the pre-post-tests results, which shows that there is a slight increase in perceived self-confidence of students, however, it is not significant (Chapter 5, *Table 32*). One possible explanation is that the business students enrolled in this simulation were confident of their abilities

at the start of the business simulation. Students rate themselves high at the start of the module with a mean of 4.21 out of 5, placing self-confidence at the top of all the other employability skills and attributes that were measured at the start of the module. This might explain the insignificant increase at the end of the module to a mean of 4.27 is due to the high rating at the start of the module.

Another explanation might be related to the discussion around whether self-confidence is a trait or something specific to certain situations. This was discussed earlier in the development of the conceptual framework for the pre-post-test design. It was argued that if self-confidence is seen as a trait, it will not change over time and if it is seen as a situation-specific concept, it can be developed (Norman and Hyland, 2003). In this study, students did not increase their self-confidence substantially, meaning that the evidence suggests that self-confidence is not an easy trait to develop. However, since this study's sample of students is considered confident based on their ratings at the beginning of the module, this result might be specific to this group of individuals. Thus, further research with a different sample of students might yield different results. Another group of students who rate their self-confidence low at the start of the module might increase their self-confidence at the end of the module, indicating that self-confidence is a situation-specific concept.

3. Reflection

Reflection is another attribute that found to be significantly higher at the end of the module, indicating that business simulation help develops the reflection of business students (Chapter 5, *Table 32*). Reflection is also listed by the Delphi experts as an important skill that can be developed in business simulation. Not only it is considered as an employability skill to develop but also as an important element within the simulation process (Hughes and Scholtz, 2015). Simulation can be considered as experiential learning that students engage in where experience in only one part of the process. Students are required to incorporate what they are experiencing into what they already know. This knowledge creation from experience requires the ability to effectively reflect, which is key to learning (Hughes and Scholtz, 2015).

Many forms of reflection can take place in simulation activities. Schön (1983); (1987) concentrated his work on the concept of 'reflective practitioner'. He identified two forms of reflections, reflection in action and reflection on action. Reflection in action occurs during a learning experience, whereas the reflection on action happens post-learning experience. Cowan (2006) incorporated (Schön, 1983; 1987) two types of reflection in his framework and added a third form of reflection, which he called reflection for action. It is a reflection that happens before the learning experience based on individual past experiences and knowledge. In the business simulation, students start each round by working in teams to make decisions. Each simulation round is then followed by a debriefing in class. Debriefing is essential as it allows students to process their experiences into learning (Kolb et al., 2014). Students usually use these three types of reflection for, in and on action in the debriefing stage to reflect on what they learnt so they can use it in the next round of simulation decisions. Thus, developing reflection attribute is an outcome of the simulation as well as a crucial process of learning that happens in the business simulation.

Additional attributes reported by Delphi respondents

What is also found in the analysis of the experts' opinions regarding key employability skills that can be developed in business simulation games is that business simulation not only helps develop employability skills, but also a range of personal attributes as well. For instance, they can develop creativity and innovation, dealing with ambiguity and the ability to learn quickly attributes.

1. Creativity and innovation are seen as an attribute that can be developed through business simulation. The Delphi experts argue that since students are playing a simulated business world, they are relying on their imagination to understand this simulated world and they also need to use their creative ideas and solutions to perform in it. The ability of simulations to develop creativity was discussed previously. It was argued that if students were offered a problem, the information needed to solve the problem, and the ability to experiment and receive instant feedback on their ideas, creativity and innovation could be developed (Wynder, 2004).

2. Dealing with ambiguity/uncertainty is also recognised as a possible attribute that can be enhanced in the business simulation game. Delphi respondents argue that students need to manage uncertainty in the game and act even if not all the information is available. Managing uncertainty

and acting in uncertain conditions and situations were developed in a business simulation game, previously reported (Levant et al., 2016).

3. The final attribute is the ability to learn quickly. It is reported by a Delphi expert as an essential attribute that can be developed in the game. Students need to be able to learn the game and how to play quickly. This learning ability, including the ability to obtain and use information in the game, was highlighted previously as skills that were required in the game and could be developed in it (Levant et al., 2016).

6.3.3. Control variables

The last part of the analysis of the pre-post-tests results involves the evaluation of three control variables of gender, nationality, and work experience. Mean comparisons were also made to test differences in the development of employability skills and personal attributes in relation to these control variables.

1. Gender

The research found that gender has a direct impact on students' self-confidence and self-esteem, which are essential when dealing with graduate employability (Qenani et al., 2014). There seems to be a significant difference between males and females in terms of their development in communication (Chapter 5, *Table 34*). Males seem to develop their communication skills more than females. The findings support the argument that gender has an effect on self-perceived employability (Tomlinson, 2012). In this case, females rated themselves higher in communication skills compared to males at the beginning of the business simulation and did not develop as much after the module. Males, on the other hand, rated themselves lower at the beginning of the module but developed their communication skills more after the simulation (Chapter 8, *Figure 6*). This difference between males and females might be related to the argument that females have better communication skills compared to their counterparts. In one hand, females rated themselves highly in communication skills before the intervention indicating that they excel in communication.

On the other hand, females rated themselves poorly compared to males in problem-solving skills, indicating that they have not developed their problem-solving skills after the intervention. This difference in the self-perceived problem-solving skill may imply that the stereotype that males dominate tasks that involve problem-solving skills still exists. However, future research is needed to investigate this gender difference in problem-solving skills (Rubie-Davies and Lee, 2013). In contrast, all other employability skills and personal attributes were not affected by gender, indicating that gender might not have an influence on the development of key employability skills. These inconsistencies in the reported impact of gender are recognised by Levant et al. (2016) who found no gender influence on students development of skills after enrolling in a business simulation course.

2. Nationality

There does not seem to be a significant difference between home and international students in terms of their development in all employability skills and personal attributes (Chapter 5, *Table 33* and *Table 34*). This finding aligns with Goldfinch and Hughes (2007) study of Scottish undergraduates, which learned that nationality and ethnic grouping did not affect students' confidence in their employability skills.

3. Work experience

There seems to be a significant difference between students with and without work experience in terms of their development in adaptability attribute (Chapter 5, *Table 34*). Students without work experience have developed their adaptability skills more than students with work experience (Chapter 5, *Figure 8*). Students with work experience have rated themselves higher at the beginning of the course compared to the students without work experience and did not change their perception after the intervention. Students without work experience, on the other hand, rated themselves poorly at the start of the course but rated themselves higher than those with work experience at the end of the course. This finding was also reported in empirical studies which indicate the significant impact of work experience on perceived skills proficiency (Smith and Krüger, 2008). This finding also suggests that business simulation can help students who do not have any previous work experience to develop their adaptability attribute. Further research is needed to compare work

experience with business simulation to examine their roles in enhancing adaptability attribute of business students.

The findings of the pre-post-tests and the evaluation of the business simulation helped inform the developed conceptual framework of this study. For instance, it highlighted some complex key employability skills that can/cannot be easily developed/assessed. For example, numeracy and self-confidence perception did not significantly change after the business simulation exercise. Our interpretation of this is that not all skills can be developed equally by the same activity. It also raises the question of whether some skills are harder to assess for some students. This will inform the need for additional skill-building exercises/workshops that can be designed and implemented to improve a wide variety of skills in HE. It also reveals that assessment methods would need to be reconsidered depending on the complexity of the skills assessed. Additionally, the suitability of specific assessment methods to evaluate certain skills would need to be considered to choose the most suitable assessment for measuring specific skill/s.

An additional point is that the inclusion of students' opinions when trying to evaluate a certain skill-building exercise or activity can help us reveal some of the complexity of skills development in HE. For instance, when a method is promoted and implemented as an employability skills development exercise, it may be found to be ineffective in developing certain skills from a student's perspective. Thus, considering student's perspective can be essential when evaluating any method of skills development in HE and add a feedback layer that is important for HEIs when implementing their employability strategy and considering skills development methods.

In response to this, the use of Multi-dimensional construct (MDC) theory is proposed, which will be in the following section.

6.4 Multi-dimensional Construct: Acknowledging complexities associated with key employability skills

Following the findings and analysis from pre-post-tests results, it can be stated that pre/post tests have revealed some of the complex aspects in the framework produced using Delphi Technique. This can be in terms of understanding the methods of developing key employability skills, skills are not developed equally and that skills can vary over time. This will be explained with examples in the following section.

Considering students' perspective regarding the development of the key employability skills can help HEIs in evaluating various methods implemented to enhance students' employability. Inevitably, this can enable HEIs to use the evaluations of various methods to choose the most appropriate methods to develop certain key employability skills. It was also revealed that not all the skills can be developed equally by the same activity. For instance, under personal attributes, self-confidence was not developed in the business simulation. Careful consideration should be given to skills that might be harder to develop. This point was also recognised by the Delphi experts when discussing suggested methods to measure employability in HEIs. The experts highlighted that some skills might be harder to develop and measure, which was also confirmed in the business simulation phase. The findings of the business simulation also revealed that skills develop over time. Thus, developing employability skills should be progressive. For example, students in their first year should develop certain skills, then develop them further or develop new set of skills in the second year. Taking into account the students' stage in their studies and what skills can be developed in each stage can help universities develop the skills suitable to students in different years. This was also highlighted by the Delphi experts when they suggested to assess employability using benchmarks for certain employability skills in each programme and develop these skills over time and progressively.

Therefore, the above findings will have an implication on further considerations that can be required for two dimensions: employability skills and personal attributes. For instance, within employability skills, employers at HEIs should develop awareness that some skills would require holistic consideration in terms of selecting the method to develop student skills, which can take into account different parameters that can be based on employers' needs or those of stakeholders who work in higher education, but more importantly, students' needs and requirements. In terms of personal attributes, it was found that, using the pre-post-test, measuring such attributes can be

complex, as it is highly subjective, and requires careful consideration. Thus, this can alert employers and those who work in higher education to continually monitor such attributes, and how they change/develop over time.

6.4.1. MDC: A Theoretical Lens toward Key Employability Skills

This study framework (see Figure 10) of key employability skills revealed that these skills consist of three different components, including employability skills, personal attributes, and career building skills. Our conceptualisation of key employability skills is built on the models of Yorke and Knight (2006) who identified the two components of employability skills and personal attributes and Bridgstock (2009) who identified career building skills. In this framework, we differentiate between the three different components as (1) employability skills are related to the abilities of individuals to perform a specific task, (2) personal attributes are about individual abilities, traits or characteristics and (3) career building skills category is seen as individuals abilities to find and use information about careers proactively, abilities to apply for a job to secure employment and continuously search for job opportunities to reach individual desired outcomes. These three categories' definitions are presented in Chapter 5, *Table 16*.

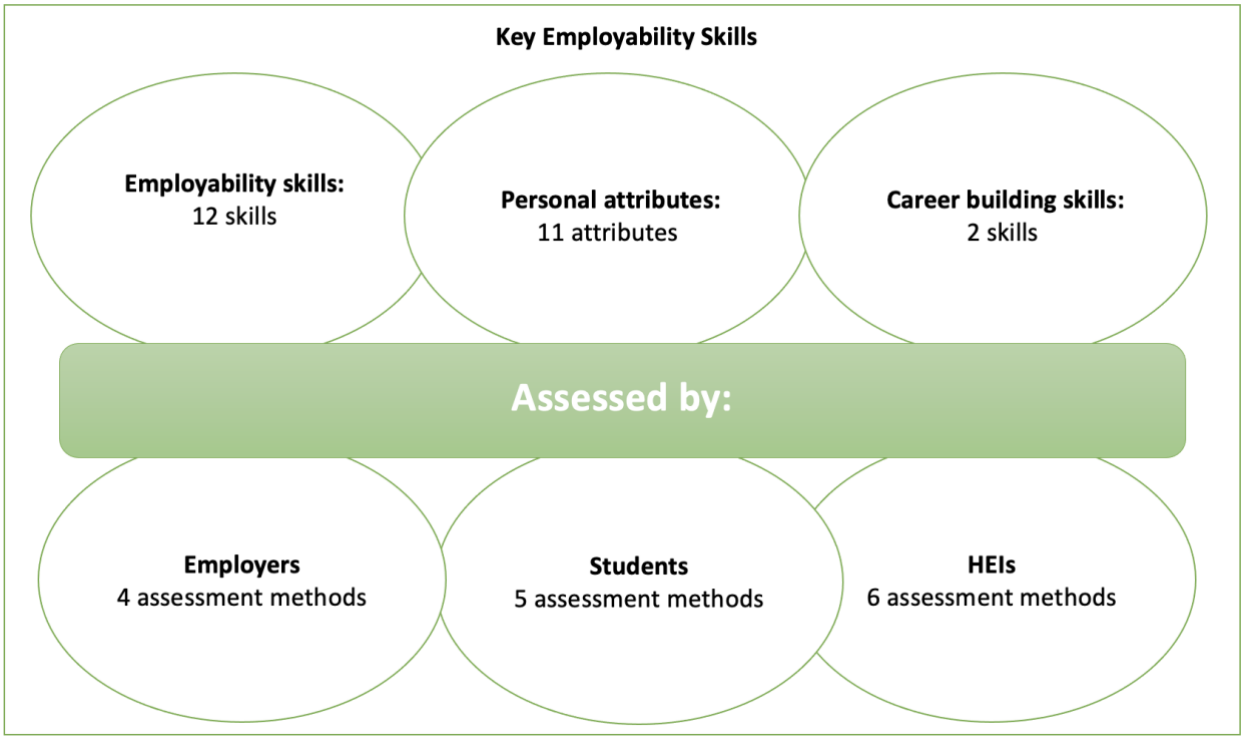

Figure 9: Key Employability Skills Framework devloped in this study

We assert that in the context of graduate employability, key employability skills embody a harmonious combination of employability skills, personal attributes, and career building skills. More specifically, we argue that key employability skills capture the aspects of each of the three components that facilitate the identification, realisation, and development of skills that students need to become more employable and make the transition from university to the world of work effectively. In addition, we acknowledge that each of the components has value in its own (independently). However, when combined, they generate the concept we call key employability skills. Hence, it is the harmonious combination of the components that give a comprehensive view and value to key employability skills concept.

With each of the three components of key employability skills discussed earlier in this chapter, we now discuss two critical sets of relations, those between key employability skills and its components and those among the underlining components themselves. Based on the framework produced, the combination of the three components composes the harmony of key employability skills. Conceptually, this relationship aligns with multi-dimensional construct theory (Law et al.,

1998), which is the directionality and the relations between the construct and its dimensions where in this instance, construct represents key employability skills and dimensions represent the components (employability skills, personal attributes and career building skills).

In the multi-dimensional construct (MDC) theory, there exist two multidimensional forms discussed by Law et al. (1998) which are relevant to the discussion of key employability skills; latent and aggregate MDC. Latent MDC whose phenomena are *reflected* or exhibited in their several dimensions. In other words, if the relationship flows from the construct to its dimensions, the construct type is Latent (see *Figure 10*A). Latent MDCs exist at a higher level of conceptual abstraction compared to their main dimensions. An example of a latent construct presented in Law et al. (1998) is the general mental ability (GMA). This construct is *reflected* in verbal, quantitative and reasoning skills of an individual. Each of the skills is representative of one's GMA, however smaller in scope compared to GMA. Hence, a more comprehensive view of GMA is obtained by exploring how it is reflected in its three primary dimensions. Consequently, GMA exists as a higher level of abstraction than its main dimensions. In contrast, aggregate MDCs are *caused* by their component dimensions, and they are on the same level in terms of conceptual abstraction. Perse, aggregate MDCs are caused or are explained by their dimensions. As presented in *Figure 10*B, if the relationship flows from the dimensions to the construct, the construct may be called aggregate because it combines or aggregates specific dimensions into a general construct. Law et al. (1998) use an example of overall job satisfaction to illustrate. According to Lawler (1983), overall job satisfaction is caused by person satisfaction with five job aspects: pay, co-workers, working conditions, supervision and promotion opportunities. Based on this identification, it cannot be justified to claim that overall job satisfaction causes satisfaction with promotional opportunities for an example. Thus, overall job satisfaction cannot be examined as a stand-alone construct, rather as a compound meaning formed by its dimensions. Based on the conceptual framework, key employability skills can be recognised as a multidimensional construct of graduate-specific employability, consist of three aggregated dimensions. Each dimension is specific to the higher education domain, which further contextualises the construct.

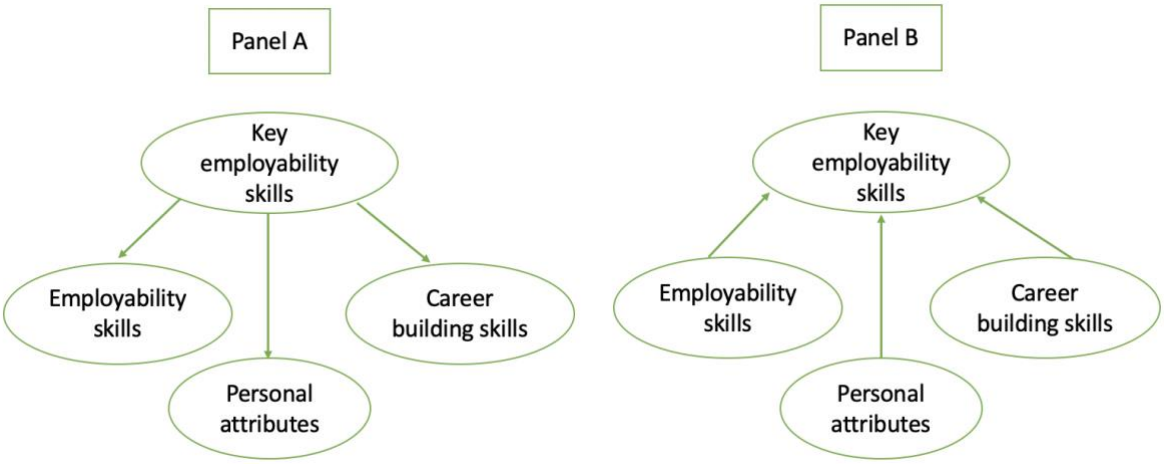

Figure 10: Key employability skills as a latent multidimensional construct **(A)** and as an aggregate multidimensional construct **(B)**

We propose that key employability skills is an aggregate MDC (Figure 11B), such that employability skills, personal attributes and career building skills cause or create one's key employability skills. This conceptualisation means, in line with multi-dimensional construct theory, that key employability skills construct has meaning only when the three dimensions are considered collectively. In other words, students' key employability skills development is derived from their employability skills, personal attributes, and career building skills.

6.4.2. MDC for Key Employability Skills: Extended Application using Reciprocal determinism

Based on the previous section, it is recognised that the MDC theory has supported acknowledging key employability skills construct and its aggregated dimensions. Although such conceptual positioning of key employability skills illustrates the usefulness of MDC theory, it potentially hinders the potential complexities associated with the dimensions themselves. This is because, based on the view of key employability skills using MDC theory, the existence of all dimensions of key employability skills although would support achieving the construct (key employability skills), it does ascertain that a job can be guaranteed. This perhaps can be reasoned by the relationship between different dimensions and entities that underline each of three dimensions. This relationship can be in the form of dimension-to-dimension and/or entity-to-entity.

The relationship between the main dimensions of key employability skills is founded in reciprocal determinism, which considers that personal, behaviours and environmental factors collectively influence each other (Bandura, 1978). Accordingly, employability skills, personal attributes, career building skills use a collective influence on each other. None of these aspects operates separately. To understand the consequences of any given factor and of key employability skills as a whole, one must investigate the entire collection of factors (Bandura, 1978). The following sub-sections elaborate on the value of MDC, with providing emphasis on the role of business simulation to the developed framework.

1. Employability skills and personal attributes

The relationship between employability skills and personal attributes is important for several reasons. First, employers ask for individuals who have certain attributes and employability skills. Not only the employers, but in this study, experts have ranked communication skills and positive attitude as the first key employability skills for business students to develop (Chapter 4: Delphi findings, section 4.5.2 Ranking). This relation between the two was found in USEM model of employability presented by Yorke and Knight (2006), who drew a link between personal qualities and key skills aspects of the model. Also, as found in this study, there might be an interaction between specific skills and attributes. For example, in order to develop teamworking skills, students need to develop their emotional intelligence to help them work with other people. Several other connections were found among employability skills and attributes as discussed in Chapter 4: Delphi findings, section 4.6. Interconnections, indicating a strong link between these two categories.

More importantly, the findings from evaluating the business simulation in pre/post-tests also revealed the need to recognise methods used to develop key employability skills. Therefore, and with the use of MDC, this can support more holistic consideration in terms of understanding the criticality of each of the dimensions. For instance, employability skills can be viewed as a ‘construct’ where skills become the dimensions. This consequently can support the significance of involvement of multiple perspectives (relevant stakeholders, including students’ perspective), and how skills are interrelated with each other and/or skills and attributes.

2. Employability skills and career building skills

Career building skills and employability skills connection was identified in Bridgstock (2009) study. It is asserted that career building skills are expected to play an essential role in specifying the skills, their level and advancement, timing and location of these skills to be learned and presented (for example when applying for a job) and used (Bridgstock, 2009). Additionally, it is identified in this study that these skills are essential, including the ability of students to articulate that they possess the required skills in the application process, which is critical to their employment. Thus, indicating that career building skills support students' employability development and articulation.

With respect to career building skills, the use of business simulation revealed the need to focus on methods used to develop skills and that skills can vary over time. In this instance, this can directly/indirectly influence career building skills, hence understanding the relationship between employability and career building skills is crucial and need to be continually considered over time. For instance, a particular employability skill may not be important for developing a career building skill, but over time, this can change, and a relationship can be established. This can be recognised using MDC as an effective mechanism to understand potential relationships between different dimensions and/or elements within each dimension.

3. Personal attributes and career building skills

The individual knowledge and appraisal of themselves in terms of their values, abilities, interests and goals are closely related to the concept of career identity (Jones and DeFillippi, 1996). There is some reported evidence linking certain traits and attributes with relatively good employment outcomes and career success. For instance, Eby et al. (2003) showed that students who have clear career goals and a positive, accurate appraisal of their own abilities and skills describe themselves as acquiring a higher level of employability compared to other students. In another study, students who have a higher level of motivation are likely to have better transition experiences from school to work (Pinquart et al., 2003). In addition, there are reported significant correlations between

specific personal attributes (optimism, work drive, emotional resilience and assertiveness) and career satisfaction (Williamson et al., 2005).

Based on the above, it can be recognised that the reciprocal determinism has extended the application of MDC theory within the context of Key Employability skills. Practically, and contextualising the above knowledge when applying for a job, the job requirement and the levels of skills play a significant role in graduate employment. For instance, each job may require different skills set and attributes depending on the requirement of the job. The requirement of a specific job may generate a set of skills that is different from another job. This has been shown in previous studies where graduate attributes differ from organisation to another (Osmani et al., 2019; Pheko and Molefhe, 2017). This difference in skills may be due to the discipline, company size, location, and company's customers. Thus, entities of each dimension of the construct may differ from a job to another (Osmani et al., 2019).

On the other hand, levels of skills needed may also vary depending on each position role and specifications of the job. For example, two different jobs may need the same skill, such as communication. However, one of them may require a "higher" level of communication compared with the other. Thus, levels of each entity of the dimensions of key employability skills may differ from job to another.

Job requirement and specification may influence the combination of skills required as well as the levels of those skills. These skills exist in the three dimensions of key employability skills construct that is explained by the MDC theory. This study may add to the MDC theory by shedding light on the importance of recognising that some factors may influence the adaptation of these dimensions. These factors include job requirement and specification that may impact the skills required from graduates and the level of these skills. Thus, not all entities of dimensions may be used, and different level of these entities exist that may affect the adaptation of this MDC construct in various contexts (different companies or different job roles or positions).

Chapter 7: Conclusion

7.1 Introduction and Summary of the research

This chapter aims to draw conclusions on the findings of this research; it highlights research contributions, limitations, and future work. The aim of this research was to establish a more tailored approach towards key employability skills development and assessment for business students in HE. Through the literature, it was identified that existing frameworks were not consistent in defining the listed skills and lack methodologies used to identify such skills. They are also missing methods to assess skills acquisition which is of great importance to HEIs. Thus, such frameworks

do not fully support employability considerations within the higher education environment. Data was obtained using Delphi Technique where a framework was developed to be used as a prompting mechanism to understand needs and requirements related to employability for business graduates during their time at HEIs. The framework and its related assessment methods act as a guideline in prompting relevant stakeholders to answer "what-to-consider" so that it holistically captures different methods to assess key employability skills of students. It is intended to help integrating different perspectives of what constitute key employability skills and recognises the roles of different stakeholders in developing and measuring employability of students.

This research also looked into the value of business simulation revealing the need to understand the criticality of some dimensions related to employability, including employability skills and personal attributes. Pre-post-tests were conducted to evaluate a business simulation game effectiveness in improving perceived key employability skills of business students. Based on the results, and referring back to the framework developed, results from the business simulation showed the need to holistically consider the impact of employability skills and personal attributes over time. In recognising their importance, MDC was used as a mechanism in order to support the potential relationships that can occur between different employability skills and/or employability skills and personal attributes. It was also found that demographic information, including gender and work experience, play a role in influencing student perceptions of employability skills.

7.2 Contribution to knowledge

This section discusses the theoretical and practical contribution of this research as the following:

7.2.1 Theoretical contribution

The literature review identified several frameworks for employability in section 2.4.3 Stakeholders views, which were seen as ambiguous, and do not encapsulate rich consideration of employability skills within higher education. One of the main outputs of this research is the development of the key employability skills framework. Three categories were identified; employability skills, personal attributes, and career building skills where each of these categories has a number of entities. Furthermore, these categories are interrelated at category-to-category and entity-to-entity (whether from the same category or different categories) levels. For instance, connections between the three categories were highlighted in the literature as discussed in Chapter 6, section 6.1.1. Key Employability Skills Framework: Incorporating Multiple Perspectives**Error! Reference source not found.**, whereas the connection between the employability skills and personal attributes are highlighted in this research and discussed in Chapter 4, section 4.6. Interconnections .

In acknowledging key employability skills and the three categories, aggregated multi-dimensional construct (MDC) theory was used to represent abstract conceptualisation of the framework developed. The theoretical contribution lies in recognising the interrelationships between the categories (or dimensions based on MDC) as well as the entities under different categories. Recognising these interrelationships becomes significant when attempting to improve employability skills for students in HE, which goes beyond taking every category (dimension) as an individual silo that operates independently from other categories. This is because it provides an integrative lens so that it acts as prompting mechanism for both the Higher Education Institutes as well as students in terms of understanding the value or impact of an entity on another or category on another. For instance, in order to develop communication and teamwork, emotional intelligence attribute is also needed. On the categorical level, if students want to deliver their career building skills, they need to develop certain employability skills and attributes. This shows an extended

application of aggregated MDC, and perhaps recognises a more holistic and richer approach to understand the complex nature of key employability skills.

7.2.2 Practical contributions

The development of the framework in this study has identified a number of methods that can be used to assess key employability skills in HE. These methods were categorised based on the stakeholder responsible for conducting these assessments in HE. Based on these methods, it was identified that there is a need for collaboration and involvement of student employability stakeholders to improve approaches and mechanisms used to assess the employability of students.

Another practical contribution is related to the evaluation of business simulation, which can be used as a strategy to enhance students' employability. The finding suggests that the use of business simulation contributed to an enhanced perception of students' key employability skills, which can be extended to be applied in other areas beyond business. In addition, this study was among the few studies that tested the effect of gender, work experience and nationality on perceived employability of business student in the context of business simulation. This indicates that there is some influence of these factors on student key employability skills development. Further discussion can be found in Chapter 6, Section: 6.3 Business Simulation: Informing key Employability.

7.3 Research objectives

The research objectives are revisited in this section, in addition to evidence of where they were achieved in the research. This is shown in Table 36.

No.	Objective	Chapter	Description
1	To critically review existing frameworks of key employability skills to with particular emphasis on their applicability in the Higher Education.	Chapter 2: Literature Review	Several frameworks were identified based on existing research and limitations of these frameworks brought to light. It was revealed that the skills definitions and methodology used to identify skills were ambiguous or unknown. These frameworks also lacked appropriate assessment methods to measure these skills in HE. This called for a new framework that takes into consideration the identified limitations and suitability for HE.
2	To develop an overarching key employability skills framework taking into consideration skills, definitions, and assessment methods.	Chapter 4: Delphi findings	The analysis of Delphi results and categorisation of key employability skills and their definitions helped build the framework. Also, links between some of the identified employability skills and personal attributes were identified. This enabled the finding of missing links and dependencies when defining key employability skills. The analysis of Delphi also identified assessment methods for key employability skills that can be used in HEIs to measure student employability. It also recognised the various stakeholders' roles in measuring employability and highlights the importance of collaboration in such activities
3	To evaluate use of business simulation game in terms of enhancing undergraduate business students' perceptions of their key employability skills.	Chapter 5: Pre-post-tests findings	The Delphi results also provided certain key employability skills that then were measured in a business simulation game. These results were obtained by considering employability experts' views regarding the value of business simulations in developing the employability of students. A business simulation game was evaluated using pre-post-tests. Students' perceptions regarding several skills were increased following the module, indicating that business simulation can develop students' perceptions of their key employability skills.
4	**RO4:** To synthesise the value of recognising interconnectivity and relationships between key employability skills for business students in HE.	Chapter 6: Discussion	Analysis of Delphi technique and business simulation showed that there is an interconnectivity between different key employability skills categories and also entities under the categories. To elicit this, MDC theory was applied as a mechanism to support a more tangible recognition of the relationships between different categories and entities within key employability skills.

Table 36: Research objectives and in which chapter they were achieved

7.4 Study limitations and recommendations for future research

This research faced a few limitations, and although they did not impede the research process, they posed certain challenges. The limitations are as follows:

The evaluation of a business simulation game was carried out at only one institution. This limits the generalisability of the findings related to the evaluation of business simulation. Evaluating the simulation in another university may yield different results. Also, this study evaluated one business simulation, and further research that evaluate different business simulations may offer new insights. In addition, in this study, the business simulation was used for undergraduate business students, and testing its effectiveness in developing key employability skills for different students' levels can add to the current knowledge in the business simulation field.

In relation to sample size, it emerged through the analysis of pre-post-tests that fragmenting the sample into respective nationality and work experience resulted in groups which are considered relatively small for statistical analysis. Thus, the results of these groups are interpreted with caution.

To overcome some of the reported limitations of this study and to build on the findings noted earlier, the following points could be considered in future research:

Following the establishment of key employability skills framework, future research may test this framework in different contexts and across various disciplines in the business school. Testing this framework in different contexts may add to or improve some of the reported skills and attributes, their definitions, and methods for measuring them in HE. Also, testing this framework across disciplines can provide insight about its suitability and applicability across business subjects.

Regarding the business simulation evaluation, testing the business simulation in different universities, with different student levels, or different types of business simulations can help confirm that the business simulation enhances key employability skills. Also, future research may provide a more detailed explanation of the value of such simulations to business students. Using a qualitative approach may offer a better understanding of how the business simulation help in developing employability skills of business students.

In conclusion, this study has provided strong insight into, and contribution to the overall understanding of key employability skills construct and its interlinked dimensions in the context of student employability. This research has established a key employability skills framework, identified links among the skills and suggested suitable methods for assessing these skills in HE. It is intended for this framework to be applied to develop and evaluate the key employability skills of business students in HE. Also, the study indicates that business simulation can be used as an employability enhancement method for business students. This may help HEIs who want to use this method in enhancing the employability of their students.

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Appendices

Appendix A

Delphi initial questionnaire

Start of Block: Consent

Consent form

I, confirm that I have read and understood the information about the project, as provided in the Information Sheet. I have been given the opportunity to ask questions about the project and my participation. I understand I can withdraw at any time without giving reasons and that I will not be penalised for withdrawing nor will I be questioned on why I have withdrawn.

I give permission for my anonymised responses to be used during the Delphi process and to be accessed by members of the research team. The use of the data in research, publications, sharing and archiving has been explained to me. The Delphi Study Consent Form is an internet consent form which will allow respondents to either consent to participate in the study or not consent to participate in the study. If you click NO and choose not to participate in the study, you will be disqualified from continuing. If you click YES and consent to participate in the study, you will automatically continue to participate in the study.

Do you consent to participate in this research study?

○ Yes, I consent

○ No, I do not Consent

Skip To: End of Survey If Consent form I, confirm that I have read and understood the information about the project, as... = No, I do not Consent

End of Block: Consent

Start of Block: Demographics

What is your age?

- ○ Under 21
- ○ 21-30
- ○ 31-40
- ○ 41-50
- ○ 51-60
- ○ Above 60

What is your gender?

- ○ Male
- ○ Female
- ○ Other

Which option best describes your ethnicity?

- White
- Black Caribbean
- Black African
- Indian
- Pakistani / Bangladeshi
- Chinese
- Other

End of Block: Demographics

Start of Block: Criteria

This research aims to define key employability skills and objective measures for these skills, to do so, the researcher needs the opinions of employability skills experts who are knowledgeable about the topic.

Do you consider yourself as an expert in transferable employability skills?

* What are transferable skills? It can be identified as skills learnt in one context and could be reasonably transferred to another (Booth 2003). They are also called generic, soft or key skills.

- Yes, I am knowledgeable about transferable employability skills
- No, I am not knowledgeable about transferable employability skills

Skip To: End of Survey If This research aims to define key employability skills and objective measures for these skills, to... = No, I am not knowledgeable about transferable employability skills

Which type of organisation do you currently work at?

- ○ Government
- ○ Academia (University)
- ○ Non-government organisation (NGO)
- ○ Private
- ○ Other (Please specify) _____

What is your current job title?

_____

How many years of work experience in an employability related position do you have?

- ○ Under 1 year
- ○ 1- 3 years
- ○ 3- 6 years
- ○ 6- 10 years
- ○ Over 10 years

What is your highest level of qualification? *If currently enrolled, highest degree received.*

- Higher degree, mainly by research (e.g. PhD, DPhil, MPhil)
- Higher degree, mainly by taught course (e.g. MA, MSc, MBA)
- Postgraduate diploma or certificate (including PGCE / PGDE)
- Professional qualification
- Undergraduate degree (including integrated master's degrees) (e.g. BA, BSc, MBChB, MEng)
- Other undergraduate diploma or certificate not specified above
- Other qualification

Display This Question:

If Which type of organisation do you currently work at? = Academia (University)

What is the total number of publications do you have on employability related studies? *publications include conference papers, journal articles, books etc.

- None
- 1- 4
- 5- 9
- 10- 14
- 15 and above

End of Block: Criteria

Start of Block: Influence/ impact

Q11 The following questions are measuring how much influence and/or impact you have on people in your institution or on government policy.

Have you ever? (Please check all that apply to you)

- ☐ been invited to give a speech, talk or presentation about employability in an event
- ☐ published a research that has been used to inform government policy regarding employability
- ☐ written a book or a chapter in a book, a white paper or an article discussing employability
- ☐ created a website that focuses on employability
- ☐ have any social media account dedicated to employability discourse in any social media platform
- ☐ owned a consultancy business that is related to employability
- ☐ been invited to participate in a government or non-government project or campaign that deal with employability
- ☐ been a member of a committee or advisory board that deals with employability

---

On a scale from 1 to 10, how influential do you think you are on an institutional/organisational level? 1= not influential 10= very influential

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10

Influence 3 On a scale from 1 to 10, how influential do you think you are on government policy?
1= not influential 10= very influential

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

End of Block: Influence/ impact

Start of Block: Nomination

Display This Question:

If Loop all: Could you please nominate any other experts that you are aware of who are knowledgeable in employ... != No

Could you please nominate any other experts that you are aware of who are knowledgeable in employability skills and can participate in this study?

- Yes
- No

Display This Question:

If Loop all: Could you please nominate any other experts that you are aware of who are knowledgeable in employ... != No

Nominee Info Could you please provide us with their contact information?

○ Name _____

○ Email _____

○ Mobile Number _____

End of Block: Nomination

Start of Block: contact Info.

Future contact will be made with a subset of questionnaire respondents in a later phase of this research. If selected, could you please provide us with your preferred contact information below?

○ Name _____

○ Email_____

○ Mobile Number _____

End of Block: contact Info.

Appendix B

Delphi first-round questions (Interviews)

The first three questions aim to answer 1st research question. The last three questions aim to explore whether business simulation game enhance employability skills and what kind of these skills specifically does it develop?

1. In your opinion, what are the most important transferable employability skills when recruiting business graduates?

---

2. Based on your knowledge, understanding and expertise, can you please define each skill you have introduced in the first question? What do they mean?

---

3. What methods you think can be used to measure these skills in higher education institutions? What kind of evidence do you think employers are looking for when recruiting business graduates?

Do you know business simulation games? If yes

4. Do you think the use of (business simulation games) can improve employability skills of undergraduate business student?

---

5. What type of employability skills do you think can be developed by business simulation games?

---

6. How well do you think these skills can be developed by the use of business simulation games?

Appendix C

Delphi Round 2 questionnaire

Start of Block: Default Question Block

Welcome to the second round of Delphi!

Thank you for agreeing to take part in this study.

In this round, you will be asked to choose the most important employability skills, rank them from one to ten and choose the most suitable methods that can be used to measure these skills development in higher education.

This survey consists of four questions and will take approximately 15 minutes to complete.

Can you please write your name?

_____

Q1. Please select **ten** most important employability skills from the following list. Kindly see the attached file in the email for more information about these skills definitions.

- [ ] Ability to learn quickly
- [ ] Able to apply
- [ ] Adaptability
- [ ] Commercial awareness
- [ ] Communication skills
- [ ] Creativity, innovation
- [ ] Cultural and moral awareness
- [ ] Customer focus
- [ ] Dealing with ambiguity
- [ ] Emotional intelligence
- [ ] Honest and open
- [ ] Leadership
- [ ] Motivation, open-mindedness and positive attitude
- [ ] Networking
- [ ] Numerical skills
- [ ] Planning and organising
- [ ] Problem-solving

- [ ] Preparation and professionalism
- [ ] Reflection
- [ ] Resilience
- [ ] Self-awareness
- [ ] Self-confidence
- [ ] Teamwork
- [ ] Technology, IT
- [ ] Time management

Carry Forward Selected Choices from "Q1. Please select ten most important employability skills from the following list. Kindly see the attached file in the email for more information about these skills definitions."

Q2. From the list selected above, please rank the chosen employability skills based on importance from 1 to 10. Please drag and drop your ten skills in order of significance (1= most significant).

_____ Ability to learn quickly
_____ Able to apply
_____ Adaptability
_____ Commercial awareness
_____ Communication skills
_____ Self-confidence
_____ Creativity, innovation
_____ Cultural and moral awareness
_____ Customer focus
_____ Dealing with ambiguity
_____ Emotional intelligence
_____ Honest and open
_____ Leadership
_____ Motivation, open-mindedness and positive attitude
_____ Networking
_____ Numerical skills
_____ Planning and organising
_____ Problem-solving
_____ Preparation and professionalism
_____ Reflection
_____ Resilience
_____ Self-awareness
_____ Teamwork
_____ Technology, IT
_____ Time management

Q3. What is your justification for choosing the top three skills?

○ Reasons for choosing the first skill
_____

○ Reasons for choosing the second skill
_____

○ Reasons for choosing the third skill
_____

Carry Forward Selected Choices from "Q1. Please select ten most important employability skills from the following list. Kindly see the attached file in the email for more information about these skills definitions."

Q4. Please choose the most suitable methods that can be used in universities to measure the development of the following employability skills for undergraduate business students.
The list of the measures includes the following:

- **Competency-based assessment**: assessments based on the judgment of competency against clear benchmarks or assessment criteria
- **Strength-based assessment**: looking at the combination of what people are good at and what they enjoy doing. It focuses on strengths of an individual
- **Self-assessment**: Students assess their skills development and evaluate their competence
- **Roleplay**: is the spontaneous acting out of situations, without costumes or scripts. The context for the role-play is presented and roles are selected. Students have minimal planning time to discuss the situation, choose different alternatives or reactions and plan a basic scenario.
- **Observation**: assessors observe students' skills development in a given task and evaluate their competence
- **Psychometrics tests**: they are used to identify a candidate's skills, knowledge and personality. They're often used during the preliminary screening stage, or as part of an assessment centre
- **MSCEIT** Mayer-Salovey-Caruso Emotional Intelligence Test**.** A performance-based test for emotional intelligence.
- **Assessment centre activities** - Mock assessment centre is a combination of tasks and activities that test graduate's suitability for the job. It gives them the chance to demonstrate a broader range of skills. Students can participate in **Mock assessment** tasks and activities that are done in students universities to practice and get feedback on their performance during these activities
- **Employability development profile survey** is a document that includes important employability skills with sections for students' self-assessment of their skills using a 5-point scale; supporting evidence (from the curriculum and extracurricular activities) in order to claim proficiency in the skills and an action plan to develop or improve the skills.
- **360-degree feedback: is a** process involves capturing feedback (abilities and skills) about an individual from a range of people including his or her manager, colleagues, internal and external customers, people who report directly to him/her and even friends or family
- **Third-party rating:** asking employers to rate students against employability skills before placements or any form of work experience and at the end and then see if there is a change
- **Business Simulation:** participants are running their company in a simulation, and they are faced with managerial issues and problems where they must choose their courses of action.

By doing this, they get a chance to see how they can relate research, theory and management concepts in practical settings

- **Mock interviews:** Universities can offer mock interviews to give the students a realistic practice before the real interview. Career advisors will provide feedback to students on their answers and tips on how they could improve

	Competency based	Strength based	Self-asses s	Role play	Observ ation	Psycho metrics tests	MSC EIT	Mock asses centre	Employa bility survey	360 feedback	Third party rating	Bus. Sim.	Mock interviews
Ability to learn quickly	○	○	○	○	○	○	○	○	○	○	○	○	○
Able to apply	○	○	○	○	○	○	○	○	○	○	○	○	○
Adaptability	○	○	○	○	○	○	○	○	○	○	○	○	○
Commercial awareness	○	○	○	○	○	○	○	○	○	○	○	○	○
Communicat ion skills	○	○	○	○	○	○	○	○	○	○	○	○	○
Self-confidence	○	○	○	○	○	○	○	○	○	○	○	○	○
Creativity, innovation	○	○	○	○	○	○	○	○	○	○	○	○	○
Cultural and moral awareness	○	○	○	○	○	○	○	○	○	○	○	○	○
Customer focus	○	○	○	○	○	○	○	○	○	○	○	○	○
Dealing with ambiguity	○	○	○	○	○	○	○	○	○	○	○	○	○
Emotional intelligence	○	○	○	○	○	○	○	○	○	○	○	○	○

Honest and open	○	○	○	○	○	○	○	○	○	○	○	○	○
Leadership	○	○	○	○	○	○	○	○	○	○	○	○	○
Motivation, positive attitude	○	○	○	○	○	○	○	○	○	○	○	○	○
Networking	○	○	○	○	○	○	○	○	○	○	○	○	○
Numerical skills	○	○	○	○	○	○	○	○	○	○	○	○	○
Planning and organising	○	○	○	○	○	○	○	○	○	○	○	○	○
Problem solving	○	○	○	○	○	○	○	○	○	○	○	○	○
Preparation and professionalism	○	○	○	○	○	○	○	○	○	○	○	○	○
Reflection	○	○	○	○	○	○	○	○	○	○	○	○	○
Resilience	○	○	○	○	○	○	○	○	○	○	○	○	○
Self-awareness	○	○	○	○	○	○	○	○	○	○	○	○	○

Teamwork	○	○	○	○	○	○	○	○	○	○	○	○	○
Technology, IT	○	○	○	○	○	○	○	○	○	○	○	○	○
Time management	○	○	○	○	○	○	○	○	○	○	○	○	○

End of Block: Default Question Block

Start of Block: Block

Appendix D

Key employability skills measures, items of the scale and from which study it has been adopted or developed

Skill	Items	Source
Existing key employability skills measures		
Communication	• I have oral communication skills including making effective business presentations to a group • I can convey information orally one-to-one • I can communicate ideas verbally to groups • I have Listening skills - Listening attentively • I can respond positively to others' comments during a conversation • I have written communication skills including report writing skills, internal and external • I have good command of written language – English Ability to use proper grammar, spelling, and punctuation	Ramisetty and K., 2017.
Teamwork	• I can work well as part of a team • I can lead a team at work or at school • I have the skills of negotiating and persuading • I respect other team members	Sunday, N., 2013.
Leadership	• I can recognise alternative routes in meeting objectives • I can initiate change to enhance productivity • I can empathise and understand the needs of others • I can respond positively to constructive criticism • I can delegate work and responsibilities to others	Ramisetty, and K., 2017.
Problem-solving	• I can assess situations, identify problems and evaluate solutions • I recognise the many dimensions of a problem and can determine a root cause • I am not afraid to be creative when solving problems.	Sunday, 2013.

	• I like to make sure the solution of a problem works in case improvement is required	
Technology/IT	• I can use a word processor (e.g. Word) effectively • I can use e-mail effectively • I can use the internet/www effectively • I can use social media sites effectively	Goldfinch and Hughes, 2007.
Planning and organisation	• I am good at managing time and priorities – setting deadlines • I am good at taking initiative and making decisions • I am resourceful • I can set achievable goals and structure action.	(Sunday, 2013)
Numeracy	• I can correctly calculate and understand percentages and proportions • I can use a calculator or a computer to perform a basic statistical analysis • I can analyse and use numbers and data accurately and manipulate into relevant information	(Goldfinch and Hughes, 2007)
Time management	• I can plan my own time to balance study, work, and social activities • I am able to manage several tasks at once • I can plan my own time to meet straightforward study targets and deadlines	(Goldfinch and Hughes, 2007)
Self-awareness	• **Meta-cognition:** I can reflect on and evaluate personal practices, strengths and weaknesses in the workplace. • **Lifelong learning:** I can actively seek, monitor and manage knowledge and opportunities for learning in the context of employment and life	Jackson, and Chapman, 2012.
Self-confidence	**Self-efficacy:** Be self-confident in dealing with the challenges that employment and life throw up • I am confident in myself to deal with any unexpected challenges both in and out of the workplace • I am confident to achieve my goals • I am able to function independently of others • I am able to make decisions	Jackson, and Chapman, 2012.

Dealing with ambiguity	• I can take decisions with incomplete information • I can deal with situations involving uncertainty and ambiguity • I am aware of multiple solutions to business problems	(Weil et al., 2001)
Reflection	• I am able to reflect on what I have learned during my time at university • I can reflect on and articulate my experiences in university or in life • I can reflect evaluatively on the performance of myself and others.	(Edwards, 2014)
Skill measures that are taken from a bigger category in previous studies		
Commercial awareness	• I can understand and account for local, national and global economic conditions and their influence on business success. • I can operate with an understanding of business issues and priorities • I have a basic understanding of the key drivers for business success and the need to provide customer satisfaction	Part of Environmental awareness measures: (Jackson, and Chapman, 2012)
Skills measures that are adapted and developed from definitions and explanations in previous studies		
Adaptability	Adapted from definition: "Being flexible and to respond positively to new situations, demands and conditions" • I am adaptable and flexible • I am able to respond positively to changing circumstances and new challenges • I am able to adapt and work flexibly in different contexts • I can respond positively to new situations, demands and conditions	(Abbasi and Bibi, 2018)

Appendix E

The relationship between business simulations and the development of employability skills by undergraduate business students

Purpose:

Thank you for your participation in this research which aims to test whether business simulations enhance the employability skills of business students. This study is open to second year undergraduate business students at Aston University who may or may not be directly involved in a business simulation module. Your participation in this study is voluntary. While your input is very valuable to us and is needed to ensure the quality of the project, you are not required to participate. If you do take part, rest assured that, you will be anonymous and that your responses will remain confidential. There is nothing on this questionnaire that will associate you with the responses you provide.

If you need further information about the study, please read the information sheet attached with the questionnaire. If you agree to take part in this study, you will be asked next to sign the following consent form.

Thank you for taking part in this study.

YOUR CONSENT

Full title of Project: The relationship between business simulations and the development of employability skills by undergraduate business students

Name and position of Researcher: Arwa Asiri, PhD Student, Aston Business School.

Contact address: asiriama@aston.ac.uk

I, the undersigned, confirm that (please tick box as appropriate):

1. I have read and understood the information about the project, as provided in the Information Sheet. ☐
2. I have been given the opportunity to ask questions about the project and my participation. ☐
3. I voluntarily agree to participate in the study. ☐

4. I understand I can withdraw at any time without giving reasons and that I will not be penalised for withdrawing nor will I be questioned on why I have withdrawn. ☐

5. I agree that the information and opinions I provide for this study will be stored in a secure form and may be used for this study and for future research. ☐

6. The procedures regarding confidentiality have been clearly explained (e.g. use of names, pseudonyms, anonymization of data, etc.) to me. ☐

7. The use of the data in research, publications, sharing and archiving has been explained to me. ☐

_____ _____ _____

Name of Participant Signature Date

Further information: Please do not hesitate to contact the lead researcher if you have any concerns or questions. Contact details: Tel: 07482794349, email: asiriama@aston.ac.uk

The relationship between Business Simulations and the development of employability skills by undergraduate business students questionnaire

Please write your candidate number (you can find it on your student card)	
Candidate No.	__ __ __ __ __ __

Demographic characteristics

Age

What is your age?

☐ Under 18	☐ 18- 21	☐ 22- 25	☐ 26- 29	☐ 30 and above

Gender

What is your gender?

☐ Male	☐ Female	☐ Other

Student type:

What is your fee status?

☐ Home	☐ EU	☐ International

Programme

What is your programme of study?

☐ Accounting for Management	☐ Business and Mathematics	☐ Business and International Relations BSc
☐ Business Management and Public Policy	☐ Business and Politics BSc	☐ Business Computing and IT BSc
☐ Business Management and English Language BSc	☐ Business and Sociology	☐ Finance BSc
☐ Mathematics with Economics BSc	☐ International Business and Management BSc	☐ Human Resource Management BSc
☐ Other – Please state ----------		

Mode of study

What is your mode of study?

☐ Full-time	☐ Part-time

Work experience

Do you have any work experience?

- ☐ **Yes**
- ☐ **No**

Please provide a response for each of the following employability skills listed below. Please indicate your perceived level of competence/ability for each employability skill. The response scale is: 5 = Very well; 4 = Well; 3 = Some; 2 = Little; 1 = Not at all

Please circle the option that best describe your level of competence in the following statements. Please note that the scales range from 1 to 5 with 1 meaning "Note at all" and 5 meaning "Very well".

1	2	3	4	5

Item **Please <u>circle</u> your response**	**Not at all**	**Little**	**Some**	**Well**	**Very well**
1. I have oral communication skills including making effective business presentations to a group	1	2	3	4	5
2. I can work well as part of a team	1	2	3	4	5
3. I can recognise alternative routes in meeting objectives	1	2	3	4	5
4. I can assess situations, identify problems and evaluate solutions	1	2	3	4	5
5. I can use a word processor (e.g. Word) effectively	1	2	3	4	5
6. I can understand and account for local, national and global economic conditions and their influence on business success.	1	2	3	4	5
7. I am adaptable and flexible	1	2	3	4	5
8. I am good at managing time and priorities – setting deadlines	1	2	3	4	5

9. I can correctly calculate and understand percentages and proportions	1	2	3	4	5
10. I can plan my own time to balance study, work, and social activities	1	2	3	4	5
11. I can create a presentation content that is well planned, researched and designed to aid understanding	1	2	3	4	5
12. I can reflect on and evaluate personal practices, strengths and weaknesses in the workplace.	1	2	3	4	5
13. I am confident in myself to deal with any unexpected challenges both in and out of the workplace	1	2	3	4	5
14. I can manage projects	1	2	3	4	5
15. I can take decisions with incomplete information	1	2	3	4	5
16. I am able to apply my knowledge to new situations	1	2	3	4	5
17. I am able to reflect on what I have learned during my time at university	1	2	3	4	5
18. I can convey information orally one-to-one	1	2	3	4	5
19. I can lead a team at work or at school	1	2	3	4	5
20. I can initiate change to enhance productivity	1	2	3	4	5
21. I recognise the many dimensions of a problem and can determine a root cause	1	2	3	4	5
22. I can use e-mail effectively	1	2	3	4	5
23. I can operate with an understanding of business issues and priorities	1	2	3	4	5
24. I am able to respond positively to changing circumstances and new challenges	1	2	3	4	5
25. I am good at taking initiative and making decisions	1	2	3	4	5

26. I can use a calculator or a computer to perform a basic statistical analysis	1	2	3	4	5
27. I am able to manage several tasks at once	1	2	3	4	5
28. I can produce presentations on a broad range of subjects in a well-structured manner	1	2	3	4	5
29. I can actively seek, monitor and manage knowledge and opportunities for learning in the context of employment and life	1	2	3	4	5
30. I am confident to achieve my goals	1	2	3	4	5
31. I can allocate project resources	1	2	3	4	5
32. I can deal with situations involving uncertainty and ambiguity	1	2	3	4	5
33. I can apply theories to real life situations	1	2	3	4	5
34. I can reflect on and articulate my experiences in university or in life	1	2	3	4	5
35. I can communicate ideas verbally to groups	1	2	3	4	5
36. I have the skills of negotiating and persuading	1	2	3	4	5
37. I can initiate change to enhance productivity	1	2	3	4	5
38. I am not afraid to be creative when solving problems.	1	2	3	4	5
39. I can use the internet/www effectively	1	2	3	4	5
40. I have a basic understanding of the key drivers for business success and the need to provide customer satisfaction	1	2	3	4	5
41. I am able to adapt and work flexibly in different contexts	1	2	3	4	5
42. I am resourceful	1	2	3	4	5
43. I can analyse and use numbers and data accurately and manipulate into relevant information	1	2	3	4	5
44. I can plan my own time to meet straightforward study targets and deadlines	1	2	3	4	5
45. I can vary the language and expression to suit a broad range of audiences	1	2	3	4	5

46. I am able to function independently of others	1	2	3	4	5
47. I can monitor project quality, time and cost	1	2	3	4	5
48. I am aware of multiple solutions to business problems	1	2	3	4	5
49. I am able to apply academic learning in practical settings	1	2	3	4	5
50. I can reflect evaluatively on the performance of myself and others	1	2	3	4	5
51. I have Listening skills - Listening attentively	1	2	3	4	5
52. I respect other team members	1	2	3	4	5
53. I can empathise and understand the needs of others	1	2	3	4	5
54. I like to make sure the solution of a problem works in case improvement is required	1	2	3	4	5
55. I can use social media sites effectively	1	2	3	4	5
56. I can respond positively to new situations, demands and conditions	1	2	3	4	5
57. I can set achievable goals and structure action	1	2	3	4	5
58. I am able to make decisions	1	2	3	4	5
59. I can anticipate and overcome complex issues	1	2	3	4	5
60. I can use a variety of delivery techniques that make the presentation professional, fluent, appropriately paced and demonstrate mastery of the material	1	2	3	4	5
61. I can respond positively to others' comments during a conversation	1	2	3	4	5
62. I can respond positively to constructive criticism	1	2	3	4	5
63. I can use audio-visual aids effectively	1	2	3	4	5
64. I have written communication skills including report writing skills, internal and external	1	2	3	4	5
65. I can delegate work and responsibilities to others	1	2	3	4	5
66. I have good command of written language – English Ability to use proper grammar, spelling, and punctuation	1	2	3	4	5

Thank you!

We appreciate your participation!

Appendix F

Decision Form Summary

World Number		**Team Name:**			
	2030	**2031**	**2032**	**2033**	**2034**
R&D					
R&D Project Number(s)	None	None			
Total R&D Spend (W$000)	300	300			
Development Cost to be Capitalised (W$000) – 60% x R&D Spend (except for R&D 18 & 19)	None	None			
Production					
Production Quantity	1,600				
Productivity Bonus ($0, $25k, $50k or $100k)	0				
Number of Production Staff	125	125			
Capital Expenditure (W$000)	None	None			
Marketing					
Retail Selling Price (W$)	5,000				
Advertising Spend (W$000)	10	10			
Number of Sales Staff	10	10			
Human Resources					
Number of Admin Staff	20	20			
Annual Salary pp pa (W$000)	10				
Training Spend (W$000)	50	50			
Finance					
Number of Shares Issued	None	None			
Share Offer Price (W$)	None	None			
Overdraft Limit (W$000)	1,500	1,500			
Bank Loan Amount (W$000)	1,000	1,000			
Credit Days from Suppliers	90	90			
Credit Days for Customers	90	90			
Trade Discount %	20	20			
Sustainability (Options 1 - 4)					

Appendix G

Exploratory analysis results

Table G1 – Skills (pre-estimates)

	Factor				
	1	2	3	4	5
C7_Pre	.83				
C6_Pre	.64				
C5_Pre	.60				
C4_Pre	.59				
N2_Pre		.85			
N1_Pre		.60			
CA2_Pre			.73		
CA1_Pre			.66		
T3_Pre				.88	
T2_Pre				.38	
PS1_Pre					.79
PS2_Pre					.50

Table G2 – Skills (post-estimates)

	Factor				
	1	2	3	4	5
T3_Post	.85				
T2_Post	.67				
CA3_Post	.45				
CA2_Post		.70			
PS1_Post		.58			
CA1_Post		.55			
PS2_Post		.53			
C6_Post			.78		
C7_Post			.73		
N1_Post				.76	
N2_Post				.75	
C5_Post					.69
C4_Post					.39

Table G.3 - Personal attributes (pre-estimates)

	Factor		
	1	2	3
AD2_Pre	0.77		
AD1_Pre	0.75		
AD3_Pre	0.45		
R3_Pre		0.77	
R2_Pre		0.56	
CF2_Pre			0.82
CF3_Pre			0.41

Table G4- Personal attributes (post-estimates)

	Factor		
	1	2	3
R2_Post	0.63		
R3_Post	0.53		
CF3_Post	0.45		0.30
CF2_Post		0.58	
AD2_Post		0.47	0.42
AD3_Post			0.77
AD1_Post			0.30

Appendix H

Assumptions for t-test and ANOVA check across gender, work experience and nationality subgroups

Table H1 – Z-scores of skewness and kurtosis across gender and work experience subgroups

	Males		Females		With work experience		Without work experience	
Variables	Z-score of Kurtosis	Z-score of Skewness	Z-score of Kurtosis	Z-score of Skewness	Z-score of Kurtosis	Z-score of Skewness	Z-score of Kurtosis	Z-score of Skewness
Before intervention Employability Skills								
Communication	0.78	-1.70	1.09	-2.67	2.35	-3.62	-0.27	0.16
Teamwork	-0.05	-0.81	-0.63	-1.21	0.22	-1.43	-1.11	0.19
Problem-solving	-0.41	0.73	-1.00	-0.54	-1.23	0.41	-0.30	-1.03
Commercial awareness	-0.49	0.95	-0.88	-1.22	0.24	-0.61	-0.96	0.82
Numeracy	-1.51	-1.50	-0.16	-1.86	-0.51	-2.56	-1.36	-0.09
Personal attributes								
Adaptability	-1.82	0.11	-1.21	-0.21	-1.79	-0.25	-0.68	1.01
Self-confidence	0.70	-2.49	-0.34	-1.75	1.43	-3.25	-1.34	-0.46
Reflection	-1.13	0.02	-0.58	0.03	-0.85	-0.25	-0.65	0.81
After intervention Skills								
Communication	-0.66	-1.39	2.34	-2.54	1.15	-2.43	-0.66	-0.24
Teamwork	-1.08	-1.85	-1.52	0.41	-1.55	-1.32	-0.36	-0.19
Problem-solving	-0.38	0.01	-0.51	-0.78	-0.42	-0.31	0.04	-0.14
Commercial awareness	-0.95	-0.15	-1.68	-0.02	-1.80	-0.57	-0.01	1.14
Numeracy	0.11	-2.44	-0.57	-1.90	-0.48	-2.95	-1.54	-0.003
Personal attributes								
Adaptability	-0.46	-1.02	-0.78	-0.81	-0.96	-1.03	-0.17	-0.71
Self-confidence	-1.07	-0.79	-1.36	-0.48	-1.64	-1.00	-0.68	0.15
Reflection	-1.17	-1.17	2.21	-2.58	-0.10	-1.77	-0.45	-0.90

Appendix H – continued

Table H2 – Z-scores of skewness and kurtosis across nationality subgroups

	Home		International	
Variables	Z-score of Kurtosis	Z-score of Skewness	Z-score of Kurtosis	Z-score of Skewness
Before intervention				
Employability Skills				
Communication	2.69	-3.10	-0.81	-0.26
Teamwork	0.38	-1.11	-1.12	-0.36
Problem-solving	-0.77	0.49	-0.97	-0.97
Commercial awareness	-0.51	-0.89	-0.61	0.16
Numeracy	-0.83	-1.88	0.30	**-2.05**
Personal attributes				
Adaptability	-1.43	-0.22	-1.36	-0.47
Self-confidence	1.26	-2.63	-0.88	-1.34
Reflection	-0.97	0.01	-0.79	-0.18
After intervention				
Skills				
Communication	0.42	-1.85	-0.55	-0.59
Teamwork	-1.29	-1.32	-1.04	-0.35
Problem-solving	-0.53	0.64	-0.26	-1.21
Commercial awareness	-1.55	0.08	-1.01	-0.48
Numeracy	0.14	-3.00	-0.82	-1.22
Personal attributes				
Adaptability	-0.92	-0.97	-0.11	-1.09
Self-confidence	-1.16	-1.37	-1.54	0.54
Reflection	1.65	-2.31	-1.41	-0.44

Appendix H3 - continued
Table H3 – Levene's Test for Equality of Variances results

	Gender		Work experience		Nationality	
Variable	F statistic	p-value	F statistic	p-value	F statistic	p-value
Before intervention						
Employability Skills						
Communication	1.631	0.204	0.794	0.374	2.932	0.056
Teamwork	0.756	0.386	0.491	0.485	5.251	0.006*
Problem-solving	0.003	0.957	0.117	0.732	0.441	0.644
Commercial awareness	0.327	0.568	4.994	0.027*	0.258	0.773
Numeracy	0.092	0.763	0.033	0.857	1.144	0.321
Personal attributes						
Adaptability	6.728	0.010*	2.902	0.090	1.283	0.280
Self-confidence	1.819	0.179	2.197	0.140	3.975	0.021*
Reflection	1.162	0.283	0.934	0.335	0.594	0.553
After intervention						
Skills						
Communication	1.162	0.283	0.934	0.335	4.075	0.019*
Teamwork	3.688	0.057	2.300	0.131	1.062	0.348
Problem-solving	4.299	0.040*	0.002	0.964	1.847	0.161
Commercial awareness	0.001	0.976	0.023	0.881	0.108	0.898
Numeracy	0.964	0.328	0.124	0.726	0.298	0.743
Personal attributes						
Adaptability	0.595	0.442	0.562	0.455	0.710	0.493
Self-confidence	0.004	0.949	0.740	0.391	1.276	0.282
Reflection	0.254	0.615	0.780	0.378	4.769	0.010*

Note: sign * means that assumption about equality of variance across subgroup is violated